1. U.S. Agriculture—Linking Consumers and Producers

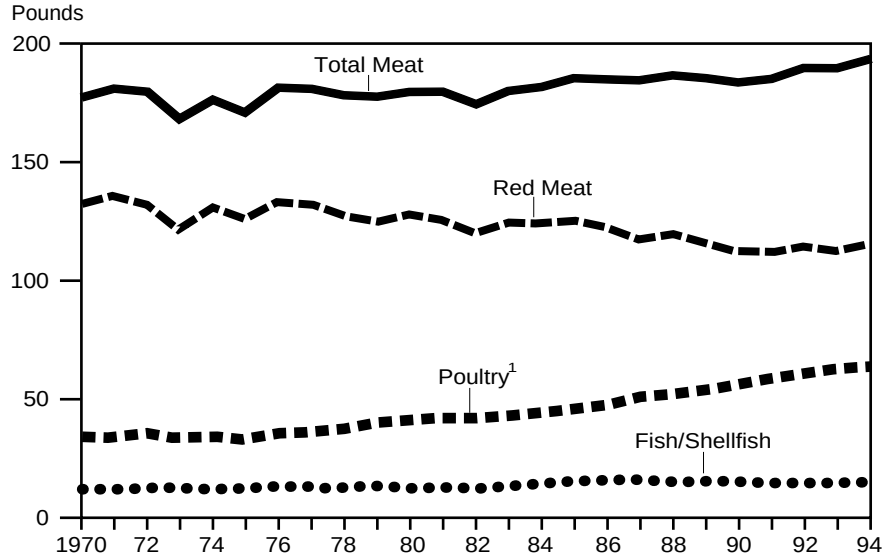
What Do Americans Eat?

Americans are slowly, with fits and starts, shifting their eating patterns toward more healthful diets. They are eating more low-fat and nonfat products, and leaner cuts of meat. However, this trend has been undermined by a growing preference for high-fat convenience foods, fast foods, and snacks. More Americans eat out, eat on the run, and eat more often than ever before. In the process, some have unwittingly increased their consumption of added fats, oils, and sugars.

A considerable gap still remains between public health recommendations and consumer practices. Between 1977-78 and 1989-91, according to USDA surveys, the average intake of fat declined from 40 percent of total energy (calories) to 34 percent, still well above the 30-percent maximum recommended. Average carbohydrate

Figure 1-1.

Per capita consumption of meat, poultry, and fish, boneless, trimmed equivalent



[1]Includes skin, neck meat and giblets

Table 1-1.

Major foods: U.S. per capita consumption

Food	*1970*	*1980*	*1993*
		Pounds	
Red meat[1]	131.7	126.4	112.1
Chicken and turkey [1]	33.8	40.8	62.6
Fish and shellfish[1]	11.7	12.4	14.9
Eggs	39.5	34.8	30.3
Cheese [2]	11.4	17.5	26.3
Ice cream	17.8	17.5	16.1
Fluid cream products	5.2	5.6	8.0
All dairy products [3]	563.8	543.2	574.1
Fats and oils	52.6	57.2	65.0
Animal	14.1	12.3	10.1
Vegetable	38.5	44.8	54.9
Peanuts and tree nuts [4]	7.2	6.6	8.3
Fruits and vegetables [5]	565.6	594.6	674.6
Fruits	230.0	258.1	278.0
Vegetables	335.6	336.6	396.6
Caloric sweeteners [6]	122.3	123.0	144.4
Refined sugar (sucrose)	101.8	83.6	64.3
Corn Sweeteners	19.1	38.2	78.7
Other	1.5	1.2	1.4
Flour and cereal products [7]	135.3	144.6	193.1
Wheat flour	110.9	116.9	139.4
Rice	6.7	9.4	17.5
Corn products	11.1	12.9	22.1
Oat products	4.4	3.7	8.6
Rye and barley	2.2	1.8	1.5
Cocoa (chocolate liquor equivalent) [8]	3.1	2.7	4.6
		Gallons	
Beverage milks	31.3	27.6	24.9
Whole	25.5	17.0	9.4
Lowfat and skim	5.8	10.5	15.5
Coffee	33.4	26.7	26.0
Tea	6.8	7.3	7.1
Soft drinks	24.3	35.1	46.6
Fruit juices	NA	7.2	8.4
Bottled water	NA	2.4	9.2
Beer	18.5	24.3	22.6
Wine	1.3	2.1	1.7
Distilled spirits	1.8	2.0	1.3

NA = Not available.

[1]Boneless, trimmed equivalent. [2]Excludes full-skim American, cottage, pot, and baker's cheese. [3]Milk equivalent, milkfat basis.[4]Shelled basis [5]Farmgate weight. [6]Dry basis. [7]Consumption of items at the processing level (excludes quantities used in alcoholic beverages and corn sweeteners). [8]What remains after cocoa beans have been roasted and hulled.

intake increased between the two survey periods from 43 percent of total calories to 49 percent, still well below the 55- to 60-percent minimum recommended by a variety of sources, including the American Cancer Society and the American Heart Association.

While Americans are eating more grains, especially in mixtures, they still are not eating the amounts of high-fiber foods—including whole-grain products, legumes, vegetables, and fruit—recommended in the latest dietary guidelines. And, Americans are eating more foods that contain large amounts of refined sugars.

Increasing supplies of beef and declining retail beef prices spurred a 1-pound increase in per capita consumption of beef in 1994, the first increase in 10 years, but long-term consumption trends for beef and for total red meat remain down. Red meat accounted for 59 percent of the total meat supply in 1994, compared with 70 percent in 1980 and 74 percent in 1970. By 1994, chicken and turkey accounted for 33 percent of the total meat consumed, up from 23 percent in 1980 and 19 percent in 1970. In 1994, per capita consumption averaged 17 pounds less red meat, 30 pounds more poultry, and 3 pounds more fish and shellfish than in 1970. Retail cuts of beef and pork and many processed meat products are significantly leaner than a decade ago. Despite a trend toward use of leaner meats, per capita consumption of total meat reached an all-time high in 1994 and is expected to rise again in 1995.

U.S. per capita egg consumption has declined steadily since an all-time high of 403 eggs in 1945. Between 1970 and 1994, total annual per capita egg consumption decreased from 309 to 238 eggs, while consumption of processed eggs rose from 33 to 61 eggs. Egg product use changed little during the 1960's and climbed only slowly during the 1970's. Since 1983, however, it has jumped 73 percent, reflecting

Figure 1-2.

Per capita consumption of eggs

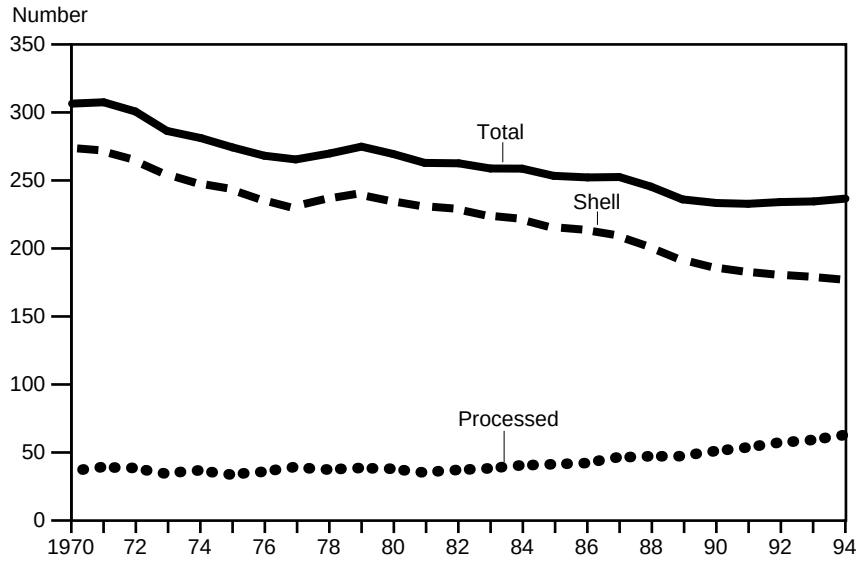


Figure 1-3.

Per capita consumption of plain fluid milk

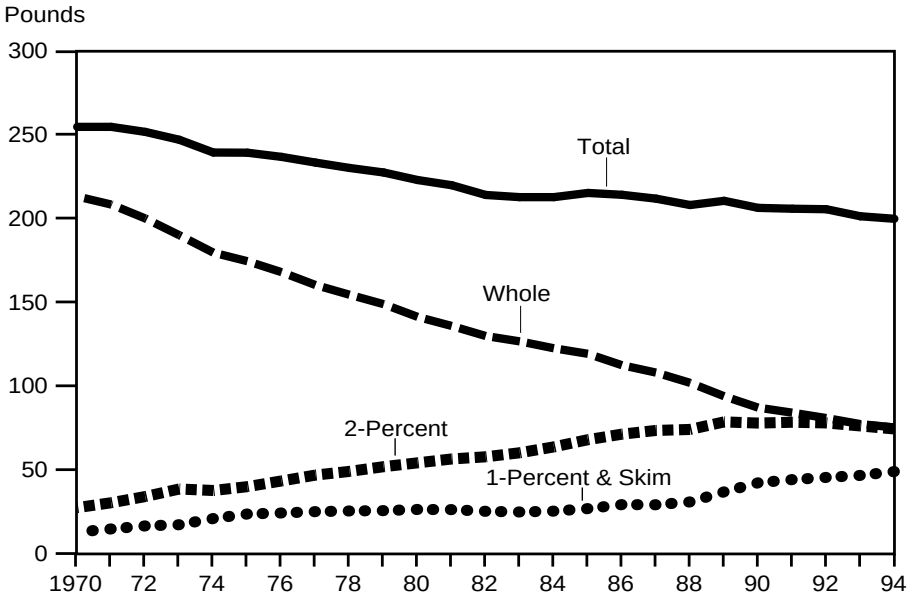
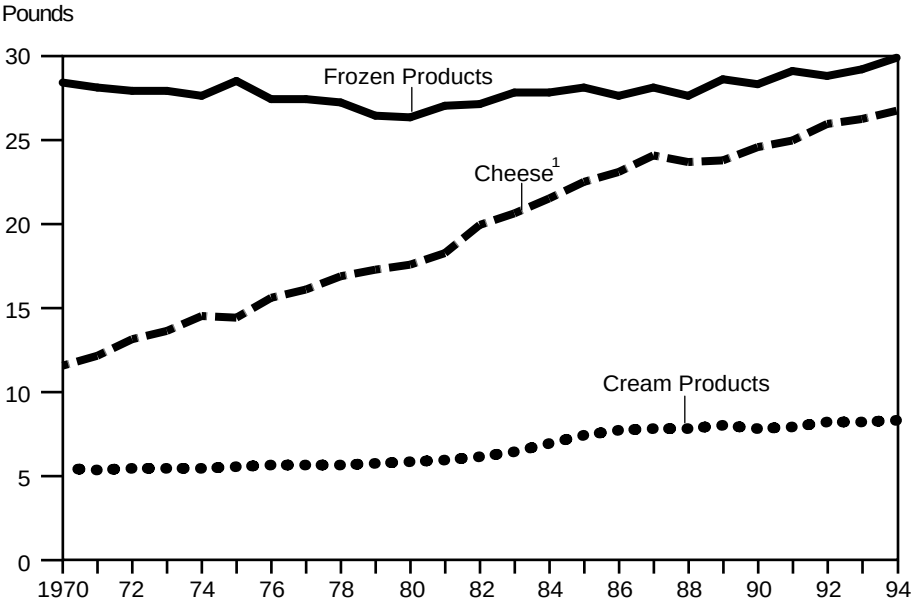


Figure 1-4.

Per capita consumption of selected dairy products



[1]Excludes full-skim American and cottage, pot, and baker's cheese

expanded use of eggs as manufacturing ingredients in a number of food products (such as pasta and sweet baked goods) and increased use in fast food outlets and other food service establishments. As with red meat, some people correlate the decline in shell egg use with concern about cholesterol. The home-cooked egg-and-bacon breakfast has given way to ready-to-eat, "instant" grain-based products and processed egg products.

The beverage milk trend is toward lower fat milk. Between 1980 and 1994, Americans cut their average annual consumption of fluid whole milk by nearly half, increased use of low-fat milk by two-fifths, and more than doubled consumption of skim milk. But the Nation failed to cut its overall use of milkfat because of growing demand for cheese. Per capita use of cheese has increased 53 percent since 1980 to 27 pounds in 1994.

Americans consumed 12 pounds more fats and oils per person (on a fat-content basis) in 1993 than in 1970. A 43-percent increase in use of vegetable fats and oils (mainly salad and cooking oils and shortening) more than offset a 28-percent decrease in use of animal fats (lard and butter). In 1993, animal fat constituted 16 percent of total fat consumption from added fats and oils, compared with 27 percent in 1970. The switch to vegetable fats and oils reflects increased consumer emphasis on unsaturated fats and oils. The increase in total fats and oils probably results from the greatly expanded consumption of fried foods in food service outlets and the increased use of salad oils on salads consumed both at home and away from home.

In 1993, Americans consumed, on average, 675 pounds (farmgate weight) of commercially produced fruits (excluding wine grapes) and vegetables, 13 percent more than in 1980 and 19 percent more than in 1970. Since 1980, vegetables accounted for most of the increase. Consumers bought more fresh produce, frozen and dried fruit and vegetables, fruit juices, and canned tomato products, and less canned fruit and canned vegetables other than tomatoes.

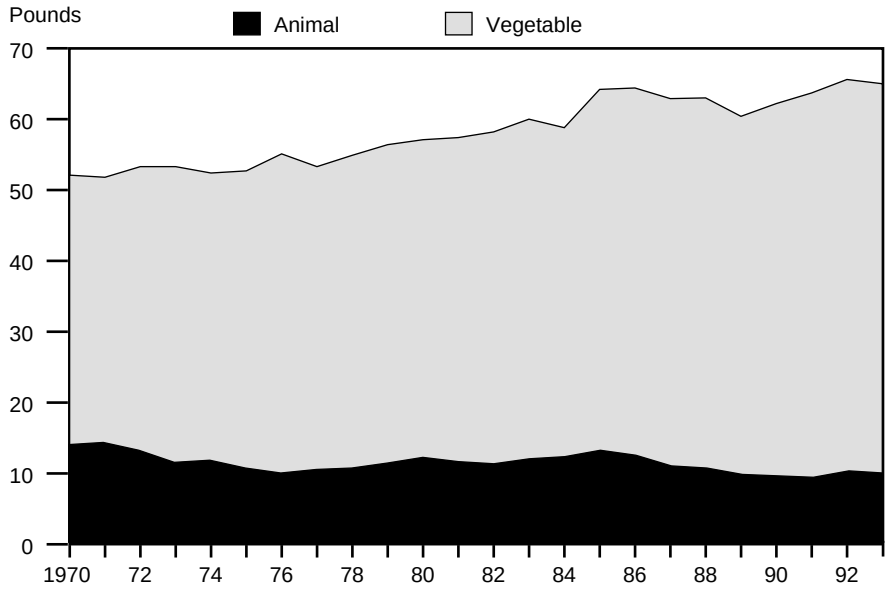
Consumption of grain products has risen in recent years but remains well below consumption levels in the early part of the century. In 1993, per capita use of flour and cereal products was 193 pounds per year, 49 pounds above the 1980 level but more than 100 pounds below the 1909 level. The recent expansion in supplies reflects ample grain stocks and strong consumer demand. Much of this growth was product-driven, as (1) consumers gained appreciation for variety bread, (2) fast-food sales of hamburgers and other products made with buns expanded rapidly, and (3) in-store bakeries and baking spurred sales.

Americans have become conspicuous consumers of sugar and sweet-tasting foods and beverages. Total per capita use of caloric sweeteners—comprised mainly of sucrose (table sugar made from cane and beets) and corn sweeteners (notably high-fructose corn syrup, called HFCS)—rose 20 percent between 1980 and 1994. In 1994, Americans consumed, on average, a record 148 pounds of caloric sweeteners (dry-weight basis), compared with 123 pounds in 1980 and 122 pounds in 1970. That is more than one-third of a pound of added sugars a day for each American.

A striking change in the availability of specific sugars has occurred in the past decade. Sucrose accounted for 44 percent of the total caloric sweetener supply in 1994, on a dry-weight basis, compared with 68 percent in 1980. By 1994, corn sweeteners accounted for 55 percent of the total caloric sweeteners consumed, up from 31

Figure 1-5.

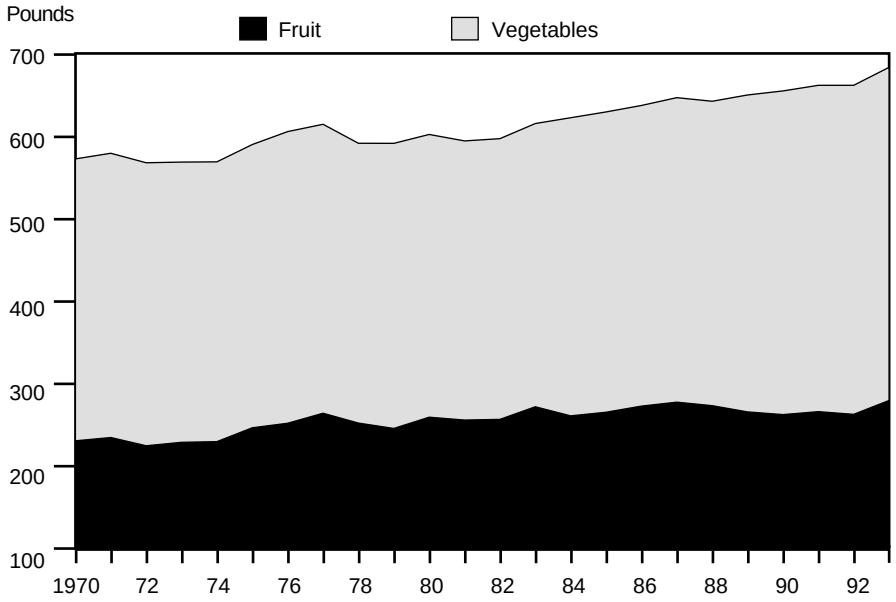
Per capita consumption of food fats and oils[1]



[1]Fat content basis. Includes butter, margarine, direct use of lard and edible tallow, shortening, salad and cooking oils, and other fats.

Figure 1-6.

Per capita consumption of fruits and vegetables[1]



[1]Farm-weight equivalent.

percent in 1980. All other caloric sweeteners, including honey, maple syrup, and molasses, maintained a 1-percent share. In 1993, beverages accounted for 72 percent of total HFCS deliveries for domestic food and beverage use. Corn sweeteners became economical as a result of abundant corn supplies and low corn prices. Moreover, sales of byproducts—corn oil and corn gluten feed and meal—made corn sweetener production even less expensive. At the same time, Federal sugar programs maintained high support prices and import quotas on sucrose. Total corn sweetener use surpassed cane and beet sugar use for the first time in 1985.

USDA's Economic Research Service annually calculates the amount of food available for human consumption in the United States. The U.S. food supply historical series measures national aggregate consumption of several hundred foods. It is the only source of time series data on food and nutrient availability in the country.

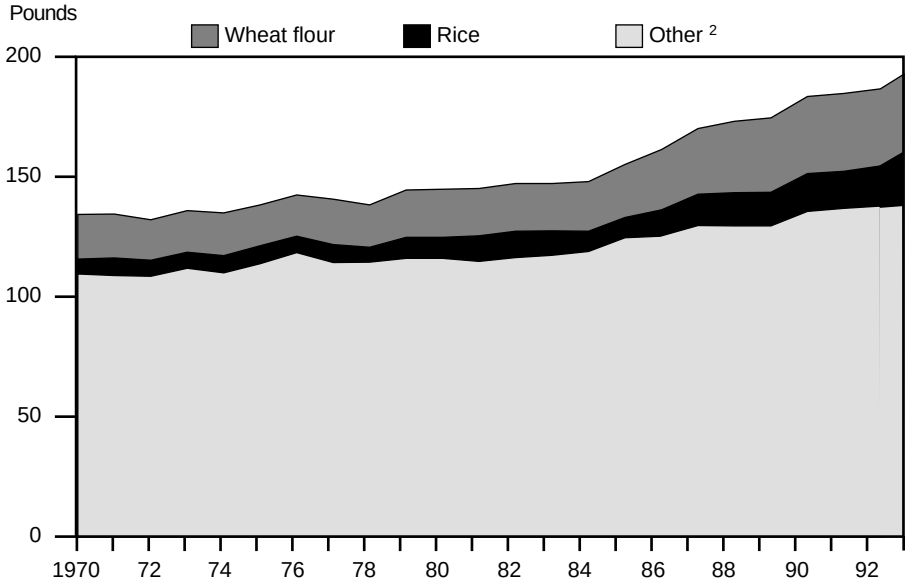
Cost of Food Services and Distribution

The estimated bill for marketing domestic farm foods—which does not include imported foods—was $401 billion in 1994. This covered all charges for transporting, processing, and distributing foods that originated on U.S. farms. It represented 79 percent of the $511 billion consumers spent for these foods. The remaining 21 percent, or $110 billion, represents the gross return paid to farmers.

The cost of marketing farm foods has increased considerably over the years, mainly because of rising costs of labor, transportation, food packaging materials, and

Figure 1-7.

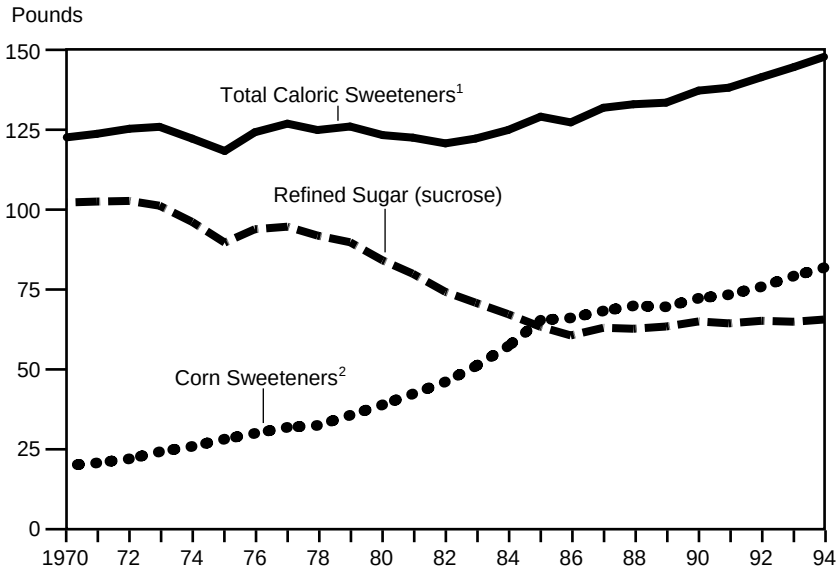
Per capita consumption of grain products[1]



[1]Excludes quantities used in alcoholic beverages, fuel, and corn sweeteners. [2]Corn, oats, barley, and rye.

Figure 1-8.

Per capita consumption of caloric sweeteners



[1]Includes small quantities of honey, and molasses and other refiner's syrups. [2]Dry basis

other inputs used in marketing, and also because of the growing volume of food and the increase in services provided with the food.

In 1984, the cost of marketing farm foods amounted to $242 billion. In the decade after that, the cost of marketing rose about 66 percent. In 1994, the marketing bill rose 5.6 percent.

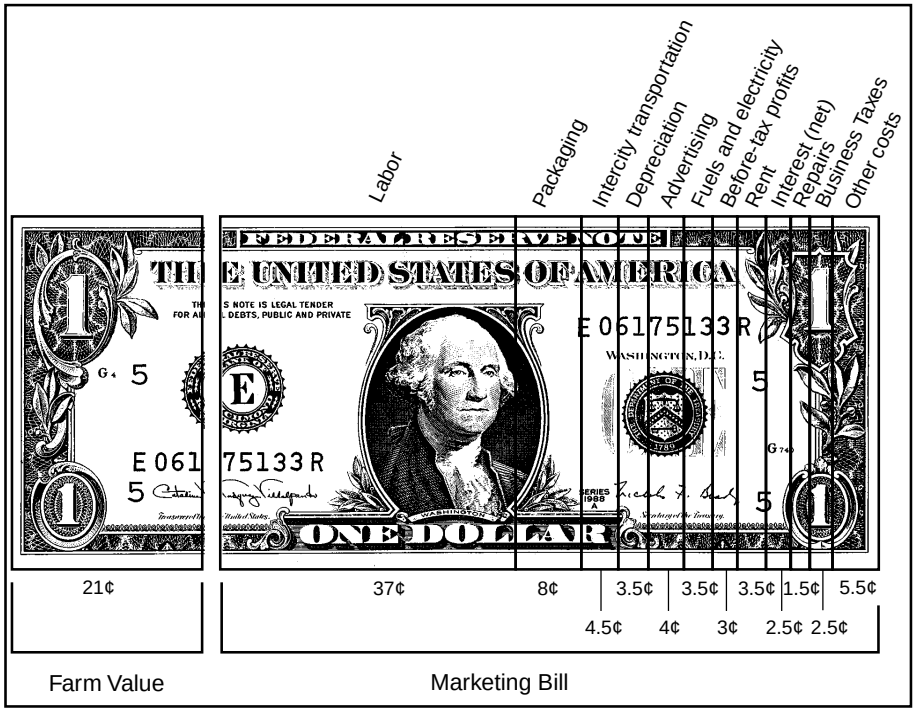
These rising costs have been the principal factor affecting the rise in consumer food expenditures. From 1984 to 1994, consumer expenditures for farm foods rose $179 billion. Nearly 90 percent of this increase resulted from an increase in the marketing bill.

The cost of labor is the biggest part of the total food marketing bill. Labor used by assemblers, manufacturers, wholesalers, retailers, and eating places cost $189 billion in 1994. This was 6 percent more than in 1993 and 73 percent more than in 1984. The total number of food marketing workers in 1994 was about 12.8 million, about 24 percent more than a decade ago. The growth in employment occurred mostly in food stores and public eating places.

Packaging is the second-largest component of the marketing bill, accounting for 8 cents of the food dollar. Costs of these materials increased nearly 7 percent in 1994. Packaging costs rose due to increased use of shipping boxes, food containers, and plastic materials. Actual prices of boxes and food containers were also higher, further driving packaging costs up. Most other marketing costs—such as transportation and energy—rose at a faster pace than in 1993.

Figure 1-9.

What a dollar spent on food paid for in 1994



Food Expenditures and Prices

Total food expenditures, which include imports, fishery products, and food originating on farms, were $617.1 billion in 1993, an increase of 3.7 percent over these expenditures in 1992. The average was $2,393 per capita, 2.5 percent above the 1992 average.

Away-from-home meals and snacks captured 46 percent of the U.S. food dollar in 1993, up from 41 percent in 1983 and 35 percent in 1973.

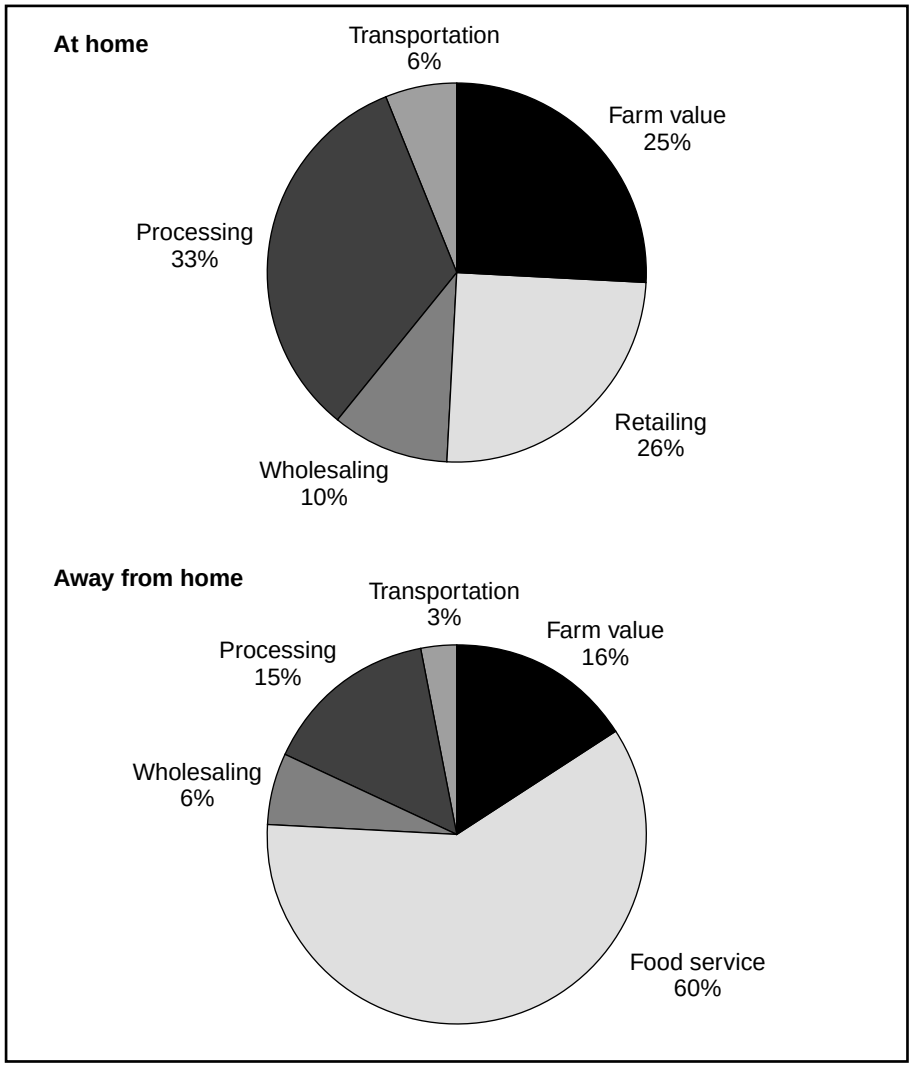
The percentage of disposable personal income (income after taxes) that U.S. consumers spend on food continues to decline. From 1993 to 1994, disposable personal income increased 5.8 percent while food expenditures rose only 4.0 percent. U.S. consumers in 1994 spent 11.1 percent of their disposable personal income on food, compared to 11.8 percent in 1990, 13.5 percent in 1980, and 13.9 percent in 1970.

In the United States, total retail food prices (including meals served in restaurants) rose 39.8 percent over the last 10 years (1984-94). Prices of food eaten away from home increased 39.8 percent, while retail foodstore prices increased 40.2 percent.

Figure 1-10.

Marketing functions of the food dollar in 1994

Processing remained the most expensive marketing function for food eaten at home.



Prices of goods and services, excluding food, in the Consumer Price Index climbed 43.3 percent over the same 10 years. Transportation was up 29.5 percent; housing 39.8 percent; medical care 97.6 percent; and apparel and upkeep 30.7 percent.

Farm-Retail Price Spread

Food prices include payments for both the raw farm product and marketing services. In 1994, the farm value, or payment for the raw product, averaged 24 percent of the retail cost of a market basket of U.S. farm foods sold in foodstores. The other 76 percent, the farm-retail price spread, consisted of all processing, transportation, wholesaling, and retailing charges incurred after farm products leave the farm.

Farm-retail spreads have increased every year for the past 10 years, largely reflecting rising costs of labor, packaging, and other processing and marketing inputs. In 1994, farm-retail spreads rose 4.4 percent and farmers received 3.3 percent less for the food they produced. The result of retail food price increases and farm value decreases has been a decline in the farm share. Widening farm-retail spreads continued to push up food costs in 1994. The farm value is expected to continue to decline slightly in 1995.

The percentage of the retail price accounted for by the farm value varies widely among foods, reflecting differences in production and marketing processes. Generally, it is larger for animal products than for crop-based foods, and smaller for foods that require considerable processing and packaging. In 1994, however, there was little difference in the farm value percentages for fresh and processed produce. The combination of reduced fresh produce prices at the farm and higher retail prices account for this unusual result.

Table 1-2.

Farm value as a percentage of retail price for domestically produced foods, 1984 and 1994

Items	*1984*	*1994*
Livestock products:		
Meats	50	36
Dairy	47	34
Poultry	56	43
Eggs	65	47
Crop products:		
Cereal and bakery	12	8
Fresh fruits	34	18
Fresh vegetables	34	23
Processed fruits and vegetables	24	20
Fats and oils	31	25
Market basket, average	35	24

2. Structure of U.S. Agriculture

Farming Regions

The 10 major farm production regions in the United States differ in soils, slope of land, climate, distance to market, and storage and marketing facilities. Together they comprise the agricultural face of the Nation.

The Northeastern States and the Lake States are the Nation's principal milk-producing areas. Climate and soil in these States are suited to raising grains and forage for cattle and for providing pastureland for grazing.

Broiler farming is important in Maine, Delaware, and Maryland. Fruit and vegetables are also important to the region.

The Appalachian region is the major tobacco-producing region in the Nation. Peanuts, cattle, and dairy production are also important there.

In the Southeast region, beef and broilers are important livestock products. Fruits, vegetables, and peanuts are grown in this region. Big citrus groves and winter vegetable production areas in Florida are major suppliers of agricultural goods. Cotton production is making a comeback.

In the Delta States, the principal cash crops are soybeans and cotton. Rice and sugarcane are also grown. With improved pastures, livestock production has gained in importance. This is a major broiler-producing region.

The Corn Belt has rich soil and good climate for excellent farming. Corn, beef, cattle, hogs, and dairy products are the major outputs of farms in the region. Other feed grains, soybeans, and wheat are also important.

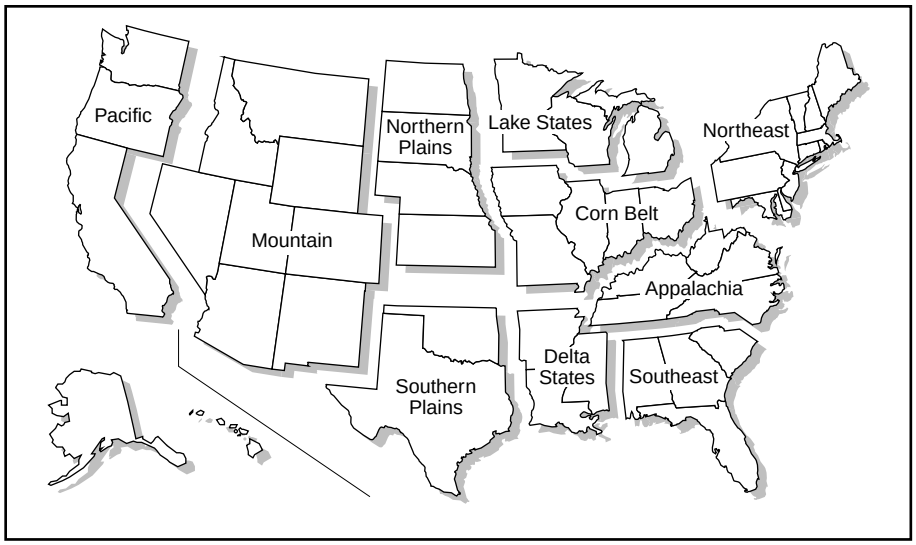
Agriculture in the northern and southern Plains, which extend north and south from Canada to Mexico, is restricted by rainfall in the western portion and by cold winters and short growing seasons in the northern part. About three-fifths of the Nation's winter and spring wheat is produced in this region. Other small grains, grain sorghum, hay, forage crops, and pastures form the basis for raising cattle. Cotton is produced in the southern part.

The Mountain States provide a still different terrain. Vast areas of this region are suited to raising cattle and sheep. Wheat is important in the northern parts. Irrigation in the valleys provides water for such crops as hay, sugar beets, potatoes, fruits, and vegetables.

The Pacific region includes the three Pacific Coast States plus Alaska and Hawaii. Farmers in Washington and Oregon specialize in raising wheat, fruit, and potatoes; vegetables, fruit, and cotton are important in California. Cattle are raised throughout the region. In Hawaii, sugarcane and pineapples are the major crops. Greenhouse/nursery and dairy products are Alaska's top-ranking commodities.

Figure 2-1.

U.S. farm production regions



Farms and Land in Farms

The United States had 2.04 million farms in 1994, down about 1 percent from 1993. A farm is defined as any establishment from which $1,000 or more of agricultural products were sold or would normally be sold during the year. The number of farms declined from 1 to 2 percent per year from 1984 through 1994; the overall decline for the period was 13 percent. This decline continues the downward trend started in 1936. Farm operator households now represent about 2 percent of total U.S. households.

Land in farms continues to decline slowly; the total of 975 million acres in 1994 is down 0.3 percent from a year earlier and down 4.2 percent from 1984. Land in farms has declined every year since reaching its peak at 1.206 billion acres back in 1954.

The number of farms has declined at a faster rate than land in farms; the average size of farms increased from 436 acres in 1984 to 478 acres in 1994.

Table 2-1.

Number of farms, land in farms, average farm size: United States, June 1, 1984-94

Year	Number of Farms	Land in Farms	Average Farm Size
	In 1,000	*In 1,000 of acres*	*In acres*
1984	2,334	1,017,803	436
1985	2,293	1,012,073	441
1986	2,250	1,005,333	447
1987	2,213	998,923	451
1988	2,197	994,543	453
1989	2,171	991,153	457
1990	2,140	987,420	461
1991	2,105	982,766	467
1992	2,094	979,963	468
1993	2,065	977,733	473
1994[2]	2,040	974,800	478

[1]A farm is any establishment from which $1,000 or more of agricultural products were sold or would normally be sold during the year.

[2]Preliminary.

Source: U.S. Department of Agriculture, National Agricultural Statistics Service. *Farm Numbers and Land in Farms*

Farms by Sales Class

Farms are commonly classified in size groups based on the total value of their gross farm sales. Data from the annual Farm Costs and Returns Survey, which is conducted by ERS and the National Agricultural Statistics Service, show that the largest share of farms is in the lowest class, with nearly 60 percent reporting gross-farm sales of less than $20,000 in 1993. According to the survey, these small farms account for only 18 percent of the acreage operated and 4 percent of the sales.

A relatively small number of very large farms produce the largest share of farm sales. Only 2 percent of the farms in 1993 were large operations with sales of $500,000 or more, but they generated 40 percent of gross farm sales and operated 13 percent of the land.

Average acreage increases consistently with sales class, ranging from 133 acres per farm in the lowest sales class to 2,537 acres for farms with gross receipts of $500,000 or more. The average farm in the $500,000-or-more sales class reported farm sales of more than $1.3 million in 1993, compared with sales of more than $5,164 for the average farm in the lowest sales class.

Table 2-2.

Number of farms and land in farms, by State, June 1, 1989-94[1]

	Land in farms			*Farms*		
	1989	*1990*	*1991*	*1989*	*1990*	*1991*
	1,000 Acres			*Number of Farms*		
AL	10,600	10,100	9,900	47,000	47,000	46,000
AK	1,010	1,000	980	600	580	560
AZ	36,000	36,000	36,000	8,100	7,800	8,000
AR	15,700	15,500	15,500	48,000	47,000	46,000
CA	31,300	30,800	30,300	84,000	85,000	83,000
CO	33,500	33,100	32,800	27,000	26,500	26,000
CT	440	420	420	4,000	3,900	3,900
DE	590	570	570	3,000	2,900	2,900
FL	11,200	10,900	10,500	41,000	41,000	40,000
GA	12,600	12,500	12,100	48,000	48,000	46,000
HI	1,720	1,710	1,710	4,650	4,600	4,600
ID	13,700	13,700	13,500	22,100	21,800	21,400
IL	28,500	28,500	28,500	86,000	83,000	82,000
IN	16,400	16,300	16,000	71,000	68,000	65,000
IA	33,500	33,500	33,500	105,000	104,000	102,000
KS	47,900	47,900	47,900	69,000	69,000	69,000
KY	14,200	14,100	14,100	95,000	93,000	91,000
LA	9,100	8,900	8,800	34,000	32,000	30,000
ME	1,450	1,450	1,420	7,300	7,200	7,100
MD	2,300	2,250	2,250	15,600	15,200	15,400
MA	680	680	680	6,900	6,900	6,900
MI	10,800	10,800	10,800	55,000	54,000	54,000
MN	30,000	30,000	30,000	90,000	89,000	88,000
MS	13,300	13,000	12,800	41,000	40,000	38,000
MO	30,400	30,400	30,400	109,000	108,000	107,000
MT	60,600	60,500	60,300	24,700	24,700	24,700
NE	47,100	47,100	47,100	57,000	57,000	56,000
NV	8,900	8,900	8,900	2,500	2,500	2,500
NH	500	490	480	3,100	2,900	2,900
NJ	880	870	880	8,300	8,100	8,300
NM	44,500	44,500	44,300	14,000	13,500	13,500
NY	8,400	8,400	8,300	39,000	38,500	38,000
NC	10,000	9,700	9,600	65,000	62,000	60,000
ND	40,500	40,500	40,400	33,500	34,000	33,000
OH	15,700	15,700	15,700	86,000	84,000	80,000
OK	33,000	33,000	33,000	70,000	70,000	70,000
OR	17,800	17,800	17,800	37,000	36,500	37,000
PA	8,200	8,100	8,100	54,000	53,000	53,000
RI	73	70	66	770	740	700
SC	5,300	5,200	5,200	25,500	25,000	24,500
SD	44,300	44,300	44,200	35,000	35,000	35,000
TN	12,600	12,400	12,400	91,000	89,000	87,000
TX	132,000	132,000	131,000	186,000	186,000	185,000
UT	11,300	11,300	11,300	13,000	13,200	13,300
VT	1,510	1,510	1,510	7,000	7,000	6,900
VA	9,000	8,900	8,800	47,000	46,000	45,000
WA	16,000	16,000	16,000	38,000	37,000	37,000
WV	3,700	3,700	3,700	21,000	20,500	20,000
WI	17,600	17,600	17,500	81,000	80,000	79,000
WY	34,800	34,800	34,800	8,900	8,900	9,000
US	991,153	987,420	982,766	2,170,520	2,140,420	2,105,060

See footnotes at end of table.

—continued

Table 2-2 continued.

Number of farms and land in farms, by State, June 1, 1989-94[1] (continued)

	Land in farms			Farms		
	1992	1993	1994[2]	1992	1993	1994[2]
	1,000 Acres			Number of Farms		
AL	9,800	10,000	10,000	46,000	47,000	46,000
AK	960	940	930	540	530	520
AZ	36,000	36,000	36,000	8,000	7,900	7,900
AR	15,500	15,400	15,400	46,000	46,000	44,000
CA	29,800	29,700	29,500	80,000	76,000	76,000
CO	32,800	32,800	32,700	25,500	25,500	25,300
CT	410	400	390	4,000	3,800	3,600
DE	560	550	550	2,700	2,500	2,500
FL	10,500	10,300	10,300	39,000	39,000	39,000
GA	12,100	12,100	12,100	46,000	45,000	43,000
HI	1,710	1,710	1,710	4,500	4,400	4,400
ID	13,500	13,500	13,500	21,000	20,500	20,500
IL	28,400	28,300	28,300	81,000	79,000	77,000
IN	16,000	16,000	16,000	65,000	63,000	63,000
IA	33,400	33,300	33,200	102,000	100,000	100,000
KS	47,800	47,800	47,800	67,000	65,000	65,000
KY	14,100	14,100	14,100	91,000	91,000	89,000
LA	8,700	8,600	8,400	30,000	29,000	28,000
ME	1,420	1,380	1,370	7,100	6,800	6,800
MD	2,200	2,200	2,200	15,600	15,000	14,500
MA	680	640	630	6,900	6,500	6,200
MI	10,800	10,700	10,700	54,000	52,000	52,000
MN	29,800	29,700	29,700	88,000	87,000	85,000
MS	12,800	12,800	12,700	38,000	39,000	39,000
MO	30,300	30,200	30,000	107,000	106,000	104,000
MT	60,000	59,800	59,700	24,600	23,800	23,100
NE	47,100	47,100	47,100	56,000	55,000	55,000
NV	8,900	8,900	8,900	2,500	2,400	2,400
NH	470	460	450	2,900	2,700	2,500
NJ	880	870	860	8,500	8,400	8,500
NM	44,200	44,200	44,200	13,500	13,500	13,500
NY	8,200	8,200	8,000	38,000	38,000	37,000
NC	9,500	9,400	9,300	60,000	59,000	58,000
ND	40,400	40,400	40,400	33,000	32,500	32,000
OH	15,400	15,200	15,200	78,000	76,000	75,000
OK	34,000	34,000	34,000	71,000	70,500	70,000
OR	17,500	17,500	17,500	37,500	37,500	37,500
PA	8,000	7,900	7,800	52,000	51,000	51,000
RI	63	63	60	700	700	690
SC	5,200	5,150	5,100	24,500	24,300	24,000
SD	44,200	44,200	44,200	35,000	34,500	34,000
TN	12,600	12,400	12,300	88,000	86,000	84,000
TX	130,000	130,000	129,300	183,000	185,000	185,000
UT	11,300	11,200	11,100	13,200	13,000	13,000
VT	1,510	1,470	1,450	6,900	6,500	6,300
VA	8,700	8,600	8,600	44,000	43,000	43,000
WA	16,000	16,000	15,800	37,000	36,000	35,500
WV	3,700	3,700	3,700	20,000	20,000	20,000
WI	17,300	17,100	16,900	79,000	79,000	78,000
WY	34,800	34,800	34,700	9,200	9,200	9,200
US	979,963	977,733	974,800	2,093,840	2,064,930	2,040,410

[1]A farm is any establishment from which $1,000 or more of agricultural products were sold or normally would be sold during the year. [2]Preliminary.

Source: U.S. Department of Agriculture, National Agricultural Statistics Service. Farm Numbers and Land in Farms.

Table 2-3.

Percent of farms and land in farms: by economic sales class, United States, June 1, 1993-94[1]

Economic class (gross value of sales)	Percent of total				Average size of farms	
	Farms		Land			
	1993	1994[2]	1993	1994[2]	1993	1994[2]
$1,000-$2,499	21.0	20.2	2.7	2.6	61	61
$2,500-$4,999	14.3	13.9	3.0	2.9	99	100
$5,000-$9,999	12.8	13.3	4.0	4.1	148	147
$10,000-$19,999	11.4	11.9	6.1	6.7	253	269
$20,000-$39,999	10.7	10.7	9.5	9.3	420	415
$40,000-$99,999	13.4	13.2	20.3	20.4	717	738
$100,000-$249,999	10.8	10.9	26.1	25.9	1,144	1,135
$250,000-$499,999	3.4	3.6	13.3	13.3	1,852	1,765
$500,000+	2.2	2.3	15.0	14.8	3,228	3,074
Total	100.0	100.0	100.0	100.0	473	478

[1]A farm is any establishment from which $1,000 or more of agriculture products were sold or normally would be sold during the year. [2]Preliminary.
Source: U.S. Department of Agriculture, National Agricultural Statistics Service

Legal Structure of U.S. Farms (Individual, Partnership, Corporation)

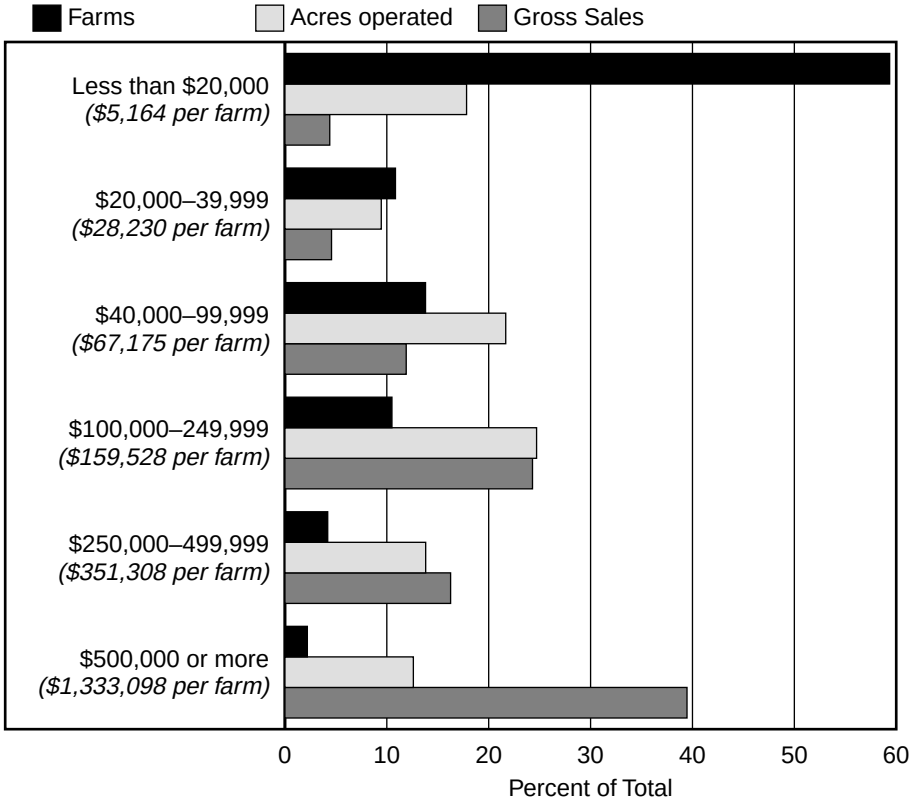
Type of organization refers to the farm's form of business organization. Farms may be broadly classified as individual or family operations, partnerships, or corporations (family and nonfamily). Farm Costs and Returns Survey data indicate that individual operations are the most common type of farm organization. Nine out of ten farms in the 1993 survey are classified as individual operations. Partnerships and corporations make up a very small share of farms. About 85 percent of farm corporations are family corporations, with more than 50 percent of the stock held by people related by blood or marriage. Individual operations, because of their large number, also account for the largest share of farmland (75 percent) and gross farm sales (64 percent).

Corporate farms have the highest average farm sales. The average value of gross farm sales by corporate farms in 1993 was $396,000 with partnerships averaging $197,000 or about half of corporate sales; gross farm sales for individual operations averaged $52,000, about one-eighth of the corporate level. Average acreage is also highest for corporate farms at 1,672 acres in 1993, compared with 850 for partnerships and 362 for individuals.

Figure 2-2.

Farms, farmland, and gross farm sales, by sales class, 1993

The largest number of farms surveyed fall in the lowest sales class with less than $20,000 of gross farm sales during the year



Source: USDA, Farm Costs and Returns Survey

Land Tenure

Land tenure describes the farm operator's ownership interest in the land farmed. The major land tenure categories are (1) full owners, who own all the land they operate, (2) part owners, who own some and rent the remainder of their land, and (3) tenants, who rent all of their land or work on shares for others. The majority of farms in the 1993 Farm Costs and Returns Survey (54 percent) reported full ownership of the land they operated, while 36 percent owned part and rented part of the farmland they operated. Only 10 percent of operations reported that they rented all of their land.

Part owners generally operate the largest farms, averaging 730 acres in 1993, followed by tenants with 534 acres and full owners with 225 acres per farm. Part owners account for the largest share of acreage operated (60 percent of the total in 1993).

Gross farm sales are also concentrated on part-owner operations (55 percent of gross farm sales in 1993). The average value of gross farm sales for part owners in 1993 was $113,300, very close to the average for tenants at $111,000. Gross farm sales for full-owner operations averaged $40,700.

Table 2-4.

U.S. agricultural landholdings of foreign owners, by State, December 31, 1994

State	Foreign-owned agricultural land	State	Foreign-owned agricultural land	State	Foreign-owned agricultural land
	Acres		Acres		Acres
Alabama	300,375	Louisiana	667,587	Ohio	199,521
Alaska	75	Maine	2,052,701	Oklahoma	58,047
Arizona	331,859	Maryland	51,112	Oregon	642,812
Arkansas	178,928	Massachusetts	2,029	Pennsylvania	91,880
California	918,771	Michigan	443,377	Puerto Rico	839
Colorado	642,309	Minnesota	221,502	Rhode Island	17
Connecticut	822	Mississippi	485,589	South Carolina	197,137
Delaware	5,878	Missouri	73,790	South Dakota	42,957
Florida	621,201	Montana	476,198	Tennessee	82,734
Georgia	561,412	Nebraska	76,585	Texas	1,173,564
Hawaii	179,971	Nevada	285,773	Utah	60,604
Idaho	22,375	New Hampshire	16,451	Vermont	85,784
Illinois	203,761	New Jersey	18,366	Virginia	148,604
Indiana	66,113	New Mexico	784,030	Washington	388,439
Iowa	32,459	New York	275,995	West Virginia	167,632
Kansas	67,958	North Carolina	224,737	Wisconsin	78,474
Kentucky	114,225	North Dakota	27,840	Wyoming	186,975
				Total	**14,058,174**

Foreign Ownership of U.S. Farmland

Foreign ownership of U.S. agricultural land remained relatively steady from 1981 through 1994—slightly above or below 1 percent of the privately owned agricultural land in the United States.

At the end of 1994, foreign persons owned 14.1 million acres—slightly more than 1 percent of the 1.3 billion acres of privately-owned U.S. agricultural land (farm and forest land).

Forest land accounts for 47 percent of all foreign-owned acreage, cropland for 18 percent, pasture and other agricultural land for 32 percent, and nonagricultural land for 3 percent.

Corporations own 71 percent of the foreign-held acreage, partnerships own 21 percent, and individuals own 6 percent. The remaining 2 percent is held by estates, trusts, institutions, associations, and others.

About 53 percent of the reported foreign holdings involve land actually owned by U.S. corporations. The law requires them to register their landholdings as foreign if as little as 10 percent of their stock is held by foreign investors. The remaining 47 percent of the foreign-held land is owned by investors not affiliated with U.S. firms.

A total of 67 percent of foreign-held acreage is owned by investors (including individuals, corporations, partnerships, etc.) from Canada, the United Kingdom, Germany, Switzerland, the Netherlands Antilles, and the British Virgin Islands (in descending rank order). Japanese investors own only 3 percent of foreign-owned acreage.

Maine is the State with the largest number of acres (2,052,701) owned by foreign persons. Foreign holdings in Maine account for 11 percent of that State's privately owned agricultural land and 15 percent of all the reported foreign-owned agricultural land nationwide. Three companies own 87 percent of the foreign-held acres in Maine, all in forest land. Two of these companies are Canadian, and the third is a U.S. corporation that is partially Canadian owned.

Outside of Maine, foreign holdings are concentrated in the West and South, each containing 35 percent of all reported foreign holdings of U.S. agricultural land.

These findings are based on reports submitted to USDA under the Agricultural Foreign Investment Disclosure Act of 1978.

Table 2-5.

U.S. agricultural landholdings by country of foreign owner, December 31, 1994

Interests excluding U.S. corporations with foreign shareholders

Country	*Acres*	*Country*	*Acres*
	Number		*Number*
Argentina	13,405	Colombia	11,414
Australia	6,137	Costa Rica	13,835
Austria	57,312	Croatia	1,023
Bahamas	36,126	Cuba	58
Bahrain	313	Czech Republic	347
Barbados	117	Denmark	12,948
Belgium	65,526	Dominican Republic	2,108
Belize	549	Ecuador	971
Bermuda	73,643	Egypt	2,076
Bolivia	11	El Salvador	128
Brazil	10,081	Finland	22
British Virgin Islands	124,975	France	128,202
Canada	1,572,107	Gambia	294
Cayman Islands	40,635	Germany	758,844
Chile	2,074	Greece	60,491
China	935	Guatemala	1,102

— continued

Table 2-5 continued.

U.S. agricultural landholdings by country of foreign owner, December 31, 1994

Country	*Acres*	*Country*	*Acres*
	Number		*Number*
Guyana	35	Pakistan	982
Honduras	1,018	Panama	121,649
Hong Kong	14,741	Peru	308
Hungary	103	Philippines	3,816
India	1,734	Poland	147
Indonesia	752	Portugal	4,146
Iran	2,343	Russia	761
Ireland	10,508	St. Vincent	2,637
Israel	951	Saudi Arabia	31,553
Italy	82,633	Singapore	504
Ivory Coast	119	Somalia	11
Jamaica	321	South Africa	2,673
Japan	200,302	Spain	3,890
Jordan	1,580	Sweden	54,549
Kampuchea	31	Switzerland	291,392
Korea (South)	1,570	Syria	2,689
Kuwait	20,188	Taiwan	7,899
Laos	31	Tanzania	10,143
Lebanon	12,604	Thailand	1,835
Liberia	29,632	Trinidad & Tobago	94
Liechtenstein	135,249	Turkey	38
Luxembourg	3,109	Turks Island	3,192
Malaysia	7,948	United Arab Emirates	4,080
Mexico	178,736	United Kingdom	1,734,467
Morocco	1,035	Uruguay	10,807
Namibia	197	Venezuela	22,610
Netherlands	112,292	Vietnam	152
Netherlands Antilles	356,837	Zimbabwe	230
New Zealand	13,587	Multiple[1]	54,145
Nicaragua	1,378	Third tier[2]	65,887
Norway	5,073		
Oman	454	Subtotal[3]	6,632,186

U.S. corporations with foreign shareholders

Country	*Acres*	*Country*	*Acres*
	Number		*Number*
US/Andorra	3,741	US/Barbados	41
US/Argentina	4,056	US/Belgium	88,484
US/Australia	5,030	US/Bermuda	38,264
US/Austria	23,091	US/Brazil	14,400
US/Bahamas	61,496	US/Brit. Virgin Islands	423,636

— continued

Table 2-5 continued.

U.S. agricultural landholdings by country of foreign owner, December 31, 1994

Country	*Acres*
	Number
US/Canada	1,687,398
US/Cayman Islands	12,528
US/Chile	9,929
US/China	15,589
US/Colombia	10,154
US/Costa Rica	407
US/Denmark	7,917
US/Dominican Republic	589
US/Ecuador	1,632
US/Egypt	959
US/El Salvador	607
US/Finland	2,212
US/France	271,571
US/Germany	867,626
US/Greece	5,249
US/Guatemala	412
US/Guyana	334
US/Honduras	37
US/Hong Kong	131,139
US/Indonesia	644
US/Iran	1,861
US/Iraq	800
US/Ireland	1,942
US/Israel	414
US/Italy	23,547
US/Japan	284,860
US/Jordan	434
US/Kenya	32
US/Korea (South)	85
US/Kuwait	8,330
US/Lebanon	703
US/Liberia	26,733
US/Libyan Arab Republic	280
US/Liechtenstein	99,365
US/Luxembourg	234,551
US/Malaysia	300
US/Malta	500
US/Mexico	252,485
US/Netherlands	363,882
US/Netherlands Antilles	212,250
US/New Hebrides	883
US/New Zealand	50,455
US/Nicaragua	282
US/Norway	9,709
US/Panama	151,798
US/Paraguay	236
US/Peru	1,696
US/Philippines	7,793
US/Portugal	1,683
US/Qatar	219
US/Saudi Arabia	10,648
US/Singapore	73
US/South Africa	2,733
US/Spain	4,574
US/Sweden	4,094
US/Switzerland	323,510
US/Taiwan	18,207
US/Thailand	252
US/Trinidad & Tobago	20
US/Turkey	443
US/United Arab Emirates	3,443
US/United Kingdom	1,024,718
US/Uruguay	618
US/Venezuela	40,182
US/Multiple	178,177
US/Third Tier	387,016
Subtotal[4]	7,425,988
Total all landholdings	14,058,174

[1]A report is processed as "multiple" when no single country predominates—for example, an equal partnership between a Canadian and a German.

[2]A report is processed as "third tier" if three or more levels of ownership are reported with no foreign interests stated.

[3]Total interests excluding U.S. corporations with foreign shareholders.

[4]Total interest of U.S. corporations with foreign shareholders.

3. The U.S. Farm Sector

Farm Labor

Labor use on U.S. farms has changed dramatically over the last several decades. Average annual farm employment dropped from 9.9 million in 1950 to 2.8 million in 1994. This decrease resulted largely from the trend toward fewer and larger farms, increased farm mechanization and other technological innovations, and higher off-farm wages. However, farm employment appears to have stabilized in recent years, as increases in mechanization and labor-saving technology have leveled off and the downward trend in farm numbers has slowed.

Family workers, including farm operators and unpaid workers, accounted for 70 percent of farm labor in 1994, while hired workers accounted for 30 percent. A recent change in farm labor use patterns has been the increased use of service workers, including crew leaders and custom crews, who accounted for 9 percent of all workers on farms in 1994, compared with less than 2 percent in 1980.

The average wage rate for hired farm workers in the United States in 1994 was $6.39 per hour. Wages varied by type of worker: livestock workers averaged $5.76, field workers averaged $6.02, and supervisors averaged $9.95 in 1994.

A significant portion of total farm production expenses is spent on labor. The 1992 Census of Agriculture reported that expenditures for hired and contract labor on U.S. farms were $15.3 billion in 1992, or almost 12 percent of total farm production expenses. About 36 percent of all farms had hired labor expenses and 12 percent had contract labor expenses.

The importance of labor varied significantly by farm type and size of farm. The proportion of total farm production expenses attributed to hired and contract labor expenses was greatest on horticultural specialty farms (45 percent), fruit and tree nut farms (40 percent), and vegetable and melon farms (37 percent). These types of farms are the least mechanized, and many of the commodities they produce are still harvested by hand. At the other extreme, labor expenses comprised less than 5 percent of all production expenses on beef cattle, hog, sheep, poultry, and cash grain farms.

Larger farms are more likely to have labor needs in excess of that provided by the farm family. Farms of 260 or more acres, which accounted for only 32 percent of all farms, had 70 percent of all labor expenses in 1992. In terms of sales class, the 27 percent of all farms with $50,000 or more in value of products sold accounted for 95 percent of all labor expenses.

Agricultural Credit

The availability and use of credit plays a significant role in the sustained profitability of farm enterprises. In this regard, a symbiotic relationship exists between agricultural producers and their lenders; the health of one depends on the condition of the other. As farmers enjoyed relative prosperity in 1993, the major institutional lenders serving agriculture experienced continuing improvement in their financial condition, and further gains were seen in 1994. Commercial banks, the Farm Credit System (FCS), and Life Insurance Companies continue to report declining loan delinquencies, foreclosures, net loan charge-offs, and restructurings. Total farm business debt at the end of 1993 was $141.9 billion, up slightly from 1992.

Lenders generally reported that agricultural credit demand was up only slightly in 1993, while credit availability remained adequate. Farmers affected by the Midwest flood and Southeast drought may have experienced loan repayment problems, as lenders in those areas reported an increase in loan renewals and extensions. Generally, lenders are actively seeking new borrowers, but their perception of a tighter regulatory environment appears to be leading them to exercise greater caution in granting loan approval. Lenders report adequate funds for all creditworthy borrowers, but they are applying stricter eligibility requirements in qualifying all loan applicants, including farmers. At the same time, farmers do not appear eager to use their improved incomes to leverage a new round of credit-financed expansion.

Loans made to agricultural producers are classified as real estate and nonreal estate loans in the farm sector accounts. Real estate loans generally have terms of from 10 to 40 years, and are ordinarily used to purchase farmland or to make major capital improvements to farm property. Much of the growth of commercial bank real estate loans during the 1980's was due to the use of farm real estate as security for refinancing of production and intermediate-term loans. Farm business real estate debt was $76 billion at the end of 1993, up $1 billion from 1992. Nonreal estate loans are typically made for loan terms of less than 10 years, with the term depending on the purpose of the loan: seasonal operating loans are made for less than 1 year, while loans to purchase machinery and equipment or livestock may run for 7 years or more. Farm business nonreal estate debt was $65.9 billion at the end of 1993, up over 3 percent from 1992.

At the end of 1993, the FCS held $24.9 billion in farm business real estate mortgage debt, and $10.5 billion in nonreal estate loans. In total, the FCS held about 25 percent of all farm business debt. The financial health of the FCS continued to improve in 1993, as the FCS reported systemwide net income of $1.2 billion on total net interest income of almost $2 billion. Furthermore, in recent years the System's overall loan portfolio has improved as the average cost of funds continued to decline. The spread between interest earned on loans outstanding and interest paid on bonds issued increased from 1.24 percent in 1990 to 2.62 percent in 1993. This translated into a more competitive loan pricing environment for the FCS as a whole.

Commercial banks held more than 38 percent of all farm business debt by the end of 1993, accounting for $19.6 billion in real estate loans (26 percent of total) and $34.9 billion in nonreal estate debt (53 percent). Life insurance companies maintained their presence in the agricultural credit market, as their total farm business debt

rose slightly to $9 billion, giving them an 11-percent share of the farm business mortgage market. The "Individuals and others" classification is composed primarily of sellers financing the sale of farmland in real estate lending, and input suppliers and relatively minor lending agencies in the nonreal estate debt category. These accounted for $16.7 billion in real estate loans and $14.2 billion in nonreal estate debt at the end of 1993.

Table 3-1.

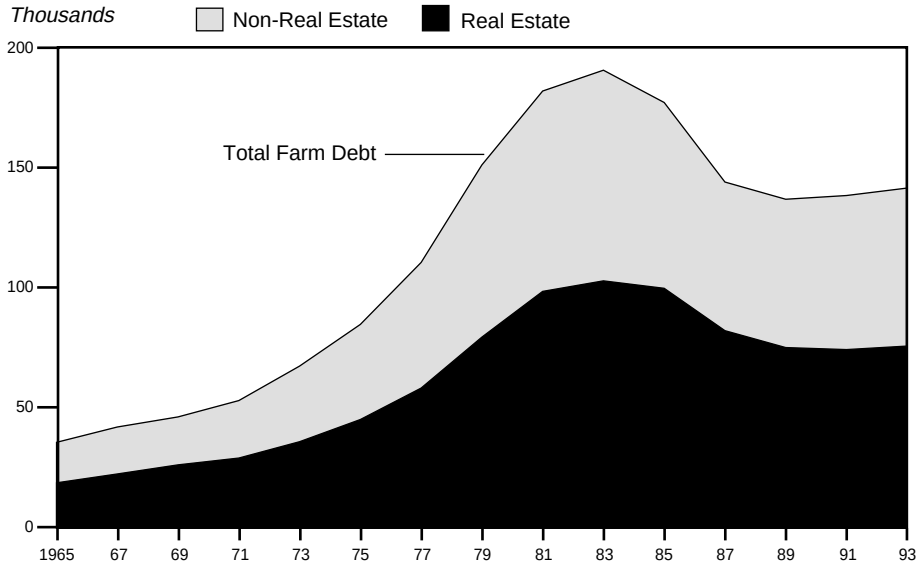
Farm business debt, selected years

	Farm debt outstanding, December 31										
	1950	*1960*	*1970*	*1980*	*1983*	*1986*	*1989*	*1990*	*1991*	*1992*	*1993*
Real estate debt:					*$ Billion*						
Farm Credit System	0.8	2.2	6.4	33.2	44.3	35.6	26.7	25.7	25.2	25.3	24.9
Life insurance companies	1.1	2.7	5.1	12.0	11.7	10.4	9.0	9.6	9.5	8.7	9.0
Banks	0.8	1.4	3.3	7.8	8.3	11.9	15.6	16.2	17.3	18.7	19.6
Farmers Home Administration	0.2	0.6	2.2	7.4	8.6	9.7	8.1	7.6	7.0	6.4	5.8
Individuals and others	2.1	4.5	10.5	29.3	30.3	22.8	15.9	15.0	15.5	16.0	16.7
Total	5.2	11.3	27.5	89.7	103.2	90.4	75.4	74.1	74.5	75.0	76.0
Non-real-estate debt:											
Banks	2.4	4.7	10.5	30.0	37.1	29.7	29.2	31.3	32.9	32.9	34.9
Farm Credit System	0.5	1.5	5.3	19.8	19.4	10.3	9.5	9.8	10.2	10.3	10.5
Farmers Home Administration	0.3	0.4	0.7	10.0	12.9	14.4	10.8	9.4	8.2	7.1	6.3
Individuals and others	2.5	4.5	4.8	17.4	18.6	12.1	12.2	12.7	13.0	13.2	14.2
Total	5.7	11.1	21.3	77.1	87.9	66.6	61.9	63.2	64.3	63.6	65.9
Total	10.9	22.4	48.8	166.8	191.1	157.0	137.2	137.4	138.8	138.6	141.9

Source: Economic Indicators of the Farm Sector: National Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Figure 3-1.

Farm Business Debt[1]

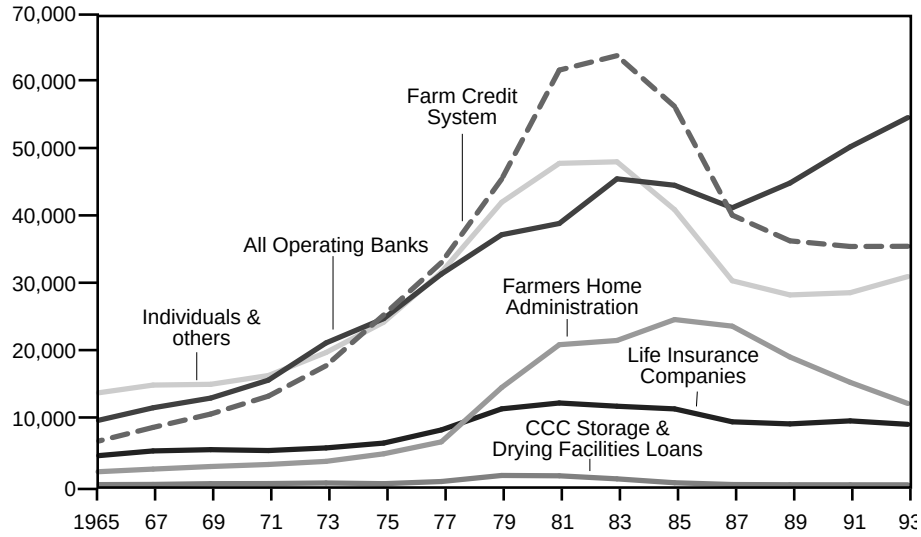


[1]Debt secured by farms assets and for operating purposes.

Source: Economic Indicators of the Farm Sector: National Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Figure 3-2.

Farm business debt by lender



Individuals and others include Commodity Credit Corporation real estate loans.

Source: Economic Indicators of the Farm Sector: National Financial Summary, 1993, ECIFS 13-1, Dec. 1994, USDA, ERS.

The Balance Sheet

Farm business asset values totaled $888 billion on December 31, 1993, an increase of 3 percent over the preceding year. Farm business debt rose 2.3 percent during 1993, totaling $141.9 billion at year's end. A 3-percent increase in equity resulted from the value of assets rising more rapidly than debt. Average equity per farm on December 31, 1993, was $360,000.

The debt-to-asset ratio (expressed as a percentage) decreased from 16.1 to 16.0 during 1993. The ratio was substantially below the peak of 23 percent that it reached in 1985.

Real estate assets accounted for 74 percent of the total value of farm business assets at the end of 1993. Real estate assets increased 3.6 percent during the year. The average farm real estate value per farm was $317,800 on December 31, 1993.

Nonreal estate assets increased 1.7 percent during 1993. Increases in value occurred for livestock and poultry, purchased inputs, and financial assets. The value of machinery and equipment remained constant in 1993, while the value of crops held in inventory declined.

Farm business real estate debt increased slightly in 1993, standing at $76 billion at the end of the year. Nonreal estate debt rose over 3 percent to $65 billion. On December 31, commercial banks held 38 percent of farm business debt, and the Farm Credit System held 25 percent.

Table 3-2.

Farm business assets, debt, and equity[1]

Item	*1960*	*1970*	*1980*	*1990*	*1993*
			Billion dollars		
Assets	174.2	278.7	983.2	848.3	888.0
Real estate	123.3	202.4	782.8	628.2	656.3
Nonreal estate[2]	50.9	76.3	200.4	200.1	231.7
Debt	22.4	48.8	166.8	137.4	141.9
Real estate[3]	11.3	27.5	89.8	74.1	76.0
Nonreal estate[4]	11.1	21.2	77.1	63.2	65.9
Equity (assets minus debt)	151.7	229.9	816.4	710.9	746.1

[1]As of December 31. [2]Crop inventory value is value of non-CCC crops held on farms plus value above loan rate for crops held under CCC. [3]Includes CCC storage and drying facilities loans. [4]Excludes value of CCC crop loans.

Source: Economic Indicators of the Farm Sector: National Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Net Farm Income

Net cash farm income rose 2.0 percent in 1993 to 58.5 billion. Gross cash farm income was up $9.1 billion, but was offset by the $7.9 billion rise in cash expenses. Adverse weather in 1993 called for the Secretary of Agriculture to designate over 800 disaster counties in the Midwest, largely because of flooding, and 500 counties in the Southeast, largely because of drought. Although many farmers directly affected by the flood and drought disasters had much lower net cash incomes, those outside the affected regions benefitted from higher prices and higher incomes. As a result, U.S. net cash farm income for 1993 showed a modest improvement over the record set in 1992. Despite the disasters, the relative stability in crop receipts came about because farmers offset lower production with sales from inventories.

Net cash income measures the farm sector's cash income generated from farming businesses during a calendar year. Farm businesses use the net cash income from farming to purchase farm assets, reduce farm debt, and meet living expenses. Net cash income is the sum of farm marketings, Government payments, and farm-related income minus cash expenses. Cash expenses include purchased feed, seed, livestock, fertilizer, lime, pesticides, fuel, oil, electricity, repair and maintenance, and other miscellaneous expenses. Cash expenses for interest, property taxes, labor, and net rent to nonoperator landlords are also included.

Net farm income fell 13.3 percent in 1993 to $43.4 billion. Gross farm income was essentially unchanged at $201.4 billion, but production expenses rose 5.3 percent ($7.9 billion). Cash receipts from farm marketings were up $3.8 billion, with a $4.2 billion increase in livestock receipts only partially offset by a $400 million drop in crop receipts. In the aggregate, crop producers experienced a reduction in output in 1993, which is reflected in both lower current year sales and the large drawdown in inventories. Average per acre yields on the acres harvested in 1993 dropped considerably in most areas, especially in hard-hit flood and drought States. The national average corn yield of 100.7 bushels per acre represents a decline of over 23 percent from the 1992 record.

Net farm income measures the net value of agricultural commodities and services produced by the farm sector during a calendar year. It includes the income and expenses associated with the farmers' onfarm dwellings. The farm sector consists of sole proprietorships, multifamily farms, partnerships, contractors, and vertically integrated corporations that are involved in farming. Gross farm income is computed by summing the gross cash income from farming, noncash income, and the value of inventory adjustment. Total production expenses are the sum of the intermediate production expenses, interest, labor, net rent to nonoperator landlords, capital consumption, and property taxes. Net farm income is the residual.

Table 3-3.

Net cash income and net farm income, 1992-93

Items	*Current dollars*		*1987 dollars*[1]	
	1992	1993	1992	1993
	Million dollars			
Gross farm income	200,213	201,432	165,602	163,102
Gross cash income	188,160	197,216	155,633	159,689
Farm marketings	171,203	175,052	141,607	141,743
Crops	84,853	84,497	70,184	68,419
Livestock and products	86,350	90,555	71,422	73,324
Government payments	9,169	13,402	7,584	10,852
Farm-related income	7,789	8,762	6,443	7,095
Noncash income	7,759	7,861	6,417	6,365
Value of home consumption	594	522	492	422
Gross rental value of dwellings	7,164	7,339	5,926	5,943
Operator and other dwellings [2]	6,674	6,904	5,520	5,591
Hired laborer dwellings	490	435	406	352
Value of inventory adjustment	4,294	(3,645)	3,551	(2,951)
Total production expenses	150,139	158,030	124,184	127,959
Intermediate product expenses	91,306	97,956	75,522	79,317
Farm origin	38,913	41,545	32,186	33,640
Feed purchased	20,132	21,433	16,652	17,355
Livestock and poultry purchased	13,868	14,949	11,471	12,105
Seed purchased	4,913	5,162	4,063	4,180
Manufactured inputs	22,712	23,157	18,786	18,750
Fertilizer and lime	8,333	8,398	6,892	6,800
Pesticides	6,469	6,719	5,351	5,440
Fuel and oil	5,300	5,364	4,383	4,343
Electricity	2,611	2,677	2,159	2,167
Other	29,682	33,255	24,551	26,927
Repair and maintenance	8,469	9,154	7,005	7,412
Other miscellaneous	21,213	24,100	17,546	19,514
Interest	11,167	10,836	9,237	8,774
Real estate	5,772	5,501	4,774	4,455
Nonreal estate	5,395	5,334	4,462	4,319
Contract and hired labor expenses	14,008	15,005	11,587	12,150
Net rent to nonoperator landlords[3]	9,507	9,551	7,864	7,734
Capital consumption	18,317	18,422	15,150	14,916
Property taxes	5,834	6,260	4,825	5,068
NET FARM INCOME[4]	50,074	43,402	41,417	35,143
Gross cash income	188,160	197,216	155,633	159,689
Cash expenses	130,772	138,697	108,165	112,306
Cash expenses, excluding net rent	119,891	127,773	99,166	103,460
Intermediate product expenses	90,535	97,298	74,884	78,784
Interest	10,616	10,304	8,781	8,343
Cash labor expenses	13,519	14,572	11,182	11,799
Property taxes	5,221	5,600	4,318	4,534
Net rent to nonoperator landlords [5]	10,880	10,924	8,999	8,846
NET CASH INCOME	57,389	58,519	47,468	47,383

na=not appropriate. [1]Gross domestic product implicit price deflators are used to deflate the accounts to real dollars. [2] Value added to gross income. Net value added to net farm income equals the difference between net farm income and returns to operators. [3]Includes landlord capital consumption. [4] Statistics in and above the Net Farm Income line represent the farm sector, defined as including farm operators' dwellings located on farms. Statistics below the Net Farm Income line represent only the farm businesses to the exclusion of the operators' dwellings. [5]Excludes landlord capital consumption.

Source: Economic Indicators of the Farm Sector: National Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Farm Household Income

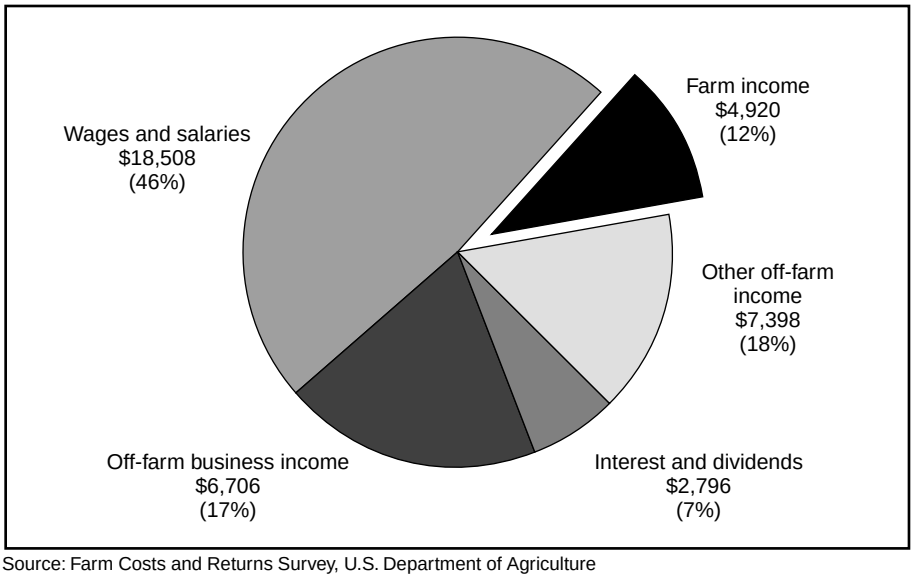
Senior farm operators have been surveyed by the annual Farm Costs and Returns Survey about the finances and production of their farms since 1985. Beginning in 1988 USDA has collected additional information about the operator's household. In 1993, the most recent year for which the survey data are currently available, over 98 percent of farms were covered in the household definition. Included are those run by individuals, legal partnerships, and family corporations. Nonfamily corporations, cooperatives, and institutional farms are not included in the household definition.

Like many other U.S. households, farm households receive income from a variety of sources, one of which is farming. The 1993 average household income for farm operator households was $40,329, which is on a par with the average U.S. household. Farm operator households accounted for 2.1 percent of all U.S. households in 1993 and their average income was 97 percent of the national average. About 88 percent of the average farm operator's household income came from off-farm sources and many operators spent the majority of their work effort in occupations other than farming. Off-farm income includes earned income such as wages and salaries from an off-farm job; net income from an off-farm business; unearned income such as interest and dividends; and royalties, annuities, Social Security, Medicare, and other off-farm sources.

For the majority of farm operator households, off-farm income is critical. Most U.S. farms are small (less than $50,000 in gross sales) and are run by households which depend mainly on off-farm sources of income. Similarly, persons with off-farm self-employment income are not always completely dependent on their self-employment income either. The larger the farm, the more likely the operator is to

Figure 3-3.

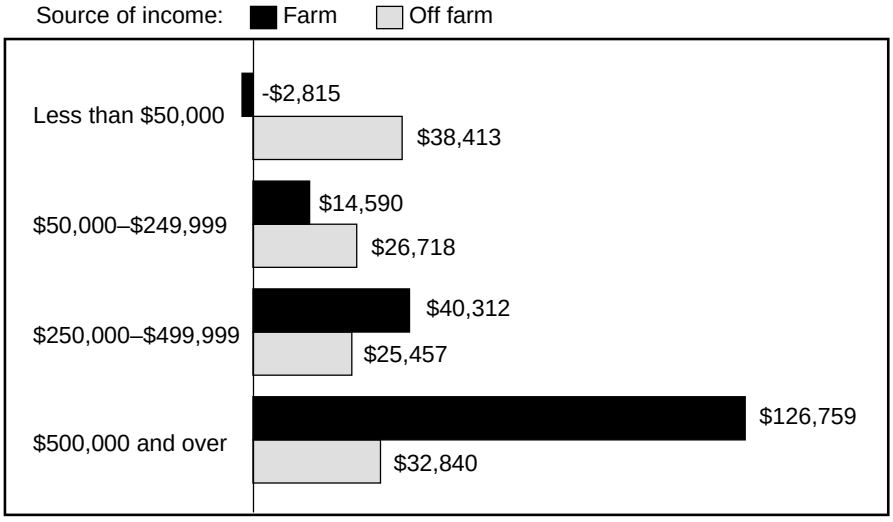
Sources of income for average farm operator household, 1993



Source: Farm Costs and Returns Survey, U.S. Department of Agriculture

Figure 3-4.

Average farm and off-farm income for farm operator households, by size of farm, 1993



[1]Based on gross value of farm sales, which includes both the operation's and landlord's value of agricultural production and Government payments.
Source: Farm Costs and Returns Survey, U.S. Dept. of Agriculture.

have a major occupation of farming, and the more likely the household will more fully depend on farm income. In 1993, slightly more than a quarter of farm households operated commercial-size farms with sales over $50,000. These farms provide most of the U.S. farm production. But even in households with the largest farms (sales over $500,000), off-farm income accounts for approximately one-fifth of household income.

Average household income and dependence on off-farm income also vary among different types of farm households. For example, about 7 percent reported negative household income for 1993. On average, these households lost $37,739 from farming during the year. About 25 percent had household income of $50,000 or over, with farm income averaging $28,879. Among occupational categories, households of operators who reported occupations other than farming or retired had the highest average household income, solely derived from off-farm sources. Data on operator's age show that, on average, households associated with the oldest and youngest operators had the lowest average household income. And data on operator's level of education show significant increases in average income with each higher level of education.

Table 3-4.

Farm operator households and household income, by selected characteristics, 1993

Item	*Number of households*	*Average household income*[1]	*Share from off-farm sources*[2]
	Number	*Dollars*	*Percent*
All operator households	2,035,692	40,329	88
Household income class:			
Negative	151,720	-28,526	nc
0-$9,999	231,650	5,749	159
$10,000-$24,999	533,491	17,804	105
$25,000-$49,999	617,718	36,225	89
$50,000 and over	501,113	106,199	73
Operator's major occupation:			
Farm or ranch work	919,044	36,341	61
Other	769,237	51,322	107
Retired	347,410	26,535	101
Operator's age class:			
Less than 35 years	180,401	33,115	77
35-44 years	394,137	42,096	81
45-54 years	471,458	52,215	90
55-64 years	433,343	45,623	87
65 years or older	556,352	27,219	96
Operator's level of education:			
Less than high school	472,721	24,643	92
High school	840,573	36,910	86
Some college	412,779	47,949	86
College	309,618	63,398	90

[1]The household income of farm operator households includes the net cash farm income that accrues to the farm operation, less depreciation, as well as wages paid to household members for work on the farm and net income from another farm business, plus all sources of off-farm income accruing to the household. In cases where the net income from the farm was shared by two or more households, the net cash income was allocated to the senior operator's household based on the share that the operator reported receiving. [2]Income from off-farm sources can be more than 100 percent of total household income if farm income is negative.
nc = not computed.

Net Farm Income by State

The ranking of States by the aggregate value of net farm income reflects the size of the State, the proportion of its land that can be cultivated, and the fertility of the land and climate within the State, as well as the State's comparative advantage in producing and marketing high valued commodities. Because these factors do not readily change, the ranking of States remains relatively stable over a period of years.

California led the Nation in 1993 with a net farm income of $5.2 billion, followed by Texas with $4.1 billion, North Carolina with $2.5 billion, Florida with 2.2 billion, and Nebraska with $2.1 billion.

California, at $19.9 billion in cash receipts, led the Nation in the value of cash receipts from all commodities. California's diversity in agricultural production is reflected by the State's top five commodities from agricultural sales: dairy products, greenhouse and nursery products, grapes, cattle and calves, and lettuce, which together accounted for 46 percent of the State's total cash receipts. California was also the top producing State in the Nation for agricultural sales from five commodities: greenhouse and nursery products, hay, grapes, tomatoes, and lettuce. California also had the highest production expenses, $16.3 billion.

The second leading State in net farm income, Texas, ranked second in cash receipts from all commodities, with $12.6 billion in sales. Texas was first in livestock receipts ($8.3 billion) and fourth in crop receipts ($4.3 billion) for the Nation. Texas is a more specialized State: 50 percent of its agricultural sales in 1993 came from the State's top commodity, cattle and calves. Texas led the Nation in sales of cattle and calves, cotton, and sorghum grain. Texas ranked second in production expenses, $11.6 billion.

The third-ranking State in net farm income, North Carolina ranked eighth in gross farm income but ranked twelfth in production expenses in the Nation. North Carolina's top commodities include tobacco, broilers, and hogs, which accounted for 54 percent of the State's sales from agricultural commodities in 1993. North Carolina also led the Nation in sales from tobacco and turkeys.

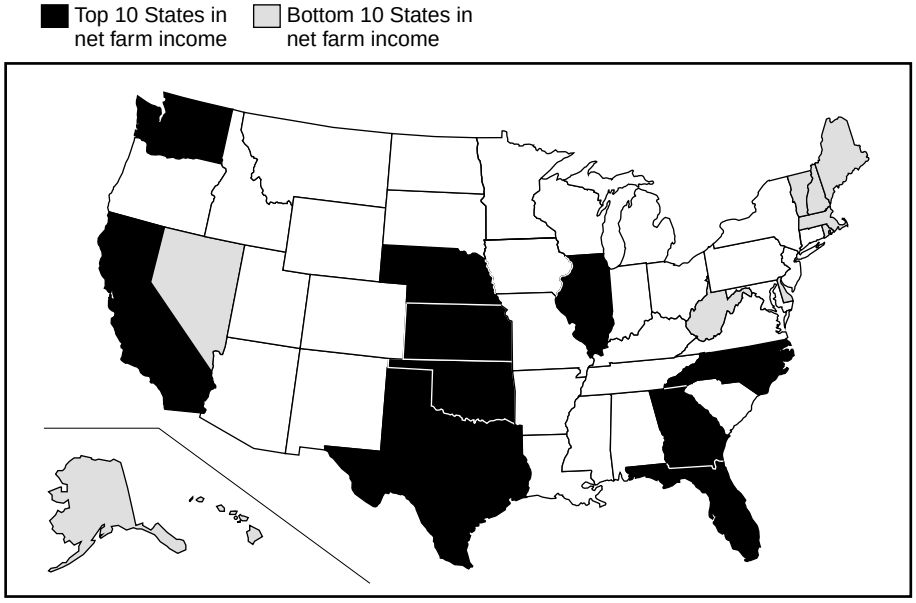
Florida ranked fourth in net farm income, ninth in gross farm income, and thirteenth in production expenses. Florida's top four commodities—greenhouse and nurseries, oranges, tomatoes, and cane for sugar—comprised 51 percent of the State's sales from agricultural production in 1993. Florida led the Nation in sales from oranges and cane for sugar.

Nebraska was the fifth leading State in net farm income. Nebraska ranked fourth in gross farm income and fifth in production expenses. The State also ranked fourth in cash receipts with $8.9 billion, second in livestock sales ($5.8 billion), and seventh in crop sales ($3.1 billion). The State's leading commodities, cattle and calves, corn, and hogs, accounted for 83 percent of the State's cash receipts from agricultural products in 1993, with cattle and calves contributing 53 percent.

Even though Arkansas ranked 16th in net farm income and 14th in cash receipts from the sales of all agricultural commodities, the State led the Nation in sales from broilers and chicken eggs in 1993.

Figure 3-5.

Net farm income, 1993



Source: Agriculture Income and Finance Situation and Outlook Report AIS-54, September 1994, USDA, ERS

State Rankings by Cash Receipts

A ranking by cash receipts of leading commodities within States can convey a significant amount of information about the product mix within a State. Similarly, a ranking of States by cash receipts from sales of a specific commodity or commodity group can convey information about the relative importance of the commodity to individual States and geographic regions. Such rankings are an aid in analyzing the effects of weather, changes in farm programs, or economic conditions affecting the prices of commodities.

Table 3-5.

States ranked by cash receipts, 1993[1]

State	Total		Livestock and products		Crops		State's top ranking commodities by value of cash receipts				
	Rank	Cash receipts	Rank	Cash receipts	Rank	Cash receipts	1	2	3	4	5
Alabama	24	2,910	16	2,184	32	726	Broilers	Cattle/calves	Eggs	Grnhs/nurs	Cotton
Alaska	50	27	50	6	50	21	Grnhs/nurs	Dairy prods	Potatoes	Hay	Cattle/calves
Arizona	31	1,922	31	885	27	1,037	Cattle/calves	Cotton	Dairy prods	Hay	Grnhs/nurs
Arkansas	14	4,382	9	2,902	20	1,480	Broilers	Soybeans	Cotton	Cattle/calves	Eggs
California	1	19,850	4	5,246	1	14,604	Dairy prods	Grnhs/nurs	Grapes	Cattle/calves	Cotton
Colorado	16	4,038	10	2,879	21	1,204	Cattle/calves	Wheat	Corn	Dairy prods	Hay
Connecticut	41	521	43	258	40	263	Grnhs/nurs	Eggs	Dairy prods	Aquaculture	Tobacco
Delaware	40	622	39	463	44	159	Broilers	Soybeans	Corn	Grnhs/nurs	Dairy prods
Florida	8	5,750	26	1,202	3	4,548	Grnhs/nurs	Oranges	Tomatoes	Cane/sugar	Dairy prods
Georgia	15	4,211	13	2,572	19	1,639	Broilers	Peanuts	Cattle/calves	Eggs	Dairy prods
Hawaii	43	491	47	85	38	406	Cane/sugar	Pineapples	Grnhs/nurs	Macad.nuts	Dairy prods
Idaho	25	2,847	27	1,167	17	1,680	Cattle/calves	Potatoes	Dairy prods	Wheat	Sugarbeets
Illinois	5	8,082	15	2,248	2	5,835	Corn	Soybeans	Hogs	Cattle/calves	Dairy prods
Indiana	11	5,118	18	1,932	6	3,186	Corn	Soybeans	Hogs	Cattle/calves	Dairy prods
Iowa	3	10,001	3	5,829	5	4,173	Hogs	Corn	Cattle/calves	Soybeans	Dairy prods
Kansas	6	7,363	5	4,870	11	2,493	Cattle/calves	Wheat	Corn	Soybeans	Sorghum grain
Kentucky	20	3,376	20	1,720	18	1,656	Tobacco	Cattle/calves	Horses/mules	Dairy prods	Corn
Louisiana	33	1,757	35	688	26	1,069	Cotton	Cane/sugar	Cattle/calves	Soybeans	Dairy prods
Maine	45	472	42	274	41	198	Eggs	Potatoes	Dairy prods	Aquaculture	Cattle/calves
Maryland	35	1,365	32	806	35	560	Broilers	Grnhs/nurs	Dairy prods	Soybeans	Cattle/calves
Massachusetts	42	497	46	122	39	375	Grnhs/nurs	Cranberries	Dairy prods	Eggs	Christ. trees
Michigan	21	3,367	25	1,376	14	1,991	Dairy prods	Corn	Grnhs/nurs	Soybeans	Cattle/calves
Minnesota	7	6,574	7	3,774	9	2,800	Dairy prods	Cattle/calves	Hogs	Corn	Soybean
Mississippi	27	2,605	22	1,577	28	1,028	Broilers	Cotton	Soybeans	Aquculture	Cattle/calves
Missouri	17	4,053	14	2,270	15	1,783	Cattle/calves	Soybeans	Hogs	Corn	Dairy prods
Montana	32	1,781	30	938	31	843	Cattle/calves	Wheat	Barley	Hay	Sugarbeets
Nebraska	4	8,909	2	5,842	7	3,067	Cattle/calves	Corn	Hogs	Soybeans	Wheat

—continued

Table 3-5 continued.

States ranked by cash receipts, 1993[1]

State	Total Rank	Total Cash receipts	Livestock and products Rank	Livestock and products Cash receipts	Crops Rank	Crops Cash receipts	State's top ranking commodities by value of cash receipts 1	2	3	4	5
Nevada	47	289	45	187	45	102	Cattle/calves	Hay	Dairy prods	Potatoes	Grnhs/nurs
New Hampshire	48	163	48	65	46	99	Dairy prods	Grnhs/nurs	Christ. trees	Apples	Cattle/calves
New Jersey	39	706	44	199	36	508	Grnhs/nurs	Dairy prods	Eggs	Blueberries	Soybean
New Mexico	34	1,621	28	1,135	37	486	Cattle/calves	Dairy prods	Hay	Grnhs/nurs	Peppers,chil
New York	26	2,817	19	1,888	30	930	Dairy prods	Grnhs/nurs	Cattle/calves	Apples	Corn
North Carolina	9	5,457	8	3,201	12	2,256	Tobacco	Broilers	Hogs	Turkeys	Grnhs/nurs
North Dakota	23	2,933	34	706	13	2,267	Wheat	Cattle/calves	Barley	Sugar beets	Dairy prods
Ohio	13	4,593	21	1,673	10	2,720	Soybeans	Corn	Dairy prods	Grnhs/nurs	Cattle/calves
Oklahoma	18	3,869	11	2,762	23	1,108	Cattle/calves	Wheat	Grnhs/nurs	Broilers	Dairy prods
Oregon	28	2,476	33	739	16	1,737	Cattle/calves	Grnhs/nurs	Dairy prods	Wheat	Onions
Pennsylvania	19	3,712	12	2,622	24	1,091	Dairy prods	Cattle/calves	Grnhs/nurs	Mushrooms	Eggs
Rhode Island	49	79	49	12	49	67	Grnhs/nurs	Eggs	Dairy prods	Potatoes	Corn, sweet
South Carolina	36	1,221	38	603	34	618	Tobacco	Broilers	Cattle/calves	Grnhs/nurs	Turkeys
South Dakota	22	3,320	17	2,173	22	1,147	Cattle/calves	Wheat	Hogs	Corn	Soybeans
Tennessee	30	2,039	29	1,012	29	1,027	Cattle/calves	Dairy prods	Tobacco	Soybean	Cotton
Texas	2	12,617	1	8,342	4	4,275	Cattle/calves	Cotton	Dairy prods	Grnhs/nurs	Broilers
Utah	38	804	37	626	42	177	Cattle/calves	Dairy prods	Hay	Turkeys	Grnhs/nurs
Vermont	44	483	40	403	47	81	Dairy prods	Cattle/calves	Grnhs/nurs	Christ. trees	Hay
Virginia	29	2,068	24	1,385	33	683	Broilers	Cattle/calves	Dairy prods	Tobacco	Turkeys
Washington	12	4,574	23	1,561	8	3,013	Cattle/calves	Apples	Dairy prods	Wheat	Potatoes
West Virginia	46	405	41	328	48	77	Cattle/calves	Broilers	Dairy prods	Turkeys	Eggs
Wisconsin	10	5,250	6	4,164	25	1,086	Dairy prods	Cattle/calves	Corn	Hogs	Grnhs/nurs
Wyoming	37	817	36	657	43	160	Cattle/calves	Sugarbeets	Hay	Sheep/lambs	Wheat
United States		175,052		90,555		84,497					

[1] All cash receipts data are reported in million dollars.

Source: Economic Indicators of the Farm Sector: State Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Table 3-6.

Leading States for cash receipts, 1993[1]

Commodities	Rank	Value	Top 10 States by their value of cash receipts									
			1	2	3	4	5	6	7	8	9	10
		Million dollars	State and million dollars									
Total		175,052	CA 19,850	TX 12,617	IA 10,001	NE 8,909	IL 8,082	KS 7,363	MN 6,574	FL 5,750	NC 5,457	WI 5,250
Livestock & poultry	1	90,555	TX 8,342	NE 5,842	IA 5,829	CA 5,246	KS 4,870	WI 4,164	MN 3,774	NC 3,201	AR 2,902	CO 2,879
Crops	2	84,497	CA 14,604	IL 5,835	FL 4,548	TX 4,275	IA 4,173	IN 3,186	NE 3,067	WA 3,013	MN 2,800	OH 2,720
Cattle and calves	1	39,986	TX 6,353	NE 4,707	KS 4,365	CO 2,421	IA 2,207	OK 2,125	CA 1,526	SD 1,503	MN 1,087	MO 864
Dairy products	2	19,316	WI 2,925	CA 2,663	NY 1,462	PA 1,411	MN 1,228	TX 781	MI 705	WA 635	OH 597	IA 506
Corn	3	14,012	IL 2,868	IA 2,232	NE 1,806	IN 1,542	MN 888	OH 808	TX 519	KS 493	MO 404	MI 388
Soybeans	4	11,622	IL 2,302	IA 1,737	IN 1,220	OH 899	MN 805	MO 796	AR 566	NE 546	KS 344	MI 318
Hogs	5	10,889	IA 2,821	IL 1,112	NC 922	MN 908	NE 847	IN 794	MO 527	SD 355	OH 346	KS 293
Broilers	6	10,407	AR 1,684	GA 1,501	AL 1,350	NC 1,004	MS 814	TX 609	MD 424	DE 410	VA 371	CA 353
Greenhouse and nursery	7	9,293	CA 1,903	FL 1,018	TX 701	OH 476	MI 376	OR 364	NC 337	PA 309	OK 275	NY 271

—continued

Table 3-6 continued.

Leading States for cash receipts, 1993[1]

Commodities	Rank	Value	Top 10 States by their value of cash receipts									
			1	2	3	4	5	6	7	8	9	10
		Million dollars	State and million dollars									
Wheat	8		ND	KS	MT	WA	OK	SD	TX	ID	MN	CO
		7,376	1,347	1,095	545	530	449	374	330	326	325	266
Cotton	9		TX	CA	MS	AR	LA	AZ	GA	TN	AL	NC
		5,015	1,344	1,126	505	381	342	301	221	182	156	127
Eggs	10		AR	GA	CA	IN	PA	AL	OH	TX	NC	IA
		3,771	285	277	267	246	240	218	203	203	195	125
Hay	11		CA	CO	ID	WA	KS	OR	MN	TX	NE	IA
		3,244	543	161	154	153	146	118	114	114	114	109
Tobacco	12		NC	KY	TN	SC	VA	GA	OH	IN	FL	PA
		2,949	1,030	919	266	186	181	157	39	33	31	24
Turkeys	13		NC	MN	CA	AR	MO	VA	IN	WI	IA	TX
		2,504	519	285	209	205	179	157	140	88	88	83
Potatoes	14		ID	WA	CA	FL	WI	OR	CO	MI	ME	ND
		2,320	554	433	181	128	118	114	106	94	93	92
Grapes	15		CA	WA	NY	AZ	MI	PA	OR	GA	AR	OH
		2,000	1,822	90	27	18	12	11	10	3	3	2
Tomatoes	16		CA	FL	OH	SC	VA	GA	MI	NJ	TN	IN
		1,696	796	[2]	50	[2]	35	25	24	[2]	19	18
Lettuce	17		CA	AZ	FL	CO	NJ	NM	OH	NY	WA	MI
		1,474	1,141	260	26	11	11	7	7	4	3	2

—continued

Table 3-6 continued.

Leading States for cash receipts, 1993[1]

Commodities	Rank	Value	Top 10 States by their value of cash receipts									
			1	2	3	4	5	6	7	8	9	10
		Million dollars	State and million dollars									
Apples	18	1,364	WA 688	CA 135	NY 108	MI 85	PA 47	VA 29	OH 27	OR 21	NC 20	ID 19
Oranges	19	1,337	FL 867	CA 461	AZ 8	TX 3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sorghum grain	20	1,205	TX 438	KS 311	NE 191	MD 81	IL 34	OK 30	AR 29	NM 21	LA 20	CO 13
Sugarbeets	21	1,083	MN 255	ID 187	ND 143	CA 132	MI 116	NE 59	WY 51	MT 51	CO 36	TX 28
Peanuts	22	1,004	GA 425	TX 156	AL 145	NC 91	FL 57	VA 52	OK 51	NM 19	SC 7	AZ 1
Almonds	23	911	CA 911	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cane for sugar	24	850	FL 439	LA 225	HI 151	TX 35	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rice	25	828	AR 282	CA 251	LA 109	TX 90	MS 69	MO 27	n.a.	n.a.	n.a.	n.a.

n.a. = not applicable. [1]Additional information about ranking of states and commodities by cash receipts can be found on the ERS Autofax, Document Number 4001, (202) 219-1107.
[2]Cash receipts data excluded to avoid disclosure of confidential information about individual producers.
Source: Economic Indicators of the Farm Sector: State Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Government Payments by Program and State

Government payments were $13.4 billion in 1993, up 46 percent ($4.2 billion), and the highest since 1988. Government payments comprised 6.8 percent of gross cash farm income in 1993. Farmers in the Midwest experienced disastrous losses in crops, facilities, and even soil from flooding along the Mississippi and its tributaries. In the southeastern United States, producers suffered significant losses through drought conditions. Farms suffering losses from natural disasters qualified for benefits from various Government programs, which is a contributing factor to the rise in government payments in 1993. In addition, the exceptionally large feed grain harvest in 1992 depressed market prices received by farmers, boosting deficiency payments, a large portion of which were paid to farmers in 1993. Because crop year Government payments overlap calendar years, deficiency and disaster payments are revealed in different calendar years. Therefore, the full impact of these payments on the farm sector associated with 1993 conditions is not completely reflected in 1993 Government payments.

Government payments represent direct, nonrecoverable transfer payments to producers participating in various programs. The role of farm commodity programs and conservation policies instituted through direct Government payments is to support prices through restricting the supply of specific commodities (Acreage Reduction Program, etc.), to support farm incomes directly through cash transfers to farm operators (deficiency payments, etc.), to support farm income in times of adverse weather or natural catastrophes (disaster payments), and to maintain quality production and environmental controls through conservation reserve programs (Wetlands Reserve Program, etc).

The annual changes in the distribution of payments across States reflects changes in the overall farm sector and U.S. economic environment, crop yields, weather conditions, market prices, and any modifications in farm legislation.

Commodity program recipients vary in type and magnitude across States depending on the State's production specialty, environmental and conservational needs, and the number of acres operated.

Table 3-7.

Government payments, by program and State, 1993[1]

State	Feed Grain	Wheat	Rice	Cotton	Wool Act	Conservation	Miscellaneous	Total
		1,000 dollars						
Alabama	6,327	4,572	0	47,707	105	30,614	47,915	137,240
Alaska	131	0	0	0	3	1,170	485	1,789
Arizona	2,988	5,263	0	82,204	1,897	1,662	19,864	113,878
Arkansas	12,045	34,321	257,938	79,016	340	17,709	303,298	704,667
California	15,093	30,023	127,013	138,427	8,915	14,144	188,531	522,146
Colorado	67,371	73,212	0	0	7,054	85,229	17,387	250,253
Connecticut	911	0	0	0	32	603	1,346	2,892
Delaware	3,585	406	0	0	9	509	1,735	6,244
Florida	3,566	781	288	5,104	7	22,573	78,361	110,680
Georgia	24,062	16,468	0	46,249	28	32,522	106,164	225,493
Hawaii	0	0	0	0	19	1,990	1,122	3,131
Idaho	22,521	72,937	0	0	4,455	43,081	16,322	159,316
Illinois	706,713	36,749	0	0	643	67,869	39,216	851,190
Indiana	315,829	16,445	0	0	289	38,455	7,935	378,953
Iowa	916,663	356	0	0	2,504	185,497	124,524	1,229,544
Kansas	245,269	328,468	0	57	1,694	157,789	50,686	783,963
Kentucky	54,479	8,635	8	0	169	30,937	2,469	96,697
Louisiana	7,457	5,448	103,360	105,898	36	14,094	131,064	367,357
Maine	844	1	0	0	88	4,608	14,126	19,667
Maryland	15,206	2,358	0	0	116	2,699	5,910	26,289
Massachusetts	311	0	0	0	52	602	2,678	3,643
Michigan	140,984	17,551	0	0	747	24,651	57,409	241,342
Minnesota	418,196	86,865	0	0	1,697	107,283	209,209	823,250
Mississippi	5,903	9,622	49,538	169,729	21	42,303	106,675	383,791
Missouri	136,742	43,226	19,995	26,296	1,276	114,810	113,019	455,364
Montana	45,115	148,179	0	0	10,538	110,096	24,080	338,008
Nebraska	601,962	71,262	0	0	1,448	83,600	48,001	806,273
Nevada	227	700	0	0	1,380	951	3,755	7,013

—continued

Table 3-7 continued.

Government payments, by program and State, 1993[1]

State	Feed Grain	Wheat	Rice	Cotton	Wool Act	Conservation	Miscellaneous	Total
New Hampshire	243	0	0	0	55	1,060	584	1,942
New Jersey	3,702	461	0	0	31	632	2,472	7,298
New Mexico	14,025	9,164	0	7,729	7,851	21,261	16,412	76,442
New York	39,089	4,013	0	0	440	8,381	20,363	72,286
North Carolina	39,889	7,982	0	24,192	94	10,537	49,754	132,448
North Dakota	107,244	284,749	0	0	2,724	110,839	58,975	564,531
Ohio	192,042	27,545	0	0	1,162	32,776	11,849	265,374
Oklahoma	15,823	167,738	215	28,448	2,617	54,751	54,357	323,949
Oregon	5,816	42,533	0	0	2,766	30,023	11,668	92,806
Pennsylvania	25,561	1,359	0	0	574	10,253	7,404	45,151
Rhode Island	3	0	0	0	4	132	1	140
South Carolina	17,547	9,309	0	19,774	2	14,760	41,120	102,512
South Dakota	165,187	83,370	0	0	8,515	75,221	100,131	432,424
Tennessee	22,535	9,100	111	51,160	86	28,158	49,474	160,624
Texas	200,584	117,058	91,212	392,947	77,941	185,131	355,957	1,420,830
Utah	3,710	5,668	0	0	7,522	11,122	8,592	36,614
Vermont	815	1	0	0	148	1,914	499	3,377
Virginia	17,594	4,794	0	681	699	7,130	15,448	46,346
Washington	23,249	112,249	0	0	814	57,851	13,045	207,208
West Virginia	2,381	124	0	0	371	2,220	1,163	6,259
Wisconsin	171,948	2,444	0	0	534	52,215	83,027	310,168
Wyoming	4,522	5,853	0	0	12,737	12,274	7,827	43,213
United States	4,844,009	1,909,362	649,678	1,225,618	173,249	1,966,691	2,633,408	13,402,015

[1]Includes both cash payments and payment-in-kind (PIK). [2]Includes amount paid under agriculture and conservation programs (Conservation Reserve, Agriculture Conservation, Emergency Conservation, and Great Plains Program). [3] The programs included Rural Clean Water, Forestry Incentive, Water Bank, Dairy Indemnity, Extended Warehouse Storage, Extended Farm Storage, Colorado River Salinity, Livestock Emergency Assistance, Interest Penalty Payments, Disaster, Loan Deficiency, Market Gains, Naval Stores Conservation, Interest on CCC-6S, Option Pilot, Rice Marketing Expense, Arkansas Beaver Lake, Wetland Reserve Program-Cost Shares, 90 Day Rule, and Potato Diversion.

Source: Economic Indicators of the Farm Sector: State Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Federal Government Program Participation and Direct Payments

Only about one-third of the Nation's farms receive direct Government payments, but some types of farms are more likely to receive payments than others. More than half of farms specializing in crops were enrolled in Government programs in 1993, and they accounted for two-thirds of direct Government payments received by farmers that year. Cash grain farms, including corn and wheat farms, had the highest participation rates, with more than three-fourths of these farms receiving Government program payments.

About 25 percent of farms specializing in livestock received direct Government payments during 1993; dairy farms had the highest participation rate among livestock farms (46 percent). Many farmers growing program-eligible crops feed the grain to their livestock.

Direct Government payments were higher for crop farms, on average, than for livestock farms. The U.S. average direct payment to all participating farms was $13,220, ranging from a low of $4,538 for poultry farms to $22,735 for wheat farms.

Table 3-8.

Number of farms, gross cash income, and direct commodity program participation, by farm type, 1993

Item	Number of farms	Distribution of direct Government payments	All Farms: Average gross cash farm income	All Farms: Average direct Government payment per farm	Participating Farms: Percent participating	Participating Farms: Average direct Government payment per participant
All farms	2,063,300	100.00	69,084	4,761	36.0	13,220
Farms that specialize in:						
Wheat	48,840	9.2	82,619	18,589	81.8	22,735
Corn	80,094	11.3	106,290	13,918	81.4	17,104
Other cash grains	111,583	18.1	110,901	15,947	78.0	20,413
Other field crops	407,556	29.2	55,333	7,032	55.1	12,773
Veg., fruits, nuts nursery, greenhouse	157,798	2.0	128,944	1,259	8.7	14,556
Beef, hogs	822,243	19.6	47,755	2,338	23.7	9,856
Poultry	27,559	0.3	126,949	1,025	22.6	4,538
Dairy	125,408	5.2	181,955	4,035	46.4	8,691
Other livestock	282,250	5.1	32,380	1,778	18.9	9,401

Source: U.S. Dept. of Agriculture, 1993 Farm Costs and Returns Survey, all versions.

Table 3-9.

Number of farms and net cash income, by value of sales class, 1993

Item	$1,000,000 and over	$500,000 to $999,999	$250,000 to $499,999	$100,000 to $249,999	$40,000 to $99,999	$20,000 to $39,999	Less than $20,000
				Thousands			
Number of farms	15	31	70	223	273	224	1,229
Total:				*Million dollars*			
Gross cash income	46,443	26,926	31,506	42,887	25,567	9,126	14,761
Cash receipts from marketings	44,826	24,614	27,706	36,224	21,262	7,833	12,587
Direct Government payment commodities	2,789	3,565	6,593	9,880	4,844	1,108	553
Price support only commodities	1,645	1,234	1,561	2,427	1,724	581	3,455
Nonsupported commodities	40,392	19,815	19,553	23,918	14,695	6,144	8,579
Government payments	613	1,209	2,534	4,492	2,592	776	1,186
Farm-related income	1,004	1,103	1,265	2,171	1,713	518	988
Cash expenses	31,985	17,886	21,111	30,730	18,256	6,844	11,885
Net cash income	14,458	9,040	10,395	12,157	7,312	2,282	2,876
Percent of total:				*Percent*			
Number of farms	0.7	1.5	3.4	10.8	13.2	10.9	59.5
Gross cash income	23.5	13.7	16.0	21.7	13.0	4.6	7.5
Cash receipts from marketings	25.6	14.1	15.8	20.7	12.1	4.5	7.2
Direct Government payment commodities	9.5	12.2	22.5	33.7	16.5	3.8	1.9
Price support only commodities	13.0	9.8	12.4	19.2	13.7	4.6	27.4
Nonsupported commodities	30.3	14.9	14.7	18.0	11.0	4.6	6.4
Government payments	4.6	9.0	18.9	33.5	19.3	5.8	8.9
Farm-related income	11.5	12.6	14.4	24.8	19.6	5.9	11.3
Cash expenses	23.1	12.9	15.2	22.2	13.2	4.9	8.6
Net cash income	24.7	15.4	17.8	20.8	12.5	3.9	4.9

Note: Farm operations may have several households sharing in the earnings of the business (for example, partners or shareholders in the farm corporation). The number of households per farm operation tends to increase as sales per farm increase.

Source: U.S. Dept. of Agriculture, 1993 Farm Costs and Returns Survey, all versions.

Table 3-10.

Number of farms, by value of sales class, 1978-93

Year	$1,000,000 or more	$500,000 to $999,999[1]	$250,000 to $499,999[2]	$100,000 to $249,999[3]	$40,000 to $99,999	$20,000 to $39,999	Less than $20,000	All farms
				Thousands				
1978	NA	17	60	135	347	292	1,585	2,436
1979	NA	20	71	151	351	287	1,558	2,437
1980	NA	24	81	166	355	282	1,532	2,440
1981	NA	27	92	182	359	276	1,504	2,440
1982	NA	30	63	232	358	267	1,457	2,407
1983	NA	23	64	240	352	289	1,412	2,379
1984	NA	32	77	230	345	248	1,401	2,334
1985	NA	27	76	223	328	244	1,394	2,293
1986	NA	30	70	217	305	247	1,381	2,250
1987	10	19	59	212	316	235	1,361	2,213
1988	12	21	60	218	312	248	1,327	2,197
1989	13	26	67	206	315	265	1,278	2,171
1990	16	27	64	214	306	259	1,254	2,140
1991	14	32	79	244	349	260	1,127	2,105
1992	15	32	76	247	339	254	1,131	2,094
1993	17	35	81	258	313	254	1,105	2,065
				Percentage distribution				
1978	NA	0.7	2.5	5.6	14.2	12.0	65.1	100.0
1979	NA	0.8	2.9	6.2	14.4	11.8	63.9	100.0
1980	NA	1.0	3.3	6.8	14.5	11.6	62.8	100.0
1981	NA	1.1	3.8	7.4	14.7	11.3	61.7	100.0

Table 3-10 continued.

Number of farms, by value of sales class, 1978-93

Year	$1,000,000 or more	$500,000 to $999,9991	$250,000 to $499,9992	$100,000 to $249,9993	$40,000 to $99,999	$20,000 to $39,999	Less than $20,000	All farms
				Percentage distribution				
1982	NA	1.2	2.6	9.6	14.9	11.1	60.5	100.0
1983	NA	0.9	2.7	10.1	14.8	12.2	59.3	100.0
1984	NA	1.4	3.3	9.9	14.8	10.6	60.0	100.0
1985	NA	1.2	3.3	9.7	14.3	10.7	60.8	100.0
1986	NA	1.3	3.1	9.7	13.5	11.0	61.4	100.0
1987	0.5	0.9	2.7	9.6	14.3	10.6	61.5	100.0
1988	0.5	1.0	2.7	9.9	14.2	11.3	60.4	100.0
1989	0.6	1.2	3.1	9.5	14.5	12.2	58.9	100.0
1990	0.8	1.3	3.0	10.0	14.3	12.1	58.6	100.0
1991	0.7	1.5	3.7	11.6	16.6	12.4	53.5	100.0
1992	0.7	1.5	3.6	11.8	16.2	12.1	54.0	100.0
1993	0.8	1.7	3.9	12.5	15.2	12.3	53.5	100.0

NA = not available. [1]For 1978-93, data are for sales class $500,000 or more. [2]For 1978-81, data are for sales class $200,000 to $499,999.
[3]For 1978-81, data are for sales class $100,000 to $199,999.
Source: Economic Indicators of the Farm Sector: National Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

Table 3-11.

Direct Government payments, by program, 1950-93[1]

Year	Feed grains	Wheat	Rice	Cotton	Wool	Conservation[2]	Miscellaneous[3]	Total
				Million dollars				
1950	np	np	np	np	np	246	37	283
1951	np	np	np	np	np	246	40	286
1952	np	np	np	np	np	242	33	275
1953	np	np	np	np	np	181	32	213
1954	np	np	np	np	np	217	40	257
1955	np	np	np	np	np	188	41	229
1956	np	np	np	np	54	220	280	554
1957	np	np	np	np	53	230	732	1,015
1958	np	np	np	np	14	215	859	1,088
1959	np	np	np	np	82	233	367	682
1960	np	np	np	np	51	223	429	703
1961	772	42	np	np	56	236	387	1,493
1962	841	253	np	np	54	230	368	1,746
1963	843	215	np	np	37	231	370	1,696
1964	1,163	438	np	39	25	236	278	2,179
1965	1,391	525	np	70	18	224	235	2,463
1966	1,293	679	np	773	34	231	267	3,277
1967	865	731	np	932	29	237	284	3,078
1968	1,366	747	np	787	66	229	268	3,463
1969	1,643	858	np	828	61	204	199	3,793
1970	1,504	871	np	919	49	208	166	3,717
1971	1,054	878	np	822	69	173	149	3,145

Table 3-11 continued.

Direct Government payments, by program, 1950-93[1]

Year	Feed grains	Wheat	Rice	Cotton	Wool	Conservation[2]	Miscellaneous[3]	Total
1972	1,845	856	np	813	110	198	140	3,962
1973	1,142	474	np	718	65	72	136	2,607
1974	101	70	np	42	[4]	192	125	530
1975	279	77	np	138	13	193	107	807
1976	196	135	[4]	108	39	209	47	734
1977	187	887	130	89	5	328	192	1,818
1978	1,172	963	3	127	27	239	499	3,030
1979	494	114	59	185	33	197	294	1,376
1980	382	211	2	172	28	214	276	1,285
1981	243	625	2	222	35	201	605	1,933
1982	713	652	156	800	46	179	946	3,492
1983	1,346	864	278	662	84	188	5,874	9,296
1984	367	1,795	192	275	118	191	5,493	8,431
1985	2,861	1,950	577	1,106	98	189	924	7,705
1986	5,158	3,500	423	1,042	112	254	1,325	11,814
1987	8,490	2,931	475	1,204	144	1,531	1,972	16,747
1988	7,219	1,842	465	924	117	1,607	2,306	14,480
1989	3,141	603	671	1,184	81	1,771	3,436	10,887
1990	2,701	2,311	465	441	96	1,898	1,386	9,298
1991	2,649	2,166	550	407	154	1,858	431	8,215
1992	2,499	1,403	512	751	188	1,899	1,916	9,168
1993	4,844	1,909	650	1,226	173	1,967	2,633	13,402

np = no program. [1]Components may not add due to rounding. Includes both cash payments and payments-in kind (PIK). [2]Includes Great Plains and other conservation programs. [3]Through 1970, total amounts are for Soil Bank program, which was discontinued in 1971. Starting with 1971, amounts include all other programs. [4]Less than $500,000.

Source: Economic Indicators of the Farm Sector: National Financial Summary, 1993, ECIFS 13-1, December 1994, USDA, ERS.

4. Rural America

Rural Population

Today, the United States is primarily metropolitan. People who live in large cities and their suburbs account for 80 percent of the total population. Nonmetropolitan people outside large cities and suburban counties numbered about 52.9 million in 1994.

Although nonmetro population increased in both the 1970's and 1980's, its proportion of the total population fell slightly because the metro population grew even more rapidly.

After 1970, most nonmetro counties that were losing population in the 1960's began to grow again because of job development, commuting, or the development of retirement communities that drew retirees in from other areas. However, after 1980, low farm income conditions and a slump in mining and manufacturing employment led to slow but widespread decline in rural population. From 1980 to 1990, about half of all nonmetro counties decreased in population, generally in the same areas that declined before 1970. Some nonmetro counties, though, grew enough as retirement or recreation areas, or from commuting to metro jobs, to produce overall nonmetro population growth during the decade.

Since 1990, there is evidence once again of increased retention of people in rural areas. From 1990 to 1994, the population of nonmetro counties grew at an annual pace more than double that of the 1980's, with far fewer counties declining. This change has affected all types of counties and most regions of the country.

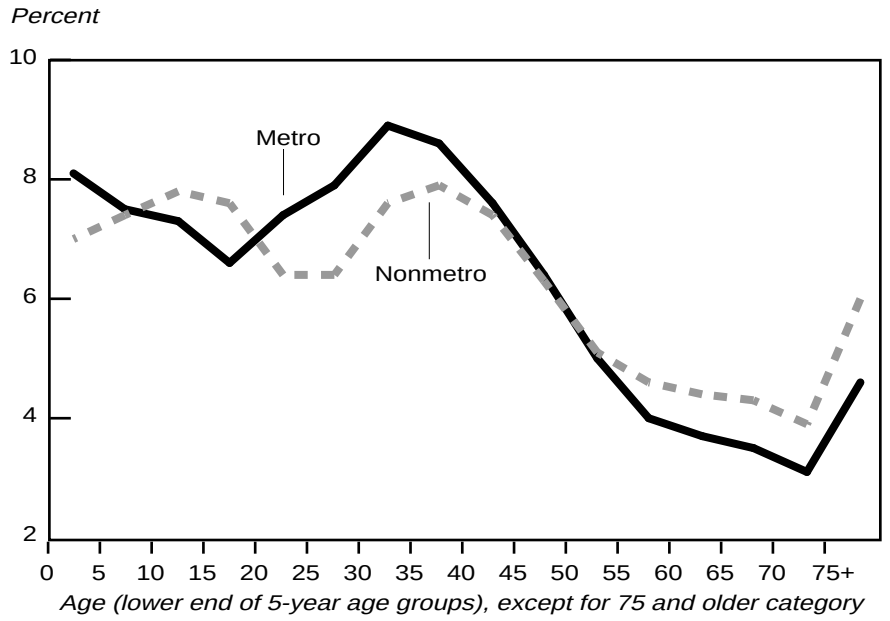
Improvement in rural economic conditions is thought to be generally responsible for this change. But, recreation and retirement counties continue to be the most rapidly developing group. Declining population is still characteristic of areas that are dependent on farming, three-fourths of which have continued to have more people moving out than in.

Age and Race

Age distributions reflect past demographic events (births, deaths, and migrations) and provide important clues about future changes in the labor supply and the demand for goods and services. The age distribution of the U.S. population is still dominated by the post-World War II rise in fertility rates known as the baby boom, whose members were born in 1946-64. From the time the youngest baby boomers graduated from high school and began their entry into the labor force in 1982 until

Figure 4-1.

Age distribution of U.S. Metro and Nonmetro population, 1994



the oldest members reach 65 in 2011, the United States has had and will continue to have a favorable balance of people in income-producing age groups. All parts of the country benefit from the current age structure.

A metro area, by definition, must have an urban nucleus of at least 50,000 people, and may include fringe counties that are linked to that nucleus because their workers commute to the central area. All other counties are nonmetro. Because of migration, which always consists primarily of young adults and their children, metro areas captured a much higher percentage of the "baby boomers." The higher metro percentage of working-age adults has been a persistent pattern for most of this century.

Metro/nonmetro differences among the youngest and oldest have become increasingly large. In a reversal of previous trends, the birth rates in metro areas in the last 5 years have been greater than in nonmetro areas. In large measure, this reversal is due to the delayed childbearing among women in the large metro baby boom cohort. Birth rates for nonmetro women are higher at younger ages, particularly for women in their twenties, an age group not well represented in nonmetro areas.

Increases in life expectancy over the past 50 years and the aging of the large population segment born in the 1920's increased the proportion of elderly between 1970 and 1990. The percentage of the population over age 75 rose dramatically, especially in nonmetro areas. Retirement migration to nonmetro areas, coupled with historically high levels of nonmetro outmigration of young adults and their children, placed a higher proportion of older people in nonmetro areas; the percentage of nonmetro population aged 55 or older was 23 percent in 1994, compared with 19 percent in

metro areas. For the first time since 1960, metro children 10 years old and younger outnumber metro teenagers. This is not true for nonmetro areas.

In 1990, 8.7 million nonmetro residents belonged to one of four minority groups: Blacks, Hispanics, Asians (including Pacific Islanders), and Native Americans. Blacks made up close to two-thirds of the nonmetro minority population in 1980, but their share declined as other groups grew much faster during the 1980's. Minorities constituted only 14 percent of the total nonmetro population in 1980, but they accounted for 50 percent of the people added during the 1980's. Their 15 percent rate of growth was more than five times the rate for Whites. For all minorities except Native Americans, however, growth rates were even higher in metro areas during the 1980's, so that the percentage of U.S. minorities living in nonmetro areas declined slightly from 16 to 14 percent. Minorities are still much more likely to live in metro areas than Whites, but their presence in nonmetro areas is increasing.

Table 4-1.

Nonmetro population by race and ethnicity, 1980-1990

	Population				*Share of U.S. population in nonmetro areas*	
Race/ethnic group	*1980*	*1990*	*Change 1980–90*	*Change 1980–90*	*1980*	*1990*
	Thousands				*Percent*	
White	46,753	47,863	1,110	2.4	25.4	24.7
Minority	7,624	8,688	1,064	14.0	16.5	14.1
Black	4,770	4,923	153	3.2	18.0	16.4
Hispanic[1]	1,786	2,329	543	30.4	12.2	10.4
Native American[2]	759	971	212	27.9	49.5	49.6
Asian	309	465	156	50.5	8.3	6.4

[1]Hispanics can be of any race.
[2]Native Americans include American Indians, Eskimos, and Aleuts.
Source: 1980 and 1990 Censuses of Population.

Nonmetropolitan Industry and Job Growth

Goods-Producing Industries

Manufacturing, natural resource-based industries such as farming and mining, and other goods-producing industries have historically been the mainstay of the rural economy. Employment gains in rural goods-producing industries were strongest during 1969-79, faltering only during the 1974-75 economic downturn. Much of this growth was attributable to national manufacturing firms that opened branch plants in rural areas and also to booming construction activities. While goods-producing industries normally spring back during economic recovery, in more recent years, over periods of recession and recovery, employment growth has been sluggish. In nonmetro areas during 1979-89, employment in farming declined by 387,000 jobs (1.6 percent annually) and in mining by 120,000 jobs (2.2 percent annually), while manufacturing increased slightly by 17,000 jobs. The loss of nonmetro goods-producing

employment accelerated during 1989-92, reflecting job weakness caused by the 1990-91 recession, with average annual declines of 1.6 percent in farming, 3.0 percent in mining, and 0.6 percent in manufacturing.

Service-Producing Industries

Nonmetro service-producing industries provided steady employment growth during 1969-92, creating almost 5.6 million new jobs in the period. Local consumer activities, business services, recreational services, and retailing accounted for most of the job growth in rural areas. Similar to the goods-producing industries, services grew fastest during 1969-79 and slowed in 1979-89. But nonmetro service industries recovered more quickly from the 1990-91 recession, adding over 1 million jobs during 1989-92.

Total Employment

Nonmetro areas gained employment at a rate comparable to that of metro areas during 1969-79 but lagged behind afterward. Nonmetro areas suffered more in the two recessions of the early 1980's, and benefited less from the 1982-89 recovery, than did metro areas. As a result, employment growth was considerably slower in nonmetro (1.0 percent annually) than in metro areas (2.3 percent annually) during 1979-89. More encouraging is the most recent performance of rural areas. In contrast to the 1980's trend, rural areas weathered the 1990-91 recession better than urban areas. In nonmetro areas, total employment grew 1.5 percent annually during 1989-92; in metro areas growth was only 0.5 percent annually. The strength of the nonmetro job growth was in service-producing industries, which increased 2.9 percent annually.

Table 4-2.

Nonmetro and metro employment growth in selected industries, 1969-92

Industry	*1969*	*1979*	*1989*	*1992*	*Change 1989-92*
		Thousands			*Percent*
Nonmetro total	17,811	21,831	23,994	25,057	4.4
Goods-producing	7,486	8,580	8,253	8,094	-1.9
Manufacturing	3,608	4,241	4,258	4,182	-1.8
Services-producing	7,144	9,589	11,694	12,713	8.7
Services	2,687	3,593	4,852	5,534	14.1
Government	3,180	3,663	4,047	4,250	5.0
Metro Total	73,067	91,132	112,420	114,232	1.6
Goods-producing	22,681	24,583	24,587	22,677	-7.8
Manufacturing	16,936	17,253	15,772	14,498	-8.1
Services-producing	37,485	51,675	71,121	74,356	4.5
Services	5,155	20,126	31,143	34,701	11.4
Government	12,902	14,873	16,711	17,201	2.9

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Table 4-3.

Nonmetro employment growth by industry, 1969-92

Industry	*1969*	*1979*	*1989*	*1992*	*Change 1989-92*
		Thousands			*Percent*
Nonmetro total	17,811	21,831	23,994	25,057	4.4
Goods-producing	7,486	8,580	8,253	8,094	-1.9
Farming	2,544	2,358	1971	1,874	-4.9
Forestry, fishing, and agric. services	166	242	364	413	13.5
Mining	362	552	432	393	-9.0
Construction	806	1,187	1,228	1,232	0.3
Manufacturing	3,608	4,241	4,258	4,182	-1.8
Services-producing	7,144	9,589	11,694	12,713	8.7
TCU*	733	916	993	1,044	5.1
Wholesale trade	428	761	792	824	4.0
Retail Trade	2,558	3,257	3,945	4,191	6.2
FIRE**	738	1,062	1,112	1,120	0.7
Services	2,687	3,593	4,852	5,534	14.1
Government	3,180	3,663	4,047	4,250	5.0

*Transportation, communications and public utilities **Finance, insurance, and real estate.
Source: U.S. Department of Commerce, Bureau of Economic Analysis

Nonmetropolitan Employment and Wages

In 1993, 27 million people 16 years old and older were in the nonmetropolitan work force, either at work or looking for work. On average, 6.5 percent or 1.8 million of these workers were unemployed during the year. Unemployment rates are particularly high among nonmetro minorities and teenagers. In 1993, 17.1 percent of teenagers, 12.3 percent of blacks, and 9.4 percent of Hispanics in nonmetro areas were unemployed. The official unemployment rate ignores those jobless people not actively seeking work because they believe jobs are unavailable (discouraged workers) and part-time workers who want full-time jobs. The nonmetro adjusted unemployment rate, which includes discouraged workers and one-half of involuntary part-time workers, was 10.3 percent.

Nonmetro unemployment fell from 7.1 percent in 1992 to 6.5 percent in 1993, as rural areas participated in the continuing national economic recovery from the 1990-91 recession. The national unemployment rate continued to fall during 1994 and rural unemployment probably fell as well (a separate nonmetro unemployment rate cannot be calculated for 1994). During the 1980's, unemployment rates were consistently higher in nonmetro areas than in metro. By 1993, however, the 6.5 percent nonmetro unemployment rate was slightly lower than the 6.9 percent metro rate. The nonmetro and metro adjusted unemployment rates show a similar pattern except that the nonmetro adjusted unemployment rate in 1993, at 10.3 percent, was still slightly higher than the 10 percent metro adjusted unemployment rate.

During the 1980's and early 1990's, nonmetro wages failed to keep pace with inflation. The inflation-adjusted, average nonmetro wage fell 11.8 percent between 1979 and 1993, from $10.88 to $9.60 per hour (1993 dollars). Average metro wages fell a smaller 3.4 percent between 1979 and 1993. As a result, the metro/nonmetro average hourly wage gap grew by 47.8 percent, increasing from $1.78 to $2.63 (1993 dollars).

An increasing share of rural workers hold jobs paying so little that they would not earn enough to raise a family of four above the poverty line even if they worked full time, year round. In 1993, 42.9 percent of nonmetro workers received wages below this threshold ($7.39/hour), an 8.9 percentage point increase since 1979. During the same period, the share of metro workers earning poverty level wages rose a smaller, but still substantial, 5.9 percentage points, to 32.3 percent.

Table 4-4.

Unemployment rates among various metro and nonmetro groups

	Nonmetro	*Metro*	*United States*	
	1993	*1993*	*1993*	*1994*[1]
		Thousands		
Civilian labor force	27,264	100,777	128,040	131,056
Total employment	25,480	93.827	119,306	123,060
Unemployed	1,782	6,951	8,734	7,996
Unemployment rate		*Percent*		
All civilian workers	6.5	6.9	6.8	6.1
Men	6.5	7.2	7.1	6.2
Women	6.6	6.5	6.5	6.0
Teenagers	17.1	19.6	19.0	17.6
White	6.0	6.0	6.0	5.3
Black	12.3	13.7	12.9	11.5
Hispanic	9.4	10.7	10.6	9.9
Adjusted unemployment rate[2]	10.3	10.0	10.1	NA

[1]Separate metro and nonmetro estimates are not available for 1994.
[2]Unemployment rate adjusted to include discouraged workers and one-half of all workers employed part-time for economic reasons.
Source: Current Population Survey, Bureau of the Census.

Table 4-5.

Average hourly wages for workers ages 16 and over

	Average hourly wage		*Change*
	1979	*1993*	*1979-93*
	1993 dollars		*Percent*
United States	12.09	11.66	–3.6
Metro	12.66	12.23	–3.4
Nonmetro	10.88	9.60	–11.8
Rural wage gap	1.78	2.63	47.8

Source: Current Population Survey, Bureau of the Census.

Table 4-6.

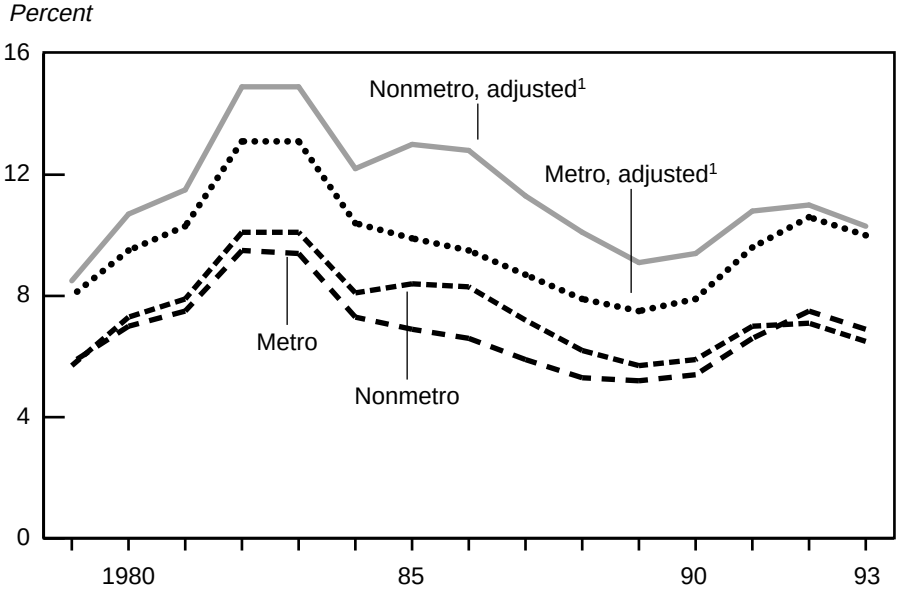
Share of low-wage[1] workers, 1979-93

	Nonmetro		Metro	
	1979	1993	1979	1993
	Percent			
All workers	34.0	42.9	26.4	32.3
Sex				
Women	54.2	56.7	41.1	40.6
Men	18.9	30.2	14.9	24.7
Race/ethnicity				
White	32.5	41.4	25.9	31.2
Black	53.2	60.8	30.7	40.3
Hispanic	41.4	42.4	33.8	48.4
Other high risk				
Teen (ages 16-19)	78.5	95.7	78.0	94.9
High school dropout	49.4	66.0	43.5	63.8

[1]Hourly wages such that full-time, year-round employment is insufficient to bring a family of four above the poverty line.
Source: Current Population Survey, Bureau of the Census.

Figure 4-2.

Unemployment rates by residence, 1979-93



[1]Includes discouraged workers and half of the workers employed part-time for economic reasons.
Source: Current Population Survey.
Note: Beginning in 1985, estimation procedures for Current Population Survey are based on the 1980 Census.

Female, minority, young, and low-educated workers were especially likely to hold low-wage jobs. Among nonmetro workers, 56.7 percent of women earned poverty level wages in 1993, as did 60.8 percent of blacks, 95.7 percent of 16-19 year-olds, and 66 percent of high school dropouts. Of course, many of these workers are members of families that have additional earners or other sources of income. For example, many younger workers have lower income needs than older workers, because they live with their parents.

Table 4-7.

Median household income by race and Hispanic ethnicity

Race/ethnicity	*1993 household income*		*Nonmetro-metro gap[1]*	*Real change, 1989-93*	
	Nonmetro	*Metro*		*Nonmetro*	*Metro*
		Dollars		*Percent*	
Total	25,256	33,212	24.0	–3.2	–8.5
White	26,463	37,330	29.1	–5.4	–6.2
Black	14,183	20,601	31.2	+0.3	–9.6
Hispanic[2]	20,246	23,231	12.8	+0.5	–10.8

Note: Nonmetro-metro difference is statistically significant in each category. Change in household income from 1989 to 1993 is significantfor all race–ethnic groups in metro areas and for nonmetro whites.
[1]Percent by which nonmetro income is lower than metro. [2]Hispanics may be of any race.
Source: Current Population Survey

Table 4-8.

Median household income by household type

Household type	*1993 household income*		*Nonmetro-metro gap[1]*
	Nonmetro	*Metro*	
		Dollars	*Percent*
Married-couple household	33,836	47,120	28.2
Male householder with family	25,372	31,147	18.5
Female householder with family	15,209	19,418	21.7
Male living alone	19,205	25,976	26.1
Female living alone	10,625	16,458	35.4

Note: Nonmetro-metro difference is statistically significant in each category.
[1]Percent by which nonmetro income is lower than metro.
Source: Current Population Survey, Bureau of the Census.

Rural Income and Poverty

Between 1989 and 1993, rural median household income declined 3.2 percent after adjusting for the effects of inflation, falling to $25,256. This decline continued the trend of generally stagnant-to-declining incomes experienced by rural households since the late 1970's. Urban income declined even more abruptly, falling 8.5 percent since 1989. As a result, the gap between rural and urban incomes narrowed, although the median income of rural households was still 24 percent less than

that of urban households. Incomes were substantially lower for rural minorities, for families headed by women, and for women living alone.

The poverty rate in rural America increased 1.5 percentage points during the period 1989-93 to stand at 17.3 percent. This percentage was substantially higher than the urban rate of 14.6 percent. The rural-urban poverty gap narrowed, however, because urban poverty increased even more rapidly in the early 1990's than did rural poverty.

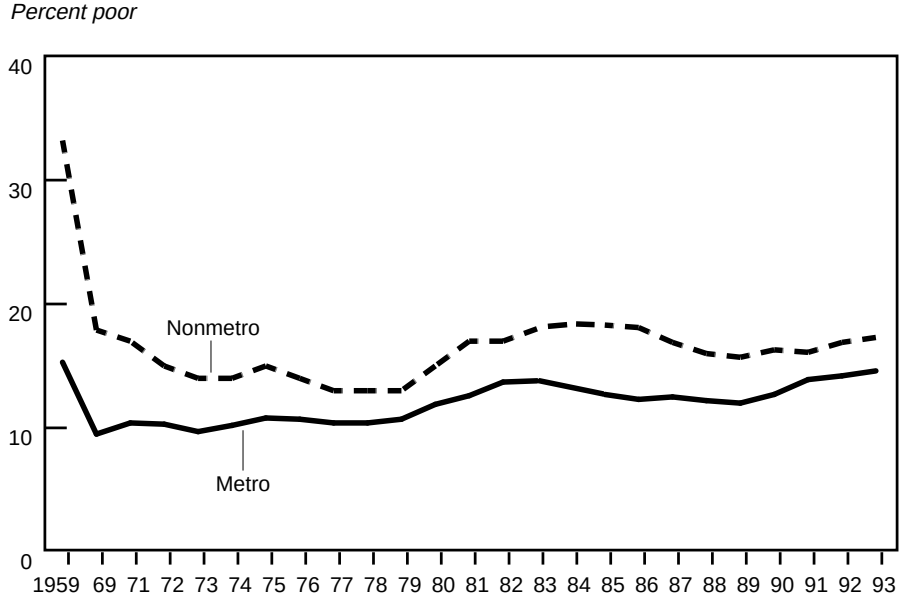
Over half of the rural poor (51 percent) live in the South, a disproportionate concentration compared with the South's 43 percent of the total rural population.

Families headed by women experience the highest poverty rate of all family types. A higher proportion of families headed by women are poor in rural areas (43.4 percent) than in urban areas (38.2 percent).

Poverty among blacks in inner cities receives much more public attention than does that among rural blacks, yet the 1993 poverty rate for rural blacks (40.7 percent) was substantially higher than that for central city blacks (35.6 percent). More than half of all rural black children (53.5 percent) live in families with incomes below the poverty level.

Figure 4-3.

Poverty rate by residence, 1959-1993

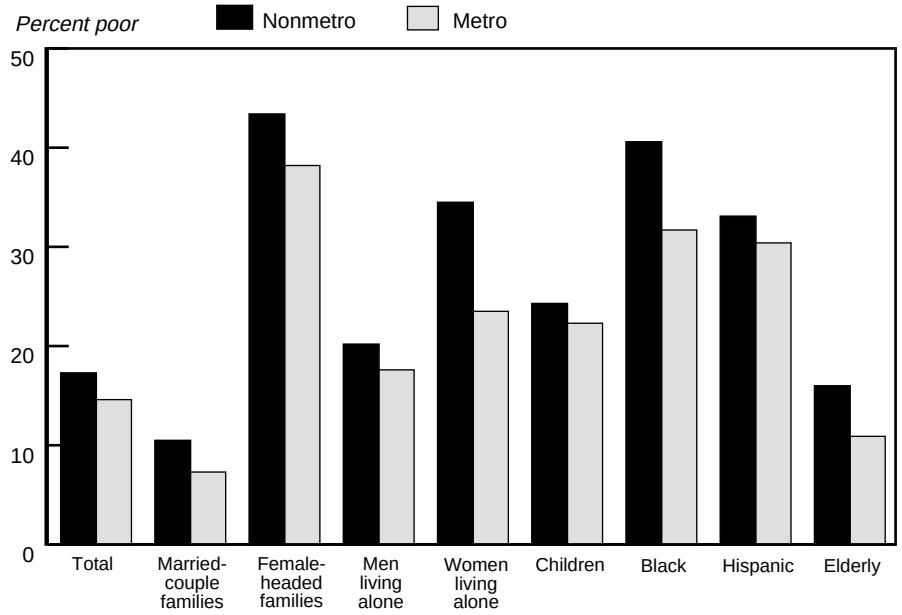


*Poverty estimates for 1989 and 1992 are based on reweighting of the respective CPS based on 1990 decennial census data. This makes them comparable to the 1993 estimates.
Source: U.S. Bureau of the Census P-60 series 1974-1994.

Figure 4-4.

Poverty rates by population group, 1993

Nonmetro residence increased poverty risk for all groups.



Source: U.S. Bureau of the Census Current Population Survey

Local Governments

In 1987, there were 91,186 local government units serving the Nation. These local governments employed the equivalent of 8.4 million full-time workers and spent over $458 billion providing public services and constructing and maintaining public facilities. The majority of these government units were located outside Metropolitan Statistical Areas (MSA's).

Over the last 25 years, local government activity increased dramatically in metro and nonmetro areas alike. However, most of the growth occurred in the 1960's and early 1970's. During the late 1970's and 1980's, inflation-adjusted spending grew more slowly, reflecting relatively slow economic growth and slow growth in intergovernmental aid.

During the mid-1980's, when metro economies were outperforming nonmetro economies, local governments in metro counties (metro governments) were able to increase their locally raised revenues more than local governments in nonmetro counties (nonmetro governments). Although nonmetro governments received somewhat larger increases in intergovernmental aid than did metro governments, this was not enough to offset their slower growth in locally raised revenue. Consequently, by 1987 metro governments surpassed nonmetro governments in per capita expenditures, but the difference was slight (about 1 percent).

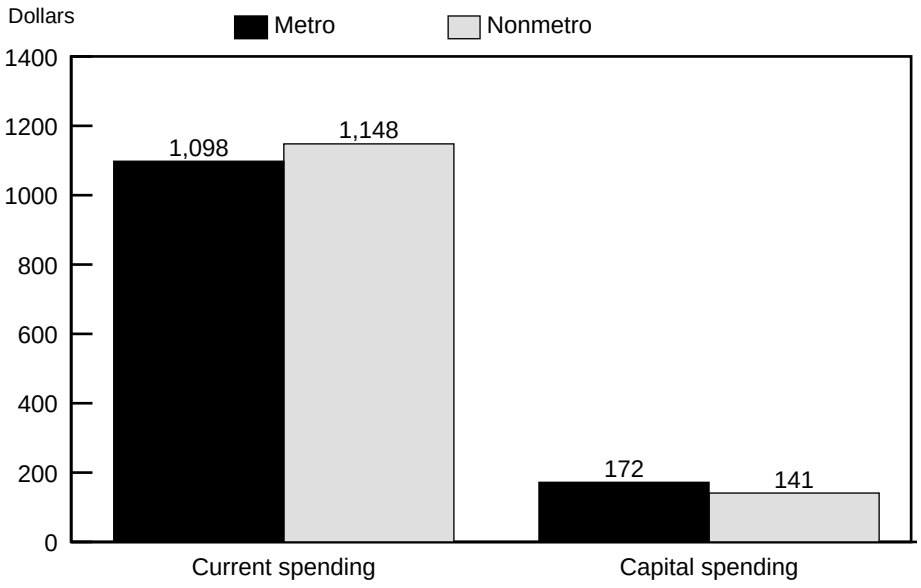
Although overall per capita spending levels are roughly the same for metro and nonmetro governments, nonmetro residents pay a substantially higher share of their income to maintain these services. In 1987, locally raised government revenues consumed 6.8 percent of income in nonmetro counties compared with 5.9 percent of income in metro counties.

A closer look at per capita expenditures, by type, sheds light on additional difficulties facing nonmetro local governments. In 1987, nonmetro governments spent 5 percent more on current services, and 22 percent less on capital projects (long-term investments, for example in roads and buildings), than did metro governments. The relatively high nonmetro current spending totals reflect the high costs of providing services in highly rural areas that are unable to take advantage of economies of scale. Many of these places (especially farming areas) lost population during the 1980's, further increasing their per capita cost of providing ongoing local government services. To compensate, many of these places had to postpone or cancel capital investment projects, reducing their capacity to provide services in the future.

In addition, nonmetro local governments in the 1990's must comply with a growing array of Federal and State mandates, such as more stringent environmental regulations. EPA estimates that the per capita compliance cost for many of these regulations is substantially higher for small communities than for large communities. This could present a significant challenge for nonmetro local governments already confronted with relatively high tax burdens, high costs of current services, and deferred capital spending.

Figure 4-5.

Local government expenditures per capita, 1987[1]



Note: Per capita amounts are county averages. [1]Latest available data.
Source: Bureau of Census, 1987 Census of Government

Rural Public Services

Rural local governments face special problems in providing services for their citizens. The following are rural characteristics that affect ways in which rural local governments provide services:

- **Isolation**, the geographic separation of rural areas from metropolitan centers, leads to low utilization rates for rural public services, inadequate response times for emergency services, and the detachment of service delivery professionals from their colleagues.
- **Low population density** means higher per unit costs of some services and the inability to supply specialized help (for example, for the handicapped) because the area cannot support the services for so few clients.
- **A lack of fiscal resources** puts many rural communities in a financial squeeze with resulting service deprivation for local residents.
- **The lack of an adequate supply of trained personnel** has several implications for service delivery in rural communities. Critical functions may go understaffed, scarce employees are often overworked, service quality and quantity suffer, and long-range planning becomes difficult.

Isolated rural communities often suffer from medical services and facilities that are of lower quality than those found in metro areas. Even if medical care services were evenly distributed across the Nation, and were of equal quality, it is likely that nonmetro residents with chronically low incomes would still have serious difficulty receiving adequate care in a complex medical system where access is based mainly on the ability to pay.

Because many rural communities are small and isolated, and lack financial resources and trained personnel, similar problems are encountered in the provision of other rural public services. Various approaches have been taken to deal with these problems:

- Some communities contract with private-sector firms to provide services. For example, 36 percent of rural localities contract out legal services to for-profit firms rather than perform such services themselves.
- Some communities that want to attract new residents and businesses may find it beneficial to cooperate with other towns and share in the cost of furnishing services they cannot afford by themselves. Rural communities can work together in a variety of ways, and mutual aid is one way. Such an approach is commonly used for fire and police protection.
- Another approach is for one community to sell a particular service to another. About 23 percent of isolated rural governments contract with other governments for solid waste disposal, about 19 percent for the operation of libraries, and 18 percent for tax assessing.
- Still another method of cooperation is joint action, especially for large projects such as building and operating hospitals or airports. Various methods of dividing costs and creating joint committees or governing boards are worked out for such projects.

Although most rural community residents do not enjoy the same level of public services available to urban area residents, much progress has been made in improving

some rural services over the last 30 years. Rising incomes and increased aid from higher level governments have made possible more and better programs for rural governments.

The management capacity of rural governments to plan and carry out these programs has improved. For example, in the 1960's and 1970's a nationwide system of multicounty substate regional agencies was developed to help rural communities plan for and manage their new population growth.

Still, the institutional base of rural governments is more fragile than that of urban areas, and these isolated governments remain more vulnerable to external changes than do metropolitan governments.

Federal Funding for Rural Area Development

Federal funds going to rural areas and small towns grew about as rapidly in the early 1980's as did Federal funding in metropolitan areas. In 1990, Federal funds reaching nonmetro counties averaged $3,270 per person, up 60 percent from 1980. Funding to metro counties averaged $3,823 per person, up 61 percent from 1980. After adjusting for inflation, these values were nearly unchanged between 1980 and 1990.

Federal funding includes payments, loans, and other transfers of money to support Federal, State, and local programs in agriculture, forest management, housing, transportation, education, health, public assistance, Social Security, veterans' benefits, defense, energy, and so on. It also includes interest on the national debt, but this has been excluded for analytic purposes. Figures on the metro-nonmetro distribution of funds are based on the share of Federal funds that can be reliably traced to county levels, and that can be compared from 1980 to 1990.

Nonmetro counties received a much larger share of their funds for income security programs, especially retirement and disability programs. About 41 percent of nonmetro funds were for such programs, compared with 30 percent of metro funds.

Nonmetro areas received much less defense funding than metro areas, but funding of nondefense programs in nonmetro and metro areas was similar in 1990. Excluding loans, nondefense funding going to nonmetro areas was $2,665 per person, compared with $2,630 per person in metro areas.

Table 4-9.

Federal funds per capita, FY 1990

Object class of funds	*All counties*	*Metro counties*	*Nonmetro counties*
All Federal funds, including loans	3,696	3,823	3,270
Salaries and wages	580	646	357
Defense	276	307	170
Nondefense	304	339	187
Procurement contracts	648	757	281
Defense	477	571	159
Nondefense	171	185	122
Direct payments to individuals	1,775	1,738	1,899
For retirement	1,206	1,163	1,349
Other than retirement	569	574	550
Other direct payments	30	8	103
Grants	358	359	354
Loans	306	315	276
Direct loans	35	16	96
Guaranteed loans	271	298	180
All expenditures, excluding loans	3,391	3,508	2,994

5. U.S. Department of Agriculture

Reorganizing "the People's Department"

The U.S. Department of Agriculture is undergoing a historic reorganization to improve coordination among USDA's broad range of programs and Agencies. This reorganization was authorized by the Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994 (P.L. 103-354), signed into law October 13, 1994. This reorganization, which is underway across the country, affects headquarters and field structures. It will reduce the number of organizational units, save a projected $4.1 billion over 5 years, and reduce staff by more than 13,000 over 5 years.

In addition to combining program operations, USDA closed or consolidated some 1,100 farm service field offices to provide "one-stop shopping" for customers participating in various USDA farm programs. Savings are being achieved through consolidating administrative services within mission areas. The goal of this reorganization is to cut costs to the taxpayers while improving service to USDA customers.

The new USDA organizational structure includes six Under Secretary positions and three Assistant Secretary positions. Each of these officials has overall responsibility for a key mission area of the Department and supervises the work of the Agencies reporting to him or her. Programs of the various mission areas are described in the following chapters.

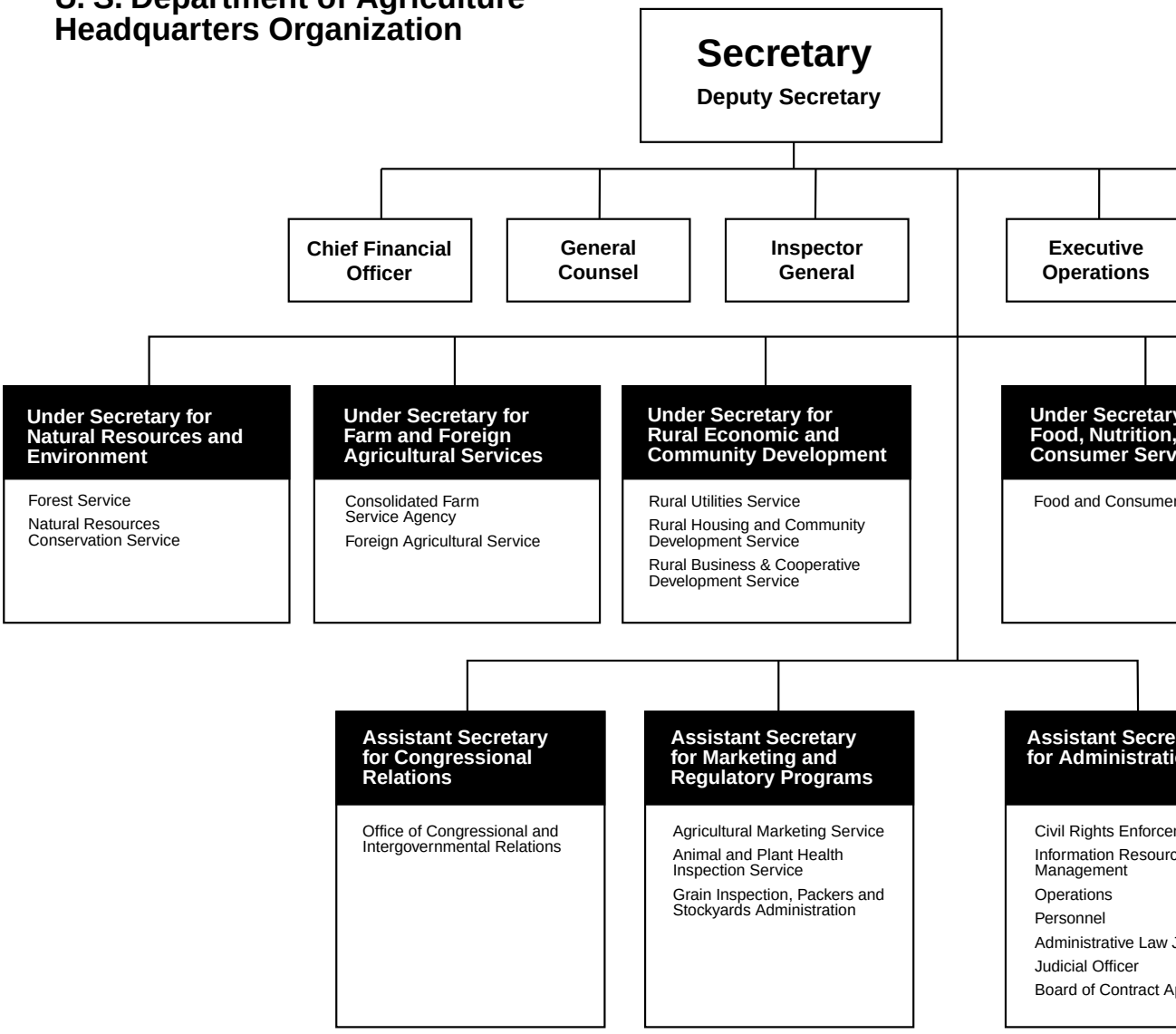
These major structural changes are leading to a new, streamlined USDA:

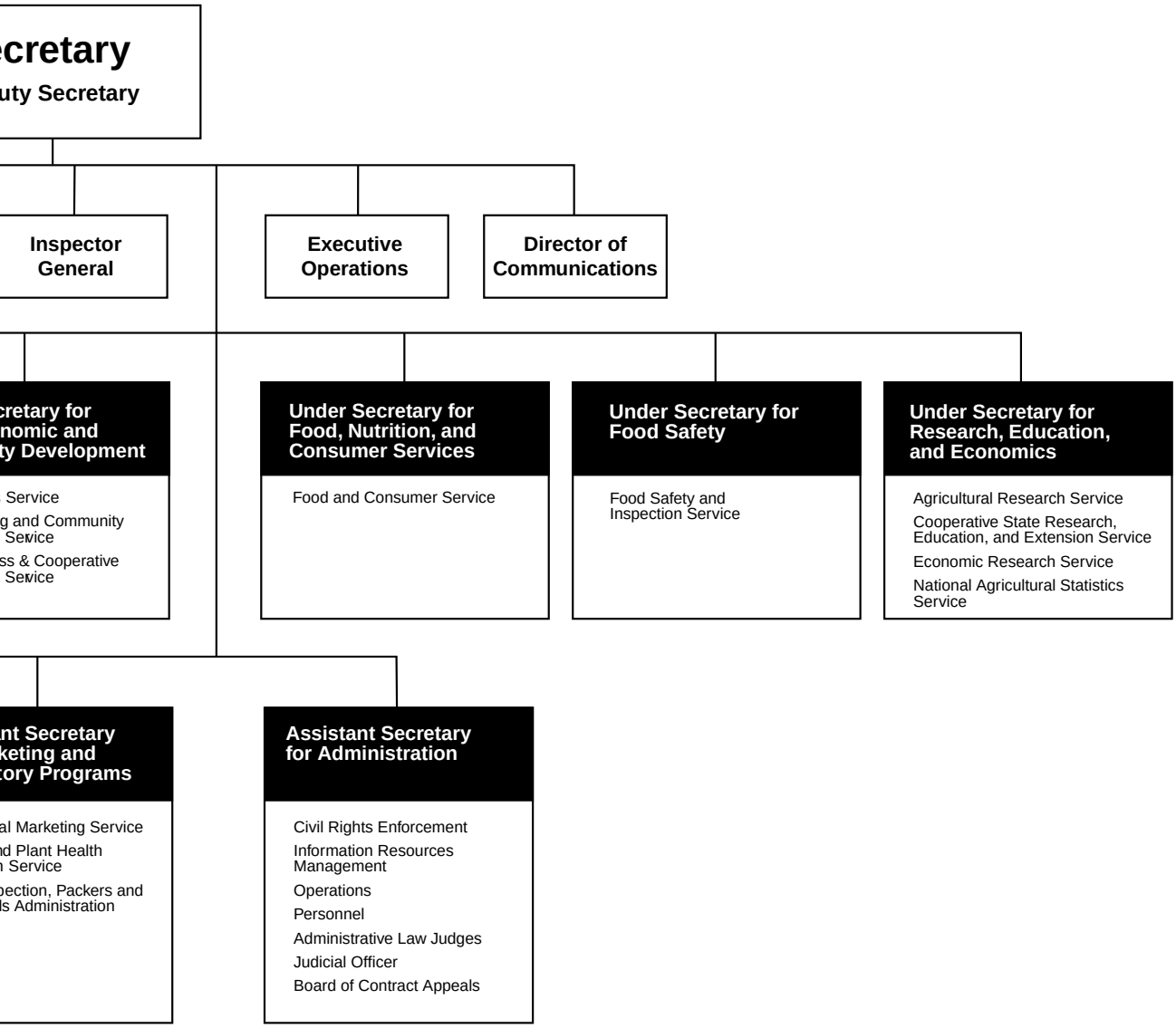
- Reduction and collocation of over 1,100 farm service agency field offices to provide one-stop service for customers of USDA's farm programs. Offices are combining or sharing space, equipment, and support personnel to reduce overhead expenses and provide one-stop service.
- Combining farmer programs in a new Consolidated Farm Service Agency (CFSA), which incorporates the functions of the previous Agricultural Stabilization and Conservation Service (ASCS), the Federal Crop Insurance Corporation, and the farm-lending activities of the former Farmers Home Administration (FmHA). CFSA is charged with administering commodity price and income support programs, crop insurance, farm lending, the Agricultural Conservation Program, and the Conservation Reserve Program. This agency will operate out of combined field offices to provide one-stop service for USDA customers.
- Elevating USDA's food safety activities by establishing an Under Secretary for Food Safety. All USDA activities related to food safety—including functions previously performed by the Agricultural Marketing Service under the

Egg Products Inspection Act and the salmonella enteritidis and pathogen reduction activities previously performed by the Agricultural Plant Health Inspection Service—report to this official. Food safety activities are thus separated from USDA's marketing activities.

- Focusing rural development work in three new agencies reporting to the Under Secretary for Rural Economic and Community Development. The Rural Utilities Service combines the telephone and electric programs of the former Rural Electrification Administration (REA) with the water and sewer programs of the former Rural Development Administration (RDA). The Rural Housing and Community Development Service combines FmHA housing programs with RDA and REA rural community loan programs. The Rural Business and Cooperative Development Service combines the former Agricultural Cooperative Service, the Alternative Agricultural Commercialization Center, and the business development programs of RDA and REA.
- Establishing the Natural Resources Conservation Service (NRCS), which administers all agriculture-related conservation programs except those assigned to the new CFSA. NRCS has authority for the following key conservation cost-share programs: the Wetlands Reserve Program, Water Bank Program, Colorado River Basin Salinity Control Act Program, Forestry Incentives Program, Great Plains Conservation Program, and Farms for the Future Program.
- Establishing a Cooperative State Research, Education, and Extension Service that combines the former Extension Service with the former Cooperative State Research Service. The National Agricultural Library is incorporated into the Agricultural Research Service.
- Establishing a Grain Inspection, Packers, and Stockyards Administration which combines the responsibilities of the former Federal Grain Inspection Service and the Packers and Stockyards Administration.
- Consolidating administrative staffs to provide central personnel and administrative functions for all agencies and offices reporting to the subcabinet official for the mission area.
- Establishing an independent appeals process that replaces the separate administrative appeal procedures of FmHA and ASCS with an independent process through a new National Appeals Division reporting directly to the Secretary.
- Establishing an Office of Risk Assessment and Cost-Benefit Analysis to review major regulations and provide cost/benefit evaluations.

U. S. Department of Agriculture Headquarters Organization





November 1994

Programs Serving All Mission Areas

Some programs serve the entire Department, crossing mission area lines. Among these, the Office of the Chief Economist, Office of the Inspector General, and Office of the Chief Financial Officer report directly to the Secretary of Agriculture. Other offices serving the entire Department report to the Assistant Secretary for Administration; these include the Office of Personnel, Office of Civil Rights Enforcement, Office of Operations, and Office of Information Resources Management. The new AmeriCorps program works with programs in several mission areas.

Office of the Chief Economist

The Office of the Chief Economist advises the Secretary on policies and programs affecting U.S. agriculture and rural areas. This advice includes assessments of USDA program proposals, legislative proposals, and general economic developments that have implications for agriculture and rural areas.

In addition, the World Agricultural Outlook Board and the Office of Risk Assessment and Cost Benefit Analysis report to the Office of the Chief Economist.

World Agricultural Outlook Board

The World Agricultural Outlook Board is USDA's focal point for forecasts and projections of global commodity markets. Each month the Board brings together interagency committees of experts to forecast the supply, use, and price of major commodities in the United States and abroad. The committees also clear agricultural forecasts published by other USDA agencies. This teamwork assures that USDA forecasts are objective and consistent.

Because the weather is vital to crop forecasts, specialists from the Board work side-by-side with weather forecasters from the National Oceanic and Atmospheric Administration to monitor the weather and assess its effects on crops. They provide timely information on potential changes in global production. In related work, the Board also coordinates departmentwide activity on long-term economic projections, remote sensing, and climate.

Office of Risk Assessment and Cost Benefit Analysis

This office is responsible for coordinating, reviewing, and approving all risk assessments of major regulations of the Department related to human health, human safety, or the environment. In addition, it provides direction to USDA agencies on appropriate methods of risk assessment and cost-benefit analysis and serves as a focal point on matters relating to risk assesment and cost-benefit analysis.

Office of Inspector General

USDA's Office of Inspector General (OIG), the first civilian OIG in the Federal Government, was established in 1962 and became fully operational in 1963. It was created after a well-knit agricultural fraud scheme showed that better coordination between audit and investigative organizations was needed, and it has evolved into its current structure through successive changes in legislation and leadership.

OIG conducts and supervises audits and investigations relating to USDA's programs and operations. It provides leadership and coordination, and recommends policies for activities that will prevent and detect fraud and abuse and promote economy, efficiency, and effectiveness in USDA programs and operations. Furthermore, the OIG keeps the Secretary and Congress fully informed of problems and deficiencies relating to administration of USDA programs and operations, and the actions designed to correct such problems and deficiencies.

During FY 1994, audit and investigative efforts resulted in approximately $82.3 million in recoveries, collections, fines, restitutions, claims established, administrative penalties, and costs avoided. Management agreed to put an additional $101.3 million to better use. OIG also identified $69.3 million in questioned costs that cannot be recovered. Investigative efforts resulted in 856 indictments and 886 convictions.

Office of Chief Financial Officer

USDA, through the Office of the Chief Financial Officer, publishes annual financial statements to inform the general public, Congress, and others about its financial operations. As trustee for substantial public monies, the Department has a fiduciary responsibility to tell taxpayers how well it has met its objectives, how well the current year's performance compares to previous years, and what plans the Department has to improve or maintain its operations.

USDA is the third largest civilian department of the U.S. Government, overseeing a variety of agencies, Government corporations, and other entities that employ more than 108,000 people at over 15,000 locations in all States and 80 countries. Budget authority for Departmental programs in FY 1994 totaled $65.3 billion.

Office of Civil Rights Enforcement

The Office of Civil Rights Enforcement (OCRE) coordinates USDA civil rights programs to prevent and resolve civil rights problems. Under the counseling and mediation program, an employee or applicant who believes he or she has been discriminated against or retaliated against on the basis of race, color, religion, sex, national origin, age, or disabling condition may file a complaint. In 1995, there are six regional service centers in Washington, DC, Atlanta, GA, New Orleans, LA, Denver, CO, Davis, CA, and Kansas City, MO.

Any eligible person being denied service or assistance may file a program complaint against agencies or recipients administering federally conducted or federally assisted programs of USDA. Through its evaluation and investigation program, OCRE conducts reviews to help determine compliance and noncompliance in employment programs, delivery of benefits, and services in Federally conducted and Federally assisted programs.

Office of Personnel

Table 5-1.

USDA staff year history

Year	Number of USDA employees*	Year	Number of USDA employees*
1948	60,815	1973	104,104
1949	63,063	1974	101,430
1950	67,560	1975	103,779
1951	66,150	1976	109,276
1952	62,825	1977	113,085
1953	62,492	1978	118,563
1954	63,309	1979	122,809
1955	64,191	1980	125,185
1956	69,423	1981	117,440
1957	74,215	1982	111,853
1958	77,264	1983	109,773
1959	79,998	1984	108,598
1960	81,585	1985	106,665
1961	85,238	1986	102,997
1962	89,168	1987	102,579
1963	94,527	1988	106,552
1964	94,781	1989	109,567
1965	94,548	1990	110,754
1966	98,688	1991	110,357
1967	102,175	1992	113,405
1968	105,628	1993	112,457
1969	101,848	1994	108,132
1970	100,860	1995**	108,053
1971	102,698	2000**	100,950
1972	104,540		

*Full-time equivalent (FTE). For example, two half-time employees would count as one FTE.
**Projections from USDA Streamlining Plan, February 1995.

■ *In 1995, USDA has over 1,000 employees with targeted disabilities in permanent full-time positions.*

Table 5-2.

Where do USDA employees work?

States & Territories	*Number of USDA employees****
Alabama	1,257
Alaska	1,032
Arizona	1,648
Arkansas	1,953
California	7,730
Colorado	2,664
Connecticut	170
Delaware	215
District of Columbia	7,297
Florida	1,541
Georgia	2,619
Guam	27
Hawaii	386
Idaho	2,701
Illinois	1,644
Indiana	771
Iowa	1,891
Kansas	1,165
Kentucky	1,162
Louisiana	2,938
Maine	291
Maryland	3,141
Massachusetts	359
Michigan	1,256
Minnesota	1,699
Mississippi	2,011
Missouri	3,714
Montana	2,744
Nebraska	1,411
Nevada	342
New Hampshire	285
New Jersey	582
New Mexico	1,368
New York	1,090
North Carolina	1,869
North Dakota	810
Ohio	883
Oklahoma	937
Oregon	5,145
Pennsylvania	1,657
Puerto Rico	653
Rhode Island	44
South Carolina	1,000
South Dakota	835
Tennessee	1,104
Texas	3,740
Trust Territories of the Pacific Islands	3
U.S. Virgin Islands	7
Utah	1,461
Vermont	260
Virginia	2,224
Washington	2,468
West Virginia	718
Wisconsin	1,534
Wyoming	728

***Permanent, full-time employees

Other Countries	*Number USDA employees****
Argentina	7
Australia	10
Austria	3
Bahamas	2
Belgium	6
Brazil	3
British Virgin Islands	23
Bulgaria	2
Canada	3
Chile	2
China	6
Colombia	2
Costa Rica	3
Denmark	1
Dominican Republic	4
Ecuador	2
Egypt	3
El Salvador	2
France	5
Germany	4

—Continued

Table 5-2 continued.

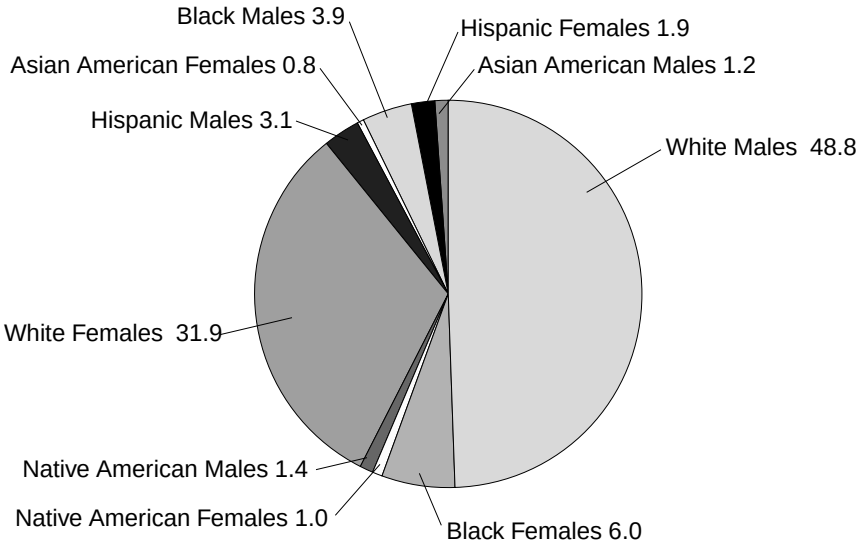
Where do USDA employees work?

Other Countries	*Number USDA employees****	*Other Countries*	*Number USDA employees****
Greece	1	Northern Mariana Islands	7
Guatemala	6	Pakistan	1
Honduras	2	Panama	1
Hong Kong	1	Philippines	2
India	2	Poland	2
Indonesia	2	Russia	5
Italy	5	Saudi Arabia	1
Ivory Coast	1	Singapore	2
Jamaica	1	South Africa	1
Japan	9	South Korea	4
Kenya	1	Spain	2
Malaysia	1	Sweden	1
Marshall Island	2	Switzerland	2
Mexico	26	Thailand	2
Micronesia	14	Tunisia	1
Morocco	1	Turkey	2
Netherlands	3	United Arab Emirates	1
New Zealand	1	United Kingdom	2
Nicaragua	2	Venezuela	2
Nigeria	1		

***Permanent, full-time employees

Figure 5-1.

USDA Workforce Profile by Race and Gender Group



Office of Operations

Mail

Each year, USDA receives over 180 million pieces of mail. At the Washington, DC, headquarters alone, over 21 million pieces of mail are handled each year, for an average of about 84,000 pieces of mail processed each workday. Smokey Bear receives more mail than any other individual in the Department. The Headquarters mail operation is an active employer of those with disabilities. Over one-third of the employees are people with disabilities. Working closely with private and public placement organizations, the division has succeeded in bringing these employees into the work force. In recognition of its success in hiring the disabled, the division has received numerous government and private-sector awards.

The mail office is one of USDA's Reinvention Laboratories supporting Vice President Gore's National Performance Review, in which the Department has taken an active role. One advance is a new multipurpose mail sorter, which will reduce staff by at least five employees. Also, USDA is taking the lead in developing Government-wide mail management initiatives that are projected to save over $2 million by FY 1996.

Procurement Facts and Figures

In FY 1994, USDA awarded approximately 8,000 new contracts, new delivery orders against existing contracts, and contract modifications. These activities, which encompass both administrative and agricultural commodity acquisitions, totalled $2.9 billion, which reflects awards of $25,000 and above, and does not address the hundreds of thousands of small purchases that USDA makes each year.

At the end of FY 1994, over 6,000 commercial credit cards had been issued to USDA employees, and the number of cards continues to increase. Procurement personnel can obligate up to $25,000 per transaction; nonprocurement personnel, who must receive training before a card can be issued, may receive delegated authority to spend up to $2,500 (the "micropurchase" level) per transaction using the card. The type of item charged ranges broadly. The Modernization of Administrative Processes project office is leading an effort to streamline the credit card systems and make it even more efficient.

In accordance with the Federal Acquisition Streamlining Act of 1994, Executive Order 12873, and other requirements, USDA has embarked on a program to process administrative procurements electronically. Initial pilot transactions involved electronic transmittal or receipt of Requests for Quotation, vendor quotes, Purchase Orders, and Notices of Award to unsuccessful quoters. USDA was one of a very limited number of executive agencies to successfully accomplish this feat on time. Electronic Commerce represents a new way of doing acquisition which should cut procurement lead time, reduce prices, and give small businesses a better chance to sell goods and services to the Government. The resulting improvements in obtaining goods and services should improve the timeliness and efficiency with which USDA delivers its services to the American public.

Washington Area Strategic Space Plan

The Washington Area Strategic Space plan is a strategy for moving employees from leased space (18 locations) into Government-owned space in a newly constructed building in Beltsville, MD, and a modernized South Building.

The Beltsville Office Facility is designed to house 1,500 employees. The planned facility will be a series of four interconnected two-story buildings on 115 acres in Prince Georges County, MD. A design/build contract was awarded in February 1995. Construction is scheduled to be completed in 1996, when employees will move to the facility and allow construction to begin on the South Building in the downtown complex.

The Department of Agriculture South Building in Washington, DC, was the largest Federal building until the Pentagon was built. The South Building has 1.34 million square feet, over 7 miles of corridors, and 4,300 rooms. The building is over 60 years old and is in need of renovation to create a modern, safe office environment. Renovation will also allow the building to accommodate 8,000 employees, almost 1,500 more than it currently houses. A tunnel runs under Independence Avenue to connect the South Building and the Jamie L. Whitten Federal Building (formerly the Administration Building). Two memorial archways on the third floor also connect the two buildings. The archways were built by private funds in 1936—the west arch in memory of former Secretary of Agriculture James Wilson, and the east arch in memory of Dr. Seaman A. Knapp, known as the father of Extension. Modernization of the South Building is scheduled for 1997-2003.

Office of Information Resources Management

Information Technology Facts and Figures

- *Over 90 percent of USDA employees have access to a personal computer or a terminal while on the job.*
- *In the first half of 1995, the Telecommunications Service Office Personnel Locator operators handled 36,457 calls.*
- *The USDA headquarters building complex local area network (HQNET) is made up of 23 miles of broadband cable and 9 miles of fiber optic cable; 150 file servers are attached to the headquarters local area network.*
- *On January 31, 1995, the departmental voice mail system had 10,477 subscriber mail boxes. In that month, user voice mail usage (send and receive minutes) went over a million minutes.*
- *The Accessible Technology Program ensures that employees and the general public with disabilities, as well as aging Americans, can provide and receive agricultural information. This program benefits employees nationwide with sight, mobility, speech, and*

hearing impairments. It offers training to managers and supervisors about their responsibilities to employees and the general public with disabilities.

- *Through the Market News Program, the Agricultural Marketing Service collects data on the prices and volumes of agricultural products sold nationwide. The Market News Telecommunications System broadcasts approximately 900 of these reports daily.*
- *AGRICOLA, the National Agricultural Library's bibliographic database, has 3 million computerized citations to worldwide agricultural literature.*
- *The Extension component of the Cooperative State Research, Education, and Extension Service has a network of 2,400 sites. These sites serve as local citizen participation centers, giving local citizens access to the National Information Infrastructure.*
- *The Forest Service has about 865 "mini-computers" and 18,000 terminals. The Forest Service personnel/payroll information arrives from 135 different electronic data collection points.*
- *The National Agricultural Statistics Service has a database of 3,500,000 names of farms, operators, partnerships, and agribusinesses. Samples are drawn from the database for agricultural surveys.*

AmeriCorps/USDA

USDA sponsors approximately 1,200 AmeriCorps members serving in 38 States in urban and rural projects fighting hunger, protecting the environment, and rebuilding rural America. During just their first 2 1/2 half months of service—from September 12 to November 31, 1994—members provided over 360,000 hours of service to their communities. The following examples indicate the breadth of activities performed by AmeriCorps participants:

- Members of the **Anti-Hunger, Nutrition, and Empowerment Team** cook and prepare meals at soup kitchens, conduct nutrition and food safety workshops for the elderly, sort goods at food banks, develop nutrition education programs for schools, provide outreach for the Women's, Infants, and Children nutrition program, work to increase the number of children receiving immunizations, improve participation in the summer feeding program, locate sites for revitalizing community gardens in low-income neighborhoods, assist earthquake victims with emergency food information, and inform pantries about how their clients who are working but are still poor can boost their incomes by using the Earned Income Tax Credit.

- Members of the **Public Lands and Environment Team** working on Forest Service lands do rehabilitation and watershed protection work, construct stream structures for fish habitat, reforest fire-damaged lands, construct and maintain trails for hiking and horseback riding, plant cuttings for riparian and wildlife restorations, maintain and rehabilitate campgrounds and make them accessible for the disabled, improve timber stands, restore historic sites, conduct surveys of threatened and endangered species habitats, remove and install fences, improve wildlife habitats, and hang erosion control netting on roads.

  Members of the Public Lands and Environment Team working on private and local municipal lands repair and restore flood-damaged areas, recreate fish habitats, monitor water quality, build community greenhouses, construct nature trails in urban and suburban as well as rural areas, build playgrounds, restore windbreaks originally created by the Civilian Conservation Corps, revegetate coastal marshes, restore collections at the National Arboretum, create a safe haven lot at a public housing development, landscape public high school grounds, clean up urban wetlands, revitalize historical sites, improve camping sites, protect stream banks, create community gardens, and clean out public fountains.

- Members of the **Rural Development Team** provide service on a wide range of projects related to running water and indoor plumbing, sustainable agriculture, emergency response and prevention, fisheries restoration, alternative uses of natural resources, environmental education facilities, community improvement and personal responsibility development, tourism to boost local economies, water quality protection, recycling promotion, American Indian tribal empowerment, water quality protection, rural housing improvement, and cultural resource preservation.

6. Rural Development: Pumping New Life into Rural Economies

In thousands of communities across the Nation, rural people are struggling to pump new life into economies locked into a downward spiral of job losses, outmigration, diminishing services, and declining living standards. Some 61 million people live in rural America, nearly 40 percent of whom earn wages below the Federal poverty level.

Helping to overcome these problems and fulfill the promise of America is USDA's office of Rural Economic and Community Development (RECD). RECD was created in 1994 when rural economic programs that had been splintered among various USDA agencies were combined into one mission area. RECD is forging new partnerships with rural communities, funding projects that create quality jobs, services, housing, and utilities. Some RECD programs also help overcome lack of competitiveness caused by isolation. This help takes many forms. It could be

- Keeping a country school or medical clinic open by linking it to the information superhighway
- Replacing dilapidated shacks with clean, safe homes, or
- Providing technical services that help rural artisans and farmers organize their own marketing cooperatives. Every year, USDA/RECD programs help create or preserve tens of thousands of rural jobs and create or improve more than 60,000 units of quality rural housing.

Regardless of which of its programs provide the economic stimulus, the mission of RECD is to bolster the quality of life in the Nation's rural communities. While the Federal Government cannot by itself solve the problems facing rural America, it can influence and motivate others—State, local, and tribal governments, as well as private and nonprofit organizations and user-owned cooperatives—to engage in rural revitalization efforts.

How RECD Works

The following examples illustrate the many ways in which RECD is working to create or preserve jobs and to enhance the quality of life in rural areas:

- In Frisco City, AL, more than 250 workers lost their jobs when fire destroyed a garment factory. The owners decided not to rebuild the plant, dealing a potentially crippling blow to a rural community where the plant was the largest employer. However, the local power cooperative secured a zero-interest loan from RECD's Rural Utilities Service, which it used to attract a medical garment factory to town, creating 210 new jobs with a possibility of 200 more jobs to be added later.

- In Wahpeton, ND, wheat straw—until now a virtually worthless postharvest crop residue, much of which is burned in the field—is instead being processed into particleboard suitable for most construction uses. This is occurring thanks to an $8.8 million Guaranteed Business and Industry Loan secured from the Rural Business and Cooperative Development Service of USDA/RECD. Some 100 million acres of wheat straw are produced each year in the Great Plains, so a new, commercial technology that will turn this scrap material into a value-added product could have an enormous impact on the region's economy.

- In the Big Bend region of Texas, a husband bade farewell to his wife and daughters as he headed north for 6 months of harvesting crops across the Western United States. He dreamed of the day when there would be jobs in his own village that would enable him to support his family without this annual separation. That dream is on the verge of reality, as a local farmers' cooperative prepares to open its own dairy goat cheese plant. The new facility was made possible in large part by technical assistance from a Cooperative Services advisor and a Business and Industry grant, both programs of USDA's Rural Business and Cooperative Development Service.

- The last doctor serving 11 communities in a rural area of Massachusetts retired, creating a medical-care crisis. Without a new medical clinic, the area could not attract a new doctor. A modern clinic was built with funding provided through RECD's Rural Housing and Community Development Service, enabling community leaders to recruit several doctors.

- Despite a good payment record by the borrower, an out-of-State bank decided that seasonal operations were "too risky" and called due the loan of a Christmas decoration manufacturing plant in rural Maine. The plant manager was forced to lay off his entire work force of 30 people just before Christmas, but vowed to open again and rehire them. He did so thanks to a loan guarantee provided through the Business and Industry Guaranteed Loan Program of RECD's Rural Business and Cooperative Development Service.

- In Bristol Bay, AK, children from several isolated villages had to be flown to school daily. Using technology grants from the Rural Utilities Service, Bristol is in the process of establishing a distance-learning link which will allow students to participate in classes without the daily flight to school.

- In central Mississippi, dozens of substandard residences lack running water and sewer service. With a grant from USDA's Rural Housing and Community Development Service, new, quality housing units are being built with clear, running water and sewer service.

RECD programs are administered through three Agencies: the Rural Utilities Service (RUS), the Rural Business and Cooperative Development Service (RBCDS), and the Rural Housing and Community Development Service (RHCDS). RECD programs and services are provided through 47 State offices, 250 district offices, and more than 1,700 county offices. A finance office in St. Louis, MO, handles financial, statistical, and management information activities.

The following overviews describe these three Agencies and their main programs.

Rural Business and Cooperative Development Service (RBCDS)

Creation of viable new and improved businesses and cooperatives in rural America is the top priority of this agency. RBCDS works through partnerships with public and private community-based organizations to provide financial assistance, business planning, and technical assistance to rural businesses. It also conducts research into rural economic issues, including rural cooperatives, and provides educational materials to the public.

Business and Industry (B&I) Loan Guarantees help finance rural business and industry projects that enhance employment opportunities and improve the economic and environmental climate in rural communities, including pollution abatement and control. Loan guarantees for projects that foster lasting community benefits bolster existing private credit structures. B&I loan guarantees, which are not intended for marginal or substandard loans, are available to businesses in areas outside urban areas with populations of 50,000 or more. Funds are also available to guarantee loans made by private lenders to cover costs arising from natural disasters (declared by the President).

Intermediary Relending Program Loans finance business facilities and community development projects in areas of a State that are outside cities of 25,000 people or more. Funds loaned by RBCDS to intermediaries support new business facilities and community development projects in rural areas.

Rural Economic Development Loans and Grants promote rural economic development and job creation projects, including feasibility studies, startup costs, and other reasonable project expenses. The maximum amount of a grant or loan is $400,000. Loans have a maximum term of 10 years and are repaid without interest. These loans and grants are available to existing Rural Utilities Service electric and telephone borrowers.

Rural Business Enterprise Grants assist public bodies, nonprofit corporations, and Federally-recognized Indian Tribal groups to finance small and emerging private business enterprises located in rural areas. A rural area is defined as an area outside the boundary of a city with a population of 50,000 or more and its immediately adjacent urbanized or urbanizing area. Funds may be used to finance and develop small and emerging private business enterprises. Costs that may be paid from grant funds include the acquisition and development of land and the construction of buildings, plants, equipment, access streets and roads, parking areas, and utility and service extensions. In addition, funds may be used for refinancing, professional services,

technical assistance, startup operating costs, working capital, and financial assistance to a third party. These funds may also be used to produce television programs that provide information for rural residents, and to create, expand, and operate rural distance learning networks.

Rural Technology and Cooperative Development Grants finance the establishment and operation of centers for rural technology and/or cooperative development. The grants improve the economic conditions of rural areas by promoting the development and commercialization of new services, products, processes, and enterprises in rural areas. Eligible applicants are public bodies, nonprofit organizations, and Federally-recognized Indian Tribal groups.

Local Technical Assistance and Planning Grants may be used for technical assistance and training for small businesses, analysis of business opportunities in rural areas, establishment of business support centers, local or multicounty economic development planning, coordination of economic development activities, and leadership development training for local government officials. These grants, which are available to public bodies and nonprofit organizations, may be used to assist rural areas and any city or town with a population under 10,000.

Cooperative Services helps improve the performance of the Nation's cooperatives and promotes understanding and use of the cooperative business system. By working together for their mutual benefit in cooperatives, rural residents are often able to reduce costs for production supplies and consumer goods, obtain services that might otherwise be unavailable, and achieve greater returns for their products. Cooperative Services accomplishes its mission by (1) responding to requests for technical assistance from rural residents who want to organize a cooperative or improve operations of an existing cooperative, (2) providing information and educational materials relating to cooperatives, (3) conducting research on cooperative financial, structural, managerial, policy, member governance, legal, and social issues, and (4) collecting and disseminating statistics to support research and technical assistance work.

The **Alternative Agricultural Research and Commercialization Center's** mission is to expedite the commercialization of new industrial products or of new uses for agricultural and forestry materials and animal byproducts. The center makes repayable investments in small businesses in rural areas. Repayments go into a revolving fund for investment in other projects. Applicants are expected to match AARC funds with an equal amount of funding from other sources.

Rural Housing and Community Development Service (RHCDS)

Decent, safe, sanitary, affordable housing and community facilities are indispensable to vibrant rural communities. USDA's Rural Housing and Community Development Service has the responsibility to make these essential elements available to rural Americans. RHCDS programs help finance new or improved housing for over 65,000 moderate-, low- or very-low-income families each year. These programs

also help rural communities finance construction, enlargement, or improvement of fire stations, libraries, hospitals, clinics, industrial parks, and other essential community facilities.

Home Ownership Loans provide home ownership opportunities and assistance to low-income households to purchase, construct, repair, or relocate a home. Borrowers are offered 30- or 38-year loans at fixed interest rates as low as 1 percent, depending on the family's adjusted income. The program provides supervised credit to many borrowers, enabling them to maintain stable payment schedules in times of financial crises through "workout" agreements. Moderate-income rural residents can be assisted with loan guarantees offered through private lenders. The loans, both direct and guaranteed, can cover up to 100 percent of market value, or acquisition cost, whichever is less.

Home Improvement and Repair Loans and Grants enable very-low-income rural homeowners to remove health and safety hazards from their homes and to make homes accessible for people with disabilities. Loans have a maximum interest rate of 1 percent. Grants are available for people age 62 and older who cannot afford to repay a loan. Housing preservation grants to nonprofit groups and government agencies finance rehabilitation of rental units for low-income and moderate-income residents.

Rural Rental Housing Loans finance construction of rental housing for low- and moderate-income individuals and families and cooperative housing for elderly or disabled persons. Loans have a maximum term of 50 years, can equal up to 100 percent of the appraised value or development cost, and can be used to construct new housing or to purchase or rehabilitate existing structures.

Rental Assistance payments provide funds directly to the owners of RHCDS-financed rental housing under contracts specifying that low-income tenants will pay no more than 30 percent of their income for rent. Rental assistance allows low- and very-low-income families to afford decent rental housing.

Community Facilities Loans and Loan Guarantees help construct, enlarge, extend, or otherwise improve community facilities providing essential services in rural areas and towns with a population of 20,000 or less. Direct loan funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and nonprofit corporations. RHCDS also guarantees community facility loans made by banks or other eligible lenders.

Rural Utilities Service

The programs of the Rural Utilities Service (RUS) touch the lives of tens of millions of rural Americans daily. Through project financing and technical assistance, RUS builds infrastructure to provide rural businesses and households with modern telecommunications, electric energy, and water. Today, this means bringing the "information superhighway" to rural America; guaranteeing safer, more reliable electric power; and delivering safe, clean drinking water with environmentally sound wastewater disposal to rural areas.

RUS is more than a new name for the successful programs of predecessor agencies. It is a partner to rural business and economic development, providing infrastructure that is the foundation for competitiveness. It is a technical and financial resource in a time of change for rural utilities.

Rural Telecommunications Loans and Loan Guarantees build modern rural communications systems. They provide rural areas with "ramps" to the information superhighway by making financing available for telecommunications facilities and by supporting the Rural Telephone Bank program. Loans are made to rural telephone cooperatives and companies which bring reliable and affordable telecommunications services to over 15 million rural Americans.

Rural Electric Loans and Loan Guarantees provide reliable, safe, and affordable electric energy to rural America by financing power distribution, generation, and transmission systems. Loans are made to nonprofit and cooperative associations, public bodies, and other utilities which serve over 25 million rural Americans.

Distance Learning and Medical Link Grants bring distance learning and telemedicine to rural America. Education and adequate medical care are crucial to the survival of rural communities, but are becoming increasingly difficult to provide. This program employs innovative ways to use existing telecommunications infrastructure to extend the reach of educational and medical expertise into communities without that expertise. Grants have been made to rural schools, clinics, and hospitals.

Water and Waste Disposal Loans and Grants develop water and waste disposal systems (including solid waste disposal and storm drainage) in rural areas and towns with populations under 10,000. The funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and nonprofit corporations. RUS also guarantees water and waste disposal loans made by banks and other eligible lenders. The same types of applicants are eligible for grants and loans.

Emergency Community Water Assistance Grants assist rural communities that have experienced a significant decline in drinking water quantity or quality to make emergency repairs and replace existing facilities. Grants can be made in rural areas and towns with a population of 5,000 or less and a median household income of no more than 100 percent of the State's median nonmetropolitan household income.

Rural Empowerment Zones and Communities

USDA is involved in an ambitious new effort to help revive the rural economies of some of the Nation's most economically depressed rural areas. This effort resulted in the selection of three Rural Empowerment Zones (EZs) and 30 Rural Enterprise Communities (ECs) in 1994 which will be eligible for special economic stimulus programs to help overcome persistently high poverty rates. These designations will help revitalize local communities by putting Americans to work.

The Rural EZs selected for the program are:

- Kentucky Highlands (Clinton, Jackson, and Wayne counties),
- Mid-Delta in Mississippi (Bolivar, Sunflower, Leflore, Washington, Humphries, and Holmes counties), and
- Rio Grande Valley in Texas (Starr, Cameron, Hidalgo, and Willacy counties).

The 30 ECs include counties and towns across the Nation. States with one or more ECs include: Alabama, Arizona, Arkansas, California, Florida, Georgia, Louisiana, Michigan, Mississippi, Missouri, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Virginia, Washington, and West Virginia.

EZ/EC designations were based on strategic plans developed by local leaders, organizations, State officials, and the private sector. Each EZ and EC designation means special consideration for various Federal programs and other assistance, including social service block grants, new tax-exempt facility bonds, tax incentives for employment, and other special consideration for existing Federal programs.

Employers in EZs will qualify for tax credits for each qualified worker who resides in the zone. Each EZ receives $40 million and each EC receives $2.95 million to implement the strategic plans.

7. Farm and International Trade Services

Consolidated Farm Service Agency

The Consolidated Farm Service Agency (CFSA) administers farm commodity, crop insurance, and conservation programs for farmers and makes farm loans through a network of State and county offices. CFSA programs are directed primarily at agricultural producers; in the case of loans, they are directed at those with farming experience.

> ***The First Farm Bill***
> *The unprecedented economic crisis which paralyzed the Nation by 1933 struck first and hardest at the farm sector. Realized net income of farmers in 1932 was less than one-third of what it had been in 1929. Farm prices fell more than 50 percent. President Franklin D. Roosevelt committed himself to direct Government action to solve the farm crisis; thus, in 1933, control of agricultural production became the primary tool for raising the prices and incomes of farm people.*

The majority of CFSA employees work with producing farmers, who maintain a crop history by making an annual report of planted acres to the CFSA county office. Typically, these offices record planting reports on about 360 million acres, 7 out of every 8 acres of cropland in the Nation.

The relationship between farmers and the Agency goes back to the 1930's and the first agricultural acts establishing farm programs. Under the unique method of local administration that Congress set up at that time, farmers who are eligible to participate in Federal programs elect a three-person county committee. This committee reviews the county office operations and makes decisions on how the programs apply locally, giving farmers a say in how the Federal programs are applied in their county. The committee makes sure that farmers receive good service and complete information. This grassroots method of administration continues today.

Commodity Programs

Agricultural commodity programs are designed to improve the economic stability of agriculture and to help farmers adjust production to meet demand through acreage reductions and diversions. The goal is to avoid severe price swings for farmers and consumers. Assistance is offered through price support loans and purchases, as well as direct payments.

Why Farm Programs?

Since the late 1920s, American farm policy has tried to encourage the production of adequate supplies of food and fiber and to maintain reasonable prices for consumers while, at the same time, assuring farmers a fair return on their investment.

Crop Insurance

Federal crop insurance covers production losses due to unavoidable causes of loss such as drought, excessive moisture, hail, wind, hurricane, tornado, and lightning. It does not cover losses due to neglect, poor farming practices, theft, or low prices. Currently, 62 crops are insurable.

The Federal Crop Insurance Reform Act of 1994 (P.L. 103-354) overhauled the crop insurance program to provide catastrophic yield protection to all producers of insurable crops for a nominal processing fee. Essentially, the reform program replaced the uncertainty of disaster assistance with the predictability of crop insurance coverage. This streamlining of the crop insurance and disaster assistance programs is expected to save taxpayers over $150 million over the next 5 years.

Starting with 1995 crops, producers of all insurable crops who sign up for the annual commodity programs; or who obtain CFSA farm ownership, operating, or emergency loans formerly administered by the Farmers Home Administration; or who have any new Conservation Reserve Program contracts must buy at least the catastrophic (CAT) level of crop insurance coverage on all insurable crops that account for 10 percent or more of their farms' crop production value. Catastrophic coverage can be obtained at a local CFSA office or from a private crop insurance agent.

Higher levels of coverage, know as "additional coverage," are available through crop insurance agents. To encourage participation, the coverage was made more attractive to farmers by increasing the premium subsidy. Buying additional coverage is also the only way farmers can benefit from attractive policy features that permit smaller optional units, replant payments, and coverage for certain quality losses.

Farmers growing crops that are not insurable will be eligible for benefits similar to those provided under the catastrophic insurance plan. This coverage is provided free of charge and is available only through CFSA offices. To be eligible, the area has to suffer a yield loss of at least 35 percent per crop. Once this criterion has been met, farmers will be paid for individual crop losses in excess of 50 percent at 60 percent of the average market price. Producers must report acres and production to be eligible for protection.

Commodity Programs

CFSA administers commodity programs for wheat, corn, grain sorghum, barley, oats, rye, oilseeds, rice, tobacco, peanuts, milk, cotton, wool, mohair, sugar, and honey.

CFSA makes Commodity Credit Corporation (CCC) loans to eligible farmers using their stored crops as collateral. Loans to producers are usually "nonrecourse." That is, when market prices are higher than the loan rate, a farmer may simply pay off

the loan and market the commodity. However, if market prices are below the loan levels, a producer can forfeit or deliver the commodity to the Government to discharge the loan obligation in full. Thus, commodity loans promote orderly marketing by providing farmers with income while they hold their crops for later sale.

Farmers also get price protection with the option of forfeiting the commodity to CCC as a sufficient-value repayment. A marketing loan provision allows producers to repay nonrecourse loans at less than the announced loan rates whenever the world price for the commodity is less than the loan rate. Marketing loans are available for feed grains, wheat, oilseeds, upland cotton and rice. Also, producers who are eligible to obtain a marketing loan and who agree to forego obtaining a loan may receive a loan deficiency payment—the difference between the loan rate and the loan repayment rate.

The price support loan is seasonal and can be repaid with interest any time through maturity. For wheat and feed grains, the Farmer-Owned Grain Reserve offers producers the opportunity to extend the crop loan for longer periods. Storage payments are made for grain placed in the Reserve.

For most commodities, loans are made directly to producers on the unprocessed commodity through CFSA county offices. Loans and purchases are also made through cooperative marketing associations or through processors. For example, price support loans for eligible tobacco are available through the applicable tobacco growers associations. For tobacco, marketings in excess of a quota are subject to penalty and are ineligible for loan.

Two levels of price support loans for peanuts are available: a higher price support level for peanuts grown within the farm poundage quota, and a lower support level for additional peanuts grown on farms with a quota or for peanuts grown on farms without a quota.

Price support loans on oilseeds and rye are available, and producers face no acreage limitations on those commodities.

For wheat, feed grains, rice, and cotton, an income support payment is provided by deficiency payments. The program participant receives a direct payment, based on the difference between a “target price” set by law and the higher of either the basic loan rate or the national average market price.

In most cases, to qualify for payments, commodity loans, and purchases, a farmer must participate in the acreage reduction, allotment, or quota programs in effect for the particular crop. For example, deficiency payments are made to those who join in the acreage reduction for the crop year. Reducing their production acreage by an established ratio, participants contribute to keeping commodity production in line with anticipated needs. The land they are holding from production must be protected from erosion. In recent years, farmers have been given the flexibility to shift program crop plantings, as well as options for oilseeds, industrial crops, and experimental crops.

Through incentive payments to producers, price support is available for shorn wool and mohair and for the sale of unshorn lambs. This program brings the national average price received by all producers up to the support level required by law. Producers who get a higher market price also get a higher incentive payment, thus encouraging producers to improve the marketing and quality of wool and mohair.

Example of wheat program:

Farmer Evans

Wheat Farmer, Wheat Program Participant

At the annual program signup—held each spring at local USDA service centers throughout the country—Farmer Evans decides to enroll the 100 acres of wheat base on his farm in USDA's voluntary wheat program. These 100 wheat base acres mean that, on average over the last 5 years, 100 acres of land on his farm have either been planted to—or been "considered planted" to—wheat. Evans, like all prospective program participants, needed first to establish a planting history for his crop in order to enroll in the farm program.

When he signs up, he agrees to meet several program requirements. First, he agrees to idle a percentage of his base acres under the acreage reduction program. For program purposes, these set-aside acres are "considered planted" to wheat. Evans also agrees that he will meet conservation standards and purchase crop insurance. In return, he becomes eligible for direct payments and price support loans.

Direct payments make up the difference between average market prices for the season—which are estimated at the start of the year—and a fixed "target price." At signup, Evans can request a portion of his estimated payment in advance, and like most farmers, he does. He can use his advance payment to help finance production expenses.

Once enrolled in the wheat program, Farmer Evans has considerable planting flexibility. On 25 percent of his base—his "flex acres"—he may plant most crops, except fruits and vegetables. However, no matter what he chooses to do, he will not earn direct payments on 15 acres. He can earn payments on 10 of his flex acres, but only if he chooses to plant wheat. To earn the highest income, Farmer Evans must compare expected returns from wheat to expected returns from other crops.

A number of other options are available—including harvesting no crop at all on his wheat base. Since his benefits are tied to the number of base acres on his farm, Evans can be expected to use one of the flexibility options to ensure that he maintains all 100 acres of his wheat base for future years.

When he harvests his wheat, he can obtain a loan from USDA, using his crop as collateral. Price support loans are an important source of short-term financing for producers, and they enable farmers to store their crops and space out their marketings to take advantage of better prices later. When he's ready to sell his wheat, Evans may repay his wheat loan either at the loan rate or the local market price (whichever is lower) at the time the loan is settled, or he may choose to give the grain to the government in lieu of repayment.

Farm Loans

CFSA has direct and guaranteed loan programs to help farmers who are temporarily unable to obtain private, commercial credit. In many cases, these are beginning farmers who have insufficient net worth to qualify for commercial credit. In other instances, these are farmers who have suffered financial setbacks from natural disasters, or who have limited resources with which to establish and maintain profitable farming operations.

Farmers who qualify obtain their credit needs through the use of loan guarantees, where a local agricultural lender makes and services the loan and CFSA guarantees the loan up to a maximum of 90 percent. CFSA also has the responsibility of approving all loan guarantees and providing monitoring and oversight of lenders' activities.

For those unable to qualify for a loan guarantee from a commercial lender, CFSA also makes direct loans. These loans are made and serviced by a CFSA official, who has the responsibility of providing credit counseling and supervision to its direct borrowers. The CFSA official accomplishes this by making a thorough assessment of the farming operation by evaluating all aspects of the operation.

For example, the CFSA official evaluates the adequacy of the real estate and facilities, machinery and equipment, financial and production management, and the farmer's goals for the operation. Any weaknesses in each phase of the operation are identified and prioritized, and the CFSA official then works one-on-one with each farmer to develop a plan of supervision that will overcome the weaknesses and ultimately result in the farmer's graduation to commercial credit.

Unlike CFSA's commodity loans, these loans can be approved only for those who have repayment ability, and the loans must be fully secured and are not nonrecourse. Local CFSA offices have further information about these loans.

Commodity Purchases and Donations

The Government-owned Commodity Credit Corporation (CCC) provides financing for farm programs, and for the purchase, storage,and disposal of commodities in Federal stocks. CFSA employees are the administrative agents for CCC. One responsibility is the inventory management of CCC's bulk and processed products.

Managing the farm products forfeited to CCC requires cooperation with the warehousing and transportation industries and private marketing channels. With over 10,000 commercial warehouses across the country approved for CCC storage contracts, CFSA commodity managers work closely with the commercial trade.

Under the dairy price support program, CCC buys surplus butter, cheese, and nonfat dry milk from processors at announced prices. These purchases help to maintain market prices at the legislated support level.

CFSA employees work with USDA's Food and Nutrition Service to purchase and deliver processed foods for the national school lunch and domestic feeding programs.

CCC inventories are not simply held, but must move into trade channels. CFSA has a field office in Kansas City, with staff to direct commodity operations. Plugged into telecommunicating trade networks, CFSA merchandisers regularly sell and swap inventories.

■ ***CCC***

CCC annual net expenditures averaged about $3 billion per year during the 10 years prior to 1982 with modest variation. Since 1982, variation has been large. Expenditures reached a high of $25.8 billion in FY 1986. They are estimated at $11.8 billion for FY 1994.

Quantities of Commodities Purchased/Donated:

Foreign:		
	FY 1993	*7,528,995 metric tons*
	FY 1994	*451,415 metric tons*
Domestic:		
	FY 1993	*822.6 million pounds*
	FY 1994	*744 million pounds*

Beyond the marketplace, CCC commodities fill the need for hunger relief for needy families in the United States and for overseas assistance. CFSA coordinates the processing and overseas delivery of over 5 billion pounds of commodities each year. Donated for Food for Peace and programs administered by voluntary organizations, these American farm products and foods help in hunger relief around the world.

Conservation Programs

CFSA conservation programs help preserve and improve the wealth and promise of America's farmlands.

■ ***Conservation***

- *USDA programs account for over half of total Federal expenditures on conservation and environmental efforts affecting agriculture.*
- *USDA spent an estimated $3.5 billion on resource conservation and other environmental activities in FY 1994.*

Conservation Reserve Program (CRP)

USDA's most ambitious conservation effort, CRP was authorized by the Food Security Act of 1985. It targets the most fragile farmland by encouraging farmers to stop growing crops on cropland designated by soil conservationists and to plant a permanent vegetative cover instead. In return, the farmer receives an annual rental payment for the term of the multiyear contract. Cost shares are also available to help establish the permanent planting of grass, legumes, trees, windbreaks, or wildlife flora.

■ ***Conservation Reserve Program Example:***

Farmer Jones submitted a bid of $42 per acre on 50 acres of highly erodible cropland in 1989. The bid was accepted. He also requested cost-share help to plant permanent grass on all 50 acres.

Mr. Jones receives a $2,100 annual rental payment each year for 10 years. A cost-share payment of $1,500 was paid to him after the grass seeding was completed.

The CRP also provides cost-share assistance to establish tree covers and wildlife habitats, and to install erosion control and similar structures.

■ *Now in its 9th year, the CRP has converted 36.4 million acres of cropland to conservation uses. Annual CRP rental payments made by USDA to participating farmers total $1.8 billion and average $50 per acre. Most CRP acres are planted in grass, but the CRP also includes 2.4 million acres of trees, 2 million acres of special wildlife practices, 410,000 acres of wetlands, and 5,200 miles of filter strips along waterways. Estimates of total CRP benefits range from $5 billion to $9 billion.*

Agricultural Conservation Program (ACP)

ACP is the primary means for CFSA to help farmers and ranchers nationwide carry out conservation and environmental practices. The program is designed to help alleviate soil, water, and related resource problems through cost-sharing. ACP assistance is available to install a variety of soil-saving practices, including terraces, grass cover, sod waterways, and other measures to control erosion. These practices also help farmers reduce sediment, chemicals, and livestock waste that contaminate streams and lakes.

■ ***Agricultural Conservation Program Example:***

Farmer Smith visits the CFSA office and requests assistance to build a water control structure to help stop erosion and improve the water quality of a small stream. The county CFSA committee reviews her plan and agrees to share 50 percent of the cost. After she completes the structure, she brings in her bills and is paid 50 percent of the cost.

All CFSA conservation programs are conducted in cooperation with other Federal and State agencies and conservation organizations.

Disaster and Emergency Assistance

In the aftermath of a natural disaster, CFSA can provide a variety of emergency assistance programs to farmers in a disaster area. For example, the agency can furnish CCC-owned grains to eligible livestock producers at reduced prices, and cost-share livestock feed purchases. To help rehabilitate the farmland damaged by a natural disaster, CFSA can assist farmers with cost-sharing to carry out emergency conservation practices under the Emergency Conservation Program.

In the event of a national security emergency, CFSA is responsible for preparedness plans and programs to assure food production and distribution, as well as the continued availability of farm machinery, feed, seed, and fertilizer.

Information Contacts

County CFSA offices, the primary points of contact for participation in programs, are listed in telephone directories under "U.S. Department of Agriculture."

State CFSA offices supervise county CFSA offices and are usually located in the State capital or near the State land-grant university.

For information on commodity sales and purchases, contact:

USDA CFSA Kansas City Commodity Office
P.O. Box 419205
Kansas City, MO 64141
Telephone: (816) 926-6364

Aerial photographs of U.S. farmland, used by CFSA as a basic tool to determine crop acreage, are also purchased extensively by other organizations and the public. Order forms and an index are available from county CFSA offices. For more information on services, including high-altitude photography, contact:

USDA CFSA Aerial Photography Field Office
Sales Branch
P.O. Box 30010
Salt Lake City, UT 84130-0010
Telephone: (801) 975-3503

For general information about the agency and its programs, contact:

USDA CFSA Information Division
P.O. Box 2415
Washington, DC 20013
Telephone: (202) 720-5237

Foreign Agricultural Service

Exports of U.S. Agricultural, Fish, and Wood Products

The United States is the world's top exporter of agricultural, fish, and wood products—with sales of $53.3 billion in FY 1994. Many factors affect trade in these products, including economic growth, currency exchange rates, national support programs, changing food preferences, consumer lifestyles, public and private sector market promotion efforts, and tariff and nontariff barriers.

Agricultural, fish, and wood product exports are vitally important to the Nation's economy as a whole. Exports provide producers, food processing companies, and associated manufacturing firms and transport companies an expanded market for their products, and a better income. Exports also enhance our ability to use land, labor, and capital more efficiently. This, in turn, allows our producers and industries to produce at a lower cost and transport efficiently, giving the United States a comparative advantage in the production of these goods.

U.S. agricultural, fish, and wood exports created an estimated 960,000 full-time domestic jobs in 1994, or 18,000 jobs for every $1 billion in products shipped. With respect to agricultural products, many of these jobs are created off the farm, and many of those employed live in urban areas. About 310,000 workers, or 10 percent of the U.S. farm labor force, are employed to produce agricultural products for the overseas market. However, beyond the farm gate, another 470,000 people work to finance, store, package, process, and ship agricultural exports. USDA economists calculate that, at the very least, each dollar received from agricultural exports stimulates another $1.38 in business activity for the economy. In 1994, U.S. agricultural exports generated $60 billion in additional economic activity.

Export gains for high-value agricultural products were broad-based in FY 1994, with many product groups reaching all-time highs. High-value, intermediate product exports rose $425 million to a record $9.3 billion. Exports of high-value, consumer-oriented products rose $1.5 billion, reaching a record $16.2 billion, a robust 11-percent increase over the previous year. However, exports of bulk commodities fell $950 million to $18 billion. The three largest commodities—wheat, coarse grains (mainly corn), and soybeans—all registered declines. Exports of wood products fell about $350 million to $6.9 billion, while exports of fish were unchanged at $2.9 billion.

Table 7-1.

Top 15 U.S. agricultural, fish, and wood product exports, FY 1994

Product	*(Category)*	*$Billion*
Coarse grains	(B)	4.6
Soybeans	(B)	4.2
Wheat	(B)	4.0
Red meats	(C)	3.4
Lumber	W)	2.4
Cotton	(B)	2.3
Logs	(W)	2.2
Fruit, fresh	(C)	1.9
Feeds & fodders	(I)	1.7
Fruit & vegetables, processed	(C)	1.6
Hides & skins	(I)	1.4
Poultry meat	(C)	1.4
Tobacco	(B)	1.3
Tree nuts	(C)	1.1
Snack foods	(C)	1.1
Subtotal		**34.6**
Total U.S. exports		**53.3**

Note: (B) bulk; (I) intermediate; (C) consumer-oriented; (W) wood

Agricultural products moving into the world market can be classified as bulk, intermediate, or consumer-oriented products. Bulk products include those commodities free from processing, such as wheat, corn, barley, and soybeans. Intermediate products (such as wheat flour, vegetable oils, and hides and skins) receive some processing, but are generally not yet ready for final consumption. Consumer-oriented foods and beverages include products that have undergone various degrees of processing or unprocessed commodities that have relatively high per unit costs due to transportation or storage, like fresh fruit.

In FY 1994, U.S. exports of bulk commodities decreased $950 million or 5 percent from the previous year. Declines for wheat and coarse grains (down $714 million and $525 million, respectively) and soybeans and tobacco (down $445 million and $183 million, respectively) more than offset export increases for cotton (up $768 million), rice (up $123 million), and pulses.

U.S. exports of intermediate products set a new record of $9.3 billion in FY 1994, finishing $425 million or 5 percent above the previous year's level. Export performance was mixed across the different product categories. Decreased sales for soybean meal, planting seeds, and wheat flour (down $133 million, $49 million, and $13 million, respectively) were more than offset by increases for vegetable oils (up $215 million), live animals (up $107 million), hides and skins (up $152 million), and sweeteners and beverage bases (up $76 million). Feeds and fodders, the largest group in the intermediate products category, was unchanged at $1.7 billion.

With a new record of $16.2 billion in FY 1994, U.S. exports of consumer-oriented products finished $1.5 billion or 11 percent above the record set during the previous year. The category accounts for 37 percent of all U.S. agricultural exports, up from 19 percent in 1986. Increases in FY 1994 were broad-based with 12 of the 16 product categories setting new record highs. The largest increases were recorded for poultry meat (up $389 million), fresh fruit (up $244 million), and red meats (up $144 million).

At $2.9 billion in FY 1994, U.S. exports of fish and seafood products remained virtually unchanged from the previous year. On the other hand, U.S. exports of wood products fell 5 percent to $6.9 billion. A 12-percent fall in the value of logs dropped exports to $2.2 billion. However, panel product shipments rose to a record $923 million.

Major Markets

Although U.S. exports of agricultural, fish, and wood products are shipped to more than 160 countries around the world, the top 10 markets account for nearly 80 percent of all sales. U.S. export gains to the top 10 markets were broad-based in FY 1994, with seven—Japan, Canada, Mexico, Taiwan, Hong Kong, the Russian Federation, and Algeria—reaching record highs. Sales to Japan, the largest market by a wide margin, rose 5 percent despite an ongoing recession in that country. Sales to Mexico jumped 11 percent, continuing a trend that has resulted in Mexico being one of our largest markets in a short time. Sales to Russia were up 30 percent, supported by a surge in consumer food shipments.

Table 7-2.

Top 10 markets for U.S. agricultural, fish, and wood products, FY 1994

Market	*Exports ($ Billion)*	*Share of Total U.S. Exports (Percent)*
Japan	14.1	27
European Union-12	8.0	15
Canada	6.7	13
Mexico	4.6	9
Korea, Republic of	2.5	5
Taiwan	2.3	4
Hong Kong	1.2	2
Russian Federation	1.1	2
China	1.0	2
Algeria	0.6	1
Subtotal	**42.179**	
Total U.S. agricultural exports	**53.3**	

Imports of U.S. Agricultural, Fish, and Wood Products

Along with the European Union and Japan, the United States ranks among the world's largest importers of agricultural, fish, and wood products. However, unlike these other major importers, these products make up only a small portion of total U.S. merchandise imports. In FY 1994, the $42.7 billion in U.S. purchases of agricultural, fish, and wood products accounted for only 6 percent of total U.S. merchandise imports.

Imports provide consumers with products that are either not produced or not available in sufficient quantities in the United States. Major agricultural imports generally not domestically produced include spices, teas, cocoa, coffee, bananas, and silk. Domestic production of other products, such as certain cheeses, olives, carpet wools, lumber, shrimp, and tobacco, is insufficient to meet domestic demand. Some seasonal items, such as fresh fruits and vegetables, are imported during periods when U.S. production cannot meet domestic demand. Finally, products such as certain spices and sugar are purchased in their raw form for processing and packaging in the United States because foreign producers have a cost advantage over U.S. producers.

Agricultural, fish, and wood imports create jobs in transportation, storage, handling, processing, and distribution in the United States. Furthermore, imports provide foreign countries with needed revenue in the form of U.S. dollars which, in turn, can be used to purchase U.S. products.

Table 7-3.

Top 15 U.S. imports of agricultural, fish, and wood products, FY 1994

Product	*$ Billion*
Competitive products	**36.5**
Lumber	6.1
Vegetables (and preparations)	2.6
Shrimp	2.6
Grain & feeds	2.3
Fruits (including juices)	2.1
Wines & malt beverages	2.1
Panel products	1.9
Beef & veal	1.8
Oilseeds and products	1.5
Live animals	1.4
Sugar (and related products)	1.1
Dairy products	1.0
Noncompetitive products	**6.2**
Coffee (raw beans and processed)	2.0
Cocoa (raw beans and processed)	1.1
Bananas (including plantains)	1.1
Top 15	**30.7**
Total agricultural imports	**42.7**

Leading products

Agricultural, fish, and wood products imported by the United States fall into two general categories: competitive goods (those that compete in some form with U.S. products) and noncompetitive goods (those that are not in direct competition with U.S. products).

In value terms, 85 percent of U.S. agricultural, fish, and wood imports are classified as competitive. Major competitive goods imported by the United States are lumber, vegetables, shrimp, grain and feeds, fruits, wines and malt beverages, wood panel products, and beef.

Coffee, cocoa, and bananas head the list of noncompetitive agricultural goods. In FY 1994, noncompetitive imports rose 12 percent to $6.2 billion mainly due to higher coffee prices, while competitive imports rose 13 percent to $36.5 billion mainly due to higher purchases of lumber, horticultural products, oilseeds, and grain and feed products.

Major suppliers

Although the United States imported products from more than 160 countries in FY 1994, the top ten countries supplied nearly three-fourths of U.S. import needs. Canada was the top supplier with sales of $13.7 billion. The major products imported from Canada were lumber, wood panel products, live cattle, and red meats. At $5.4 billion, the European Union ranked second, mainly supplying high-value consumer foods. The major products were wine and malt beverages, snack foods (including

confectioneries and biscuits), processed fruits and vegetables, and cheeses. Other major suppliers include Mexico (fresh vegetables and live cattle), Thailand (shrimp, tuna, rubber, and processed fruits and vegetables), Brazil (raw coffee beans, fruit juices, and tobacco), Indonesia (rubber, wood panel products, and shrimp), and Australia (red meats).

Many important suppliers of agricultural, fish, and wood products to the United States are developing countries. These countries depend heavily on the export of these products to generate foreign exchange which, in turn, is used to purchase imports. In FY 1994, imports from developing countries accounted for nearly half of all U.S. purchases of agricultural, fish, and wood products.

Table 7-4.

Top 10 agricultural suppliers, FY 1994

Supplier	*Imports ($Billion)*	*Share of Total U.S. Imports (Percent)*
Canada	13.7	32
European Union-12	5.4	13
Mexico	3.4	8
Thailand	2.1	5
Brazil	1.8	4
Indonesia	1.6	4
Australia	1.1	2
Ecuador	1.0	2
Colombia	1.0	2
New Zealand	1.0	2
Top 10	**32.1**	**75**
World total	**42.7**	

Food Aid Programs

The Food, Agriculture, Conservation, and Trade Act of 1990 reauthorized and added activities to one of the oldest U.S. export assistance programs—Public Law 480, also known as Food for Peace.

Current estimates of FY year 1995 commodity funding available for food aid total $935.4 million, including $185.7 million for Title I (including Title I/Food for Progress), $479.8 million for Title II (including Title II/World Food Program), and $47.7 million for Title III.

The 1990 Farm Bill reauthorized Title I government-to-government concessional sales, with maximum repayment terms of 30 years. FY 1995 planned programming for P.L. 480, Title I as of April 18, 1995, provides $142.5 million for 15 countries. Under these planned programs, approximately 749,300 metric tons of commodities are expected to be exported. These totals do not reflect ocean freight financing of $11.9 million for Title I. For FY 1995, $55.1 million of Title I funds for commodities have been set aside to fund a number of Food for Progress country programs.

The 1990 Farm Bill reauthorized the Title II emergency and private assistance donations program. It increased the minimum tonnage by 25,000 metric tons per year, beginning with 1.925 million tons in FY 1991 and increasing to 2.025 million tons in FY 1995. A new provision requires that $10 million-$13.5 million of Title II funds be provided each year to private voluntary organizations and cooperatives to support their overseas food aid activities. For FY 1995, about 2.1 million tons of commodities, valued at approximately $479.8 million (including transportation), are planned for donations under Title II and through the World Food Program.

A revised Title III Food for Development program was initiated by the 1990 Farm Bill. This program provides government-to-government grant food assistance to least-developed countries. Local sales proceeds can be used to support a variety of economic development and related activities in recipient countries. For FY 1995, 282,600 metric tons of commodities valued at $47.7 million are planned under Title III.

Another program, Food for Progress, is carried out using commodities available for distribution under Section 416, or funds available to the Commodity Credit Corporation (CCC) or appropriated under Title I, P.L. 480. The program provides commodities to needy countries as a reward for having undertaken economic or agricultural reform. The 1990 Farm Bill adds private voluntary organizations (PVO's), nonprofit agricultural organizations, and cooperatives as potential recipients. In FY 1995, Food for Progress bilateral agreements using the Title I authority are planned with Armenia, Georgia, Kyrgyzstan, and Tajikistan, totaling about 351,500 metric tons, valued at $55.1 million (excluding transportation). Food for Progress programs using CCC funds are planned with U.S. PVO's for projects in Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, and Tajikistan, totaling about 56,600 tons of commodities, valued at about $42.6 million. The Food for Progress program is limited by a global 500,000-metric-ton legislative ceiling, and by a cap on noncommodity costs paid directly by CCC (primarily transportation) of $30 million.

The Food, Agriculture, Conservation, and Trade Act of 1990 also reauthorized the Farmer-to-Farmer Program, which can include middle-income countries and emerging democracies.

The Section 416(b) program (of the Agricultural Act of 1949) provides for the donation to needy countries of eligible commodities held by the CCC. Currently, 5,000 metric tons of nonfortified nonfat dry milk have been determined available under Section 416(b) for FY 1995.

Commercial Export Credit Guarantee Programs

The Food, Agriculture, Conservation, and Trade Act of 1990 made available at least $5 billion annually for the Export Credit Guarantee Program (GSM-102). This program guarantees repayment of short-term loans (90 days to 3 years) made by U.S. financial institutions to eligible banks in countries that purchase U.S. farm products. As of March 10, 1995, some $3.15 billion worth of guarantees was made available to over 70 countries including five regional programs—for West Africa, Southern Africa, the Andean region, Central America, and the East Caribbean—for FY 1995. As of March 10, 1995, registrations under the GSM-102 credit guarantee program for FY 1995 totaled $1.32 billion for 17 countries and the West African, Southern African, Andean, and East Caribbean regions.

The 1990 Act also provided for implementation of an Intermediate Credit Guarantee Program (GSM-103) through FY 1995. The guarantees issued under this program can cover financing periods of more than 3 and up to 10 years. The Act makes available $500 million per year for the program, which is designed to help developing nations make the transition from concessional financing to cash purchases. As of March 10, 1995, $175 million worth of intermediate guarantees was made available to five countries for FY 1995. As of March 10, 1995, registrations under the GSM-103 credit guarantee program for FY 1995 totaled $51.6 million for three countries.

Export Assistance Programs

The Food, Agriculture, Conservation, and Trade Act of 1990 endorsed export assistance programs implemented by USDA in recent years, specifically to counter or offset adverse effects on U.S. agriculture from unfair trade practices on the part of competitors.

The Export Enhancement Program (EEP) was extended by the Food, Agriculture, Conservation, and Trade Act of 1990 to permit USDA to provide export bonuses to make U.S. commodities more competitive in the world marketplace and to offset the adverse effects of unfair trade practices or subsidies. The Farm Bill requires that the CCC make available at least $500 million in funds or commodities for the EEP each fiscal year through 1995. Since Nov. 6, 1991, USDA has paid EEP bonuses in cash. In the General Agreement on Tariffs and Trade implementing legislation, the focus of the EEP was changed to allow the EEP to be used as a market promotion and expansion tool.

Through FY 1994, over 158.6 million metric tons of wheat and wheat flour (grain equivalents), over 14.4 million tons of barley, 537,000 tons of barley malt (grain equivalent), and over 944,000 tons of rice have been sold. In addition, 258,000 tons of frozen poultry, over 1,000 tons of pork, over 2.27 billion table eggs, over 1.9 million tons of vegetable oil, 4,000 tons of canned peaches, 319,000 tons of sorghum, nearly 189,000 tons of poultry feed, and over 69,700 dairy cattle have been sold.

The Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988 authorized the creation of the Sunflowerseed Oil Assistance Program (SOAP) to provide bonuses to U.S. exporters to facilitate additional sales of sunflowerseed oil in targeted world markets. The Agriculture Appropriations Act for FY 1989 created the Cottonseed Oil Assistance Program (COAP). These programs are similar in operation to the EEP. The SOAP and COAP programs use funds available under Section 32 of Public Law 74-320. Fiscal year 1995 SOAP/COAP sales totaled 0 metric tons, with total bonuses valued at $0 million.

The 1990 Farm Bill also continued the Market Promotion Program (MPP), which provides assistance to trade promotion organizations and private entities to help fund their market development activities overseas. For FY 1994, $100 million was allocated to 59 organizations to promote agricultural commodities under the MPP. For 1995, $85.5 million is available for allocation.

Dairy Export Programs

Section 114 of the 1990 Farm Bill mandated that a Dairy Export Incentive Program (DEIP) be operated by the CCC. The Uruguay Round legislation mandates the program through the year 2001. The DEIP operates on a bid bonus system similar to EEP, with cash bonus payments.

The 1995 DEIP was announced on January 20, 1995. Bonuses under the program are available to 110 countries totaling 114,500 metric tons of milk powder, 99 countries totaling 37,650 metric tons of butterfat, and to 75 countries totaling 3,850 metric tons of Cheddar, Feta, Gouda, cream, Mozzarella, and processed American cheeses. The allocations will be valid until June 30, 1995, as provided in the invitation for offers. Under the DEIP this year, the CCC has awarded 115,576 metric tons, with a bonus value of $56.803 million.

International Links

The International Cooperation and Development (ICD) area of USDA's Foreign Agricultural Service is responsible for coordinating, supporting, and delivering a diversified program of international cooperation and development. It aims to enhance the competitiveness of U.S. agriculture, preserve natural resource ecosystems, and pursue sustainable economic development worldwide by mobilizing the resources of USDA and its affiliates.

ICD programs provide links to world resources and build a spirit of cooperation and goodwill that serves U.S. agriculture. These links help U.S. agriculture gain access to emerging technologies and to a wide array of genetic material, which can be crucial in creating new or improved agricultural products, practices, and markets. These international partnerships are the germinating seeds that can produce a rich and diverse harvest of scientific advances and business ventures.

ICD helps increase income and food availability in developing nations by linking the technical expertise of the U.S. agricultural community with those nations. This cooperative effort helps developing nations surmount the barriers of hunger and poverty and build more stable economies. As industrialized nations have become saturated with goods and services, investors have begun to explore developing nations as markets for fresh and expanded business ventures. Nations moving from low- to middle-income status now offer the brightest prospects for U.S. agricultural products, a trend that is likely to continue, so USDA helps foster economic growth, strong diplomatic ties, and durable trade relationships with these nations.

8. Food, Nutrition, and Consumer Services

Food and Consumer Service

Nutrition is one of USDA's central missions, and it is the bridge between the farmer and consumer. The Food and Consumer Service (FCS) administers USDA's nutrition assistance programs, with the dual mission of improving the Nation's health by getting food to people who need it, and strengthening the agricultural economy.

USDA has made nutrition and nutrition education integral components of all its domestic nutrition programs. These programs provide access to healthy diets for many needy Americans, and important markets for agricultural commodities. Overall, the nutrition programs reach one out of every five Americans.

At the same time, USDA is committed to ensuring that the programs operate accurately and efficiently. FCS works closely with the States to ensure that benefits are received only by those who are eligible, and to catch and punish people who seek to abuse the programs for their own gain.

For FY 1995, the total appropriation for the 15 nutrition assistance programs is $40.2 billion—or nearly 65 percent of the entire USDA budget of $61.9 billion.

Most of the programs are directed at low-income Americans. They include:

- The Food Stamp Program
- The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
- The National School Lunch Program
- The School Breakfast Program
- The Nutrition Education and Training Program
- The Emergency Food Assistance Program
- The Child and Adult Care Food Program
- The Commodity Supplemental Food Program
- The Summer Food Service Program
- The Special Milk Program
- The Nutrition Program for the Elderly
- The Food Distribution Program on Indian Reservations
- The WIC Farmers Market Nutrition Program
- The Commodity Distribution to Charitable Institutions and to Soup Kitchens and Food Banks
- The Nutrition Assistance Program in Puerto Rico and the Northern Mariana Islands

FCS is also the primary Federal agency that delivers food assistance in response to disasters. The Agency includes an Office of Consumer Affairs. In addition, this mission area includes the Center for Nutrition Policy and Promotion.

> ***Nutrition Program Fact:***
> *Determining eligibility: Many of USDA's nutrition programs use household income as a guideline for program eligibility. Depending on the program rules, household income of 100 percent, 130 percent, or 185 percent of the Federal poverty level may be used to determine levels of eligibility. For FY 1995, 100 percent of the poverty guideline is $14,800 a year for a family of four; 130 percent is $19,240 a year; and 185 percent is $27,380 a year. Federal poverty guidelines are established by the Office of Management and Budget, and are updated annually by the Department of Health and Human Services.*

The Food Stamp Program

The Food Stamp Program is the cornerstone of USDA's nutrition assistance programs. Initiated as a pilot program in 1961 and made permanent in 1964, the program issues monthly allotments of coupons that are redeemable at retail food stores, or provides benefits through Electronic Benefit Transfer (EBT).

Increasingly, paper food stamp coupons are being replaced by EBT, an online system in which participants use magnetic strip cards to access their food stamp account at the point of sale. USDA has made conversion from paper coupons to EBT a major priority, and has set a goal to have a national EBT implementation plan in place by 1996. By eliminating paper coupons and creating an electronic record of every food stamp transaction, EBT will be a useful tool in improving program delivery and in reducing certain types of food stamp fraud and trafficking.

EBT is only one component of FCS's commitment to Food Stamp Program integrity. The agency works closely with the States to ensure that they issue benefits in the correct amounts, and only to people who are eligible. EBT has enhanced FCS's ability to catch those who abuse the program, and penalties have been increased for people who are caught.

One State—Maryland—has already implemented EBT statewide, and approximately 37 States have some EBT activity underway, from actual operations in some counties through early planning.

USDA also provides educational materials to integrate nutrition into the Food Stamp Program and to help Food Stamp recipients make better use of their benefits. USDA has a critical responsibility to promote nutrition assistance in all of its food programs. In 1994, FCS initiated a series of Community Nutrition Education Cooperative Agreements, totaling more than $984,000, to 10 State agencies, universities, and local program organizations to design and implement innovative nutrition education efforts aimed at food stamp households, schoolchildren, and WIC participants.

Eligibility: Eligibility and allotments are based on household size and income, assets, and other factors. For a family of four, gross monthly income cannot exceed 130 percent of the Federal poverty guidelines.

Benefits: The Food Stamp Program will serve an average of almost 27 million people each month in FY 1995. Average monthly benefits are $74.12 per person The level of benefits a household receives is based on the Thrifty Food Plan, a low-cost model diet plan.

Funding: The total Food Stamp Program appropriation for FY 1995 is $27.7 billion.

■ ***Nutrition Program Fact:***
How EBT works: Electronic Benefit Transfer (EBT) is a computerized system that allows food stamp customers to use a plastic card similar to a bank card to access their food stamp benefits. Eligible recipients have an account established for their monthly benefits. At the grocery checkout, they present the card, which is used to debit their food stamp account for the amount of eligible purchases. The funds are automatically transferred to the retailer's account, and an electronic record is made of the transaction. No money and no food stamps change hands.

The National School Lunch Program

The National School Lunch Program (NSLP) is a federally assisted meal program operating in more than 93,000 public and nonprofit private schools and residential child care institutions. It provides nutritionally balanced, low-cost or free lunches to more than 25 million children each day.

The NSLP is usually administered by State education agencies, which operate the program through agreements with local school districts. FCS administers the program at the Federal level. School districts and independent schools that choose to take part in the lunch program receive cash reimbursement and donated commodity assistance from USDA for each meal they serve. In return, they must serve lunches that meet Federal meal pattern requirements, and they must offer free and reduced-price lunches to eligible children.

Last June, in an effort to improve the nutritional quality of school meals, FCS launched the School Meals Initiative for Healthy Children, the first full-scale reform of the school lunch program since it was established in 1946. The centerpiece of the initiative is a regulatory proposal to update nutrition standards so that all school meals will meet the recommendations of the Dietary Guidelines for Americans.

Four national hearings were held to allow the public to provide comments and recommendations on proposed new regulations to institute the changes. More than 14,000 comments were received from a wide variety of interested individuals and groups.

In support of USDA's School Meals Initiative, on October 6, 1994, Congress passed the Healthy Meals for Healthy Americans Act, requiring that all school meals conform to the Dietary Guidelines by school year 1996-97.

Other elements of the initiative will teach and motivate children to make healthy food choices, cut administrative red tape, and continue to improve the quality of the commodities USDA provides to schools. Recognizing that improved nutrition education empowers students to make healthy food choices, USDA established Team Nutrition as a part of the School Meals Initiative. Team Nutrition brings together public/private partnerships to implement a national Children's Nutrition Campaign, as well as a Training and Technical Assistance Program to help school food service professionals deliver healthy school meals.

The campaign has produced significant results. USDA has already formed a groundbreaking partnership with the Walt Disney Company to develop healthy eating messages to be used on television. USDA has also entered into a partnership with Scholastic, Inc., to deliver age-appropriate nutrition information to children in school and to their parents at home.

The second component of Team Nutrition, the Training and Technical Assistance Program, was designed to ensure that school nutrition and food service personnel have the education, motivation, training, and skills necessary to serve meals that meet USDA's nutrition standards and appeal to children.

As part of the training component of Team Nutrition, FCS hosted "USDA's Great Nutrition Adventure," a series of events linking prominent chefs with local schools across the country. The chefs spent the day teaching children about the importance of a nutritious diet and working with school food service personnel to teach them how to achieve healthy school meals that appeal to children.

The Department has also placed special emphasis on improving the quality of commodities donated to the National School Lunch Program. Last year the Commodities Improvement Council was established to promote the health of school children by improving the nutritional profile of USDA commodities while maintaining USDA's support for domestic agricultural markets. Based on the council's recommendations, USDA is implementing plans to reduce the fat, sodium, and sugar content of commodities, and to offer a wider variety of new low and reduced-fat products.

USDA has made significant progress in increasing the amount of fresh produce given to schools. During the last school year, USDA doubled the volume of fresh fruits and vegetables purchased for the NSLP. It has also launched a cooperative pilot project with the Department of Defense (DOD) to increase the variety of produce available to schools by utilizing DOD's buying and distribution system.

Eligibility: Any child, regardless of family income level, can purchase a meal through the NSLP. Children from families with incomes at or below 130 percent of poverty are eligible to receive free meals. Children from families with incomes between 130 and 185 percent of poverty are eligible for reduced-price meals. Children from families with incomes over 185 percent of poverty pay the full, locally established price.

Benefits: Most of the support USDA provides to schools comes in the form of cash reimbursements for meals served. The reimbursement is highest for meals served to students who qualify to receive their meals free, and the lowest reimbursement is for students who pay full price. The current cash reimbursement rates are: Free, $1.76; reduced price, $1.36; and full price, $.17.

In addition to cash reimbursements, schools are entitled to receive commodity foods, called "entitlement" foods, at an annually adjusted per-meal rate (currently 14.5 cents) for each meal they serve. Schools can receive additional commodities known as "bonus" commodities when these are available from surplus stocks purchased by USDA under price support programs. USDA commodities make up approximately 17 percent of the food served. The remaining 83 percent is purchased locally by the school food authority.

Funding: For FY 1995, Congress appropriated $4.2 billion for the National School Lunch Program. Another $644.6 million is included for the purchase of entitlement commodity foods.

> ■ ***Nutrition Program Fact:***
> *USDA commodity foods make up only about 17 percent of the foods that are served to children in the National School Lunch Program. Nonetheless, more than 1 billion pounds of food, valued at more than $650 million, was provided to schools by USDA in FY 1994.*

The School Breakfast Program

The School Breakfast Program (SBP) provides cash assistance to States to initiate, maintain, or expand nonprofit breakfast programs in eligible schools and residential child care institutions. The program operates in more than 60,000 schools and institutions, serving a daily average of 5.8 million children. The program is administered at the Federal level by FCS. State education agencies administer the program at the State level, and local school food authorities operate it in schools.

USDA has made expansion of the SBP a top priority. A series of startup grants initiated in 1990 helped push participation up by more than half, from 3.8 million children to 5.8 million. The Healthy Meals for Healthy Americans Act of 1994 made these grants permanent and expanded coverage under them to include school breakfast expansion, as well as Summer Food Service Program start-up and expansion. The act authorized funding of $5 million in FY 1995, 1996, and 1997; $6 million in FY 1998; and $7 million annually thereafter.

Eligibility: Any child at a participating school may purchase a meal through SBP. Children from families with incomes at or below 130 percent of the poverty level are eligible for free breakfasts. Children from families with incomes between 130 and 185 percent of the poverty level are eligible for reduced-price breakfasts. Children from families with incomes over 185 percent of poverty pay the full locally established price for their breakfasts.

Benefits: Under Federal law, schools may not charge students who are eligible for free breakfasts. Schools may charge no more than 30 cents for a reduced-price breakfast. There is no Federal limit placed on how much a school may charge for breakfast served to paying students—those from families with incomes above 185 percent of poverty.

Funding: For FY 1995, Congress appropriated $1.1 billion for the SBP.

■ ***Nutrition Program Fact:***
The vast majority of children who participate in the School Breakfast Program—87 percent—receive their meals free or at a reduced price. That compares to 55 percent of children who receive free or reduced-price meals in the National School Lunch Program.

The Nutrition Education and Training Program

The Nutrition Education and Training (NET) Program is the nutrition education component of the food assistance programs for children: the National School Lunch Program, School Breakfast, Summer Food Service, and Child and Adult Care Food Programs.

The goal of NET is to provide leadership in promoting healthy eating habits for our Nation's children by offering effective educational experiences to help children make informed food choices as a part of a healthy lifestyle.

Each year when Congress appropriates money for NET, the Secretary of Agriculture allocates funds to States in the form of grants, usually to the State education agency. The size of a State's grant depends on the number of children enrolled in public or private schools; public and private nonprofit child care programs, including residential day care; and the Summer Food Service Program.

Each State employs a NET coordinator who assesses the needs for nutrition education in the State and develops a plan to address the identified needs, establishing priorities for use of the funds available in a given year.

States use NET funds in a variety of ways, for example to:

- Help educators learn the principles of nutrition and ways to make them meaningful to their students through coordinated classroom and school cafeteria learning experiences,
- Provide training for food service personnel in nutrition, nutrition education, and food service management,
- Involve parents and the community in nutrition education, and
- Develop nutrition education materials and make them available to students, parents, teachers, and food service personnel.

Eligibility: All children participating in or eligible to participate in the USDA Child Nutrition Programs may receive nutrition education through NET.

Funding: In FY 1995, Congress appropriated $10.3 million for the NET Program.

The WIC Program

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a grant program whose goal is to improve the health of pregnant, postpartum, and breastfeeding women, and infants and children up to 5 years old, by providing supplemental foods, nutrition education, and access to health care. A few State

agencies provide food directly to participants, but most States provide WIC vouchers that can be used at authorized food stores for approved foods.

WIC provides each State with a set amount of money to serve its most needy WIC population. Because of documented successes of the WIC Program in improving the nutritional well-being of participants, it has received continuing political support, enabling it to expand to serve more eligible people. In FY 1994, WIC served an average of 6.5 million people each month.

Eligibility: To be eligible for WIC, an applicant must meet State residency requirements, meet an income standard, and have been determined by a health professional to be at nutritional risk.

Benefits: In most States, WIC participants receive vouchers that allow them to purchase a monthly food package specially designed to supplement their diets. The foods provided are high in protein, calcium, iron, and vitamins A and C. WIC foods include iron-fortified infant formula and infant cereal; iron-fortified adult cereal; vitamin C-rich fruit or vegetable juice; eggs, milk, and cheese; and peanut butter, dried beans, or peas. Special therapeutic formulas and foods are provided when prescribed by a physician for a specified medical condition.

The Food and Consumer Service also encourages WIC mothers to breastfeed their babies whenever possible. WIC women who exclusively breastfeed their babies receive an enhanced food package which includes tuna and carrots.

Funding: The total appropriation for the WIC Program in FY 1995 is $3.5 billion.

■ ***Nutrition Program Fact:***
A 1990 USDA study showed WIC to be effective in improving the health of newborns and infants as well as mothers. Every $1 spent on WIC, the study reported, saved up to $3 in Medicaid costs.

■ ***Nutrition Program Fact:***
FCS requires all States to take bids from or negotiate with manufacturers for the best rebate on each can of WIC infant formula purchased. In 1994, infant formula rebates amounted to over $1 billion nationwide and funded services for nearly 1.6 million persons each month.

■ ***Nutrition Program Fact:***
WIC will serve an estimated 7 million persons each month in 1995, including four out of 10 babies born in the United States.

■ ***Nutrition Program Fact:***
According to the Centers for Disease Control and Prevention, WIC referrals for immunization were an important factor in overcoming the recent measles epidemic among preschool-age children.

The WIC Farmers' Market Nutrition Program

The WIC Farmers' Market Nutrition Program (FMNP), established in 1992, is funded through a Congressionally-mandated set-aside in the WIC appropriation. The program has two goals: To provide fresh, nutritious, unprepared food, such as fruits and vegetables, from farmers' markets to WIC participants who are at nutritional risk; and to expand consumers' awareness and use of farmers' markets. This program, operated in conjunction with the regular WIC Program, is offered in 26 States and other jurisdictions. Four additional States will start offering the program this year.

Eligibility: Women, infants over 4 months old, and children who receive WIC Program benefits, or who are WIC-eligible, may participate.

Benefits: Fresh produce can be purchased with FMNP coupons. State agencies may limit FMNP sales to specific foods that are locally grown to encourage participants to support the farmers in their own State.

Funding: The amount set aside in the WIC appropriation for FMNP for FY 1995 is $6.75 million.

■ ***Nutrition Program Fact:***
Studies have shown that where the WIC Farmers' Market Nutrition Program has been available, WIC participants have consumed more fresh fruits and vegetables.

The Commodity Supplemental Food Program

The Commodity Supplemental Food Program (CSFP) is a program of grants to States, administered by FCS at the Federal level. CSFP provides commodity foods to supplement the diets of low-income infants; children up to the age of 6; pregnant, postpartum, and breastfeeding women; and persons 60 years of age and older.

CSFP operates at more than 70 sites in 20 States, including the District of Columbia, and two Indian Tribal Organizations. USDA donates commodity foods to the State agencies for distribution, and provides funds to State and local agencies to cover certain administrative costs. The program served an average of more than 363,000 people each month in FY 1994.

Eligibility: State agencies that administer CSFP may establish a residency requirement and/or require applicants to be determined to be at nutritional risk in order to be eligible for program participation. To be income-eligible, women, infants, and children must be eligible for benefits under existing Federal, State, or local food, health, or welfare programs, and must not currently be receiving WIC benefits. Elderly persons must meet a low-income standard.

Benefits: There are six food packages for different categories of participants. The food packages are not intended to provide a complete and balanced diet, but rather are supplements that are good sources of the nutrients often lacking in participants' diets.

Funding: The 1995 appropriation for CSFP is $84.5 million.

> ***Nutrition Program Fact:***
> *CSFP has grown from a $48 million program in 1984 serving 150,100 participants to an $84.5 million program in 1995 serving over 412,000 people.*

The Child and Adult Care Food Program

The Child and Adult Care Food Program provides healthy meals and snacks in child and adult day care facilities.

CACFP ensures that children and adults in day care receive healthy meals by reimbursing participating day care operators for their meal costs and providing them with USDA commodity food. Family day care homes must be overseen by sponsoring organizations, which also receive reimbursements from USDA for their administrative expenses.

The program generally operates in child care centers, outside-school-hours care centers, family and group day care homes, and some adult day care centers. In return for Federal support, day care providers in the CACFP must serve meals that meet Federal guidelines, and must offer free or reduced-price meals to eligible people.

First authorized as a pilot project in 1975, the program was formerly known as the Child Care Food Program. It was made a permanent program in 1978, and the name was changed in 1989 to reflect the addition of an adult component. CACFP is administered at the Federal level by FCS. State agencies or FCS regional offices oversee the program at the local level.

In June 1994, CACFP provided meals to nearly 2 million children and 43,000 adults.

Eligibility: At child and adult day care centers, participants from families with income at or below 130 percent of the poverty level may qualify for free meals; those from families with income between 130 percent and 185 percent of the poverty level may qualify for reduced-price meals; and those from families with income above 185 percent of the poverty level pay full price.

At family day care homes, all meals are reimbursed at a single rate. There is no income test for children to receive meals, but children of the care provider cannot receive reimbursed meals unless family income is at or below 185 percent of the Federal poverty level.

As part of a demonstration project, homeless children under age 6 are eligible for the program if they reside in approved emergency shelters.

Benefits: Children and adults who attend day care facilities receive nutritious meals and snacks. Care providers receive reimbursement for eligible meals. Family

day care sponsoring organizations receive reimbursement for their administrative costs.

Funding: Congress appropriated $1.5 billion for the CACFP in FY 1995.

> ***Nutrition Program Fact:***
> *More than 185,000 family day care homes and 30,000 day care centers participate in the Child and Adult Care Food Program.*

The Summer Food Service Program

The Summer Food Service Program provides free meals to low-income children during school vacations.

SFSP was first created as part of a larger pilot program in 1968, and became a separate program in 1975. The SFSP served about 2.3 million children a day during the summer of 1994.

The program is administered at the Federal level by FCS. Locally, it is operated by approved sponsors, which receive reimbursement from USDA for the meals they serve.

Sponsors provide meals at a central site such as a school or community center. Any child or adult with a disability within the program's operating area can participate. All meals are served free.

The Summer Food Service Program operates in low-income areas where half or more of the children are from households with income at or below 185 percent of the Federal poverty guideline. Homeless feeding sites that primarily serve homeless children may participate regardless of location. Residential camps also may get reimbursement for eligible children through the SFSP.

Eligibility: Children 18 and under, and people over 18 who are handicapped and who participate in a program established for the mentally or physically handicapped, may receive meals through the Summer Food Service Program.

Benefits: At most sites, participants receive either one or two meals a day. Residential camps and sites that primarily serve children from migrant households may be approved to serve up to four meals per day. Sponsors are reimbursed for documented operating and administrative costs.

Funding: Congress appropriated $254.6 million for the program in FY 1995.

> ***Nutrition Program Fact:***
> *Some 25 million children eat school lunch every day when school is in session, and about half of them receive their meals free or at a reduced price. The Summer Food Service Program offers those children nutritious food when school is not in session. However, only about 2 million children are able to participate, because many communities do not sponsor the program.*

The Special Milk Program

The Special Milk Program provides milk to children in schools and child care institutions that do not participate in other Federal meal service programs. The program reimburses schools for the milk they serve.

Schools in the National School Lunch or School Breakfast Programs may also participate in the SMP to provide milk to children in half-day prekindergarten and kindergarten programs where children do not have access to the school meal programs.

Expansion of the National School Lunch and School Breakfast Programs, which include milk, has led to a substantial reduction in the SMP since its peak in the late 1960's.

Eligibility: Any child at a participating school or kindergarten program can get milk through the SMP. Children may buy milk or receive it free, depending on the school's choice of program options. When local officials offer free milk under the program, any child from a family that meets income guidelines for free meals and milk is eligible.

Benefits: Participating schools and institutions receive reimbursement from the Federal government for each half-pint of milk served. They must operate their milk programs on a nonprofit basis. They agree to use the Federal reimbursement to reduce the selling price of milk to all children.

Funding: Congress appropriated $18.1 million for the program in FY 1995.

> ■ ***Nutrition Program Fact:***
> *In 1994, nearly 159 million half-pints of milk were served through the Special Milk Program.*

Nutrition Program for the Elderly

The Nutrition Program for the Elderly helps provide elderly persons with nutritionally sound meals through meals-on-wheels programs or in senior citizen centers and similar settings.

The NPE is administered by the U.S. Department of Health and Human Services, but receives commodity foods and financial support from USDA under provisions of the Older Americans Act of 1965. USDA provided reimbursement for an average of more than 900,000 meals a day in FY 1994.

Eligibility: Age is the only factor used in determining eligibility. People age 60 or older and their spouses, regardless of age, are eligible for NPE benefits. There is no income requirement to receive meals under NPE.

Benefits: Each recipient can contribute as much as he or she wishes toward the cost of the meal, but meals are free to those who cannot make any contribution.

Under NPE, USDA provides cash reimbursements and/or commodity foods for meals served through DHHS programs. Meals served must meet a specified percentage of the Recommended Dietary Allowances (RDA's) in order to qualify for cash or commodity assistance.

Funding: Congress appropriated $150 million for NPE for 1995.

■ ***Nutrition Program Fact:***
Indian tribal organizations may select an age below 60 for defining an "older" person for their tribes for purposes of eligibility for the Nutrition Program for the Elderly.

The Food Distribution Program on Indian Reservations

This program provides monthly food packages to Indians living on or near reservations. Many Native Americans participate in the FDPIR as an alternative to the Food Stamp Program if they do not have easy access to food stores. An average of more than 113,000 Native Americans received food through FDPIR each month in 1994.

The program is administered at the Federal level by FCS in cooperation with State agencies. USDA provides food to the State agencies, which are responsible for program operations such as storage and distribution, eligibility certification, and nutrition education.

The foods in the current food packages were recommended in 1986 by a USDA task force to meet the health needs and preferences of Native Americans. USDA also provides nutrition information in the monthly food package, with suggestions for making the most nutritious use of the commodity foods.

Eligibility: To participate in FDPIR, the household must be low-income, have assets within specified limits, and be located on or near an Indian reservation. The income limits used to determine FDPIR eligibility are based on Food Stamp Program monthly income limits, but are slightly higher.

Benefits: USDA donates a variety of foods to help participants maintain a balanced diet. These commodities include canned meats and fish products; vegetables, fruits, and juices; dried beans; peanuts or peanut butter; milk, butter, and cheese; pasta, flour, or grains; adult cereals; corn syrup or honey; and vegetable oil and shortening.

Each program recipient receives a monthly food package that weighs 50 to 75 pounds and contains a variety of foods.

Funding: Congress appropriated $33.2 million for FDPIR in FY 1995.

■ ***Nutrition Program Fact:***
A recipe book, Quick & Easy Commodity Recipes for the Food Distribution Program on Indian Reservations, was released for use by FDPIR participants in 1990. The book was developed as part of a 5-year nutrition education plan. USDA also distributes a series of 12 nutrition and health fact sheets for FDPIR participants.

The Emergency Food Assistance Program

Originally named the Temporary Emergency Food Assistance Program, TEFAP gives needy Americans USDA-donated foods for household use. The foods are free, but recipients must meet program eligibility criteria set by the States. Local agencies,

usually food banks, shelters, and soup kitchens, are designated by the States to distribute the food.

TEFAP was first authorized in 1981 to distribute surplus commodities to households. Its aim was to help reduce Federal food inventories and storage costs while assisting the needy. The 1988 Hunger Prevention Act required the Secretary of Agriculture not only to distribute surplus foods, but also to purchase additional food for further distribution to needy households.

Available foods vary depending on market conditions. Typically, canned and dried fruits, canned vegetables, canned meats, peanut butter, butter, and cornmeal are available. Quantities of any particular commodity food vary, and States may rotate distribution of some foods from area to area so that each county receives its fair share at some time during the year.

Eligibility: Each State sets criteria for determining what households are eligible to participate in the program. Income standards may include participation in any other existing Federal, State, or local food, health, or welfare program for which income is considered as a basis for eligibility.

Each State can adjust the income criteria based on the level of need in order to ensure that assistance is provided only to those most in need.

Benefits: An estimated 2.5 million food packages are distributed to households each month. TEFAP has provided billions of pounds of food since its beginning. More than one billion pounds, valued at $846 million, was distributed at the program's height in 1987. In 1994, nearly $200 million worth of food was distributed.

Funding: Congress appropriated $65 million for TEFAP in 1995.

> ■ ***Nutrition Program Fact:***
> *Some 90 percent of TEFAP households may be eligible to receive food stamps.*

Food Donations to Charitable Institutions, Soup Kitchens, and Food Banks

Thousands of charitable institutions throughout the country rely on foods donated by USDA to help provide meals to needy people. These charitable groups range from churches operating community kitchens for the homeless and destitute, to orphanages and homes for the elderly. Other eligible groups include meals-on-wheels programs, soup kitchens, temporary shelters, correctional institutions offering rehabilitative activities, group homes for the mentally retarded, and hospitals that offer general and long-term health care.

Foods donated to charitable institutions come from agricultural surpluses acquired by USDA as part of its price stabilization and surplus removal activities.

Eligibility: To participate, charitable institutions must be nonprofit and must serve meals on a regular basis. They may be either public or nonprofit private institutions that have Federal tax-exempt status. Interested groups apply for participation to their State's distributing agency, which determines eligibility based on standards set by USDA.

Benefits: Throughout the year, USDA acquires a variety of foods through its programs designed to stabilize farm prices. USDA has this food processed, packaged, and transported to designated locations within each State. State distributing agencies supply the food to eligible institutions and other users of donated foods. The kinds and quantities of food donated to charitable institutions vary, depending on crop and market conditions. Generally, the foods donated are butter; cereal and grain products such as cornmeal, rice, rolled wheat and oats, macaroni, and spaghetti; and peanut and oil products such as roasted peanuts, peanut butter, peanut granules, vegetable oil, and vegetable shortening. Other foods, including meats, fruits, and vegetables, may become available when there is a surplus, but such surpluses are usually limited in quantity.

For soup kitchens and food banks, the commodities available generally include canned and frozen meats, nonfat dry milk, and canned fruits and vegetables.

Funding: Congress appropriated $40 million for FY 1995 to provide food to soup kitchens and food banks. The cost of foods donated to charitable institutions varies depending on market conditions.

■ ***Nutrition Program Fact:***
In 1994, more than 250 million pounds of food was provided through this program.

The Nutrition Assistance Programs in Puerto Rico and the Commonwealth of the Northern Mariana Islands

The Food Stamp Program in Puerto Rico and the Northern Marianas was replaced in 1982 by a block grant program. The two territories now provide cash and coupons to participants rather than food stamps or food distribution. The Nutrition Assistance Program grant can also be used to fund up to 50 percent of Puerto Rico's administrative expenses, or to fund special projects related to food production and distribution.

The Nutrition Assistance Program for the Commonwealth of the Northern Marianas (CNMI) provides annual block grant funds for food assistance to the needy. The Northern Marianas NAP uses food coupons, similar to food stamps used in the 50 States.

Eligibility: Puerto Rico and the CNMI determine eligibility and allotments for their programs based on household size, income, assets, and other factors.

Benefits: The NAP in Puerto Rico served an average of 1.41 million persons in FY 1994. Average monthly benefits were $62.02 per person.

In the Northern Marianas, the NAP served an average of 3,842 people each month in 1994, with average monthly benefits of $77.06 per person.

Funding: The total appropriation for the NAP in Puerto Rico for FY 1995 is $1.143 billion. The total appropriation for the Northern Marianas has held steady at $3.7 million each year.

USDA Disaster Assistance

FCS is the primary agency responsible for providing Federal food assistance in response to disasters. FCS provides assistance through the Food Distribution Program and the Disaster Food Stamp Program.

Food Distribution Program: FCS can provide USDA-donated food assistance through State distributing agencies. All States have some stocks of USDA food on hand for use in their commodity programs for schools or needy people. These stocks can be released immediately for use in a disaster situation.

Upon request from a State, FCS will procure additional food to meet the needs of people affected by a disaster. Nearby States also may be asked to release their stocks of USDA food to help feed disaster victims. State distributing agencies then distribute the food to preparation or distribution sites. Disaster relief agencies such as the American Red Cross prepare the food at shelters and other mass care facilities.

The State may also request that food be made available for household distribution, if commercial channels of food supply are not available because of the disaster.

Disaster Food Stamp Program: When commercial channels of food supply are still operable, or have been restored following a disaster, a State may request approval from the Secretary of Agriculture to operate the Disaster Food Stamp Program.

If approval is granted, FCS provides on-site guidance for establishing and operating the disaster program. FCS ensures that an adequate supply of food stamp coupons is available. State and local officials are responsible for determining the eligibility of households to receive disaster food stamps, and for issuing the benefits.

■ ***Nutrition Program Fact:***
In FY 1994, FCS provided more than $86 million in commodities and disaster food stamps to areas struck by natural disasters:

State	*Food stamp benefits*	*Commodities*
California (earthquake)	*$68.1 million*	*$2.3 million*
Alabama (floods)		*$73,860*
Florida (floods)		*$55,882*
Georgia (floods)	*$15.8 million*	*$288,090*
Total	*$83.9 million*	*$2.7 million*

Nutrition Program Fact:
How to apply: People who want to apply for any of the nutrition assistance programs that FCS operates must do so through the appropriate State agency, since the programs are administered at the State and local levels by various public and private organizations. In general, applicants for the largest programs should contact the following State or local agencies:

- *Food Stamp Program: State welfare agency*
- *School Lunch or School Breakfast (free and reduced-price meals): Neighborhood school or local school authority*
- *WIC program: State or local public health office*

For programs not listed above, State and local welfare agencies, health departments, or education agencies can provide information about what programs are available and how and where to apply.

The Office of Consumer Affairs

The Office of Consumer Affairs (OCA) links FCS, consumer groups, and FCS program stakeholders. OCA advises the Under Secretary for Food, Nutrition, and Consumer Services on consumer and constituent issues and concerns.

OCA arranges periodic meetings, briefings, and roundtables on USDA and FCS policy for the public, consumer representatives, and program stakeholders. It provides public access to a wide range of USDA and FCS documents such as speeches, regulatory proposals, and studies, through the Internet and other electronic media, and it responds to consumer requests for assistance and information on USDA policy and procedures.

The OCA director reports to the Under Secretary for Food, Nutrition, and Consumer Services, and receives managerial and administrative support from FCS.

Center for Nutrition Policy and Promotion

The Center for Nutrition Policy and Promotion was established in December 1994 to provide direction and coordination for USDA's nutrition research and policy activities. The center helps enhance the nutritional status of Americans by linking scientific research to the nutritional needs of the American consumer. It translates nutrition research into information and materials for health professionals, private companies, and consumers, to increase public knowledge and understanding of the importance of nutrition.

The Center is an independent resource in USDA, working cooperatively with other parts of the Department to provide strategic planning and coordination for nutrition policy. The Center's director reports to the Under Secretary for Food, Nutrition, and Consumer Services, and receives managerial and administrative support from FCS. The Center's funding is $2.2 million for FY 1995.

9. Food Safety

Food Safety and Inspection Service

The major responsibility of the Food Safety and Inspection Service (FSIS) is to oversee and inspect more than 7.5 billion poultry and 130 million meat animals yearly on their path from farm to table. This public health agency in the USDA protects consumers by ensuring that meat and poultry products are safe, wholesome, and accurately labeled.

In 1994, as part of the USDA reorganization, elements of various agencies were combined into one food safety agency headed by an Under Secretary for Food Safety. Some divisions of the Agricultural Marketing Service (AMS) and the Animal and Plant Health Inspection Service (APHIS) as well as the entire Food Safety and Inspection Service (FSIS) are now under one umbrella.

The mission of the Agency is to reduce the risk of foodborne illness, the Nation's most significant food safety problem. To accomplish this, the new food safety agency is taking steps to improve the safety of meat and poultry from farm to table in the food production, processing, distribution, and marketing chain.

Between 1906 and 1993, the inspection system was based on what inspectors could see: diseases, defects, and contamination on meat and poultry carcasses. But dangers to the food supply are often from unseen microscopic bacteria, such as *E. coli* and *Salmonella*.

Now FSIS is doing research and developing the tools needed to detect bacteria on meat and poultry which cannot be seen on visual inspection. Samples of meat and poultry are routinely tested for bacterial contamination. This is part of a broad and long-term science-based strategy to prevent foodborne pathogens from entering the food supply all along the chain, to improve the safety of meat and poultry products, and to better protect public health.

FSIS Activities

The activities of FSIS include:

- Inspecting meat and poultry, as well as processed products made from them;
- Setting standards for plant facilities, product contents, packaging, and labeling;
- Analyzing products for microbiological and chemical adulterants; and
- Educating consumers about foodborne illness by way of publications, educational campaigns, and a toll-free Meat and Poultry Hotline.

The task of inspecting meat and poultry is imposing because consumers spend $120 billion, or one third of their annual food dollars, for meat and poultry products. FSIS inspects and regulates all raw beef, pork, lamb, chicken, and turkey sold in interstate and foreign commerce, including imported products.

In addition, about 250,000 different processed meat and poultry products fall under FSIS inspection. These include hams, sausage, soups, stews, pizzas, frozen dinners, and any product containing two percent or more cooked poultry or at least three percent raw meat. USDA also reviews 500,000 different package labels, which must be approved before the products may be sold to consumers.

Table 9-1.

Livestock and poultry federally inspected in 1994

Cattle	34,370,227
Pigs	90,206,024
Other	5,124,359
Poultry	7,492,088,622

The task of inspecting meat and poultry is carried out by more than 8,100 Inspection Operations employees, including over 1,100 veterinarians. They work in some 6,200 privately owned plants to carry out the mandate of the 1906 Federal Meat Inspection Act, the 1957 Poultry Products Inspection Act, and the regulations that implement these laws.

All plant facilities and equipment must adhere to FSIS standards and be approved before they can be used. Standards are also set for certain slaughter and processing activities, such as plant sanitation and thermal processing.

Inspectors check animals before and after slaughter, visually examining over 7 billion poultry carcasses and 130 million livestock carcasses—including beef, pork, and lamb—each year. They prevent diseased animals from entering the food supply and examine carcasses for visible defects that can affect safety and quality.

■ *More than 8,100 Inspection Operations employees, including more than 1,100 veterinarians, carry out the inspection laws in over 6,200 meat, poultry, and other slaughtering or processing plants in the United States and U.S. Territories.*

Inspectors can also can test for the presence of pathogenic microorganisms and drug and chemical residues that violate Federal law. The Agency operates three field laboratories to test meat and poultry samples.

■ *There are over 6,500 inspectors licensed to inspect meat and poultry in more than 1,400 foreign plants authorized to export products to the United States. In 1994, over 2.5 billion pounds of meat and poultry passed inspection for entry into the United States from 35 countries.*

Over the last 20 years, the violation rate for drug and chemical residues detected in FSIS testing programs has dropped dramatically, moving close to zero. Only about 3 of every 1,000 samples routinely tested for residues exceed the legal limit.

Imported meat and poultry arriving by ship or air are also subject to FSIS scrutiny. The Agency reviews and monitors the foreign inspection systems in the products' countries of origin to ensure they are equivalent to the U.S. system. When the products reach the United States, selected products are reinspected at 150 official import facilities by import inspection personnel.

Finally, FSIS continues to work to improve meat inspection. The Agency develops and improves procedures for detecting microbiological and chemical adulterants, and infectious and toxic agents in meat and poultry products. If foodborne bacteria, residues, or other types of contamination are found, FSIS may ask the producer to voluntarily recall the products.

Standards and Labeling

FSIS also inspects products during processing, handling, and packaging to ensure that they are truthfully labeled. FSIS evaluates and sets standards for food ingredients, additives, and compounds used to prepare and package meat and poultry products. The Agency sets labeling standards and approves labels for meat and poultry products.

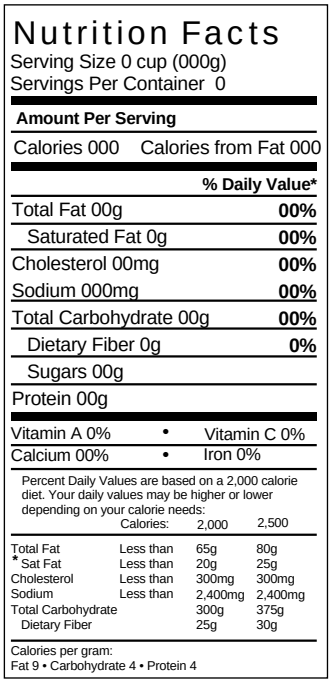
Nutrition Labeling of Meat and Poultry Products

One of the most far-reaching recent accomplishments of FSIS was requiring mandatory nutrition labeling for most meat and poultry products except raw, single-ingredient products such as raw poultry. The final rule, issued January 6, 1993, became effective in August 1994.

The Nutrition Facts panel was developed through a joint effort by FSIS and the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services (HHS). The two agencies issued parallel regulations intended to create the most uniform nutrition labels possible for virtually all foods.

The labels help consumers follow the Dietary Guidelines developed by the USDA and HHS. The guidelines emphasize the importance of a well-balanced diet. Most packaged foods carry an up-to-date, easy-to-use nutrition panel.

See the following example.



Nutrition Facts
Serving Size 0 cup (000g)
Servings Per Container 0

Amount Per Serving

Calories 000 Calories from Fat 000

	% Daily Value*
Total Fat 00g	**00%**
Saturated Fat 0g	**00%**
Cholesterol 00mg	**00%**
Sodium 000mg	**00%**
Total Carbohydrate 00g	**00%**
Dietary Fiber 0g	**0%**
Sugars 00g	
Protein 00g	

Vitamin A 0% • Vitamin C 0%
Calcium 00% • Iron 0%

Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		Calories: 2,000	2,500
Total Fat	Less than	65g	80g
* Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

In addition to the Nutrition Facts panel, FSIS also defined the product claims that can be made on the front label of meat and poultry products. The Agency has set specific requirements for using the following terms:

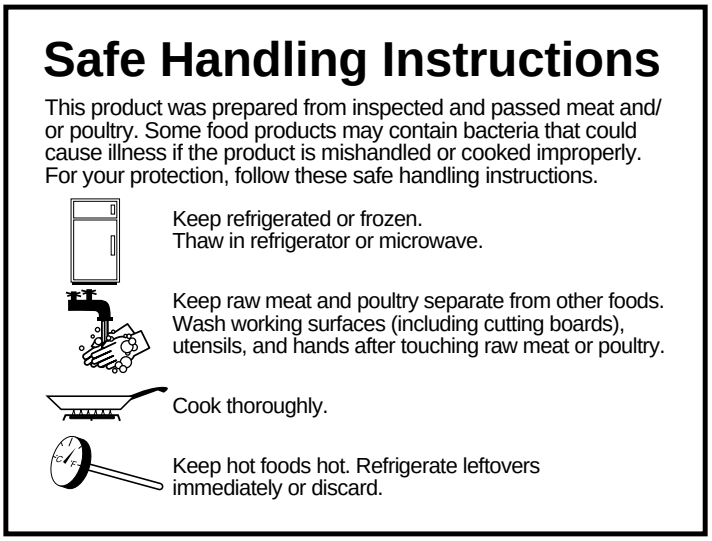
- free,
- less
- low
- good source of
- extra lean
- light (lite)
- high
- reduced
- lean
- more

Safe Food Handling Label

In 1994, FSIS issued a rule requiring safe handling instructions on packages of all raw or partially cooked meat and poultry products as part of a comprehensive effort to protect consumers from foodborne illness. Some food products may contain bacteria that could cause illness if the product is mishandled or cooked improperly.

To prevent bacterial growth and to reduce the risk of foodborne illness, the label directs consumers to follow safe food handling practices from the time perishable products are purchased until they have been cooked and stored.

A Safe Food Handling Label:



Current Food Safety Initiatives

Positive steps have been taken to reduce contamination in the food supply. For the first time since 1906, FSIS moved in 1994 to declare a pathogenic bacterium, *E. coli O157:H7*, an adulterant in raw product. The bacterium, which is most often linked to undercooked ground beef, is believed to cause an estimated 10,000 to 20,000 illnesses and about 500 deaths each year.

FSIS initiated a nationwide sampling program in federally inspected plants and retail stores to test for *E. coli O157:H7* in raw ground beef. Any samples testing positive for the pathogen in USDA laboratories are to be treated as adulterated under the Federal Meat Inspection Act and referred to FSIS for regulatory action.

To further accomplish the Agency's goal to reduce contamination, FSIS has proposed Pathogen Reduction and Hazard Analysis and Critical Control Point (HACCP) Systems. The proposal requires changes in procedures from an inspection system based primarily on sight, touch, and smell, to one incorporating scientific testing and systematic prevention of contamination.

Food Safety from Farm to Table

FSIS is taking steps to improve the safety of meat and poultry from production through use. Food safety depends on:

- Properly growing the animals at the farm or feedlot,
- Processing at the plant incorporating pathogen reduction and HACCP measures,
- Handling the food safely during transportation and distribution,
- Storing it safely in the store, and
- Safe food handling at home by consumers.

At the Farm

Quality control programs are being used to control pathogens on the farm. FSIS works closely with the producers of food animals as well as other government agencies to explore what measures can be taken on the farm and before animals enter the slaughter facility to reduce the risk of contaminating meat and poultry products.

Inside the Plant

Changing a live animal into food that is conveniently packaged for consumers occurs inside a federally inspected meat or poultry plant. To improve the safety of meat and poultry products, FSIS proposes to use Pathogen Reduction and HACCP systems to reduce levels of bacteria which can be on meat and poultry products as a result of contamination from the live animal.

The purpose of HACCP systems is to identify potential food safety hazards arising in slaughter and processing plants. HACCP is a system of steps used to identify and prevent problems from occurring during food processing and to correct them as soon as they are detected. With HACCP in place, FSIS can verify that the plant is controlling its processes and consistently producing products that comply with food safety requirements.

The HACCP system consists of seven principles that plants must incorporate into their operation plans. They include (1) hazard analysis, (2) critical control point identification, (3) establishment of critical limits, (4) monitoring procedures, (5) corrective actions, (6) record keeping, and (7) verification procedures.

Under the Pathogen Reduction proposal, targets would be set for reducing the incidence of bacterial contamination of raw meat and poultry products. Daily microbial testing would be required in slaughter plants to determine whether targets are being met or remedial measures are necessary.

Raw products would be tested for *Salmonella*, a pathogenic bacteria that is the most common cause of foodborne illness in the United States. Slaughter plants would be required to reduce contamination to a specific level that will be determined by FSIS. The proposal would require bacterial testing 90 days after publication of the final rule.

■ ***Egg Products Inspection Now Under FSIS***

As of May 28, 1995, FSIS is responsible for inspection of 81 U.S. plants that produce liquid, frozen, and dried egg products. Formerly under the jurisdiction of USDA's Agricultural Marketing Service, 158 inspectors, supervisors, and support staff will now be part of FSIS. In FY 1994, USDA inspected 1,761 million pounds of liquid egg products, which translates into 817 million pounds sold in liquid form, 428 million pounds sold in frozen form, and 133 million pounds sold as dried egg products.

In Retail Establishments

FSIS is working closely with the Food and Drug Administration to ensure food safety at the retail level. This includes establishing Federal standards for the safe handling of food during transportation, distribution, and storage. FSIS also will work

with producers and others to develop and implement food safety measures that can be taken on the farm and before animals enter the slaughter facility to reduce the risk of harmful contamination of meat and poultry products.

At the Table

Helping ensure that consumers handle food safely at home is an ongoing priority for the Agency carried out by the Public Information staff and the USDA Meat and Poultry Hotline. Consumers, school children, the media and other information multipliers are the object of a comprehensive, nationwide FSIS food safety education program to prevent foodborne illness.

USDA Meat and Poultry Hotline 1 (800) 535-4555

The Agency reaches people directly through its toll-free Meat and Poultry Hotline. The Hotline's staff of home economists, dieticians, and food technologists inform the public on how to properly handle, prepare, and store meat and poultry products to minimize the growth of foodborne pathogens.

More than 125,000 people called the Hotline in 1994. Some of their specific concerns included *E. coli O157:H7*, *Salmonella enteritidis*, cutting boards, and the safe handling of already cooked foods.

The Hotline staff can be reached Monday through Friday year-round from 10:00 a.m. to 4:00 p.m. Eastern Time. Callers can hear their choices of recorded food safety messages 24 hours a day by calling the same toll-free number. Using a touch-tone phone, they can select from about 50 food safety messages under eight "menu" headings which are updated periodically to include seasonal topics and the latest recalls of meat and poultry products.

■ ***What do people call the Hotline about?***

Here are some of the most frequent topics of questions to the Hotline staff:

- *Prevention of foodborne illness, food storage, preparation and handling*
- *Recalls of meat and poultry*
- *Different types of foodborne pathogens*
- *Problems or complaints about certain products*
- *Power failures or food at risk in refrigerators and freezers that breakdown*
- *Using new nutrition labels to plan healthful diets*
- *Safe handling label instructions*
- *Safe preparation and handling of foods to be eaten away from home or outdoors*
- *The role of the consumer in food protection*
- *People who are "at risk" for foodborne illness, including the young, the elderly, pregnant women, and the chronically ill*

10. Natural Resources and Environment

USDA's Natural Resources and Environment mission area plays a vital role in the management and conservation of the Nation's land, natural resources, and natural heritage. The USDA Forest Service and the Natural Resources Conservation Service (formerly the Soil Conservation Service) share responsibility for fostering sound stewardship on 75 percent of the country's total land area. The Forest Service oversees the management of 191.6 million acres of public lands, made up of 155 forests and 20 National Grasslands, while the Natural Resources Conservation Service provides direct, technical assistance and conducts a broad range of programs to address farmers' and ranchers' natural resource problems on private lands.

Although the programs of the agencies differ, both agencies are defined by profound land and service ethics which guide their common mission: to promote diverse, healthy and sustainable ecosystems by restoring and sustaining the integrity of soil, air, water, biological diversity, and ecological processes. By making resource management decisions in the context of the full system, the agencies ensure that products, values and services, and uses desired by people are produced in ways that sustain a healthy and productive nation and environment.

Caring for the Nation's land, natural resources, and natural heritage in a sustainable way is a challenging task, a task which depends on each agency's unique and dynamic partnerships. The Forest Service, for example, works closely with State forestry organizations to help private landowners apply environmentally sound practices on the land. Through its cooperative State and private forestry programs, the Forest Service offers technical and financial assistance to protect and improve the quality of air, water, soil, and open space, and encourages uses of natural resources on non-Federal lands, while protecting the environment. The Natural Resources Conservation Service relies on a three-way partnership—with conservation districts, State agencies, and Earth Team volunteers—to deliver technical assistance at the local level.

Both the Forest Service and Natural Resources Conservation Service (NRCS) assist urban and rural communities to restore and enhance the quality of ecosystems and to build capacity for meeting community needs in an environmentally sound manner. The Forest Service and NRCS, along with the Cooperative State Research, Education, and Extension Service and other Federal agencies, have participated in the year-old Urban Resources Partnership Program. The agencies in the program work cooperatively with local communities, governments, organizations, and businesses to deliver services efficiently and effectively in eight pilot cities: Atlanta, Chicago, Denver, East St. Louis, Los Angeles, New York City, Philadelphia, and Seattle. Four partnership projects initiated in FY 1994 included educating children about wetland restoration, planting community gardens, and providing urban forestry and leadership training to women in innercity communities.

The Natural Resources Conservation Service and Forest Service have supported rural development activities through their work in cooperation with conservation districts, Resource Conservation and Development Councils, State rural development councils, and others. The agencies offer guidance about ways to enhance economic well-being and create natural resource-based jobs, while sustaining the environment and its resource base.

As mission areas across the department have developed and implemented reinvention strategies, the Natural Resources and Environment mission area has closely coordinated reorganization and streamlining in the Forest Service and the Natural Resources Conservation Service to help both agencies work better for less and improve customer service. Both agencies have completed strategies—reflecting extensive stakeholder input—to ensure their conservation leadership into the 21st century. The strategies have included significant streamlining and restructuring of headquarters staff and field workforce; development of regional leadership teams to ensure an integrated, comprehensive approach to natural resource management; and a renewed commitment to customer service.

In 1994, the Secretary of Agriculture created the Agricultural Council on Environmental Quality, which is led by the Under Secretary for Natural Resources and Environment. The council's mission is to coordinate crosscutting environmental policies and programs within the department. Some of the policy issues coordinated by the council include pesticides, threatened or endangered species, biomass for energy, and water quality. The council also serves as the departmental liaison with other Federal agencies and nongovernmental organizations.

Forest Service: Caring for the Land and Serving People

The Forest Service considers the American people its owners, customers, and partners in caring for the Nation's natural resources.

The United States has about 1.6 billion acres of forest and range land, under all ownerships. Nearly half of this area, 736.7 million acres, is forest land.

The Forest Service is responsible for managing the 191.6 million acres in the National Forest System. This is 8.3 percent of U.S. land area—about the size of Texas, plus 10 percent.

There are 155 National Forests and 20 National Grasslands in 44 States, the Virgin Islands, and Puerto Rico.

The Forest Service administers statutes that guide:

- Construction of roads and trails, which are built where needed to allow for closely regulated timber harvesting, to give the public access to outdoor recreation areas, and to provide scenic drives and hikes,
- Construction and maintenance of facilities at picnic, camping, water sports, ski, and other areas for public convenience and enjoyment,
- Timber harvesting methods that will protect the land and streams, assure rapid renewal of the forest, provide food and cover for wildlife and fish, and have minimum impact on scenic and recreation values,

- Removal of oil, gas, uranium, and other minerals of strategic importance, as well as geothermal steam and coal,
- Use of national forest and range land as a refuge for threatened and endangered species of birds, animals, fish, and plants, and
- Use of National Forests and Grasslands for livestock grazing.

Mission

The Forest Service's mission is expressed best in its land ethic, which charges the agency to "Promote the sustainability of ecosystems by ensuring their health, diversity, and productivity." This is coupled with the service ethic: "Tell the truth, obey the law, work collaboratively, and use appropriate scientific information in caring for the land and serving people."

These land and service ethics are applied daily to the management of the Nation's forest and range lands through the development and practice of ecosystem management. Simply stated, ecosystem management is the integration of ecological, economic, and social factors in order to maintain and enhance the quality of the environment to meet current and future needs.

Four goals help the agency focus priorities in providing sustainable benefits to the American people. They are to (1) protect ecosystems, (2) restore deteriorated ecosystems, (3) provide multiple benefits for people within the capabilities of ecosystems, and (4) improve organizational effectiveness.

The Forest Service's 1990 Resources Planning Act Program, a long-term strategic plan, set forth four high-priority themes: Enhancing recreation, wildlife, and fisheries resources; ensuring that commodity production is environmentally acceptable; improving scientific knowledge about natural resources; and responding to global resource issues.

Principal Laws

The Forest Service administers the lands and resources of the National Forest System under the National Forest Management Act of 1976, the Multiple Use-Sustained Yield Act of 1960, and the Organic Administration Act which created the National Forest System. The agency also conducts research, provides assistance to private landowners, and assesses the Nation's natural resources under the Renewable Resources Extension Act of 1978 and the Forest and Rangeland Renewable Resources Research Act of 1978.

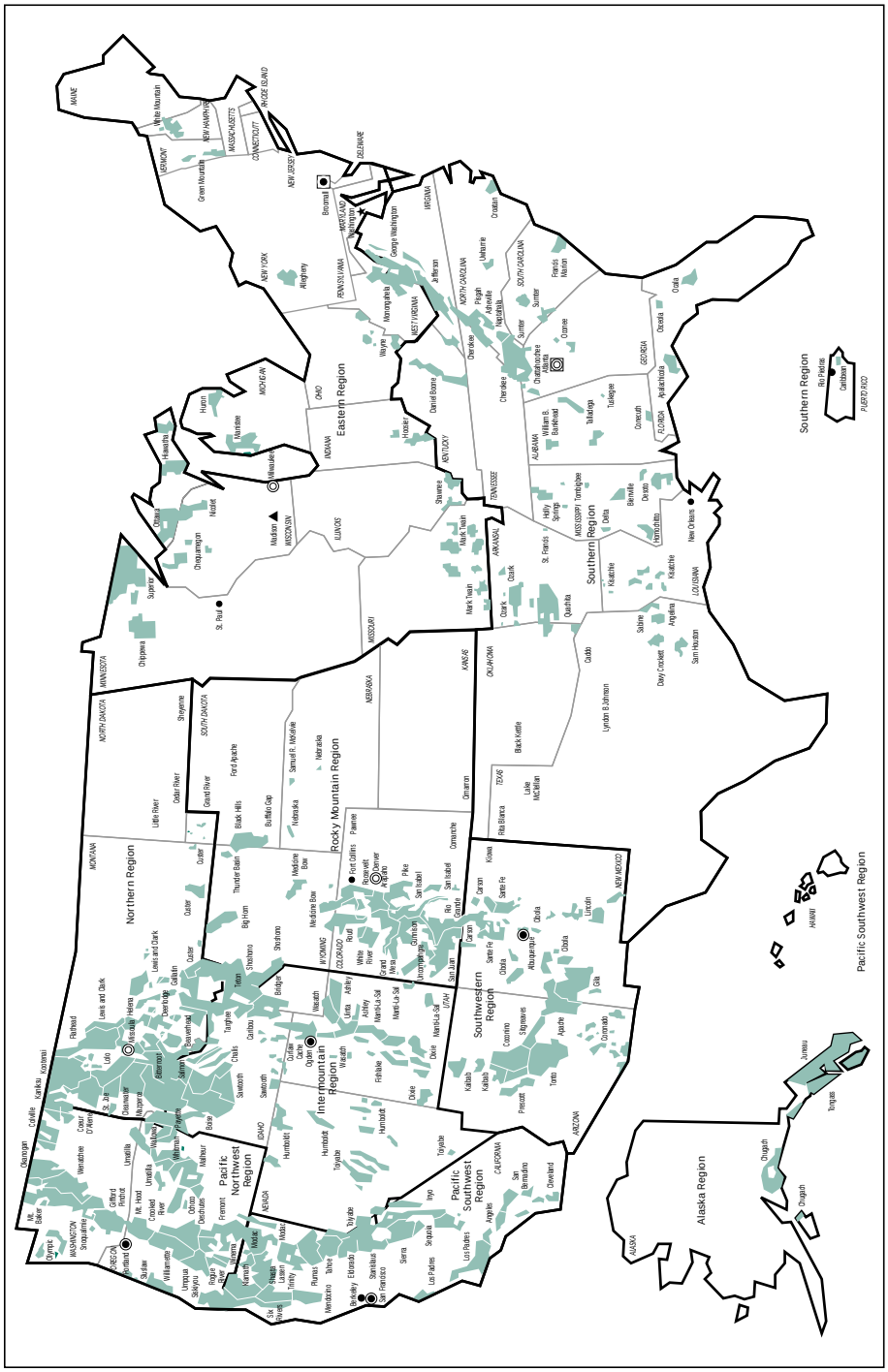
Organizational Structure

The top administrative official of the Forest Service is the Chief, who, through the Under Secretary for Natural Resources and the Environment, reports to the Secretary of Agriculture. The agency is responsibile for administering programs that provide services to the general public and other users in four areas: (1) National Forest System, (2) State and Private Forestry, (3) Research, and (4) International Forestry.

In the **National Forest System**, the Forest Service operates under the concept of multiple use, providing sustained yields of renewable resources such as water, livestock forage, wildlife habitat, wood, and recreation. The Forest Service is committed

Figure 10-1.

Location of National Forests



to the preservation of wilderness, biodiversity, and landscape beauty, as well as the protection of water, air, and soil quality in its management of these lands.

The lands are protected as much as possible from wildfire, epidemics of disease and insect pests, erosion, floods, and water and air pollution.

In addition, the Agency, under its **State and Private Forestry** program, works with State forestry organizations to help private landowners apply good forest practices on their lands. Through its cooperative State and private forestry programs, the Forest Service offers financial and technical assistance to protect and improve the quality of air, water, soil, and open space and encourages uses of natural resources on non-Federal lands, while protecting the environment.

The **research** arm of the Forest Service conducts extensive research on a wide range of forest-related subjects, to develop new knowledge and science in ecosystem restoration and management, and to enhance and protect productivity on all of America's forests and rangelands, with special attention to long-term natural resource issues of national and international scope.

The Forest Service carries out **international forestry** activities to help promote sustainable development and global environmental stability, particularly in key countries important in global climate change. This mandate includes a national goal for sustainable management of all forests by the year 2000, researching topics with implications for global forest management, and sharing resource management experience with colleagues around the world.

Reinvention

In 1994, the Forest Service completed a comprehensive strategy to transform itself into a new Forest Service of the future. "Reinvention of the Forest Service: The Changes Begin" is a strategic document, but it is also very much a call for action. It asks for energetic and enthusiastic support to accomplish some very complex tasks. The Forest Service has:

- Streamlined the workforce by 10 percent during the past 2 years, and plans to streamline by nearly another 10 percent during the next several years,
- Planned a comprehensive restructuring of national headquarters to enhance corporate, strategic decisionmaking (plans call for streamlining the Washington Office by more than 25 percent this year),
- Created regional leadership teams to promote a more comprehensive, integrated approach to management of National Forests and Grasslands,
- Adopted a customer service pledge that improves the Forest Service's long tradition of customer service,
- Re-engineered several core work processes to provide improved service and better land management (these include forest planning, environmental assessment, and budget planning), and
- Re-engineered some administrative work processes to reduce internal red tape and enhance internal customer service, including small purchasing, staffing, and travel administration.

National Forest Foundation

The National Forest Foundation was authorized by Congress in 1990 to collect and administer donations to further the activities of the Forest Service. The Foundation became operational in 1992. In 1993, it funded three youth forest camps, in Oregon, Washington, and Virginia. These camps served 211 youth from many ethnic backgrounds who were recruited from rural and urban areas. They accomplished more than $334,400 worth of resource projects on national forest lands, and received high school credit for the summer projects.

National Forest System—Conservation and Multiple Use

Lands

The Forest Service is the steward of the 191.6 million acres in the National Forest System. This stewardship includes landownership adjustment to protect and enhance the National Forest System, prevention of unauthorized encumbrances, protection of boundaries and records associated with this land, granting appropriate rights to others when in the public interest, resolution of issues affecting lands, and administration of rights granted to or retained by other agencies, governments, and landowners.

Wildlfe, Fish, and Rare Plants Management

The National Forest System includes 2.3 million acres of fishable lakes, ponds, and reservoirs and more than 197,000 miles of perennial streams.

National Forests and Grasslands support habitats for more than 3,000 species of birds, mammals, reptiles, amphibians, and fish, as well as some 10,000 plant species. The National Forests and Grasslands also provide:

- 80% of the elk, mountain goat, and bighorn sheep habitat in the lower 48 States,
- 28 million acres of wild turkey habitat,
- 5.4 million acres of wetland habitat,
- Habitat for 250 species of neotropical migratory birds, and
- Habitat for more than 280 species of threatened or endangered plants, fish, or wildlife.

In 1994, people made more than 86 million visits to national forests to fish, hunt, and view wildlife, fish, and plants, with a total net value of nearly $4.3 billion. More than $1.7 billion in annual economic benefits result from recreational and commercial harvest of fish resources on National Forest System lands.

The Agency's threatened, endangered, and sensitive species program aims to conserve and restore habitat and thus avoid the need to list additional rare species. Habitat management efforts—in partnership with other Federal agencies, State fish and wildlife agencies, and national conservation groups—are currently underway for salmon, steelhead and cutthroat trout, spotted owl, marbled murrelet, and grizzly bear. Efforts to reintroduce species or increase their numbers are planned in collaboration with the U.S. Fish and Wildlife Service and State agencies for gray wolf, black-footed ferret, California condor, Mexican wolf, thick-billed parrot, and red-cockaded woodpecker.

- ***Key Facts about the Forest Service***
  - *The Forest Service manages 155 national forests for multiple uses.*
  - *There are 191 million acres of national forest land. This is 8.3 percent of the United States' land area—about the size of Texas plus 10 percent.*
  - *The entire Nation has about 1.6 billion acres of forest and range land, under all ownerships.*
  - *The entire Nation has 736.7 million acres of forest land area, not including rangeland, under all ownerships.*
  - *The National Forest trail system is the largest in the Nation, with more than 124,600 miles of trails for hiking, riding, and cross-country skiing.*
  - *The Forest Service provides more recreation than any other Federal Agency.*
  - *Minerals found on Forest Service lands provide more than $3.5 billion in private sector revenue.*

The owners/managers of this forest land are as follows:

- *Federal Government: 249.1 million acres*
- *Forest Service: 139.9 million acres*
- *Bureau of Land Management: 36.6 million acres*
- *National Park Service, Department of Defense, Department of Energy, and other Federal: 72.6 million acres*
- *Non-Federal total: 487.5 million acres*
- *State: 54.7 million acres*
- *Industry, county, municipal, farmer, & other private: 432.8 million acres*

The Forest Service manages—

- *National Grasslands: 3.9 million acres*
- *National Primitive Areas: 173,762 acres*
- *National Scenic-Research Areas: 6,630 acres*
- *National Wild & Scenic Rivers: 4,385 miles—95 rivers*
- *National Recreation Areas: 2.7 million acres*
- *National Game Refuges and Wildlife Preserves: 1.2 million acres*
- *National Monument Areas: 3.3 million acres*
- *National Historic Areas: 6,540 acres*
- *Congressionally designated wilderness—34.6 million acres*

Visitors to the National Forests are attracted by—

- *5,885 campgrounds and picnic areas*
- *328 swimming developments*
- *1,222 boating sites*
- *250 winter sports sites, including 120 downhill ski areas*
- *If all these sites were fully occupied at the same time, they would accommodate 1.8 million persons.*

Key 1994 figures:

- *Recreation use: 330.3 million visitor days (1 visitor day equals 12 hours of recreation use)*
- *Lands burned by wildfire: 530,000 acres*
- *Insect and disease suppression: 1.7 million acres*
- *Watershed improvements: 36,201 acres*
- *Wildlife and fish habitat improvements: 242,761 acres*
- *Reforestation: 492,000 acres*
- *Livestock grazing: 9.4 million animal unit months*
- *Grazing allotments administered: 9,940*
- *Mineral cases processed: 26,539*
- *Timber sold: 3.1 billion board feet*
- *Timber harvested: 4.8 billion board feet (some had been sold in previous years)*
- *Road system: 369,000 miles*

Partnerships

In 1994, more than 3,150 partners joined the Forest Service through the Challenge Cost-Share Program to complete more than 3,000 wildlife and fish habitat improvement projects on national forests and grasslands. Through these partnership efforts, many species have returned to habitats once abandoned. Fragile plant habitats have been identified and protected. Wetlands for waterfowl and other species have been improved by the construction of nesting islands and platforms. Fisheries have benefited from improved cover, construction of fish ladders and barriers, and restoration of watersheds.

Since 1986, wildlife and fish conservation partner contributions of labor, materials, expertise, and cash have approached $106 million, more than matching Forest Service monetary contributions of over $77 million.

Water, Soil, and Air

About 20 percent of the surface water supply in the United States flows from National Forest System watersheds. Three major goals of the Forest Service's watershed management programs are assuring adequate yields of high quality water, sustaining soil productivity, and managing air quality within standards. The task of mapping all the soils of the National Forest System, with the cooperation of the Natural Resources Conservation Service, is about 70 percent completed. The Forest Service improved 24,836 acres of watershed in FY 1994, about 15 percent more than the target amount.

Other significant activities include watershed analyses and watershed restoration work, especially in the Pacific Northwest; participating in water right adjudications in eight Western States; assessing water quality problems from abandoned mines located on most National Forests with assistance from States and other Federal

- ***Key Facts about Water in the National Forest System:***
  - *Watersheds on National Forest System lands total about 3,200*
  - *There are 902 municipal watersheds on National Forest System land, serving 25 million people*
  - *173 trillion gallons of water is supplied by the National Forest System to municipal watersheds annually*
  - *500 remote weather data collection platforms are used in agricultural, fire, weather, and streamflow forecasting*
  - *Burned-area emergency restoration in FY 1994 covered more than 150,000 acres of the 1.5 million acres burned*
  - *88 wilderness areas, covering almost 15 million acres, are classified as Class I (special visibility protection) under the Federal Clean Air Act.*

agencies; and monitoring lichens, lakes, snow, vegetation, and the atmosphere to determine air pollution impacts to wilderness areas.

Forage

National Forest System rangeland is managed to conserve the land and its vegetation while providing food for both livestock and wildlife. Forage production is a primary use of these lands. Under a multiple-use system, grazing areas also serve as watersheds, wildlife habitat, and recreation sites. Grazing privileges are granted on national forests and grasslands within the national forest system. Cattle and sheep graze under permit arrangements, for which a fee is paid by ranchers and farmers. The permittees cooperate with the Forest Service in range improvement projects.

- ***Key Facts about Rangeland***
  - *9.3 million animal unit months of livestock grazing were recorded on National Forest System lands in FY 1994, and,*
  - *the Forest Service administered 9,413 grazing allotments.*

Minerals and Energy

The Forest Service manages surface operations on mineral lands in the National Forest System. Energy resources on national forest system lands include oil, natural gas, coal, geothermal steam, and uranium. Mineral commodities of strategic importance on these lands are nickel, cobalt, molybdenum, tungsten, and vanadium. Other important commodities include gold, silver, lead, phosphate, barite, and construction materials such as gravel and stone. The Forest Service recommends conservation measures to be followed by the resource extractors. The objective is to permit

- ***Key Facts about the Forest Service Minerals Program***
  - *$3.2 billion of mineral production*
  - *7 million acres prospective for coal (50 billion tons)*
  - *45 million acres prospective for oil and gas*
  - *Substantial geothermal energy potential*
  - *Giant deposits of oil and gas*
  - *World class deposits of coal, platinum, copper, silver, lead, molybdenum*
  - *Largest carbon dioxide (CO_2) project in the country (Bridger-Teton National Forest, WY)*
  - *Largest coal mine in the United States (Thunder Basin Grasslands, WY)*
  - *Only platinum mine in the Western Hemisphere (Custer National Forest, MN)*
  - *Most lead production in the United States (Mark Twain National Forest, MO)*
  - *World-renowned quartz crystals, known for size and cluster quality (Ouachita National Forest, AR)*
  - *One of the largest molybdenum deposits in the world: 10% of the free world's reserves, and more than 1.5 billion tons of ore (Tongass National Forest, AK)*

- ***The following resources are produced annually on National Forest System lands:***
  - *12 million barrels of oil*
  - *325 billion cubic feet of gas*
  - *114 million tons of coal*
  - *500 million pounds of lead*
  - *200 million pounds of copper*
  - *1 million ounces of gold*
  - *20 million tons of sand and gravel*

environmentally responsible prospecting and mining, so there is minimal disturbance and damage to the land and damaged lands are reclaimed.

Timber

Less than half of the national forests' 191 million acres can be classified as commercial forest land, that is, land available for and capable of producing crops of industrial wood. These commercial forests help furnish the Nation with the lumber and plywood needed for housing and industrial uses, and with paper products. Timber management involves preparing sales by selecting the means of harvest that will be appropriate for the particular soil conditions involved and taking the measures necessary to protect the environment.

Table 10-1.

National Forest System lands administered by the Forest Service as of September 30, 1994

State, Commonwealth, or Territory	*National forests, purchase units, research areas, and other areas*	*National grasslands*	*Land utilization projects*	*Total*
		Acres		
Alabama	662,715	0	40	662,755
Alaska	22,053,445	0	0	22,053,445
Arizona	11,250,006	0	0	11,250,006
Arkansas	2,551,017	0	0	2,551,017
California	20,606,994	18,425	0	20,625,419
Colorado	13,867,569	628,379	0	14,495,948
Connecticut	24	0	0	24
Florida	1,136,990	0	0	1,136,990
Georgia	864,063	0	0	864,063
Hawaii	1	0	0	1
Idaho	20,399,384	47,756	0	20,447,140
Illinois	272,492	0	0	272,492
Indiana	193,036	0	0	193,036
Kansas	0	108,175	0	108,175
Kentucky	684,454	0	0	684,454
Louisiana	603,288	0	0	603,288
Maine	53,040	0	0	53,040
Michigan	2,852,991	0	959	2,853,950
Minnesota	2,826,931	0	0	2,826,931
Mississippi	1,155,613	0	0	1,155,613
Missouri	1,490,087	0	0	1,490,087
Montana	16,868,073	0	0	16,868,073
Nebraska	257,653	94,480	0	352,133
Nevada	5,813,980	0	0	5,813,980
New Hampshire	723,296	0	0	723,296
New Mexico	9,189,925	136,417	240	9,326,582
New York	13,750	0	0	13,750
North Carolina	1,240,781	0	0	1,240,781
North Dakota	743	1,105,036	0	1,105,779
Ohio	220,020	0	0	220,020
Oklahoma	255,471	46,286	0	301,757
Oregon	15,549,233	111,352	856	15,661,441
Pennsylvania	513,229	0	0	513,229
Puerto Rico	27,831	0	0	27,831
South Carolina	611,269	0	0	611,269
South Dakota	1,145,277	866,610	0	2,011,887
Tennessee	631,713	0	0	631,713
Texas	637,448	117,531	0	754,979
Utah	8,109,316	0	0	8,109,316
Vermont	354,256	0	0	354,256
Virgin Islands	147	0	0	147
Virginia	1,650,526	0	0	1,650,526
Washington	9,170,370	0	738	9,171,108
West Virginia	1,032,135	0	0	1,032,135
Wisconsin	1,519,364	0	0	1,519,364
Wyoming	8,686,638	571,971	0	9,258,609
Total	187,746,584	3,852,418	2,833	191,601,835

Passport in Time

Through Passport In Time, the Forest Service offers unique, nontraditional recreation experiences such as archaeological excavation, historic structure restoration, and wilderness surveys. These experiences foster environmental stewardship while providing the public with extraordinary experiences.

Passport In Time volunteers have contributed more than $2.5 million worth of time and effort to help preserve our Nation's history by:

- Restoring 45 historic structures,
- Stabilizing 11 National Register eligible sites,
- Evaluating 143 sites for inclusion in the National Register of Historic Places,
- Working at 28 projects in wilderness, and
- Developing 12 heritage interpretive sites.

State and Private Forestry—Providing Assistance to Nonindustrial Private Landowners

The **Forest Stewardship Program** provides technical assistance to nonindustrial private forest landowners to manage their forests for multiple resources. Since 1990, 101,516 landowners have enrolled in the program, and stewardship plans have been prepared for more than 13.2 million acres of nonindustrial private forests.

The **Stewardship Incentives Program** provides cost-share assistance, in cooperation with State Foresters and the Consolidated Farm Services Agency, for landowners to implement Forest Stewardship Landowner Plans on over 378,000 acres annually. This includes 50,138 acres of tree planting annually. Since 1990, stewardship incentives practices have been implemented on more than 1.3 million acres, including 140,239 acres of tree planting.

Forest Health Protection

The Forest Service:

- Emphasizes forest health protection including technical and financial assistance to Federal agencies, American Indian tribes, and (through the State Foresters) to private landowners,
- Conducts insect and disease detection surveys on 155 million acres of Federal lands and 441 million acres of State and private lands in cooperation with State Foresters,
- Participates in the forest health monitoring program with the State Foresters and the Environmental Protection Agency,
- Works with the Animal and Plant Health Inspection Service to protect the Nation's forests from insects and diseases,
- Provides technical assistance in the safe and effective use of pesticides,
- Cost-shares insect and disease suppression projects with States and funds suppression projects on Federal lands, and
- Evaluates and applies new, more efficient and environmentally sensitive technologies for forest health protection.

Table 10-2.

Payment to States from national forest receipts—FY1992-94[1]

State, Commonwealth, or Territory	*FY 1994*	*FY 1993*	*FY 1992*
		Dollars	
Alabama	1,271,055.32	1,390,707.02	1,881,981.22
Alaska	8,782,012.16	3,901,912.71	3,345,950.44
Arizona	3,949,883.28	5,658,379.07	6,125,695.16
Arkansas	4,535,988.40	3,450,850.85	2,141,293.04
California	50,981,328.44	47,060,152.68	59,580,922.17
Colorado	6,318,890.15	5,541,927.06	4,538,913.53
Florida	1,068,081.49	1,570,634.99	1,503,569.12
Georgia	892,851.64	1,240,412.85	1,225,869.10
Idaho	25,227,816.58	22,966,972.68	19,427,079.28
Illinois	37,588.40	46,807.23	40,784.24
Indiana	18,228.06	12,177.50	11,859.68
Kentucky	446,667.89	683,085.08	646,572.27
Louisiana	2,577,223.55	2,417,348.58	3,888,688.27
Maine	32,800.47	40,248.27	30,982.64
Michigan	1,964,052.45	1,897,568.10	1,906,690.24
Minnesota	2,818,868.30	2,667,734.07	2,455,163.33
Mississippi	5,928,308.80	5,930,285.85	6,147,256.79
Missouri	1,235,858.48	871,200.97	1,366,714.82
Montana	14,482,280.68	13,854,903.49	11,839,490.13
Nebraska	67,973.60	39,329.54	44,574.57
Nevada	520,368.09	356,128.64	425,283.05
New Hampshire	480,777.36	589,502.13	454,605.69
New Mexico	1,458,715.36	1,642,149.35	2,007,276.46
New York	7,607.03	2,276.34	1,755.19
North Carolina	678,553.50	786,977.55	722,720.12
North Dakota	94.23	79.01	91.53
Ohio	30,109.51	37,692.65	132,986.34
Oklahoma	595,042.78	457,336.22	247,900.72
Oregon	119,791,067.39	128,866,867.46	136,540,593.13
Pennsylvania	5,301,759.86	4,613,532.38	4,923,027.09
Puerto Rico	25,571.76	12,915.25	17,336.63
South Carolina	1,586,032.17	1,507,617.12	1,701,257.06
South Dakota	2,631,316.84	3,388,926.09	2,983,000.04
Tennessee	385,048.53	505,505.43	511,875.21
Texas	3,599,206.19	3,695,331.74	3,513,039.64
Utah	2,373,290.67	1,738,582.52	1,565,081.26
Vermont	166,768.17	186,170.81	167,641.47
Virginia	820,206.58	667,802.45	530,885.01
Washington	31,913,563.22	30,886,124.04	35,103,924.21
West Virginia	761,339.86	1,259,065.43	1,061,686.74
Wisconsin	1,206,337.52	986,160.40	952,687.17
Wyoming	2,191,880.96	2,355,729.99	2,127,068.13
Total	309,162,415.72	305,785,111.59	323,841,771.93

[1]Data Source: All Service Receipts - ASR-09-3.

Table 10-3.

State summary of total recreation use on National Forest System lands by activity—FY 1994

State, Commonwealth, or Territory[1]	*Camping, picnicking & swimming*	*Mechanized travel & viewing scenery*	*Hiking, horseback riding & water travel*	*Winter sports*	*Resorts, cabins & organization camps*
			1,000 RVD's[2]		
Alabama	192.3	116.8	67.0	0.0	0.4
Alaska	371.5	3,687.7	353.7	85.4	163.7
Arizona	7,662.9	13,586.3	2,753.1	345.4	951.1
Arkansas	584.1	532.6	215.1	0.1	24.9
California	15,299.9	23,534.9	5,163.9	4,063.0	8,063.6
Colorado	6,556.3	10,231.6	2,576.5	7,273.5	745.0
Florida	1,716.6	488.6	178.8	0.0	217.0
Georgia	899.5	985.3	389.8	2.2	46.3
Idaho	4,326.1	3,970.3	1,242.6	853.5	603.0
Illinois	248.7	389.2	171.7	1.8	8.2
Indiana	207.6	66.9	68.3	0.3	1.4
Kansas	16.8	27.0	2.8	0.0	1.9
Kentucky	664.8	668.6	255.5	1.0	17.3
Louisiana	185.7	151.4	22.3	0.0	23.4
Maine	22.0	45.8	17.1	4.2	3.6
Michigan	1,570.4	1,581.3	246.0	95.6	117.4
Minnesota	1,877.3	1,052.2	867.3	104.4	458.8
Mississippi	244.8	355.4	119.9	0.0	10.8
Missouri	610.8	575.1	332.3	0.0	10.6
Montana	2,184.7	3,664.3	1,208.0	619.7	412.8
Nebraska	68.5	85.7	20.2	0.4	3.3
Nevada	975.1	1,030.0	390.4	299.2	139.5
New Hampshire	680.9	1,237.2	366.1	631.3	222.2
New Mexico	3,024.8	2,101.4	692.2	791.4	251.5
New York	15.8	5.7	3.4	1.7	0.0
North Carolina	1,604.3	2,223.2	1,089.3	13.8	96.0
North Dakota	14.7	28.0	12.8	0.9	0.0
Ohio	111.7	136.0	78.0	1.0	0.0
Oklahoma	59.6	178.6	49.9	0.0	0.0
Oregon	11,289.5	11,719.1	3,889.7	1,583.9	2,027.7
Pennsylvania	909.5	1,275.6	274.3	19.0	53.7
Puerto Rico	109.2	102.2	23.1	0.0	7.8
South Carolina	261.7	223.6	127.2	0.0	0.8
South Dakota	237.7	2,481.7	183.4	21.9	115.4
Tennessee	1,158.6	881.9	304.3	4.9	97.3
Texas	652.8	450.1	115.0	0.0	26.3
Utah	6,131.2	5,212.5	1,227.7	1,190.1	828.2
Vermont	127.3	288.7	95.0	925.0	74.6
Virginia	1,120.7	1,564.6	459.2	29.0	19.3
Washington	5,165.5	11,490.7	3,384.2	1,090.6	1,119.9
West Virginia	534.7	305.5	146.1	5.4	36.9
Wisconsin	535.9	751.0	120.8	34.9	18.5
Wyoming	2,089.8	2,552.9	1,289.9	384.0	847.7
Total	82,322.3	112,037.2	30,593.9	20,478.5	17,867.8

[1]Unlisted States have no Forest Service recreation programs.
[2]One recreation visitor-day (RVD) is the recreation use of National Forest land or water that

Table 10-3.

Hunting	*Fishing*	*Non-consumptive fish & wildlife use*	*Other recreation activities*	*Total*	*State, Commonwealth, or Territory*[1]
			1,000 RVD's[2]		
160.0	67.2	4.6	77.6	685.9	Alabama
138.2	494.8	42.9	385.7	5,723.6	Alaska
1,079.0	907.2	480.3	4,266.0	32,031.3	Arizona
510.2	101.5	24.9	143.0	2,136.4	Arkansas
1,555.0	3,302.9	527.0	11,023.0	72,533.2	California
1,804.1	1,757.1	173.5	1,055.5	32,173.1	Colorado
233.9	172.5	21.4	128.6	3,157.4	Florida
374.2	191.9	35.8	92.7	3,017.7	Georgia
1,114.2	1,001.9	175.0	951.9	14,238.5	Idaho
129.3	42.5	17.5	70.8	1,079.7	Illinois
67.8	77.0	3.2	16.4	508.9	Indiana
8.3	13.8	2.5	11.3	84.4	Kansas
208.2	210.5	13.3	112.5	2,151.7	Kentucky
106.9	35.9	3.9	34.8	564.3	Louisiana
8.8	5.0	1.4	5.8	113.7	Maine
539.9	545.9	23.0	148.1	4,867.6	Michigan
331.0	861.5	34.6	128.2	5,715.3	Minnesota
398.0	93.2	30.3	96.5	1,348.9	Mississippi
275.6	132.5	19.3	105.0	2,061.2	Missouri
1,086.2	883.8	142.0	1,179.2	11,380.7	Montana
59.5	2.4	2.6	18.1	260.7	Nebraska
161.9	80.6	67.4	215.7	3,359.8	Nevada
37.7	29.0	13.9	24.5	3,242.8	New Hampshire
549.1	322.2	173.1	1,216.7	9,122.4	New Mexico
4.4	1.4	0.8	1.3	34.5	New York
756.0	326.3	39.9	265.0	6,413.8	North Carolina
50.4	1.5	3.0	2.6	113.9	North Dakota
234.9	55.0	5.0	64.2	685.8	Ohio
66.4	20.7	10.2	13.1	398.5	Oklahoma
2,024.1	1,976.4	594.2	1,924.7	37,029.3	Oregon
173.0	182.0	23.4	81.1	2,991.6	Pennsylvania
0.0	0.0	2.2	51.6	296.1	Puerto Rico
210.3	58.7	13.2	60.8	956.3	South Carolina
100.4	127.7	11.9	115.6	3,395.7	South Dakota
246.8	186.3	28.4	81.4	2,989.9	Tennessee
231.7	791.3	24.4	92.3	2,383.9	Texas
889.5	998.9	74.4	876.1	17,428.6	Utah
85.5	24.2	31.4	78.7	1,730.4	Vermont
836.3	352.7	72.3	243.0	4,697.1	Virginia
853.3	420.0	120.2	1,152.5	24,796.9	Washington
224.7	136.6	10.6	50.8	1,451.3	West Virginia
232.6	492.4	9.2	159.2	2,354.5	Wisconsin
603.6	386.1	80.7	406.4	8,641.1	Wyoming
18,760.9	17,871.0	3,188.8	27,228.0	330,348.4	**Total**

aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Fire Management

The Forest Service works in cooperation with States and their local wildland fire protection agencies to protect State and private lands nationwide. Fire protection and emergency firefighting programs protect 191 million acres of National Forest System lands and an additional 20 million acres of State and private lands under protection exchanges and agreements.

Federal Excess Personal Property

In 1994 the USDA Forest Service loaned used Federal property to the State Foresters for rural and wildland fire protection that had an original acquisition cost of $112 million. Former military cargo trucks that are built into tanker trucks represent a large portion of the property, along with aircraft, heavy equipment, and shop machinery.

Rural Community Fire Protection

This program to organize, train, and equip rural fire departments in communities with populations under 10,000 is funded at $3.5 million annually. In 1994 these funds were awarded in 3,258 grants that attracted $7.1 million in matching fire department funds. More than 80 percent of the money funded purchases of equipment such as communications devices, nozzles, hoses, and protective clothing.

■ ***Fire Facts USDA Forest Service***

■***Number of fires:***	*Average*	*1994*
Less than 10 acres	*10,593*	*13,374*
10 to 999 acres	*919*	*1,211*
1,000+ acres	*49*	*161*
Total	*11,562*	*14,746*

■***Major causes of fires:***	*Average % of starts*	*Average % of acres burned*
Lightning	*51*	*57*
Human caused	*49*	*43*

■***Acres burned:***	*Average*	*1994*
National Forest protected lands	*379,814*	*1,479,735*

■***Appropriations:***	*Average*	*1994*
Presuppression appropriation	*$156,600,000*	*$190,200,000*
Emergency suppression expenditures	*$162,400,000*	*$757,000,000*
Total	*$319,000,000*	*$947,200,000*
State and private appropriations	*$ 14,556,000*	*$ 17,148,000*

—continued

■***Natural Fuels Treatment:***	*Average*	*1994*
Acres treated	*325,000*	*385,000*
Program cost	*$10,300,000*	*$12,700,000*
	Projected 1995	*Projected 1996*
Acres treated	*458,000*	*>600,000*
Program costs	*$16,400,000*	*$24,500,000*

■***USFS Personnel on Wildfires:***	*Average*	*1994*
Fire management, full time	*1,694*	*1,710*
Fire management, part time	*2,029*	*1,843*
Fire management, temporary	*6,189*	*5,467*
*Other USFS personnel**	*19,000*	*28,000*
*Emergency hire (AD)**	*19,000*	*38,000*
Hotshot crews		*53*
Smokejumpers		*290*
Helitack		*200*
Rappellers		*240*
Type 1 Incident management teams		*18*

■***Resources available from other Agencies (1994):***

	States	*Federal*	*Military*	*International*
Overhead	*2,100*	*1,000*		
Crews	*150*	*30*	*200*	
Engines	*500*	*80*		
Aircraft	*30*	*100*	*32*	*16*
Hotshot crews		*12*		
Smokejumpers		*117*		

■***USFS Aircraft:***	*1994*	*1995*
Under contract		
Airtankers	*30*	*30*
Helicopters	*375*	*375*
Fixed wing	*875*	*875*
Total	*1,280*	*1,280*

Forest Service owned	
Retardant, water & foam delivered	*Gallons*
Airtanker	*26,200,000*
Helicopter	*76,300,000*
Total	*102,500,000*

	Average	*1994*
Flight hours (all aircraft)	*80,000*	*118,700*

■***Federal excess property on loan to States***	*1994*
Original cost	*$410,000,000*
Cooperators	*50 States and 5 Territories*

**Estimated; multiple dispatches cause duplication*

Table 10-4.

Acres of State and private lands burned—FY 1993

State, Commonwealth, or Territory	Acres protected	Lightening fires	Person-caused fires	Total fires	Acres burned
		Number			
Alabama	25,726,491	57	4,334	4,391	33,188
Alaska	134,000,000	105	430	535	120,233
Arizona	22,447,000	98	736	834	109,294
Arkansas	18,604,989	89	2,039	2,128	26,589
California	32,057,391	150	6,629	6,779	110,531
Colorado	25,958,109	153	1,114	1,267	3,526
Connecticut	2,390,000	3	101	104	349
Delaware	557,000	0	12	12	415
Florida	25,380,158	1,162	3,518	4,680	80,484
Georgia	27,279,400	513	8,663	9,176	33,602
Guam	81,643	0	1,187	1,187	3,202
Hawaii	3,306,300	0	98	98	6,000
Idaho	6,025,690	120	136	256	1,443
Illinois	10,670,000	10	608	618	3,242
Indiana	7,328,000	2	323	325	1,893
Iowa	7,612,000	5	980	985	7,782
Kansas	46,400,000	82	2,246	2,328	40,325
Kentucky	11,663,883	9	1,059	1,068	18,126
Louisiana	18,931,000	10	3,474	3,484	36,036
Maine	17,743,000	79	668	747	1,640
Maryland	3,400,000	21	530	551	2,802
Massachusetts	3,581,000	21	5,129	5,150	5,250
Michigan	20,600,276	1	232	233	903
Minnesota	22,800,000	7	1,273	1,280	18,293
Mississippi	16,800,000	12	3,666	3,678	36,285
Missouri	42,350,000	28	2,966	2,994	31,952
Montana	49,679,599	104	150	254	8,267
Nebraska	49,083,520	42	531	573	8,840
Nevada	20,600,270	50	53	103	2,414
New Hampshire	4,987,200	3	549	552	224
New Jersey	3,150,000	10	1,501	1,511	2,667
New Mexico	42,500,000	304	902	1,206	192,699
New York	18,336,406	15	195	210	623
North Carolina	18,710,381	198	4,503	4,701	25,304
North Dakota	31,878,661	10	374	384	7,992
Ohio	5,822,095	5	583	588	2,805
Oklahoma	5,944,557	15	2,327	2,342	59,225
Oregon	15,536,626	178	642	820	2,845
Pennsylvania	19,541,000	12	641	653	3,318
Puerto Rico[1]	829,107	0	337	337	1,291
Rhode Island	433,000	2	134	136	227
South Carolina	12,558,258	235	5,118	5,353	34,086
South Dakota	43,556,390	23	91	114	2,832

—continued

Table 10-4 continued.

Acres of State and private lands burned—FY 1993

State, Commonwealth, or Territory	Acres protected	Lightening fires	Person-caused fires	Total fires	Acres burned
		Number			
Tennessee	25,668,400	19	2,053	2,072	15,542
Texas	22,123,000	28	1,338	1,366	21,306
Utah	15,000,000	122	160	282	13,950
Vermont	4,623,000	5	166	171	354
Virginia	13,458,062	48	881	929	3,723
Washington	12,500,000	89	551	640	2,203
West Virginia	12,594,000	1	824	825	10,024
Wisconsin	18,898,000	8	945	953	1,365
Wyoming	29,108,929	55	248	303	4,628
Total	1,050,813,791	4,318	77,948	82,266	1,162,139

1994 Fire Season

In 1994, 14,746 fires burned 1,479,735 acres of National Forest System lands. The annual average is 11,562 fires and 379,814 acres. Forest Service-contracted air-tankers and helicopters dropped 102.5 million gallons of retardant, water, and foam on the fires.

Fuels Treatment

In 1994, 385,000 acres of National Forest System lands received treatment for naturally generated fuels, compared to the 325,000 acres normally treated.

Rural Community Assistance

The Forest Service implements the national initiative on rural development in coordination with the USDA Rural Business and Cooperative Development Service and State rural development councils. The goal is to strengthen rural communities by helping them diversify and expand their economies through the wise use of natural resources. Through economic action programs, the Forest Service provides technical and financial assistance to more than 850 rural communities that are adversely affected by changes in availability of natural resources or in natural resource policy. Pacific Northwest rural community assistance provides economic adjustment assistance to 147 communities affected by the President's Forest Plan for the Pacific Northwest. This community assistance was part of a larger, multi-agency effort to target resources for rural areas with acute economic problems.

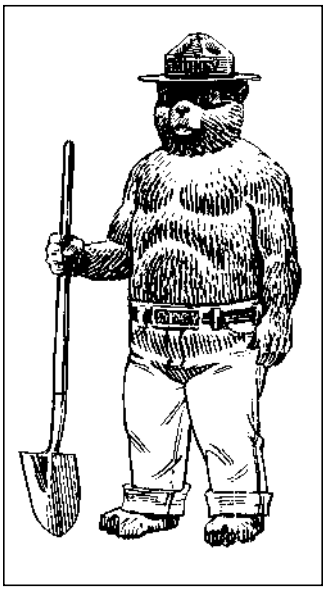
Urban and Community Forestry

The Forest Service provides technical and financial assistance to more than 7,740 cities and communities in all States, the District of Columbia, and Puerto Rico for the purpose of building local capacity to manage their natural resources.

Natural Resource Conservation Education

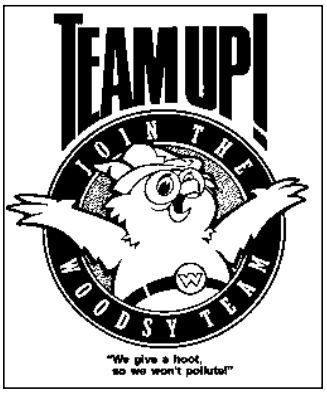
The Forest Service supports a lifelong learning process that promotes the understanding of ecosystems and natural resources—their interrelationships, conservation, use, management, and values to society. The program includes support for the delivery of Project Learning Tree with a network of 400,000 teachers.

Smokey Bear. In 1994, Smokey Bear celebrated 50 years of forest fire prevention. The Forest Service began a forest fire prevention program during World War II, and in 1944, a bear was introduced as the program symbol. In 1950, a bear cub survived a forest fire in the Lincoln National Forest, New Mexico, and after being nursed back to health, came to live in the National Zoo in Washington, DC, as the living fire prevention symbol.



Smokey Bear

Woodsy Owl. Woodsy Owl is a colorful and fanciful character who was designed to be especially appealing to young children. Woodsy Owl is recognized by over 83 percent of all American households and is considered to be America's leading symbol for environmental improvement. Woodsy was created in response to increased public awareness of environmental problems during the late 1960's and early 1970's. The Woodsy Owl campaign was officially launched by the USDA Forest Service on September 15, 1971. In June 1974, Congress enacted a law establishing "Woodsy Owl" as a "symbol for a public service campaign to promote wise use of the environment and programs which foster maintenance and improvement of environmental quality."



Woodsy Owl

Research

Forests are critical to the global environment and the global economy. They are the source of food, raw materials, shelter, and income for millions, and provide sanctuary for people and habitat for wildlife. Forests filter and protect water supplies and absorb carbon dioxide from the atmosphere. Agency research today is conducted in areas requiring urgent policy and management action, including sustainable development, biodiversity, economic and social values, ecological management, and forest health.

Established in 1876, Forest Service research has developed into the world's largest single source of natural resource information. It includes:

- More than 700 scientists whose work is aimed at the productivity, health, and diversity of the temperate, boreal, and tropical forests,

- Seven Regional Experiment Stations and one National Forest Products Laboratory comprising 77 research lab locations, many collocated with universities, and
- Gateways for collaborative research in the tropics, through the International Institute of Tropical Forestry in Puerto Rico and the Institute of Pacific Islands Forestry in Hawaii.

The Forest Service Research program provides:

- More than 2,700 publications per year, and numerous presentations at symposia and workshops,
- Collaboration with university, industry, and other scientists; nongovernmental organizations; managers; and policymakers for work that transcends the abilities of any single organization,
- More than $20 million per year in domestic grants, cooperative agreements, and contracts for research partnerships, and
- Key data bases for enhancing forest health, productivity, and conservation.

The Forest Service provides scientific and technological information to manage the Nation's forests and associated ecosystems. This includes studies in vegetation management, watersheds, fisheries, wildlife, products and recycling, insects and diseases, economics, forest and rangeland ecology, silviculture, fire ecology, fire prevention, insects and diseases, ecosystem functioning, and recreation. For example, activities include:

- Restoration of degraded wetlands,
- Protection and restoration of endangered or sensitive native fish, such as Pacific and Atlantic Salmon, and
- Development of strategies to conserve bird populations, in partnership with the National Fish and Wildlife Foundation.

Research priorities include:

- Forest inventory and analysis across the United States and forest health monitoring in 18 States,
- Global change research, to learn how climate change interacts with pollution, drought, and forest health,
- Recycling and wood use, to solve technical problems that hinder wastepaper recycling and to develop new products from agricultural and wood fibers and byproducts, and
- Large-scale ecosystem studies, for example on restoring mixed-oak forests in southern Ohio, evaluating impacts of silvicultural treatment on biological diversity in northern hardwood forests, and protecting watersheds, riparian zones, and biological diversity in the Rio Grande Basin.

International Forestry

The Forest Service international program advances sustainable management of forest ecosystems in other countries in ways that also benefit the United States. Drawing on the skills of its resource managers and scientists, the Forest Service is a global conservation leader and the main advocate in the U.S. government for sustainable forest management based on scientific principles. The United States is the world's largest importer of wood, and it exports more than $18 billion worth of wood

products each year. The Forest Service helps to develop international policies and guidelines that support U.S. business internationally.

The Forest Service is instrumental in preventing forest pests, such as the Asian gypsy moth and the sirex wood wasp, from entering the United States. In cooperation with Latin American countries, the Forest Service protects the habitat of migratory birds—250 out of 750 bird species in the U.S. migrate to other countries. The Forest Service develops and shares new technology with other countries, including technologies for forest utilization, monitoring forest resources, and understanding the role of forests in global climate change.

Human Resource Programs

Human Resource Programs provide job opportunities, training, and education for the unemployed, underemployed, elderly, young, and others with special needs, simultaneously benefiting high-priority conservation work. These programs are a major part of the Forest Service work force. In FY 1994, these programs included 120,889 participants.

Job Corps Civilian Conservation Centers

Through an agreement with the U.S. Department of Labor, the Forest Service operates 18 centers on Forest Service lands. The Job Corps program is the only Federal residential, education, and training program for the Nation's disadvantaged youth.

- ***Key facts about Job Corps Civilian Conservation Centers***
  - *18 Job Corps Centers, 15 coed*
  - *7,976 enrolled, ages 16-24*
  - *$88 million budget*
  - *$20.2 million work accomplishment*
  - *80 percent placed*
  - *Average starting salary, approximately $6.50 per hour*
  - *42 percent minorities*

Senior Community Service Employment Program

This program is designed to provide useful part-time employment and training for persons aged 55 and over.

- ***Key facts about the Senior Community Service Employment Program:***
  - *5,476 older workers participated*
  - *$26.8 million budget*
  - *$41 million work accomplishment*
  - *Only Federal agency among 10 National sponsors*
  - *40 percent females*
  - *16 percent placed*
  - *$1.53 return on dollar invested*

Youth Conservation Corps

In this summer employment program, persons aged 15-18 accomplish projects that further the development and conservation of natural resources of the United States.

- ***Key facts about the Youth Conservation Corps:***
  - *766 enrollees, ages 15-18*
  - *$1.7 million operating costs*
  - *$2.5 million work accomplishment*
  - *$1.48 return on dollar invested*
  - *3 percent females*

Volunteers in the National Forests

This program allows organizations and individuals to donate their talents and services to help manage the Nation's natural resources.

- ***Key facts about Volunteers in the National Forests :***
  - *93,726 volunteers have participated, including 207 international volunteers and 311 Touch America Project volunteers, aged 14-17.*
  - *$36.8 million work accomplishment*
  - *1 million volunteers reported since the 1972 legislation*

Hosted Programs

Hosted programs provide conservation training and work opportunities on National Forests or in conjunction with Federal programs. Programs are administered through agreements with State and county agencies, colleges, universities, Indian tribes, and private and nonprofit organizations. The program has had 12,796 participants, with work accomplishment valued at $18.8 million.

Youth Forest Camps

Through a partnership with the National Forest Foundation, the Forest Service operated five youth forest camps during the summer of 1994. These camps provided jobs, work training, and environmental education for persons aged 14-20.

- ***Key facts about Youth Forest Camps :***
  - *149 participants*
  - *Work valued at $407,000*
  - *5 camps operated (Oregon, Washington, Virginia, Maine, and Colorado)*
  - *48 percent females*

- ***Key facts about law enforcement and investigations, FY 1994:***
  - *154,881 incidents or violations of Federal laws and regulations were reported. These violations resulted in many millions of dollars in damages and losses to National Forest System property and resources.*
  - *Nearly 630,667 cannabis plants were eradicated from 8,485 sites on the National Forests.*
  - *1,392 individuals were arrested for producing and distributing illicit controlled substances on the National Forest System.*
  - *About 180 special agents and 433 full-time uniformed law enforcement officers performed investigation and enforcement activities that are unique to the National Forest System and its resources.*

Law Enforcement and Investigations

The objective of the Forest Service law enforcement program is to protect the natural resources, Federal property, agency employees, and National Forest System visitors and their property. The program focuses on activities such as vandalism, archaeological resource violations, timber theft, wildland arson, and the cultivation and manufacture of illegal drugs.

Forest Service drug control efforts continue to focus on detection, apprehension, and prosecution of persons responsible for illegal drug activities on the forests. Drug enforcement efforts resulted in the seizure of several million dollars worth of assets and the destruction of several billion dollars worth of drugs.

In FY 1994, 479 cooperative law enforcement agreements allowed the Forest Service to cooperate with State and local law enforcement agencies and with other Federal agencies to increase protection of and service to forest visitors. About 203 drug control agreements were set up between the Forest Service, State and local law enforcement agencies, and other Federal agencies or task forces to work cooperatively in eliminating illegal drug activities on the National Forest System.

Natural Resources Conservation Service: A Productive Nation in Harmony with a Quality Environment

As USDA's lead agency for conservation technical assistance, the Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service) works closely with other USDA agencies involved in conservation priorities, including the Consolidated Farm Service Agency; the Agricultural Research Service; the Forest Service; and the Cooperative State Research, Education, and Extension Service. Through these agencies, USDA administers a wide range of programs to address this country's natural resource challenges as they affect private lands in agricultural and other uses.

- ***NRCS Major Accomplishments in FY 1994***
  - *Decisionmakers receiving technical services:* *1.1 million*
  - *Acres treated annually through conservation technical assistance:* *63.1 million*
  - *Tons of soil erosion reduced through conservation technical assistance:* *244 million*
  - *Acres mapped by NRCS:* *25.4 million*
  - *Number of soil surveys ready for publication:* *53*

Our well-being depends on healthy, productive, and diverse ecosystems and their sustainable use. Just as soil, water, and habitat are interrelated, the programs that address these resources are interrelated, and programs that help one resource also benefit others. If you stop erosion, for example, you also enhance soil productivity and protect water and air quality. Improving the environment can enhance the economic health and future of communities throughout the United States.

The mission of NRCS is to provide leadership and administer programs to help land owners and land users conserve, improve, and sustain our natural resources and the environment, while enabling the United States to continue serving as the world's preeminent producer of food and fiber.

A Partnership Approach to Resource Conservation

For six decades, NRCS employees have worked side-by-side with landowners, conservation districts, State and local governments, and urban and rural partners to restore and enhance the American landscape. The agency helps landowners and communities take a comprehensive approach in conservation planning, going beyond soil to an understanding of how all natural resources—soil, water, air, plants, animals—relate to each other and to humans. The agency works to solve the natural resource challenges on the Nation's private lands—reducing soil erosion, improving soil health and rangeland health, protecting water quality and supply, conserving wetlands, and providing fish and wildlife habitat.

Most NRCS employees serve in USDA's network of local, county-based offices, including those in Puerto Rico and the Pacific Basin. The rest are at State, regional, and national offices, providing technology, policy, and administrative support. They serve all people who live and work on the land. Nearly three-fourths of the agency's technical assistance goes to helping farmers and ranchers develop conservation systems uniquely suited to their land and their ways of doing business.

The agency helps rural and urban communities curb erosion, conserve and protect water, and solve other resource problems. American Indian tribes, Alaska Natives, Pacific Islanders, and other native groups work with NRCS on a variety of initiatives that include resource inventories and the adaptation of conservation programs to fit the special needs of their people and their land. Also, countries around the globe seek NRCS advice on building their own conservation delivery systems and in coping with severe natural resource problems.

Conservation is the work of many—no one can do it alone. NRCS relies on many partners to help set conservation goals, work with people on the land, and provide services. In addition to local conservation districts, State conservation agencies, and other State and Federal agencies, the partners include NRCS Earth Team volunteers, AmeriCorps members, agricultural and environmental groups, and professional societies.

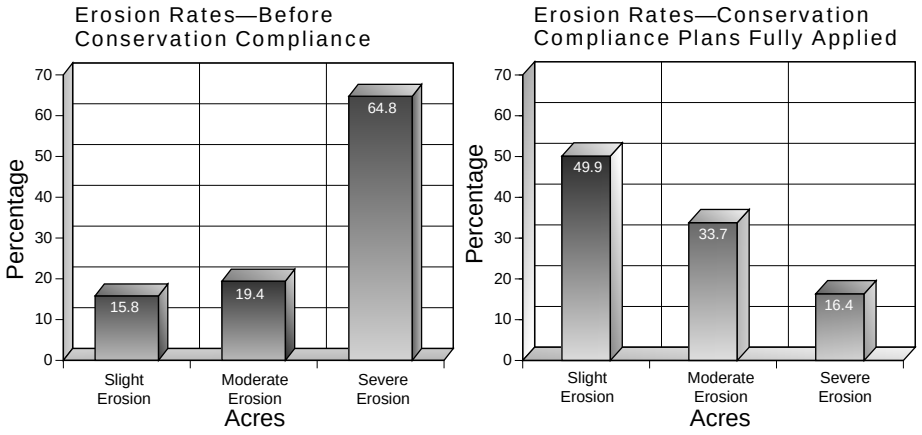
Conservation Technical Assistance

NRCS provides conservation technical assistance to land users, communities, units of State and local government, and other Federal agencies in planning and implementing natural resource solutions to reduce erosion, improve soil and water quantity and quality, improve and conserve wetlands, enhance fish and wildlife habitat, improve air quality, improve pasture and range conditions, reduce upstream flooding, and improve woodlands. The purpose of applying these solutions is to sustain agricultural productivity and protect and enhance the natural resource base. This assistance is based on voluntary local landowner cooperation and recognizes the value of educational, technical, and financial assistance.

The 1985 Food Security Act, as amended by the Food, Agriculture, Conservation, and Trade Act of 1990, calls for NRCS to implement the following provisions: highly erodible land, wetland (swampbuster), Wetlands Reserve Program, and Conservation Reserve Program. NRCS technical field staff make highly erodible

Figure 10-2.

Soil erosion rates before and after the 1985 Food Security Act



Farmers have made tremendous progress in the last 10 years in reducing soil erosion on the Nation's most highly erodible cultivated cropland.

Categories of erosion
- Slight: Erosion rates at or below tolerable levels
- Moderate: Erosion rates between one and two times tolerable levels
- Severe: Erosion rates more than two times above tolerable levels

SOURCE; USDA Natural Resources Conservation Service, Conservation Compliance 1994 Status Reviews, preliminary data as of February 9, 1995

land and wetland determinations, and they assist land users in developing and implementing necessary conservation plans. NRCS is also the lead Federal agency for delineating wetlands on agricultural lands for purposes of complying with the provisions of the Food Security Act and Section 404 of the Clean Water Act. NRCS administers the following five cost-share programs:

1. Wetlands Reserve Program
2. Great Plains Conservation Program
3. Colorado River Basin Salinity Control Program
4. Water Bank Program, and
5. Forestry Incentives Program.

NRCS also provides technical assistance to individuals and groups participating in the Agricultural Conservation Program and Conservation Reserve Program.

Soil Surveys

NRCS conducts soil surveys cooperatively with other Federal agencies, land-grant universities, State agencies, and local units of government. Soil surveys provide the public with local information on the uses and capabilities of their soil resource. Soil surveys are based on scientific analysis and classification of the soils, and are used to determine land capabilities and conservation treatment needs. The published soil survey for a county or designated area includes maps and interpretations, with explanatory information that is the foundation of resource policy, planning, and decisionmaking for Federal, State, county, and local community programs.

Snow Survey and Water Supply Forecasts

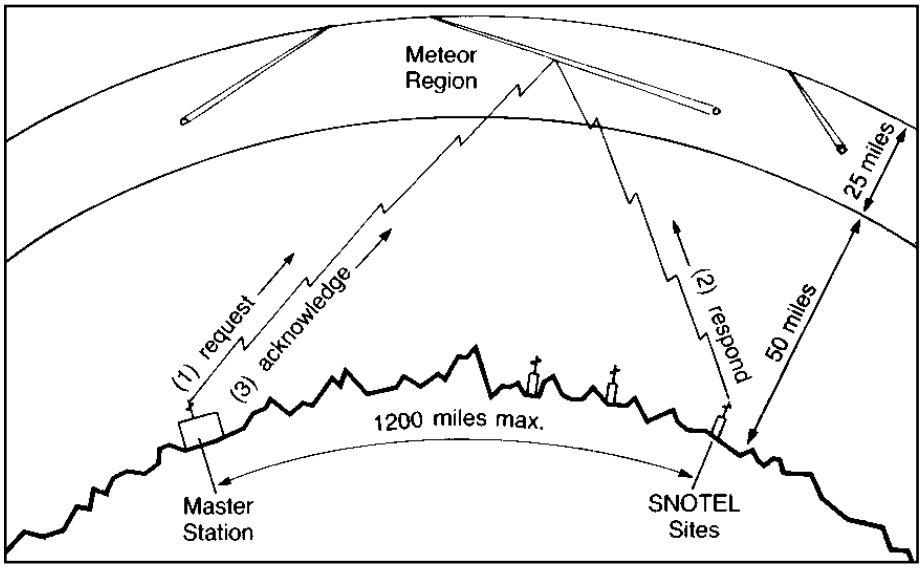
NRCS field staff collect data from more than 1,200 remote high mountain sites to provide Western States and Alaska with vital information on future water supplies. The data are assembled and analyzed and water yield forecasts are made. Forecasts provide estimates of annual water availability, spring runoff, and summer stream flows. Water supply forecasts are used by individuals, organizations, and State and Federal agencies to make decisions relating to agricultural production, fish and wildlife management, municipal and industrial water supply, urban development, flood control, recreation power generation, and water quality management. The National Weather Service includes them in their river forecasting function.

Plant Materials Centers

NRCS employees at 26 Plant Materials Centers assemble, test, and encourage increased plant propagation and usefulness of plant species for biomass production, carbon sequestration, erosion reduction, wetland restoration, water quality improvement, streambank and riparian area protection, and coastal dune stabilization, and to meet other special conservation treatment needs. The work is carried out cooperatively with State and Federal agencies, commercial businesses, and seed and nursery associations. After species are proven, they are released to the private sector for commercial production. In 1993, NRCS developed cultivars that were turned over to others to produce plant stock that generated $211 million in revenue for private sector nurseries and seed companies.

Figure 10-3.

Snow surveys and meteor burst technology



Water supply forecasting is enhanced by automated snow survey data collection through a snowpack telemetry (SNOTEL) network. This figure depicts the meteor burst technique used to transmit data from remote SNOTEL sites.

Billions of sand-sized meteorites enter the atmosphere daily. As each particle heats and burns in the region 50 to 75 miles above the Earth's surface, its disintegration creates a trail of ionized gases. The trails diffuse rapidly, usually disappearing within a second, but their short lifespan is adequate for SNOTEL communications to be completed.

The process has three major steps: (1) master stations request data from remote sites; (2) sites respond by transmitting their current data; and (3) finally a master station acknowledges receipt and signals the site transmitter to stop. This complex exchange, taking place in a fraction of a second, is possible thanks to microprocessors.

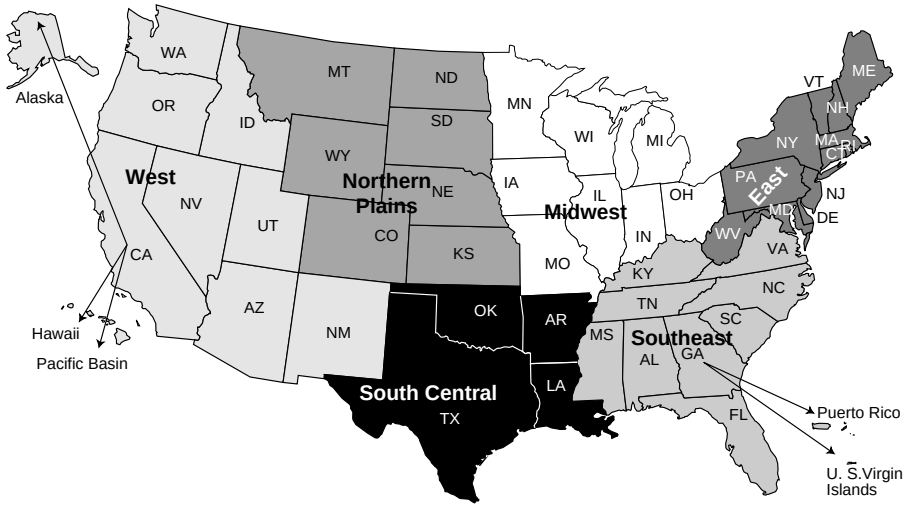
Wetlands Reserve Program

The Wetlands Reserve Program is a voluntary incentive program to assist owners of eligible land to restore and protect wetlands. The primary objectives of the program are to preserve and restore wetlands, improve wildlife habitat, and protect migratory waterfowl. Wetland restoration improves water quality and provides flood water retention, ground water recharge, open space, and esthetic values.

The Secretary of Agriculture uses program funds to purchase long term and permanent easements that provide for the restoration and protection of wetlands. Eligible lands include farmed wetlands, prior converted wetlands that have a history of food and fiber production, limited areas of natural wetland that significantly add to the

Figure 10-4.

Wetlands Reserve Program Acreage by NRCS Region[1]



Region	[2] 1992 Recorded Acres (rounded)	[3] 1994 Accepted Acres (rounded)
East	50	700
Southeast	17,400	17,300
Midwest	7,750	19,600
Northern Plains	0	6,700
South Central	12,700	24,400
West	4,300	6,300
TOTALS	42,200	75,000

1 1995 WRP expanded to all States. Signup was March 30-June 30, 1995; landowners offered 570,000 acres during the signup.

2 1992 Pilot WRP program offered in nine States through September 1993. Figures are recorded official easements; 6,000-8,000 additional acres in process.

3 1994 program expanded to 20 States with signup from February 28-March 11, 1994.

values of the easement area, riparian corridors that connect protected wetland areas, and associated upland buffer areas. The easements require the landowner to agree to the implementation of restoration and protection actions on the easement area. Compatible use of the easement area may be allowed by NRCS where such use is fully consistent with the long term protection and enhancement of the wetland values of the easement. Technical assistance is provided mainly by NRCS and the U.S. Fish and Wildlife Service.

Program participants who sell permanent easements receive one lump sum easement payment, not to exceed the agricultural value of the land. They also receive restoration cost share funding of 75 to 100 percent. Participants who sell

nonpermanent easements receive 50 to 75 percent of the easement payment amount that would have been paid for a permanent easement on the same site and 50 to 75 percent of the restoration cost share. Title clearance and associated legal expenses are covered by NRCS. Actual implementation of the restoration practice may be undertaken in a variety of ways (for example by the landowner, by the landowner contracting for the work, or by NRCS entering into a cooperative agreement with a conservation district or other appropriate entity to accomplish the work).

After two signups in 1992 and 1994, the Department had about 110,000 acres enrolled in the program. Another 100,000 acres are expected to be enrolled in 1995 in the first nationwide signup.

Watershed Planning

NRCS provides assistance to local communities in watershed planning in response to requests by sponsoring local organizations. The agency works with sponsors to develop watershed plans that meet sponsors' priorities and provide natural resource benefits.

Small Watersheds Projects

NRCS provides technical and financial assistance—in cooperation with local sponsoring organizations, State agencies, and other public agencies—to voluntarily plan and install watershed-based projects on private lands. The program empowers local people or decisionmakers, builds partnerships, and requires local and State funding contributions. The purposes of watershed projects include watershed protection; flood prevention; water quality improvements; soil erosion reduction; rural, municipal, and industrial water supply; irrigation water management; sedimentation control; fish and wildlife habitat enhancement; and creation and restoration of wetlands and wetland functions.

Emergency Watershed Protection

Under the Emergency Watershed Protection program, NRCS provides assistance to reduce hazards to life and property in watersheds damaged by severe natural events. An emergency exists when floods, fire, drought, or other natural causes result in life or property being endangered. During the past 8 years, the program has been needed and used in an average of 26 States per year. Emergency work includes establishing quick vegetative cover on denuded land, sloping steep land, and eroding banks; opening dangerously restricted channels; repairing diversions and levees; and other emergency work. The emergency area need not be declared a national disaster area to be eligible for technical and financial assistance. Emergency watershed protection is applicable to small-scale, localized disasters as well as disasters of national magnitude. NRCS provides technical and financial assistance for disaster cleanup and subsequent rebuilding; restoration of stream corridors, wetlands, and riparian areas; and urban planning and site location assistance to the Federal Emergency Management Agency when relocating communities out of floodplains. Local people are generally employed on a short-term basis to assist with disaster recovery.

Watershed Operations

Under the Flood Control Act of 1944, NRCS is authorized to administer watershed works of improvement. Flood prevention operations include planning and installing works of improvement and land treatment measures for flood prevention; for the conservation, development, utilization, and disposal of water; and for the reduction of sedimentation and erosion damage. This may also include the development of recreational facilities and the improvement of fish and wildlife habitat. Activities are authorized in 11 specific flood prevention projects covering about 35 million acres in 11 States.

Colorado River Basin Salinity Control Program

This is a voluntary incentive program that supports the objectives of the Nation's commitment to the 1973 International Boundary and Water Commission Agreement concerning the quality of water in the Colorado River delivered downstream to users in the United States and Mexico. The program calls for identifying salt source areas; developing conservation plans; and implementing salinity control measures such as improvement of on-farm irrigation water management, related laterals, and erosion management practices. The Federal Government provides financial and technical assistance to landowners to plan, install, and maintain needed soil and water conservation practices, including replacement of incidental fish and wildlife values. It also conducts research, demonstration, and education activities and evaluates program effectiveness. The program provides for up to 70 percent Federal cost-sharing, with reimbursement of 30 percent of NRCS cost-share funds by the States. The program is authorized in the seven Colorado River Basin States, with current emphasis on projects in Colorado, Nevada, Utah, and Wyoming.

Table 10-5.

Major Accomplishment	*Grand Valley, CO*	*Uinta Basin, UT*	*Big Sandy, WY*	*Lower Gunnison, CO*	*McElmo Creek, CO*
Salt load reduction (cumulative) - tons	63,074	77,549	22,313	18,878	2,238
Deep percolation reduction (cumulative) -acre/feet	17,429	56,001	8,582	5,880	2,238
FY 1994 contracts approved	69	113	9	56	39

Forestry Incentives Program

The objectives of this program are to increase the Nation's production of sawtimber and pulpwood on nonindustrial, private forest lands; to decrease expected shortages and rising prices of timber; and to help ensure effective use of available forest lands. Program objectives are met by providing cost-share and technical assistance to landowners to encourage voluntary installation of forestry practices. The program shares up to 65 percent of the cost incurred by the landowner for tree planting and timberstand improvement.

Water Bank Program

The objectives of this program are to preserve and improve migratory waterfowl and wildlife-related resources, conserve surface water and reduce runoff and soil and wind erosion, improve flood control, contribute to improved soil moisture, enhance landscape esthetics, and promote comprehensive water management planning. Ten-year agreements are established between NRCS and landowners and operators in important migratory waterfowl nesting, breeding, and feeding areas for the conservation of wetlands.

River Basin Surveys and Investigations

NRCS cooperates with other Federal, State, and local agencies in conducting river basin surveys and investigations, flood hazard analysis, and flood plain management assistance to aid in the development of coordinated water resource programs, including the development of guiding principles and procedures. Cooperative river basin studies are made up of agricultural, rural, and upstream water and land resources to identify resource problems and determine corrective actions needed. These surveys address a variety of natural resource concerns including water quality improvement, opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, rural development, municipal and industrial water needs, upstream flood damages, and water needs for fish, wildlife, and forest-based industries. Flood plain management assistance includes the identification of flood hazards and the location and use of wetlands. NRCS represents USDA on river basin regional entities and River Basin Interagency Committees that coordinate work among Federal Departments and States.

Great Plains Conservation Program (GPCP)

This program offers long-term solutions to natural resource problems in the 10 States comprising the Great Plains region. NRCS helps farmers, ranchers, and others make and implement conservation plans to bring improved economic and social stability to the Great Plains area. This is accomplished by accelerating the conversion of cropland not suited for continuous cropping to less intensive uses; preventing deterioration of cropland and rangeland; enhancing fish, wildlife, and recreation resources; and promoting better land management. Farmers and ranchers participating in the program contribute nearly 60 percent of the costs.

GPCP is a special program targeted to total conservation treatment of entire farms or ranches having severe soil and water resource problems. Program participation is voluntary and is carried out by applying a conservation plan on the entire

operating unit. GPCP has been effective in addressing the needs of small and limited resource farmers and providing assistance to American Indians. In addition to significantly reducing erosion and sediment, the program addresses water quality problems and provides wildlife and other environmental benefits.

Resource Conservation and Development (RC&D) Program

This program is initiated and directed at the local level by volunteers. It is regional and encompasses multiple communities, various units of government, and grassroots organizations. The program serves as a catalyst for these civic-oriented groups to share knowledge and resources in a collective attempt to solve common problems facing their region. The RC&D Program offers aid in balancing an area's environmental, economic, and social needs. Assistance is obtained from the private sector, corporations, and foundations, and all levels of government contribute to the program. This combination of local leadership and coordination of State and Federal resources is an efficient way for communities to achieve local goals cooperatively. In FY 1994, RC&D areas completed 1,984 projects and donated 415,000 hours of time. Every dollar of NRCS Federal technical and financial assistance devoted to local projects was matched by $13 from other sources. In mid-1995 there were 277 authorized RC&D areas involving 2,016 counties across the country.

National Resources Inventory

Every 5 years, NRCS issues a report card on how well the Nation is sustaining natural resources on nonfederal land. Called the "National Resources Inventory," or

Figure 10-5.

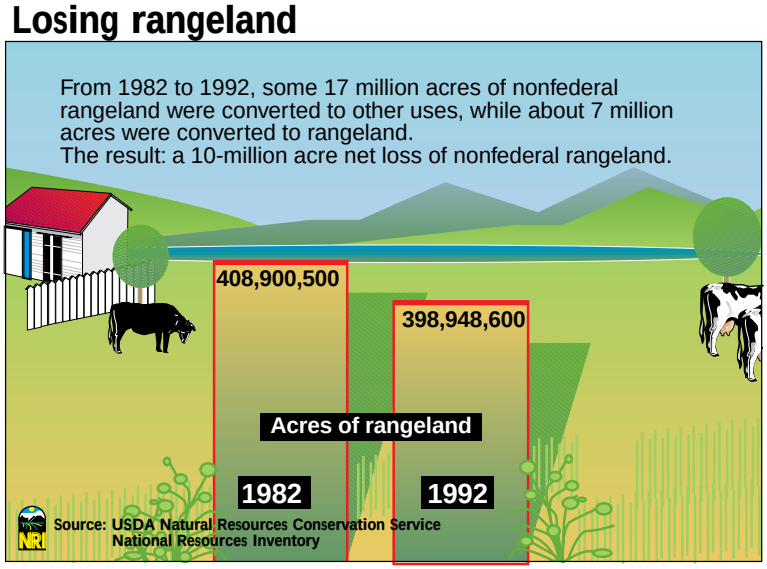
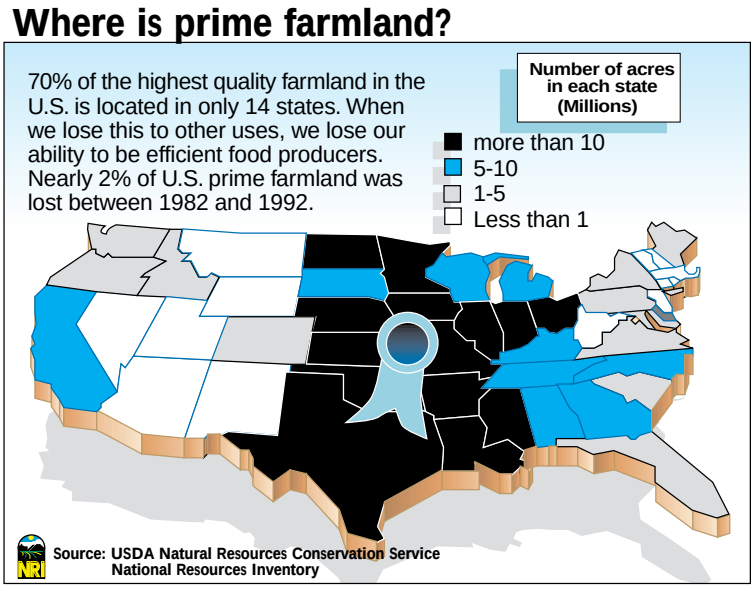


Figure 10-6.



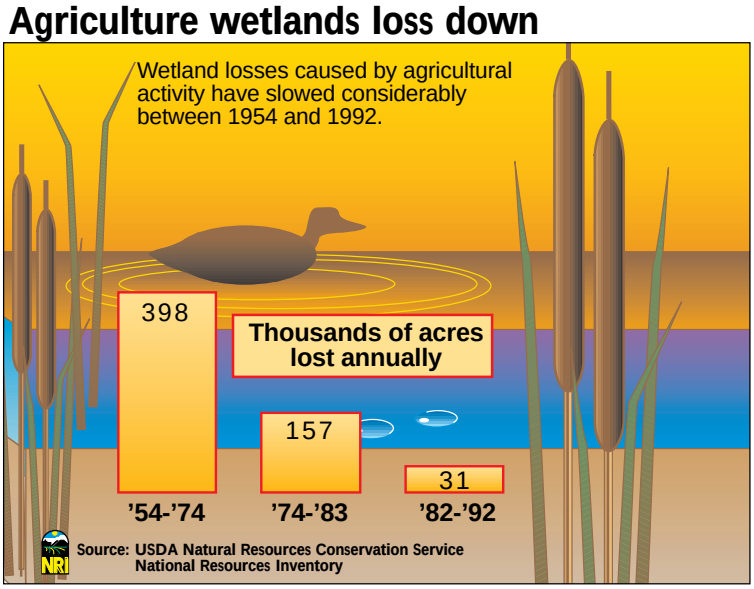
NRI, this report card contains the most comprehensive and statistically reliable data of its kind in the world. It measures trends in soil erosion by water and wind, wetland loss, changes in prime farmland acreage, irrigation, and conservation treatment needs at national and State levels.

In 1994, NRCS released the NRI data comparing resource conditions and trends in 1982 and 1992. Key findings include the following:

- Between 1982 and 1992, the Nation's cropland acreage decreased by about 9 percent (from 421 million to 382 million acres), most of it going into the Conservation Reserve Program; rangeland acreage decreased by about 2 percent (from 409 million to 399 million acres); and developed land increased by 18 percent (from 78 million to 92 million acres).
- The average annual rate of soil erosion for the Nation dropped substantially between 1982 and 1992, largely due to the success of the Nation's farmers in meeting the conservation provisions of the 1985 Farm Bill.
- From 1982 to 1992, 6 million acres of prime farmland—the Nation's best agricultural land—was lost, primarily due to rural and urban development.
- Wetland loss due to agriculture has slowed significantly.

The NRI contributes to resource appraisals authorized by the Soil and Water Resources Conservation Act of 1977. These RCA appraisals, led by NRCS, are the basis for USDA's National Conservation Program as well as farm and environmental legislation.

Figure 10-7.



In 1994, NRI data and analytical software were made available to the public on CD-ROM for the first time. To obtain the NRI database, Data Analysis Software, and spatial data sets, contact: NRCS National Cartographic and GIS Center, Fort Worth Federal Center, Bldg. 23, Room 60, P.O. Box 6567, Fort Worth, TX 76115-0567; or telephone (817) 334-5559, Extension 3135.

11. Research, Education, and Economics

Research, Analysis, and Outreach: Meeting Challenges of the Future

Three major challenges face U.S. agriculture in the coming decade: To increase U.S. competitiveness in a rapidly changing global market; to meet the public's continued demand for safe, nutritious food produced under environmentally-friendly conditions; and to respond to the increasing industrialization of American agriculture.

Helping to meet these challenges is USDA's Research, Education, and Economics (REE) mission area, which includes four USDA agencies: the Agricultural Research Service (ARS), Cooperative State Research, Education, and Extension Service (CSREES), Economic Research Service (ERS), and National Agricultural Statistics Service (NASS). These four Agencies work together to help ensure an abundant, safe food supply; to sustain a viable and competitive food and agricultural economy; and to maintain our environmental and natural resource base. And working together, the four Agencies provide knowledge and cutting-edge technology to ensure that high-quality food and other agricultural products are available to consumers.

REE does economic and social research that supports other USDA programs and policies, providing data, information, education, and economic and statistical analyses on a variety of topics, including rural development, the environment and natural resources, food safety, food prices, farm labor, farm income, financial conditions, commodity markets, and international trade. U.S. agriculture is continually counted, measured, priced, analyzed, and reported to provide the facts needed by Americans working throughout this vast industry.

REE serves American agriculture and rural communities by providing meaningful, accurate, and objective statistical information. Forecasts and estimates for over 165 different crop and livestock commodities are provided annually to help farmers, ranchers, other agribusinesses, policymakers, Members of Congress, and the public make informed decisions.

USDA research and education help develop new products and new uses, improve farming and processing efficiency, explore profitable marketing strategies, increase food safety, and find resource-saving technologies. For example, USDA scientists are developing biodegradable plastic from corn starch, printers ink based on 100 percent soybean oil, and frozen concentrated milk for people who can't get to the supermarket often.

Studies demonstrate that consumers reap the benefits of investing in agricultural research: Every tax dollar invested in the U.S. agricultural system has paid back at least $1.35. These returns have been broadly shared through lower prices to American

consumers, increased international competitiveness for farmers, jobs for working families, and increased profitability in agricultural industries.

The U.S. agricultural research system, long pre-eminent in the world and a model for other countries, is retooling for the next century by focusing on outcomes. For example, precision agriculture uses satellite systems and tractor-mounted computers to measure yields and anticipate fertilizer and pesticide needs within 2 to 6 feet of the tractor. This will help farmers increase production while preserving the environment. Such dramatic developments will usher in many more—from new discoveries in bioengineering to pathogen reduction in farm animals—which will help U.S. agriculture meet the challenges of the future. The emphasis in today's agricultural research is on integrated pest management (IPM), which puts nature's own biological agents to work along with state-of-the-art farming practices to beat back crop-destroying pests and reduce our need to apply pesticides and herbicides.

USDA works with land-grant institutions and industry to move know-how and technology from the laboratory to farmers, consumers, and agribusinesses. With an eye toward reaping an abundant harvest of scientific expertise, USDA supports research by young people and seasoned scientists at colleges and universities, including 1890 land-grant colleges, throughout the United States. REE works in partnership with the State agricultural experiment station system based at land-grant universities to carry out a balanced program of fundamental and applied research.

USDA's water quality program is a coordinated effort to protect the Nation's waters from contamination by agricultural chemicals. It offers farmers, ranchers, and other land managers the know-how, technical means, and financial assistance to address environmental concerns and State water quality requirements.

Through its sustainable agriculture research and education program, USDA awards competitive grants to producers for on-farm studies and demonstration projects, ranging from specific production practices (such as mechanical weed control or crop rotations) to studies on the quality of life in rural regions. Benefits of these programs include improved profitability, an enhanced natural resource base, and a reasonable quality of life for producers and their communities.

REE also focuses on practical education that Americans need to deal with critical issues in their lives, by linking scientific research to the needs of people. For example, the expanded food and nutrition education program (EFNEP) reaches limited resource audiences, especially youth and families with young children, to improve family diets and nutritional well-being. Since its inception, EFNEP has directly affected over 19 million adults and 4-H youth in all 50 States and in American Samoa, Guam, Micronesia, the Northern Marianas, Puerto Rico, and the Virgin Islands. REE also offers information on issues ranging from community economic development and health care concerns to food safety, water quality, children, youth and families, and sustainable agriculture. Information technology is crucial in the delivery of this knowledge, so REE works with local communities to provide access to information resources via the information superhighway.

REE is also home to the National Agricultural Library (NAL)—a key information resource for agricultural researchers worldwide. Established in 1862, NAL is the largest agricultural library in the world and one of three national libraries of the United States; the other two are the Library of Congress and the National Library of

Medicine. As the Nation's chief resource and service for agricultural information, NAL offers researchers, educators, policymakers, farmers, consumers, and the general public approximately 48 miles of bookshelves in a 14-story building, plus access to the library's two million volumes through its computerized network or electronic bulletin board.

Agricultural Research Service

ARS is the primary in-house research agency in USDA. It conducts a balanced program of fundamental and applied research that concentrates on problems that are national or regional in scope.

The agency maintains a network of geographically dispersed national and overseas laboratories, allowing USDA to:

- Perform long-term, high-risk research,
- Respond to both stable and changing technical goals,
- Ensure research accountability, and
- Form, disband, or coordinate interdisciplinary research teams (often at different sites) from a large, diverse scientific work force.

Areas of research emphasis for ARS correspond to high-priority problems identified by scientists, internal program evaluations, users, new legislation, appropriations, action and regulatory agencies, and executive branch initiatives. Major areas of research are described in the following sections.

Soil, air, and water

ARS is focusing on the increasing critical issues of environmental degradation. Currently, the Agency is working on:

- Improved production systems that will protect water quality from the effects of agricultural chemicals and control erosion when crop residues are low,
- Strategies for off-site control of chemical buildup in ground water,
- Methods for assessing the possible effects of global climate change on water and energy fluxes, water resources, and the health and sustainability of agroecosystems,
- Ways to facilitate conservation tillage, and
- Evaluating and optimizing no-till and other conservation tillage and residue management systems—to increase soil organic matter, infiltration, and soil biological activity and to reduce runoff, erosion, evaporation, and drought damage.

Plant Productivity

ARS focuses on the traditional concern of enhancing plant yields, including such projects as:

- Enhancing plant germplasm by manipulating genomes at the molecular level and improving plant genetic resources to overcome productivity barriers in major crops,

- Technologies for controlling fundamental biological processes relating to productivity, market quality, and production costs,
- Long- and short-term acquisition and preservation of plant germplasm,
- Detection at the molecular level of pathogens in propagative material,
- Methods for nondestructive testing of seed viability and composition and for environmentally safe pest control with acceptable health risk,
- Management systems for sound ecosystem maintenance and water use on important range, pasture, and crop lands,
- Weed and plant disease control,
- Areawide control of high-priority pests,
- Development of a relational database for the national plant germplasm system, and
- Computer simulation models for growth and development of economically important crops and weeds.

Animal Productivity

ARS projects to increase animal productivity seek ways to:

- Reduce mortality and other losses from disease and parasites,
- Improve genetic resistance to diseases and parasites,
- Use biologically based control of parasites,
- Control zoonotic bacteria and parasites in live animals,
- Increase the genetic capacity of animals for greater production,
- Evaluate behavioral, physiological, and productivity indicators of animal well-being,
- Understand the physiological processes involved in feed intake and metabolism and mechanisms by which chemical and physical composition of feed can limit nutrient availability,
- Make nondestructive repeated measurements of body composition, and
- Use animal wastes and means to reduce waste contamination of surface and ground water.

Commodity Conversion and Delivery

In efforts to improve the processing of agricultural commodities, ARS is seeking:

- Means to prevent or eliminate foodborne microorganisms in animal products, prevent mycotoxins in food and feed products, eliminate insect and disease trade barriers limiting agricultural exports, meet marketing requirements (including physical, sanitary, performance qualities) for various commodities, and extend shelf life with sensory quality retention,
- Methods for rapid, objective analysis of marketing safety and quality characteristics,
- Technologies for converting agricultural commodities to value-added industrial products; alternative fuels; and new fiber, leather, feed, and food products,
- Process treatments to enhance food safety, minimize residues or additives, and retain quality, and
- Alternative processing methods that are environmentally benign.

Human Nutrition and Well-Being

Research in this area seeks:

- Methods to determine composition of commonly consumed foods and to change food production and processing systems to improve the nutritional quality of food,
- Better understanding of the role of dietary components in weight maintenance and risk of chronic diseases,
- Identification of adequate and safe ranges of nutrient and calorie intake,
- Explanation of the molecular and cellular basis of human nutrition,
- An ongoing national data bank on the nutrient content of foods, and
- Monitoring the food consumption of the U.S. population.

Reaping the Products of Research

While much ARS research lays the foundation for long-term development, the ultimate beneficiaries of this research are the Nation's consumers. Each year, dozens of new products and improved varieties of fruits, nuts, and vegetables emerge from ARS laboratories and greenhouses. Here's just a sampling:

***Potatoes.** Americans eat an average of more than 100 pounds of potatoes each year, about half from fresh potatoes and half in processed foods. Research has brought forth a slew of new, improved potato varieties for both uses. For example, Atlantic makes potato chips with lower fat content than any other variety, thanks to its low ratio of water to solids. Atlantic is now the Nation's number one chipping potato.*

***Wheat.** For 50 years, ARS laboratories have worked with all segments of the baking industry to help provide consumers with uniform, flavorful, nutritious bread and other wheat products. Throughout the country, ARS scientists who work with wheat aim to make U.S.-grown grain better all the time. It's not an easy job. Techniques for successfully slipping new genes into crops like tomatoes or petunias typically don't work on wheat. After years of effort, scientists have won many victories.*

A yardstick for their wheat-breeding success is the popularity of the new varieties they've come up with. One variety alone accounts for most of the soft red winter wheat that's grown in the Eastern United States. Why? Because it stands up to wheat's most destructive disease, leaf rust. Other varieties have amazed even dubious wheat farmers by resisting the Hessian fly and cereal leaf beetle, two costly insect pests.

***Milk.** If you're among the many American adults who have trouble digesting lactose, you may already know about the lactose-free dairy products that ARS scientists developed by altering a bacterium*

used to make cheese and yogurt. It produces an enzyme that in turn breaks down the milk's lactose, sparing you an upset stomach.

Peaches. *A laboratory technique called embryo culture has proven especially helpful in creating new peach varieties. When nurtured in petri dishes, tiny embryos that could not survive in nature are cultivated into plantlets. Tended carefully in the greenhouse, the plantlets can eventually be planted outdoors in the research orchard.*

Turkeys. *Rearing turkeys has become a lot easier for producers, thanks to ARS innovation. The Beltsville Poultry Semen Extender enables poultry producers to set up "turkey stud farms" with only the best males, thus making the most efficient use of artificial insemination.*

Citrus Fruit. *In Florida, ARS has come up with citrus varieties that have higher yields, increased disease resistance, better color, and longer shelf life. For example, juice from cold-hardy Ambersweet is fresh and approved for use in orange juice products. Because it withstands Florida's occasional cold snaps that can ruin most citrus, Ambersweet is being widely planted in the Sunshine State. It took 20 years of patient breeding to develop it, but the payoff is huge.*

Rice. *Rice, a billion-dollar annual crop, is grown in only six States: Arkansas, California, Louisiana, Texas, Mississippi, and Missouri. Long-grain, an American favorite, is raised chiefly in the South, while medium and short-grain rice grows mainly in California. And everywhere that rice is grown, ARS research stands behind the crop.*

Much of this work involves breeding better rice. In 1993, a single ARS-developed semidwarf rice variety, Lemont, covered 600,000 acres. That same year, its cousin Gulfmont contributed another 147,000 acres. Together they accounted for nearly 30 percent of the rice in four States. Semidwarf varieties have short, stout stems, so they don't fall over in a strong wind or rain, and their grain-laden heads do not snap off before the rice can be harvested.

Catfish. *Catfish, long regarded in the South as a down-home delicacy, was hard to find in supermarkets elsewhere until recently. But now, thanks to aquaculture, pond-raised catfish is a popular item in the frozen food case. ARS helped increase fish farming by breeding fish for disease resistance, finding better feed, and eliminating chemicals that contribute to off flavors.*

SuperSlurper. *When ARS scientists married starch to a synthetic chemical, they managed to create a product so thirsty it could absorb hundreds of times its own weight in water. Someone called it SuperSlurper, and the name stuck. After patents were secured in 1976, SuperSlurper started popping up all over the marketplace.*

This absorbent compound, which can slurp up to 2,000 times its weight in water, is used as an electrical conductor in batteries; it is

found in fuel filters, baby powders, and wound dressings; and compounds very much like it are used in disposable diapers and sanitary napkins.

Poinsettia. *Not only is poinsettia the most popular Christmas plant, it is the number-one flowering potted plant in the United States, even though its traditional sales period is just 6 weeks. That was not the case back in 1976, when ARS first began its program to improve the flower's dependability. This meant discovering the exact conditions of light and temperature the plant requires. Researchers also performed breeding experiments that defined how color develops, and they devised precision growing methods that enabled massive cultivation. Last year, the wholesale value of the poinsettia crop reached nearly $170 million—a jump of more than 400 percent since 1976.*

Cotton. *When medics during World War II pleaded for self-clinging elastic bandages, stretch cottons were born. After the war, consumers asked ARS to make stretch cotton available in diapers, socks, and underwear, so ARS chemists invented three different ways to put more stretch into cotton.*

Next, ARS helped unchain Americans from the ironing board. First, scientists brought forth the first wash-and-wear cotton shirts. Then they improved the process by which durable-press cotton fabric finish was created so it would pose no health risk to textile workers. A new way to cross-link cotton fibers used citric acid to do the trick. The improved process, which has been patented, keeps cotton fabrics wrinkle-free for more than 100 washings.

Cooperative State Research, Education, and Extension Service

The Cooperative State Research, Education, and Extension Service (CSREES), which was created in 1994, forms a national and international research and education network. CSREES combines the research and higher education functions of the former Cooperative State Research Service with the education and outreach functions of the former Extension Service.

Mission

In cooperation with its partners and customers, CSREES focuses on advancing a global system of research, extension, and higher education in the food and agricultural sciences and related environmental and human sciences to benefit people, communities, and the Nation.

CSREES programs increase scientific knowledge and provide access to that knowledge; strengthen the capabilities of land-grant and other institutions in research, extension, and higher education; increase access to and use of improved communication and network systems; and promote informed decisionmaking by producers, families, communities, and other customers.

The Agency's purpose is to improve economic, environmental, and social conditions in the United States and globally. These conditions include improved agricultural and other economic enterprises; safer, cleaner water, food, and air; enhanced stewardship and management of natural resources; healthier, more responsible, and more productive individuals, families, and communities; and a stable, secure, diverse, and affordable national food supply.

Partners

CSREES works in partnership with the public and private sectors to maximize the effectiveness of limited resources. Partners include:

- Land-grant institutions in each State, territory, and the District of Columbia,
- More than 130 colleges of agriculture,
- 59 agricultural experiment stations,
- 57 cooperative extension services,
- 63 schools of forestry,
- 16 1890 historically black land-grant institutions and Tuskegee University,
- 27 colleges of veterinary medicine,
- 42 schools and colleges of family and consumer sciences,
- 29 1994 Native American land-grant institutions, and
- 127 Hispanic-serving institutions, including 81 members and 45 associate members of the Hispanic Association of Colleges and Universities.

Programs

CSREES research, extension, and education leadership is provided through programs in plant and animal production, protection, and processing; natural resources and environment; rural economic and social development; families, 4-H, and nutrition; partnerships; competitive research grants and awards management; science and education resource development; and communications, technology, and distance education.

The agency develops research and education programs in cooperation with its partners, using advanced research and educational technologies that empower people and communities to solve problems and improve their lives. The CSREES partnership with the land-grant universities and their representatives is critical to effective and shared planning, delivery, and accountability for research, higher education, and extension programs.

Advanced Communication Technology

CSREES is a recognized international leader in designing, organizing, and applying advanced communication technologies and in meeting the growing demand for enhanced distance education capabilities. CSREES provides essential community access to research and education knowledge and connects private citizens to other Federal Government information. All State extension system offices and 75 percent

of county offices are interconnected via interactive communication technology. This capability enables CSREES to respond in a timely and credible manner to critical issues and public needs.

Reaching Diverse Audiences

Rural America is more diverse, both in human and financial resources, than ever before. In response, CSREES is a diverse and multicultural organization that values and is committed to pluralism as a long-term investment in the future.

CSREES at Work

CSREES is a key to knowledge-based agriculture, for it provides a critical connection between extension educators—who identify and communicate agricultural, environmental, and community problems—and researchers at campuses and experiment stations. The researchers, in turn, generate new knowledge and develop a new generation of scientists. Educators and researchers work together to initiate and stimulate new research that helps solve real world problems.

- ***CSREES Is***
  - *Cutting-edge research programs on value-added products, plant and animal genomes, integrated pest management, water quality, human nutrition, food safety, and animal and plant systems*
  - *Model education programs on food safety; sustainable agriculture; water quality; children, youth, and families; health; environmental stewardship; and community economic development*
  - *5.6 million youth involved in 4-H projects and programs*
  - *The National Research Initiative, which supports research to solve key agricultural and environmental problems*
  - *Grants to provide educational opportunities in the agricultural and food sciences*
  - *Innovative design of interactive distance education activities to reach diverse audiences and sustain access to lifelong learning*
  - *Immediate electronic access to flood and disaster safety, recovery, and other vital information*
  - *3 million trained volunteers who work with outreach education programs nationwide*
  - *Over 9,600 local extension educators working in 3,150 counties*
  - *Over 9,500 scientists conducting research at 59 State agricultural experiment stations*
  - *International education programs taught by over 200 extension professionals in 17 countries*

For Further Information

Contact your local county extension office (offices are listed under local government in the telephone directory), a land-grant university, or the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, Washington, DC 20250-0900. Telephone: 202-720-3029; Fax: 202-690-0289; Internet address: csrees@reeusda.gov

Did you know?

- *CSREES information is electronically accessible globally via Internet through Almanac (almanac@reeusda.gov), Gopher (gopher.reeusda.gov (port 70)), and World Wide Web (http://www.reeusda.gov).*
- *CSREES promotes research and development of industrial products that are environmentally friendly and biodegradable and that can be recycled and manufactured from renewable resources grown domestically.*
- *Nearly 100 CSREES extension educators from 29 land-grant universities participated in the USDA Poland/American Project, helping with Poland's transition to a market economy.*
- *The CSREES AgriAbility project provides on-farm assistance to over 2,000 farmers with disabilities and educates agricultural, rehabilitation, and health professionals on safely accommodating disability in agriculture.*
- *Agriculture ranks as one of the three most hazardous U.S. industries. CSREES funding supports farm safety education programs in all 50 states and Puerto Rico.*
- *Hibiscus, also known as kenaf, is a source of industrial fibers for manufactured products such as printing and writing paper, building materials, and containers that combine kenaf with recycled plastic. It is used as an adsorbent material in oil/chemical spill booms, poultry litter, animal bedding, and potting soil. Since 1986, CSREES has led efforts to commercialize kenaf; this plant can produce 6-10 tons of dry fiber per acre.*
- *A CSREES distance learning partnership with the National Association of Counties gave communities nationwide access to interactive discussion of children's issues. This access not only provided a broader range of information for local communities, but it also encouraged their active participation in a continuing learning process.*
- *In 1990-95, jobs in the food and agricultural sciences outpaced graduates by 11 percent. A continuing 5 percent shortfall is projected over the next 5 years.*

- *Women represent more than 38 percent of the baccalaureate enrollment in agriculture, renewable natural resources, and forestry programs at land-grant and State institutions, and their enrollment in academic areas related to agriculture is growing.*
- *58 percent of U.S. forests (358 million acres) is held by 10 million private owners. CSREES has educational programs in all States to help these owners manage their forests with environmentally acceptable methods.*
- *The CSREES pesticide applicator training program trains over half a million people each year on the safe and environmentally sound use of pesticides.*
- *CSREES aquaculture programs assist U.S. farmers, who raise nearly 100 aquatic species for food and recreation with a farm gate value of nearly $1 billion.*

Economic Research Service

The Economic Research Service (ERS) provides economic and other social science information and analysis on agriculture, food, natural resources, and rural America. The information produced by ERS is used by farmers and consumers in the decisions they make and by public officials in developing, administering, and evaluating agricultural and rural policies and programs. The wide range of topics that ERS researches, analyzes, and monitors includes:

- Domestic and international agricultural developments and markets,
- Nutrition education and food assistance, food safety regulation, determinants of consumer demand for quality and safety, and food marketing trends and developments,
- Agricultural resource and environmental issues, and
- National rural and agricultural conditions affecting the rural economy, the financial performance of the farm sector, and the implications of changing farm credit and financial market structures.

ERS-produced information is available to the public through research reports, situation and outlook reports, electronic media, magazines (including *Agricultural Outlook*, *FoodReview*, *Rural Conditions and Trends*, and *Rural Development Perspectives*), radio, newspapers, and frequent participation of ERS staff at various public forums.

ERS has four principal functions:

- Research,
- Development of economic and statistical indicators,
- Situation and outlook analysis, and
- Staff analysis.

Research, together with economic and statistical indicators, provides the knowledge and the data base for the situation and outlook and staff analysis functions. The products of the situation and outlook analysis are periodic reports that analyze the current situation and forecast the short-term outlook for major agricultural commodities, agricultural exports, agricultural finance, agricultural resources, and world agriculture. ERS staff also assess issues requiring policy decisions by the Administration and Congress.

All ERS, NASS, and WAOB reports are available through a variety of formats. Printed reports are available through the ERS-NASS order desk at 1-800-999-6779. Most reports are also available electronically through the USDA Computerized Information Delivery System. In addition, selected reports are available through the ERS/NASS electronic bulletin board or through the Internet; call (202) 219-0395 for more information.

National Agricultural Statistics Services

An orderly production and marketing system depends on an accurate, up-to-the-minute accounting of the many factors that influence agriculture. The mission of the National Agricultural Statistics Service (NASS) is to serve the United States, its agriculture, and its rural communities by providing meaningful, timely, accurate, and objective statistical information and services.

NASS headquarters in Washington, DC, and State Statistical Offices (SSO's) cover 120 crops and 45 livestock items annually. Current and historical information is published in approximately 400 reports, which focus on:

- Crop acreage, yield, production, and grain stocks,
- Livestock, dairy, and poultry production and prospects,
- Chemical use in agriculture,
- Labor use and wage rates,
- Farms and land in farms, and
- Prices, costs, and returns.

The information is geared toward producers and can help them plan planting, feeding, breeding, and marketing programs. The data also are used by agricultural organizations, services, and businesses; trade groups; and financial institutions to determine demand for inputs, resources, transportation, and storage-related crop and livestock products. In addition, the data are used to make and carry out agricultural policy concerning farm program legislation, commodity programs, agricultural research, and rural development.

Most estimates are based on information gathered from producers, who are surveyed through personal or telephone interviews or through mailed questionnaires. In addition, for major crops—such as corn, wheat, soybeans, and cotton—in-the-field counts and measurements of plant development are made in the top producing States. Other estimates are based on surveys of grain elevators, hatcheries, and other agribusinesses, as well as on administrative data such as slaughter records.

Data collected from these varied sources are summarized by the NASS SSO serving that State and sent to the Agency's Agricultural Statistics Board in

Washington, DC, which determines and issues the official estimates for the State and the Nation.

How To Get More Information

All NASS reports are released at scheduled times, and the information is offered to the public in a variety of formats. Publications and a catalog of products can be ordered by calling 800/999-6779. Electronic sources for information include the Computerized Information Delivery Service (202/720-9045) and Internet (202/219-0012). For additional information about the Agency, its products, or its services, call the information hotline: 800/727-9540.

State Statistical offices often have some additional data breakouts not found in national publications. For information about a particular State, call the State Statistician at any of the following offices:

ALABAMA
Montgomery
(800)832-4181

ALASKA
Palmer
(800)478-6079

ARIZONA
Phoenix
(800)645-7286

ARKANSAS
Little Rock
(800)327-2970

CALIFORNIA
Sacramento
(800)851-1127

COLORADO
Lakewood
(800)392-3202

DELAWARE
Dover
302)739-4811

FLORIDA
Orlando
(800)344-6277

GEORGIA
Athens
(800)253-4419

HAWAII
Honolulu
(800)804-9514

IDAHO
Boise
(800)691-9987

ILLINOIS
Springfield
(800)622-9865

INDIANA
West Lafayette
(800)473-2696

IOWA
Des Moines
(800)772-0825

KANSAS
Topeka
(800)258-4564

KENTUCKY
Louisville
(800)928-5277

LOUISIANA
Baton Rouge
(800)256-4485

MARYLAND
Annapolis
(410)841-5740

MICHIGAN
Lansing
(800)453-7501

MINNESOTA
St. Paul
(800)453-7502

MISSISSIPPI
Jackson
(800)535-9609

MISSOURI
Columbia
(800)551-1014

MONTANA
Helena
(800)835-2612

NEBRASKA
Lincoln
(800)582-6443

NEVADA
Reno
(702)784-5584

NEW ENGLAND
Concord, NH
(800)642-9571

NEW JERSEY
Trenton
(609)292-6385

NEW MEXICO
Las Cruces
(800)530-8810

NEW YORK
Albany
(800)821-1276

NORTH CAROLINA
Raleigh
(800)437-8451

NORTH DAKOTA
Fargo
(800)626-3134

OHIO
Columbus
(800)858-8144

OKLAHOMA
Oklahoma City
(800)982-2934

OREGON
Portland
(800)338-2157

PENNSYLVANIA
Harrisburg
(800)498-1518

SOUTH CAROLINA
Columbia
(800)424-9406

SOUTH DAKOTA
Sioux Falls
(800)338-2557

TENNESSEE
Nashville
(800)626-0987

TEXAS
Austin
(800)626-3142

UTAH
Salt Lake City
(801)524-5003

VIRGINIA
Richmond
(800)772-0670

WASHINGTON
Olympia
(800)435-5883

WEST VIRGINIA
Charleston
(800)535-7088

WISCONSIN
Madison
(800)478-6079

WYOMING
Cheyenne
(800)892-1660

12. Marketing and Regulatory Programs

Animal and Plant Health Inspection Service: Protecting Agricultural Health and Productivity

Why are the farmers and ranchers of the United States able to produce so much food for the tables of America's consumers? One key to our plentiful food supply is our healthy crops and livestock.

And this is no accident. America's agricultural health is a result of a team effort—good husbandry by farmers and ranchers plus an organized effort to control and eradicate pests and disease and to prevent the entry of devastating foreign plagues.

Pests and diseases—just like frosts, floods, and droughts— can wreak havoc on agricultural productivity, depressing farm incomes and driving up food costs for consumers in the process. Nobody can prevent weather-related disasters, but USDA can and does play a vital role in protecting our country's agricultural health. The result is a more abundant, higher quality, and cheaper food supply than is found anywhere else in the world.

With the advent of free trade initiatives, a global network of countries has agreed that valid agricultural health concerns—not politics, not economics—are the only acceptable basis for trade restrictions. In this environment, our country's agricultural health infrastructure will be our farmers' greatest ally in seeking new export markets.

Excluding Foreign Pests and Diseases

Agricultural Quarantine Inspection

Agriculture, America's biggest industry and its largest employer, is under constant threat of attack. The enemies are countless and often microscopic, and they gain access to our country in surprising ways. Their potential allies are every traveler entering the United States and every American business importing agricultural products from other countries.

Many passengers entering the United States don't realize that one piece of fruit packed in a suitcase has the potential to cause millions of dollars in damage to U.S. agriculture. Forbidden fruits and vegetables can carry a whole range of plant diseases and pests. Oranges, for example, can introduce diseases like citrus canker or pests like the Mediterranean fruit fly (Medfly).

Similarly, sausages and other meat products from many countries can contain animal disease organisms that can live for many months and even survive processing. Meat scraps from abroad could end up in garbage that is fed to swine. If the meat

came from animals infected with a disease, such as African swine fever, hog cholera, or foot-and-mouth disease, it easily could be passed to domestic swine, and a serious epidemic could result.

Agricultural quarantine inspection is the first line of defense against foreign pests and diseases. Seven days a week, around 1,300 inspectors with USDA's Animal and Plant Health Inspection Service (APHIS) are on duty at international airports, seaports, and border stations to inspect passengers and baggage for plant and animal products that could be harboring pests or disease organisms. These APHIS Plant Protection and Quarantine inspectors check millions of passengers and their baggage each year for plant or animal pests and diseases that might harm U.S. agriculture. They also inspect ship cargoes, rail and truck freight, and mail from foreign countries.

The following table provides selected inspection and interception data:

Table 12-1.

FY	*1990*	*1991*	*1992*	*1993*	*1994*
Ships inspected	53,795	52,119	53,374	47,887	53,270
Aircraft inspected	356,434	356,915	378,643	378,634	451,342
Passengers and crew inspected	54,092,706	53,999,523	58,103,711	56,920,156	62,548,979
Interceptions, plant material	1,667,201	1,527,922	1,723,004	1,474,569	1,442,214
Interceptions of pests	57,856	56,213	54,831	51,829	54,831
Interceptions, meat/poultry products	166,520	205,407	246,878	224,340	281,230
Baggage civil penalties -number	n/a	29,089	29,700	27,137	22,164
Baggage civil penalties -Amount of fines	n/a	$1,299,270	$1,537,590	$1,407,000	$1,186,310

From high-tech to a keen nose, APHIS uses a variety of means to exclude foreign pests and protect American agriculture. Inspectors augment visual inspection with some 75 x-ray units that help check passenger baggage and mail for prohibited agricultural materials.

They also have enlisted trained detector dogs and their keen sense of smell to help sniff out prohibited fruit and meat. On leashes and under the constant supervision of their handlers, the friendly beagles in USDA's "Beagle Brigade" have checked the baggage of passengers arriving from overseas for the past 10 years.

Currently, APHIS has 37 canine teams at 19 airports, including 18 of America's 20 busiest international airports. Dogs also are used at three post offices. In addition to their actual function, the Beagle Brigade serves as an effective symbol of the need to protect American agriculture and the Nation's food supply from foreign pests. The Beagle Brigade program was responsible for approximately 60,000 seizures of prohibited agriculture products in FY 1994.

From Tex at Houston, Sparky in Chicago, and Taffy in Los Angeles to Abbot in Miami and Jackpot in Washington, DC, the Beagle Brigade spans the United States. These five dogs provide a good sample of what our Beagle Brigade dogs are like.

***Texanna (nickname—Tex)** is 4 years old and stationed at Houston's Intercontinental Airport. Her favorite smell is apples and in 1994 she worked 322 flights and made 460 seizures. Her proudest moments include finding 5 pounds of olives, 21 pounds of wheat, and a large quantity of pork. Tex's hobbies are chasing a ball and playing with her colleagues, and her pet peeve is people thinking she's a boy and calling her "fellah."*

***Sparky** is 7 1/2 years old and stationed at Chicago O'Hare International Airport. Adopted from a family in Miami, he has worked for USDA since August 1988. In FY 1994, he worked 1,619 flights and made 3,150 seizures. His proudest moments are when he finds smuggled birds; one month he found 362 pounds of meat. Sparky's hobbies are running loose at the kennel and playing with fellow O'Hare beagle Phyto. His pet peeve is people trying to distract him when he's working.*

*At Los Angeles International airport, beagle **Taffy** is 2 years old and was trained last year at John F. Kennedy International Airport, NY. Her favorite treats are rawhide treats, and she likes looking for apples and oranges. In FY 1994, Taffy worked 688 flights and made 491 seizures. Her hobbies are playing with colleagues, especially fellow USDA detector dog Kojak, and her best trick is shaking hands.*

***Abbott** (nickname, "The Little Prince of PPQ") is 4 years old and he works at Miami International Airport. His favorite smells are beef*

and pork, and in 1994 he worked 812 flights and made 1,308 seizures. Abbott's proudest moments include finding 30 pounds of pork and a 25-pound ham; his pet peeve is that when he finds something good and smelly to roll in, he then has to have a bath. His best trick is the belly crawl.

Finally, at Washington, DC's Dulles International Airport, ***Jackpot****, 5 years old, is hard at work. He loves looking for meat, and bits of pepperoni are his favorite treat. In FY 1994 he worked 1,052 flights and made 1,463 seizures. Jackpot is proud every time he finds something. He enjoys playing hide and seek, and his best trick is pointing out a suitcase with his paw.*

Preclearance—Checking at the Source

In addition to domestic exclusion efforts, APHIS' International Services has a corps of experts stationed overseas to bolster the Nation's defenses against exotic pests and diseases. Often it is more practical and effective to check and monitor commodities for pests or diseases at the source through preclearance programs. APHIS has special arrangements with a number of countries for preclearance programs, summarized in the following table.

Country	Commodities
Australia	Apples, pears, grapes
Belgium	Bulb inspection
Brazil	Mangoes (hot water treatment)
Chile	Stonefruit, berries, grapes, cut flowers, fruits, and vegetables
Costa Rica	Papaya
Ecuador	Mangoes (hot water treatment); melons (free zone)
Great Britain	Bulb inspection
Guatemala	Mangoes (hot water treatment)
Ireland	Bulb inspection
Israel	Bulb inspection
Japan	Sand pears, Unshu oranges
Korea	Sand pears, tangerines
Mexico	Mangoes (hot water treatment)
New Zealand	Apples, pears, Nashi pears
The Netherlands	Bulb inspection
Nicaragua	Mangoes (hot water treatment)
Peru	Mangoes (hot water treatment)
South Africa	Apples, pears
Spain	Lemons, clementines, Valencia oranges
Taiwan	Mangoes (hot water treatment), litchi (vapor heat)
Turkey	Bulb inspection
Venezuela	Mangoes (hot water treatment)

International Programs

Through direct overseas contacts, APHIS employees gather and exchange information on plant and animal health; work to strengthen national, regional, and international agricultural health organizations; and cooperate in international programs against certain pests and diseases that directly threaten American agriculture. Two of the latter are the MOSCAMED program—which combats Medfly infestations in Mexico and Guatemala—and a program to eradicate screwworms, a parasitic insect of warmblooded animals. Screwworm flies lay their eggs on the edge of open wounds, and the developing larvae feed on the living flesh of the host. Left untreated, the infestation can be fatal.

Screwworms were eradicated from the United States through the use of the sterile insect technique. With this method, millions of screwworm flies are reared in captivity, sterilized, and then released over infested areas to mate with native fertile flies. Eggs produced through such matings do not hatch, and the insect literally breeds itself out of existence.

To provide further protection to U.S. livestock, starting in 1972 eradication efforts were moved southward from the U.S.-Mexico border, with the eventual goal of establishing a barrier of sterile flies across the Isthmus of Panama. To date, screwworms have been eradicated from Mexico, Guatemala, Belize, Honduras, and El Salvador. Eradication efforts continue in Nicaragua, and agreements have been signed to start programs in Costa Rica and Panama. A production plant at Tuxtla-Gutierrez in Chiapas in southern Mexico can produce up to 500 million sterile flies weekly.

APHIS also works to prevent foot-and-mouth disease from entering Mexico, Central America, and Panama and works with Colombia to eliminate this disease from the northern part of that country.

Coping with Invasions

If, despite our best efforts, foreign pests or diseases do manage to slip past our border defenses, APHIS conducts appropriate control and eradication measures. Examples include Mediterranean fruit fly eradication projects in California in the early 1990's and outbreaks of exotic Newcastle disease in pet birds in several States during the 1980's.

APHIS has a special cadre of people who deal with introductions of exotic plant pests. Known as PEPPA—for "Preparedness for Emergency Plant Pest Actions"—these teams have been mobilized on several occasions to combat costly infestations of Medflies.

Early detection of exotic animal diseases by alert livestock producers and practicing veterinarians who contact specially trained State and Federal veterinarians is the key to their quick detection and elimination. More than 300 such trained veterinarians are located throughout the United States to investigate suspected foreign diseases. Within 24 hours of diagnosis, one of four specially trained task forces in APHIS' Veterinary Services can be mobilized at the site of an outbreak to implement the measures necessary to eradicate the disease.

Import-Export Regulations

APHIS is responsible for enforcing regulations governing the import and export of plants and animals and certain agricultural products.

Import requirements depend on both the product and the country of origin. Plants and plant materials usually must be accompanied by a phytosanitary certificate issued by an official of the exporting country. Livestock and poultry must be accompanied by a health certificate, also issued by an official of the exporting country. Animal products, such as meats and hides, are restricted if they originate in countries that have a different disease status than the United States.

APHIS regulates the importation of animals that enter the country through land ports along the borders with Mexico and Canada. Imports of livestock and poultry from other countries must be quarantined at one of four animal import centers: Newburgh, NY; Miami, FL; Los Angeles, CA; and Honolulu, HI

Personally owned pet birds can enter through one of six USDA-operated bird quarantine facilities: New York, NY; Miami, FL; San Ysidro, CA; Hidalgo, TX; Los Angeles, CA; and Honolulu, HI.

Pet birds from Canada can enter without quarantine because Canada's animal disease programs and import rules are similar to those of the United States. Commercial shipments of pet birds can enter through one of 60 privately owned, APHIS-supervised quarantine facilities. A special high-security animal import center at Key West, FL, provides a safe means of importing animals from countries infected with foot-and-mouth disease.

APHIS cooperates with the U.S. Department of the Interior in carrying out provisions of the Endangered Species Act that deal with imports and exports of endangered plant, animal, and bird species. Also, at many ports, APHIS officers inspect and sample seed imported from foreign countries to ensure that it is accurately labeled and free of noxious weeds.

APHIS also maintains 14 plant introduction stations, the largest of which is at Miami, FL, for commercial importation of plant materials. Smaller stations are at Orlando, FL; San Juan, PR; JFK International Airport, Jamaica, NY; Hoboken, NJ; Houston, El Paso, and Los Indios (Brownsville), TX; Nogales, AZ.; San Diego, Los Angeles, and San Francisco, CA; Seattle, WA; and Honolulu, HI.

To facilitate agricultural exports, APHIS officials certify the health of both plants and animals that are shipped to foreign countries. APHIS assures that U.S. plants and plant products meet the plant quarantine import requirements of foreign countries. This assurance is in the form of a phytosanitary certificate, issued by APHIS or State cooperators. During FY 1994, 271,000 phytosanitary certificates were issued for exports of plants and plant products worth $23 billion.

APHIS' Veterinary Services officials and its National Center for Import and Export provide health certification for animals and animal products designated for export. Examinations and tests—usually done by USDA-accredited veterinarians—cover both U.S. export health requirements and the frequently complex import requirements of the receiving nation. An APHIS veterinarian endorses export health certificates after all tests and other requirements have been met. Then a final examination is conducted by an APHIS veterinarian at the port of export before the livestock

or poultry leaves the country. During 1994, livestock exports increased by 30 percent over the previous year.

Domestic Plant Health Programs

In most cases, plant pest problems are handled by individual farmers, ranchers, and other property owners and their State or local governments. However, when an insect, weed, or disease poses a particularly serious threat to a major crop, the Nation's forests, or other plant resources, APHIS may join in the control work.

Most pests and weeds that are targets of APHIS' Plant Protection and Quarantine programs are not native to America. They gained entry into this country through commercial trade channels, international travelers, or other means.

When pests are new to this country, control techniques may not be available. In any case, APHIS applies interstate quarantines and takes other steps to prevent spread until effective control measures can be developed.

In many cases, foreign pests are only minor problems in their native lands because they are kept in check by native parasites, predators, and diseases. Since many of these natural enemies may not exist in the United States, one of APHIS control techniques—in cooperation with USDA's Agricultural Research Service—is the importation, rearing, and release of parasites and other biological control organisms.

Biocontrol: Nature's Way

Biological control means using predators, parasites, and pathogens to combat plant pests. Predators and parasites include insects, mites, and nematodes that naturally attack a target pest. Pathogens include bacteria, viruses, or fungi that cause diseases specifically injurious to a target pest.

Biological control was first put to broad, practical use in the United States in the 1880's. At that time, California citrus groves were being devastated by an exotic insect, the cottony-cushion scale. A USDA scout working in Australia found the vedalia beetle feeding on the scale insect. The beetle, part of the lady beetle family, was successfully introduced into California and other citrus-growing regions and has kept the scale insect from causing economic damage ever since.

To coordinate the important search for new and better biocontrol opportunities, APHIS established the National Biological Control Institute in 1989. Its mission is to promote, facilitate, and provide leadership for biological control. Its main work is to compile and release technical information and coordinate the work needed to find, identify, and augment or distribute new biological control agents.

The Institute relies on scientists from ARS and elsewhere to identify potentially useful biological control agents. These agents are carefully screened at quarantine centers before being put to use.

Various agencies have successfully cooperated on biocontrol projects. For example, several decades ago, ARS scientists found six species of stingless wasps in Europe that keep alfalfa weevils in check. In 1980, APHIS took on the job of establishing these beneficial wasps across the land. Between 1980 and 1989, APHIS and its cooperators raised and distributed about 17 million wasps, and today there are beneficial wasps within reach of virtually every alfalfa field in the country. It's esti-

mated that the benefits of the alfalfa weevil biocontrol program amount to about $88 million per year, representing a return of about $87 for each $1 spent on the project.

Other APHIS biocontrol programs currently underway in cooperation with State agencies include efforts against the cereal leaf beetle, sweet potato whitefly, Russian wheat aphid, Colorado potato beetle, euonymus scale, brown citrus aphid, leafy spurge, diffuse and spotted knapweed, and common crupina. Promising biocontrol agents for other pests are being tested at APHIS biocontrol labs in Mission, TX; Niles, MI; and Bozeman, MT.

"See No Weevil" Boll Weevil Eradication

One major domestic program that APHIS coordinates is the effort to eradicate boll weevils from the United States. The boll weevil entered this country from Mexico in the late 1890's and soon became a major pest of cotton. It has caused an estimated $12 billion in losses to the Nation's economy. In 1973, it was estimated that insecticides applied to control boll weevils accounted for about one-third of the total applied to agricultural crops in the United States.

The success of a 1971-73 cooperative boll weevil eradication experiment in portions of Mississippi, Louisiana, and Alabama involving Federal and State agencies and grower associations led to two additional 3-year experiments. One was an eradication trial in North Carolina and Virginia; the second was an optimum pest management trial in Mississippi.

The current boll weevil eradication effort judiciously applies pesticides based on the number of adult weevils trapped around cotton fields. The traps contain a pheromone (insect attractant) and a small amount of insecticide that kills all captured weevils. In eradication program areas, one to three traps are placed per acre and are checked weekly. Pesticides are applied only to fields that reach a predetermined number of trapped weevils. This selective use of pesticides results in fields requiring minimal pesticide applications—sometimes none—during the growing season. After several seasons, the weevils are eradicated within the defined program area, eliminating any further need to spray for this pest.

The following table shows progress in eradicating boll weevils from U.S. cotton-growing areas.

	States involved	Eradication acres	Weevil-free acres
1983	VA/NC/SC	93,090	34,425
1987	+GA/FL/AL	405,225	174,720
1994	+MS/TN/TX	615,580	1,813,420
1995 (est.)	Same	1,089,450	2,363,235

In the cooperative boll weevil eradication program, APHIS supplies equipment, technical and administrative support, and a portion of program funds. Grower assessments and/or State appropriations finance the great majority of the program—70 percent or more.

The success of the program has brought a resurgence of cotton production. Planting intentions reported by the National Cotton Council indicated more than a 13.5-percent increase in cotton acreage in 1995 compared with 1994.

Witchweed: A Success Story

Witchweed is a parasitic plant that attaches itself to the roots of crops such as corn, sorghum, sugar cane, and other members of the grass family, robbing them of water and vital nutrients. Each plant can produce up to 500,000 seeds per year, and the seeds can remain viable in the soil for up to 15 years, germinating only when they come into contact with the root of a host plant.

Witchweed was introduced into the Carolinas from Africa in the mid-1950's. When the parasite first struck, corn plants mysteriously withered and died. A student visiting from India recognized the weed and told U.S. agricultural experts what it was.

Over the course of an eradication effort that began in 1974, some 450,000 acres have been infested. The eradication program was based on surveillance to locate infested fields, quarantines to prevent spread, and a combination of herbicides and germination stimulants to actually eradicate the weed.

At the beginning of FY 1995, with fewer than 28,000 infested acres remaining, APHIS turned operation of the program over to North Carolina to complete eradication there, but continues to help finish the eradication effort in South Carolina.

Grasshoppers and IPM

APHIS was the lead agency in a cooperative Integrated Pest Management (IPM) initiative for grasshopper control in the Western United States. This IPM project, which began in 1987 and closed down in 1994, was aimed at finding better and more acceptable ways of preventing grasshopper damage, while protecting the environment. Activities included developing means to predict and manage grasshopper outbreaks, developing biological control alternatives that minimize the use of chemicals, and integrating proven control techniques into guidelines for APHIS rangeland grasshopper programs.

Other domestic Plant Protection and Quarantine programs include a quarantine program to prevent the artificial spread of the European gypsy moth from infested areas in the northeastern United States through movement of outdoor household goods and other articles, quarantines to prevent the spread of imported fire ants through movement of plant nursery material from infested areas, and releasing irradiated sterile pink bollworm moths to keep this insect out of cotton in California's San Joaquin Valley.

Domestic Animal Health Programs

Protecting the health of the Nation's livestock and poultry industries is the responsibility of APHIS' Veterinary Services.

Veterinary medical officers and animal health technicians work with their counterparts in the States and with livestock producers to carry out cooperative programs to control and eradicate certain animal diseases. The decision to begin a nationwide campaign against a domestic animal disease is based on a number of factors, the most important of which is: "Are producers and the livestock industry a leading force in the campaign?"

This organized effort against livestock diseases began in 1884 when Congress created a special agency within USDA to combat bovine pleuropneumonia—a dreaded cattle disease that was crippling exports as well as taking a heavy toll on domestic cattle. Within 8 years, contagious bovine pleuropneumonia had been eradicated, and this campaign set the pattern for subsequent animal disease control and eradication programs.

To date, 13 serious livestock and poultry diseases have been eradicated from the United States. They are:

Table 12-2.

Diseases eradicated from the United States

Year	*Disease*
1892	Contagious bovine pleuropneumonia
1929	Foot-and-mouth disease
1929	Fowl plague
1934	Glanders
1942	Dourine
1943	Texas cattle fever
1959	Vesicular exanthema (VE)
1959 & 66	Screwworms (Southeast & Southwest)
1971	Venezuelan equine encephalitis
1973	Sheep scabies
1974	Exotic Newcastle disease
1978	Hog cholera
1985	Lethal avian influenza

Current disease eradication programs include cooperative State-Federal efforts directed at cattle and swine brucellosis, bovine tuberculosis, and pseudorabies in swine (see table).

Table 12-3.

Status of States in cattle and swine brucellosis, bovine tuberculosis, and pseudorabies in swine

State	Cattle Brucellosis*	Swine Brucellosis**	TB***	Cattle Pseudorabies****
AL	Class A	Stage 2	Free	Stage 3
AK	Free	Free	Free	Free
AZ	Free	Free	Free	Stage 3
AR	Class A	Stage 2	Free	Stage 3
CA	Class A	Free	M-A	Stage 3
CO	Free	Free	Free	Stage 4
DE	Free	Free	Free	Stage 4
FL	Class A	Stage 1	Free	Stage 2
GA	Class A	Stage 2	Free	Stage 3
HI	Free	Free	Free	Stage 3
IL	Free	Free	Free	Stage 2
IN	Free	Free	Free	Stage 2/3
IA	Class A	Free	Free	Stage 2
KS	Class A	Free	M-A	Stage 2
KY	Class A	Free	Free	Stage 3
LA	Class A	Stage 2	Free	Stage 3
ME	Free	Free	Free	Free
MD	Free	Free	Free	Stage 3
MA	Free	Free	Free	Stage 3
MI	Free	Free	Free	Stage 2/3
MN	Free	Free	Free	Stage 2/3
MS	Class A	Free	Free	Free
MO	Class A	Free	Free	Stage 3
MT	Free	Free	Free	Free
NE	Class A	Free	Free	Stage 2/3
NV	Free	Free	Free	Free
NH	Free	Free	Free	Stage 3
NJ	Free	Free	Free	Stage 3
NM	Class A	Free	M-A	Free
NY	Free	Free	Free	Free
NC	Free	Free	M-A	Stage 2/3
ND	Free	Free	Free	Free
OH	Free	Free	Free	Stage 3
OK	Class A	Stage 2	M-A	Stage 3
OR	Free	Free	Free	Free
PA	Free	Free	M-A	Stage 2
PR	Free	Free	M-A	Stage 2
RI	Free	Free	Free	Stage 2
SC	Free	Stage 1	Free	Stage 4
SD	Class A	Free	Free	Stage 3
TN	Class A	Free	Free	Stage 3
TX	Class A	Stage 2	M-A	Stage 3

Table 12-3 continued.

Status of States in cattle and swine brucellosis, bovine tuberculosis, and pseudorabies in swine

State	Cattle Brucellosis*	Swine Brucellosis**	TB***	Cattle Pseudorabies****
UT	Free	Free	Free	Free
VT	Free	Free	Free	Stage 4
VI	Free	Free	Free	Stage 2
VA	Free	Free	M-A	Stage 4
WA	Free	Free	Free	Free
WV	Free	Free	Free	Stage 3
WI	Free	Free	Free	Stage 3/4
WY	Free	Free	Free	Free

* Class A (less than .25 percent herd infection rate) or Class Free
** Stage 1, 2 or Free
*** Modified Accredited (M-A) or Accredited Free (Free)
**** Stage 1, 2, 3, 4 or Free

Disease control and eradication measures include quarantines to stop the movement of possibly infected or exposed animals, testing and examination to detect infection, destruction of infected (and sometimes exposed) animals to prevent further disease spread, treatment to eliminate parasites, vaccination in some cases, and cleaning and disinfection of contaminated premises. In addition to the programs listed above, APHIS also cooperates with the States in a Voluntary Flock Certification Program to combat scrapie in sheep and goats.

APHIS animal health programs are carried out by a field force of about 250 veterinarians and 360 lay inspectors working out of area offices (usually located in State capitals). Laboratory support for these programs is supplied by APHIS' National Veterinary Services Laboratories at Ames, IA, and Plum Island, NY, which are centers of excellence in the diagnostic sciences and integral parts of APHIS' animal health programs.

Under the Virus-Serum-Toxin Act of 1913, APHIS enforces regulations to assure that animal vaccines and other veterinary biologics are safe, pure, potent, and effective. Veterinary biologics are products designed to diagnose, prevent, or treat animal diseases. They are used to protect or diagnose disease in a variety of domestic animals, including farm animals, household pets, poultry, fish, and fur bearers.

In contrast to animal medicines, drugs, or chemicals—all of which are regulated by the U.S. Food and Drug Administration—veterinary biologics are derivatives of living organisms. Unlike some pharmaceutical products, most biologics leave no chemical residues in animals. Furthermore, most disease organisms do not develop resistance to the immune response produced by a veterinary biologic.

Veterinarians and other professionals in APHIS' Biotechnology, Biologics, and Environmental Protection regulate and license all veterinary biologics as well as the facilities where they are produced. They also inspect and monitor the production of

veterinary biologics, including both genetically engineered products and products produced by conventional means. Necessary tests of veterinary biologics are conducted at the APHIS National Veterinary Services Laboratories at Ames, IA.

More than a half-century ago, there were perhaps a half a dozen animal vaccines and other biologics available to farmers. Now there are 2,144 active product licenses and 116 licensed manufacturers.

Monitoring Plant and Animal Pests and Diseases

In order to combat plant pests and animal diseases, it's important to know their number and where they are located.

To monitor plant pests, APHIS' Plant Protection and Quarantine unit works with the States in a project called the Cooperative Agricultural Pest Survey, which started in 1982 as a pilot project. Survey data on weeds, insects, plant diseases, and pests are entered into a nationwide database, the National Agricultural Pest Information System (NAPIS). This database can be accessed from anywhere in the country by persons with an authorized account.

By accessing NAPIS, users can retrieve the latest data on pests. NAPIS data can assist pest forecasting, early pest warning, quicker and more precise delimiting efforts, and better planning for plant pest eradication or control efforts. Survey data—which can reflect the absence as well as the presence of pests—also helps U.S. exports, assuring foreign countries that our commodities are free of specific pests and diseases.

There are more than a million records in the NAPIS database. Approximately 200 Federal and State agencies use NAPIS. NAPIS contains survey data files as well as text and graphics files. The data can be downloaded and analyzed with geographic information systems to provide graphic representation of information. For example, locations of pine shoot beetle detections can be shown graphically as well as where and how often surveys have been conducted for the beetle. This information is used by the State and Federal agencies regulating this pest.

Describing animal health and management in the United States is the goal of the APHIS National Animal Health Monitoring System (NAHMS). This program, which is conducted by APHIS' Veterinary Services, began in 1983.

NAHMS compiles statistics and information from existing data bases and gathers new data through short- and long-term targeted studies to present a baseline picture of animal agriculture. This information then can be used to predict trends and improve animal production efficiency and food quality. NAHMS provides statistically sound data concerning U.S. livestock and poultry diseases and disease conditions, along with their costs and associated production practices. Information from NAHMS aids a broad group of users throughout agriculture.

Baseline animal health and management data from NAHMS national studies are helping analysts identify associations between *Escherichia coli 0157:H7* and calf management. State and National officials, industry groups, and producers applied NAHMS national study data and information NAHMS compiled from State veterinary diagnostic laboratory reports to address a 1994 outbreak of acute bovine viral diarrhea disease.

Regulating Biotechnology in Agriculture

Scientists use agricultural biotechnology with a variety of laboratory techniques, such as genetic engineering, to improve plants, animals, and micro-organisms. Recent discoveries have led to virus-resistant crops such as cucumbers, tomatoes, and potatoes; to better vaccines and diagnostic kits used for diseases of horses, chickens, and swine; and even to new and improved varieties of commercial flowers.

APHIS' role in agricultural biotechnology is to manage and oversee regulations to ensure the safe and rapid development of the products of biotechnology. Applicants under APHIS' effective regulations and practical guidelines can safely test genetically engineered organisms and products—outside of the physical containment of the laboratory.

APHIS officials issue permits or acknowledge notification for the importation, interstate movement, or field testing of genetically engineered plants and microorganisms that are or may be plant pests.

Since 1987, APHIS has issued 1,287 interstate movement permits, 308 importation movement permits, 79 courtesy (nonregulated article) permits, and 585 release permits. Under a notification system begun in May 1993, 660 release/interstate movement, 531 movement, and 133 importation notifications have been acknowledged respectively. To date, with more than 1,700 field tests at more than 6,500 sites, no environmental problems have resulted from field tests of any of these organisms.

These biotechnology regulations also provide for an exemption process once it has been established that a genetically engineered product is safe and no longer needs to be regulated. Under this process, companies can petition APHIS for a determination of nonregulated status for specific genetically engineered products.

To date, there are eight genetically engineered plant lines that have been proven safe and no longer need to be regulated by APHIS. They are:

Year	Company	Plant/enhanced trait
1995	Ciba Seeds	An insect-resistant corn line
1995	Monsanto Co.	Russet Burbank potato lines resistant to Colorado potato beetles
1995	DNA Plant Technology Corp.	Delayed-ripening tomato line 1345-4
1994	Asgrow Seed Co. (Upjohn)	ZW-20 yellow crookneck squash resistant to certain mosaic virus diseases
1994	Calgene, Inc.	Laurate-producing canola lines
1994	Monsanto Co.	Soybeans tolerant of the herbicide glyphosate
1994	Calgene, Inc.	Cotton tolerant of the herbicide bromoxynil
1992	Calgene, Inc.	Flavr-Savr tomato (delayed ripening)

APHIS also regulates the licensing and production of genetically engineered vaccines and other veterinary biologics. These products range from diagnostic kits for feline leukemia virus to genetically engineered vaccines to prevent pseudorabies, a serious disease affecting swine. With the pseudorabies vaccines, tests kits have been developed to distinguish between infected animals and those vaccinated with genetically engineered vaccines.

Since the first vaccine was licensed in 1979, a total of 49 genetically engineered biologics have been licensed; all but 8 are still being produced.

Controlling Wildlife Damage

The mission of APHIS' Animal Damage Control program is to provide Federal leadership in managing problems caused by wildlife. Wildlife is a significant public resource that Americans greatly value. But by its very nature, wildlife also can damage agricultural and industrial resources, pose risks to human health and safety, and affect other natural resources. APHIS helps solve problems that occur when human activity and wildlife are in conflict with one another. In doing so, APHIS attempts to develop and use wildlife management strategies that are biologically, environmentally, and socially sound.

The need for effective and environmentally sound wildlife damage management is rising dramatically. One reason is that increasing suburban development intrudes upon traditional wildlife habitats. Also, population explosions of some adaptable wildlife species, such as coyotes and deer, pose increasing risks to human activities. However, advances in science and technology are providing alternative methods for solving wildlife problems.

APHIS' Denver Wildlife Research Center is the world's only research facility devoted entirely to developing methods for managing wildlife damage. Established in the 1920's, this facility has an integrated, multidisciplinary research program that is uniquely suited to provide scientific information and solutions to wildlife damage problems.

Here are a few examples of its current projects:

- Developing chemosensory repellants and attractants for birds and mammals,
- Finding methods to reduce threats to human safety when birds collide with airplanes,
- Finding ways to control the brown tree snake in Guam,
- Engineering an immunocontraceptive vaccine and delivery system to help resolve problems caused by wildlife overpopulation,
- Reducing bird damage to fish hatcheries and cereal crops,
- Studying coyote biology and behavior to develop techniques for protecting livestock from these predators, and
- Looking at ways to solve wildlife problems in urban areas, such as deer in backyards, raccoons in gardens, squirrels in attics, and geese on golf courses.

More than half of U.S. farmers experience economic loss from animal damage. In 1990, sheep and goat producers lost an estimated $27.4 million due to predation. In 1991, cattle producers' losses to predators were worth $41.5 million. Coyotes

alone caused $13.5 million in sheep losses, $5.6 million in goat losses, and $24.3 million in cattle losses nationwide.

Additionally, beavers in the Southeastern United States cause an estimated $100 million in damage each year to public and private property, while Mississippi catfish farmers lose nearly $6 million worth of fingerlings to fish-eating birds. During 1 year

- *APHIS deals with a wide variety of problems, ranging from coyote attacks on lambs to protecting endangered species from predation by other wildlife. Animal Damage Control efforts include these:*
  - *A farmer in Washington requested assistance after thousands of Canada geese congregated on his 43-acre field of carrots and began eating his crop, which had a potential market value of more than $7,000 an acre. Noise-making devices and other scare tactics recommended by APHIS were successful in frightening the geese and keeping them out of his field.*
  - *A mountain lion that killed a dog and attacked another dog and a mule in Colorado was captured by an APHIS specialist and officials from the Colorado Division of Wildlife. The lion was released unharmed in a remote site about 165 miles from the community where the attacks occurred.*
  - *In 1991, a plane carrying 350 passengers aborted takeoff at JFK International Airport after gulls were drawn into one of its engines. Although no one was seriously injured, the aircraft lost its brakes and 10 tires in the accident. Between 1988 and 1990, there were an average of 170 bird strikes against airplanes per year at this airport. After APHIS became involved in managing bird populations at the airport in 1990, laughing gull strikes were reduced by 66 percent in 1991, and by 89 percent in 1992 compared with the previous 2-year period.*
  - *Livestock guarding dogs, predator-proof fencing, and the "Electronic Guard" (a device developed by APHIS that combines a flashing strobe light and a siren to scare coyotes) are examples of nonlethal ways to minimize damage from predators.*
  - *ADC helps protect many threatened or endangered species from predation, including the California least tern and lightfooted clapper rail, the San Joaquin kit fox, the Aleutian Canada goose, the Louisiana pearlshell (mussel), and two species of endangered sea turtles.*
  - *In 1995, APHIS cooperated with Texas officials to help combat a rabies epidemic in the southern part of that State. Coyote baits laced with a genetically engineered rabies vaccine approved by APHIS for use in the project were dropped over a 14,400-square-mile area stretching from Maverick County, at the Mexican border, to Calhoun County, on the Gulf Coast. The goal of the project is to create a buffer zone of immunized coyotes to help prevent the further spread of canine rabies across Texas into more heavily populated areas.*

in Pennsylvania, white-tailed deer caused crop losses totalling $30 million. Overall bird populations cause an estimated annual loss to U.S. agriculture of $100 million. In total, the annual dollar loss to agriculture in the United States from wildlife exceeds $500 million.

Humane Care of Animals

A number of local, State, and Federal laws deal with the humane treatment and care of animals.

An important Federal law in this area is the Animal Welfare Act, which regulates the care and treatment of animals that are used for research or exhibition or are sold as pets at the wholesale level. This Act, which APHIS administers, does not cover retail pet stores. The Act also specifically excludes animals raised for food or fiber (including fur-bearing animals).

USDA has long had a concern for the health and well-being of animals. The first Federal humane law, which mandated feed and water for farm animals being transported by barge or rail, was passed in 1873. In 1966, responding to complaints about suffering and neglected dogs and cats supplied to research institutions and focusing on the problem of "petnapping," Congress passed the Laboratory Animal Welfare Act.

Four years later, a much more comprehensive piece of legislation—the Animal Welfare Act—was enacted. This law expanded coverage to most other warmblooded animals used in research, animals in zoos and circuses, marine mammals in sea life shows and exhibits, and animals sold in the wholesale pet trade. The law does not cover retail pet shops, game ranches, livestock shows, rodeos, State or county fairs, or dog and cat shows.

The Animal Welfare Act has been amended three times. A 1976 amendment extended the scope of the Act to include care and treatment while animals are being transported via common carriers. It also outlawed animal fighting ventures, such as dog or cock fights, unless specifically allowed by State law.

A 1985 amendment focused on research animals. It called for establishment of special committees at every research facility to oversee animal use and for regulations to provide for exercise of dogs and the psychological well-being of nonhuman primates.

In 1993, the act was further amended to help prevent the use of lost and stolen pets in research by giving pet owners more time to find their pets and by requiring more documentation from dealers who sell animals to researchers. Under the newest regulations, pounds and animal shelters must hold dogs and cats for at least 5 days, including a Saturday, before releasing them to dealers.

The following table shows some animal welfare statistics for FY 1994.

Table 12-4.

Animal welfare accomplishments, FY 1994:

Animals used in research:	1,618,194
Registered research facilities:	1,380
Licensed animal dealers:	4,238
Licensed and registered exhibitors:	1,896
Compliance inspections:	14,778

Regulatory Enforcement and Animal Care officials in APHIS enforce the Animal Welfare Act through a system of licensing and registering regulated businesses. Inspectors check to make sure that licensees and registrants are complying with the standards for proper care and handling of animals covered by the Act.

If violations are noted, inspectors set deadlines for correcting the situation. In extreme situations, APHIS can seize and take custody of animals whose safety is in imminent danger. If the problem isn't corrected, the person responsible may be charged with a violation and prosecuted through civil procedures. Penalties include fines, suspension or revocation of licenses, and cease-and-desist orders to prevent future violations. The table below summarizes penalties over the past 3 fiscal years.

Table 12-5.

Animal welfare sanctions imposed, FY 1992-94

	1992	*1993*	*1994*
Fines imposed	$286,450	$165,250	$345,900
License revocations,suspensions, and refusals	20	13	23

Here are some examples of APHIS enforcement actions in 1994:

- A commercial airline was fined $60,000 for inhumane transportation of dogs when 32 puppies died because of faulty ventilation on a flight from St. Louis to Salt Lake City.
- A Mississippi dog dealer was fined $5,000 and had his dealer's license revoked for failing to properly identify animals and several other violations of the Act.
- In April 1995, two Iowa dog dealers had their license permanently revoked and were fined $200,000 for failing to maintain proper records, identify animals properly, maintain structurally sound and sanitary housing facilities, and several other violations of the Act.

APHIS also enforces the Horse Protection Act, which prohibits the cruel practice of "soring" show horses. The primary enforcement tool is inspection of horses at

shows by APHIS personnel and by "Designated Qualified Persons" who are licensed by industry organizations and certified and monitored by APHIS.

Agricultural Marketing Service

When you visit the grocery store, you know you'll find an abundance and variety of top-quality produce, meats, and dairy products. If you're like most people, you probably don't give a second thought to the marketing system that brings that food from the farm to your table. Yet, this state-of-the-art marketing system makes it possible to pick and choose from a variety of products, available all year around, tailored to meet the demands of today's lifestyles. Millions of people—from grower to retailer—make this marketing system work. Buyers, traders, scientists, factory workers, transportation experts, wholesalers, distributors, retailers, advertising firms—in addition to the Nation's farmers—all help create a marketing system that is unsurpassed by any in the world. And USDA's Agricultural Marketing Service (AMS) helps make sure the U.S. marketing system remains world-class.

Services to Promote Quality: Grading, Quality Standards, and Certification

Wherever or whenever you shop, you expect good, uniform quality and reasonable prices for the food you purchase. AMS quality grade standards and grading services are two voluntary tools that industry can use to help promote quality, and to communicate that quality to consumers. Industry pays for these services and they are voluntary, so their widespread use by industry indicates they are valuable tools in helping market their products.

USDA quality grade marks are easily seen on beef, lamb, chicken, turkey, butter, and eggs. For many other products, such as fresh and processed fruits and vegetables, the grade mark isn't always visible on the retail product. In these commodities, the grading service is used by wholesalers, and the final retail packaging may not include the grade mark. However, quality grades are widely used—even if they are not prominently displayed—as a "language" among traders. They make business transactions easier whether they are local or made over long distances. Consumers, as well as those involved in the marketing of agricultural products, benefit from the greater efficiency permitted by the availability and application of grade standards.

Grading is based on standards, and standards are based on measurable attributes that describe the value and utility of the product. Beef quality standards, for instance, describe attributes such as marbling (the amount of fat interspersed with lean meat), color, firmness, texture, and age of the animal, for each grade. In turn, these factors are a good indication of tenderness, juiciness, and flavor of the meat—all characteristics important to consumers. Prime, Choice, and Select are all grades familiar to consumers of beef.

Standards for each product describe the entire range of quality for a product, and the number of grades varies by commodity. There are eight grades for beef, and three each for frying chickens, eggs, and turkeys. On the other hand, there are 39 grades for cotton, and more than 300 fruit, vegetable, and specialty product standards.

■ ***Facts about grading:*** *From October 1993 through September 1994, USDA graded 37 percent of the shell eggs and 95 percent of the butter produced in the United States. Almost 85 billion pounds of fresh fruits and vegetables and over 10 billion pounds of processed fruits and vegetables received a USDA grade mark. Nearly all of the meat industry requests AMS grading services: USDA grades were applied to 82 percent of all beef, 88 percent of all lambs, 19 percent of all veal and calves, 78 percent of all turkeys, and 54 percent of all chickens and other poultry marketed in this country. USDA also graded more than 98 percent of the cotton and 97 percent of the tobacco produced in the United States.*

In addition to grading services, USDA provides certification services, for a fee, that facilitate ordering and purchase of products used by large-volume buyers. Certification assures buyers that the products they purchase will meet the terms of the contract—with respect to quality, processing, size, packaging, and delivery. If a large buyer—such as a school district, hospital, prison, or the military—orders huge volumes of a particular product such as catsup or processed turkey or chicken, it wants to be sure that the delivered product meets certain needs. Too much money is involved to risk getting tomato soup when you need catsup, and meals can't be postponed while the mistake gets corrected. Graders review and accept agricultural products to make sure they meet specifications set by private-sector purchasers. They also certify food items purchased for Federal feeding programs.

Spreading the News

Farmers, shippers, wholesalers, and retailers across the country rely on AMS Market News for up-to-the-minute information on commodity prices, demand, movement, volume, and quality. Market News helps industry make the daily critical decisions about where and when to sell, and what price to expect. Because this information is made so widely available, farmers and those who market agricultural products are able to better compete, ensuring consumers a stable and reasonably priced food supply.

Approximately 600 reports are generated daily, collected from more than 100 U.S. locations. Reports cover local, regional, national, and even international markets for dairy, livestock, poultry, grain, fruit, vegetables, tobacco, cotton, and specialty products. Weekly, biweekly, monthly, and annual reports track the longer range performance of cotton, dairy products, poultry and eggs, fruits, vegetables, specialty crops, livestock, meat, grain, floral products, feeds, wool, and tobacco. Periodically, AMS issues special reports on such commodities as olive oil, peanuts, and honey.

USDA's commodity market information in Market News is easily accessible—via newspapers, television, and radio; printed reports mailed or faxed directly to the user; telephone recorders; electronic access through Sprint and the Internet; and by direct contact with USDA reporters.

Buying Food: Helping Farmers and Needy Persons

AMS serves both farmers and those in need of nutrition assistance through its commodity procurement programs. By purchasing wholesome, high-quality food products that are in abundance, AMS helps provide stable markets for producers. The Nation's food assistance programs benefit from these purchases, as these foods go to low-income individuals who might otherwise be unable to afford them.

Some of the programs and groups that typically receive USDA-purchased food include: children in the National School Lunch, Summer Camp, and School Breakfast Programs; Native Americans participating in the Food Distribution Program on Indian Reservations; older Americans through the Nutrition Program for the Elderly; and low-income and homeless persons through the Commodity Supplemental Food Program and the Emergency Food Assistance Program. In addition, USDA helps provide disaster relief by making emergency purchases of commodities for distribution to disaster victims.

Once USDA determines that a purchase is appropriate, AMS publicly invites bids to supply a maximum quantity, and makes sure that the food it purchases meets quality and nutrition standards. Often, AMS specifies that foods be low in fat, sugar, and sodium. By law, AMS only purchases products that are 100 percent domestic in origin.

Pesticides: Information and Records

Many Americans are concerned about the use and potential negative effects of agricultural pesticides on health and environmental quality. Chemical residues on domestic and imported food—especially produce—have received particular attention. Recognizing this concern, AMS began coordinating a Pesticide Data Program (PDP) in 1991. Through agreements with nine States, AMS collects and analyzes samples of fresh and processed produce and grain for potential pesticide residues. In 1996, dairy commodities will be added to the program. The PDP generates objective data that support government decisions, while also serving to keep the public informed about the safety of the Nation's food supply. The Environmental Protection Agency (EPA) uses PDP data to support pesticide reregistration and special review decisions, and the Food and Drug Administration (FDA) uses PDP data to enforce EPA-established tolerances and FDA administrative guidelines for food.

In addition to the PDP, AMS also has the primary responsibility for the Pesticide Recordkeeping Program. This program requires all certified private applicators of federally restricted-use pesticides to maintain records of all applications. The records will be put into a data base to help analyze agricultural pesticide use, but the data can also be helpful to health care professionals when treating individuals who may have been exposed to an agricultural chemical. AMS strives to provide outreach and educational support to States and private applicators, to broaden their understanding and participation in the program and to promote the safe use and treatment of agricultural pesticides.

Helping Farmers Promote Their Products

"The Touch...the Feel of Cotton...the Fabric of Our Lives," "Beef...It's What's for Dinner," "Milk—What A Surprise!" If you've watched television or read magazines lately, you've probably heard or read these slogans and others, for a host of

agricultural commodities. All of these promotional campaigns are part of the research and promotion programs that AMS oversees.

Federal research and promotion programs, each authorized by separate legislation, are designed to improve farmers' incomes by allowing them to promote their products. The programs are all fully funded by industry assessments. Board members are nominated by industry and appointed officially by the Secretary of Agriculture. AMS oversees the activities of the boards or councils and approves budgets, in order to assure compliance with the legislation.

Currently, there are research and promotion programs for beef, pork, cotton, cut flowers and greens, dairy products, eggs, fluid milk, honey, lamb, limes, wool and mohair, potatoes, soybeans, and watermelon.

But, while advertising is one part of these programs, product research and development is also a major focus. Permanent press cotton and low-cholesterol, low-fat dairy products are just two examples of how these programs have benefitted consumers and expanded markets for producers.

■ ***Fact about marketing**: The national Fluid Milk Processors Promotion program began its "Milk—What A Surprise!" campaign in 1994, featuring photographs of famous personalities wearing "milk mustaches." The board estimates that 147 million consumers have already been reached by this promotion.*

Marketing Orders: Solving Producers' Marketing Problems

Marketing agreements and orders help dairy, fruit, vegetable, and peanut producers come together to work at solving marketing problems they cannot solve individually. Marketing orders are flexible tools that can be tailored to the needs of local market conditions for producing and selling. But they are also legal instruments that have the force of law, with USDA ensuring an appropriate balance between the interests of producers looking for a fair price and consumers who expect an adequate, quality supply at a reasonable price.

Federal milk marketing orders, for example, establish minimum prices that milk handlers or dealers must pay to producers for milk, depending on how that milk will be used—for example as fluid milk or cheese. Federal milk orders help build more stable marketing conditions by operating at the first level of trade, where milk leaves the farm and enters the marketing system. They are flexible in order to cope with market changes. They assure that consumers will have a steady supply of fresh milk at all times.

Marketing agreements and orders also help provide stable markets for fruit, vegetable, and specialty crops like nuts and raisins, to the benefit of producers and consumers. They help farmers produce for a market, rather than having to market whatever happens to be produced. There is no control of pricing or production. A marketing order may also help an industry smooth the flow of crops moving to market, to alleviate seasonal shortages and gluts. In addition, marketing orders help

maintain the quality of produce being marketed; standardize packages or containers; and authorize advertising, research, and market development. Each program is tailored to the individual industry's marketing needs.

Ensuring Fair Trade in the Market

AMS also administers several programs that ensure fair trade practices among buyers and sellers of agricultural products.

The Perishable Agricultural Commodities Act (PACA) program promotes fair trading in the fresh and frozen fruit and vegetable industry. Through PACA, buyers and sellers are required to live up to the terms of their contracts, and procedures are available for resolving disputes outside the civil court system.

Fruit and vegetable buyers and sellers need this assurance because of the highly perishable nature of their products. Trading in produce is considerably different than trading for a car, a computer, or even grain. When a vegetable grower doesn't get paid, the product usually can't be reclaimed before it spoils—or before it has already been consumed.

Although PACA was initiated to protect producers, it benefits consumers and the entire produce industry. Over the past decade, AMS has handled nearly 40,000 PACA complaints, not just from growers, but also from grower-agents, grower-shippers, brokers, retailers, and processors. PACA is funded by license fees paid by industry, but the bottom line is that fair trade and resolved disputes mean businesses of any size can operate in a better trade environment and consumers can get a wider choice of reasonably priced, high-quality fruits and vegetables.

The Federal Seed Act (FSA) protects everyone who buys seed by prohibiting false labeling and advertising of seed in interstate commerce. The FSA also complements State seed laws by prohibiting the shipment of seed containing excessive noxious weed seeds. Labels for agricultural seed must state such information as the kinds and percentage of seed in the container, percentages of foreign matter and weed seeds, germination percentage and the date tested, and the name and address of the shipper.

The Plant Variety Protection Act provides patent-like protection to breeders of plants that reproduce sexually, that is, through seeds. Developers of new plant varieties can apply for certificates of protection. This protection enables the breeder to market the variety exclusively for 20 years and, in so doing, creates an incentive for investment in the development of new plant varieties. Since 1970, AMS' Plant Variety Protection Office has issued more than 3,000 certificates of protection.

The Agricultural Fair Practices Act allows farmers to file complaints with USDA if a processor refuses to deal with them because they are members of a producers' bargaining or marketing association. The act makes it unlawful for handlers to coerce, intimidate, or discriminate against producers because they belong to such groups. USDA helps to institute court proceedings when farmers' rights are found to be so violated.

Organic Certification

AMS is responsible for developing and implementing an organic certification program, authorized by the Organic Foods Production Act as part of the 1990 Farm Bill.

The goals of the organic certification program are to:

- Establish national standards governing the marketing of certain products as organically produced,
- Assure consumers that organically grown products meet consistent standards, and
- Facilitate interstate commerce in fresh and processed food that is organically produced.

Under the act, the first National Organic Standards Board was appointed in January 1992. Its job is to help develop standards for substances to be used in organic production. Existing organic programs will have to conform with the national program once it is in place.

Direct Marketing and Wholesale Market Development

AMS continually seeks ways to help farmers and marketers improve the U.S. food marketing system. For example, AMS' Federal-State Marketing Improvement Program (FSMIP) provides matching funds to State departments of agriculture to conduct research that will help develop or improve local marketing systems. The aim of the program is to reduce costs or expand markets for producers, ultimately benefiting consumers through lower food costs and more food choices. Projects include research on innovative marketing techniques, taking those research findings into the marketplace to "test market" the results, and developing State expertise in providing service to marketers of agricultural products. In FY 1994, FSMIP funded 32 projects in 24 States for $1.3 million.

The Wholesale Market Development Program works to improve the handling, processing, packaging, storage, and distribution of agricultural products. AMS researchers work with local governments and food industry groups to develop modern, efficient, wholesale food distribution centers and farmers markets.

> ***Fact about farmers markets:*** *USDA defines a farmers market as a group of farmers and vendors leasing or renting space in a common facility on a temporary basis, with an emphasis on the sale of fresh farm products, crafts, and other locally produced items. USDA estimates there are currently 1,755 farmers markets in the United States.*

Efficient Transportation for Agriculture

Without efficient transportation of agricultural products, our food marketing system would not work. Transportation ties all the components of our marketing system together.

AMS, through its Transportation and Marketing Division, is constantly monitoring such issues as waterway user fees; the condition of rural roads and bridges; the impact of rail and truck deregulation on agriculture; and the situation of rail, truck, and marine shipping for export promotion. It also analyzes local and national transportation situations, and provides information and recommendations to policymakers and in regulatory forums. Producers, producer groups, shippers, exporters, rural communities, carriers, government agencies, and universities all benefit from the technical assistance and information provided.

AMS also conducts research on such new technologies as improved handling and packaging for perishables, cryogenic refrigeration (use of carbon dioxide snow) for transporting frozen foods, new handling procedures for the air shipment of bees, and handling and regulatory requirements for shipping livestock.

Produce Locally, Think Globally

To remain competitive in today's world, American agriculture has become more global, and AMS has striven to be a strong partner in expanding markets for U.S. agricultural products.

The AMS role in import and export of commodities centers on its quality grading and certification programs, which are user-funded. Grading involves determining whether a product meets a set of quality standards. Certification ensures that contract specifications have been met—in other words, that the buyer receives the product in the condition and quantity described by the terms of the contract. AMS commodity graders frequently support other USDA agencies involved in export assistance, such as the Consolidated Farm Service Agency and the Foreign Agricultural Service.

U.S. companies often request certification services when exporting to a country that has specific import requirements. Certification services provided by AMS help avoid rejection of shipments or delay in delivery once the product reaches its foreign destination. Delays lead to product deterioration and, ultimately, affect our image for quality. One example of this type of program is the AMS Quality Systems Certification Program, a user-funded service for the meat industry, which provides independent, third-party verification of a supplier's documented quality management system. The program was developed to promote world-class quality and to improve the international competitiveness of the U.S. livestock and meat industry.

For selected fruits and vegetables, the grading of imports is mandatory. But for the most part, firms importing agricultural products into the United States use grading services voluntarily. AMS graders are also often asked to demonstrate commodity grading to foreign firms and governments.

In 1994, AMS and industry sponsored an international beef quality audit to identify the quality components that would enhance the desirability of U.S. beef in the global marketplace. Interviews were conducted with nearly 300 businesses and organizations in 20 countries. Results were shared with producers, exporters, and others in the industry, and will help the U.S. meat industry market its products better in growing markets.

In addition to grading and certification services, AMS Market News offices provide information on sales and prices of both imports and exports. Today, U.S. market participants can receive market information on livestock and meat from Venezuela,

Japan and other Pacific Rim markets, Mexico, Canada, Australia, and New Zealand; fruits and vegetables from France, Great Britain, Bulgaria, Poland, Mexico, New Zealand, and Canada; ornamentals from Germany, France, and Mexico; and a host of products from Kazakhstan and Russia.

AMS participates in a number of international forums that aim to facilitate world agricultural trade and avoid potential trade barriers, and it administers the Agreement on the International Carriage of Foodstuffs and the Economic Commission for Europe treaty. In 1994, AMS continued to provide eastern Europe and other countries with technical assistance to improve transportation and distribution of their agricultural commodities.

Whether at home or abroad, AMS strives to help U.S. agriculture market its abundant, high-quality products. And AMS will continue to work to help U.S. agriculture strategically market its products in growing world markets, while assuring U.S. consumers an abundant supply of high-quality, wholesome food at reasonable prices.

Grain Inspection, Packers, and Stockyards Administration

The Grain Inspection, Packers, and Stockyards Administration (GIPSA) was established October 20, 1994, under the authority of the Federal Crop Insurance and Department of Agriculture Reorganization Act of 1994, to administer the programs and functions of two predecessor agencies—the Federal Grain Inspection Service and the Packers and Stockyards Administration. GIPSA's two program activities—the Grain Inspection program and the Packers and Stockyards program—help promote a competitive, efficient market structure and facilitate the marketing of grains, oilseeds, pulses, rice, livestock, meat, and poultry in domestic and international markets.

Federal Grain Inspection Program

The Grain Inspection program plays a critical role in American grain trade. Its mission is to:

- Facilitate the marketing of grain, oilseeds, pulses, rice, and related commodities by establishing descriptive standards and terms,
- Certify quality accurately and consistently,
- Provide for uniform official inspection and weighing,
- Carry out assigned regulatory and service responsibilities, and
- Provide the framework for commodity quality improvement incentives to both domestic and foreign buyers.

This program serves American agriculture by providing descriptions (grades) and testing methodologies for measuring the quality and quantity of grain, rice, edible beans, and related commodities, and by providing an array of inspection and weighing services, on a fee basis, through a unique partnership of Federal, State, and private laboratories.

By serving as an impartial third party, GIPSA and the official grain inspection and weighing system ensure that the Official U.S. Standards for Grain are applied and that weights are recorded fairly and accurately. In this way, GIPSA advances the orderly and efficient marketing and effective distribution of U.S. grain and other assigned commodities from the Nation's farms to domestic and foreign buyers.

The Grain Inspection program administers the provisions of the U.S. Grain Standards Act, and those provisions of the Agricultural Marketing Act of 1946 that relate to inspection of rice, pulses, lentils and processed grain products. To facilitate the marketing of U.S. grain and related commodities, the program:

- Establishes official U.S. grading standards and testing procedures for eight grains (barley, corn, oats, rye, sorghum, triticale, wheat, and mixed grain), four oilseeds (canola, flaxseed, soybeans, and sunflower seed), rice, lentils, dry peas, and a variety of edible beans.
- Provides American agriculture and customers of U.S. grain around the world with a national inspection and weighing system that applies the official grading and testing standards and procedures in a uniform, accurate, and impartial manner.
- Inspects and weighs exported grain and oilseeds. Domestic and imported grain and oilseed shipments, and crops with standards under the AMA, are inspected and weighed upon request.
- Monitors grain handling practices to prevent the deceptive use of the grading standards and official inspection and weighing results, and the degradation of grain quality through the introduction of foreign material, dockage, or other nongrain material to grain.

Through these permissive and mandatory programs, the Federal Grain Inspection program promotes efficient and effective marketing of U.S. grain and other commodities from farmers to end users.

Packers and Stockyards Programs

In the Packers and Stockyards program, GIPSA's mission is:

- To promote fair business practices and a competitive marketing environment for the marketing of livestock, meat, and poultry by fostering fair and open competition and guarding against deceptive and fraudulent practices affecting the movement and price of meat animals and their products; and
- To protect consumers and members of the livestock, meat, and poultry industries from unfair business practices which can unduly affect meat and poultry distribution and prices.

GIPSA's Packers and Stockyards program administers the Packers and Stockyards (P&S) Act of 1921. The purpose of the act, which has been amended to keep pace with changes in the industry, is to assure fair competition and fair trade practices, safeguard farmers and ranchers, and protect consumers and members of the livestock, meat, and poultry industries from unfair business practices that can unduly affect meat and poultry distribution and prices.

Payment Protection

The P&S Act requires prompt payment for livestock purchased by dealers, market agencies, and packers whose operations are subject to the act. Every dealer, order buyer, packer, commission firm, and auction market must pay for livestock before the close of the next business day following the purchase and transfer of possession. In addition, the act establishes specific payment delivery requirements for livestock purchased for slaughter.

Other means of assuring payment protection include annual and special reports required of packers, live poultry dealers, stockyard owners, market agencies, and dealers. These reports help monitor compliance with the financial requirements of the P&S Act. Also, each packer, market agency, and dealer operating in commerce is required to file a surety bond or its equivalent. During FY 1994, 300 claimants were paid $2.3 million from bond proceeds of dealers and market agencies that failed financially; 9 claimants were paid $50 million from packer bonds.

One way the P&S program assures the integrity of the livestock, meat, and poultry markets is through programs that provide payment protection for sellers of livestock, meat, and poultry. For example, P&S emphasizes custodial account investigations as a means of payment protection for consignors of livestock. All market agencies selling on a commission basis are required to establish and maintain a separate bank account designated as "Custodial Account for Shippers' Proceeds," to be used for deposits from livestock purchasers and disbursements to consignors of livestock.

The P&S custodial audit program provides for auditing each auction market and commission firm's custodial account at least once every 3 years. During the past 4 years, livestock consignors, on average, have recovered 80 percent of their losses from auction markets that failed financially.

Packer & Poultry Trust Activities

If a meat packer fails to pay for livestock or a live poultry dealer for live poultry, then receivables, inventories, and proceeds derived from such purchases in cash sales or by poultry growing arrangement become trust assets by operation of law. These assets are held by the meat packer or live poultry dealer for the benefit of all unpaid cash sellers and/or poultry growers. Cash sellers of livestock and poultry growers are legally in a priority payment position in bankruptcy or in claims against trust assets in the event of business failure.

Since the 1976 amendments to the P&S Act, cash sellers have been paid $46.9 million under the statutory trust provision. During FY 1994, 11 packer firms paid out $2.0 million.

A statutory trust provision offering protection to live poultry growers and sellers became effective in February 1988. Since then, P&S has investigated 28 poultry failures, with 17 resulting in payments totalling $6.1 million.

Open Competition

Competition for livestock, either in direct trading or at public markets, should be open and free of restrictions. Any practice, agreement, or understanding that excludes potential buyers from bidding in open competition would be considered a restraint on competition. Practices resulting in the lessening of competition for producers' livestock include apportioning of territories, price agreements or arrangements not to compete, and payoffs or kickbacks to buyers. GIPSA staff members immediately investigate any practice that indicates a possible restriction of competition.

Scales & Weighing Activities

GIPSA is concerned with two different elements that affect the integrity of transactions: (1) the accuracy of scales used for weighing livestock, meat, and poultry, and (2) the proper and honest operation of scales to assure that the weight on which a transaction is based is accurate.

The major emphasis in the scales and weighing program is on detection of improper and fraudulent use of scales. An investigative program uses several different procedures to determine whether weighing activity is proper and honest.

A total of 551 livestock weighing investigations were conducted in FY 1994, and approximately 10 percent of the investigations disclosed false weighing. More than 17,300 head of livestock were checkweighed by GIPSA personnel in these investigations.

Animal Care & Handling

GIPSA also has jurisdiction over livestock marketing at stockyards. If the care and handling of livestock at a stockyard are found to be unjust, unreasonable, or discriminatory, then rules, regulations, and practices can be prescribed for handling such livestock to protect the quality and value of the animals. GIPSA requires stockyard owners and packers to exercise reasonable care and promptness with respect to handling livestock to prevent shrinkage, injury, death, or other avoidable loss. The agency also has a surveillance program to review handling practices, services, and facilities at stockyards.

Fair Treatment for Poultry Growers

GIPSA carries out enforcement of the trade practice provisions of the P&S Act relating to live poultry dealers. Its review program extensively examines the records of poultry integrators to assure compliance with the trade practice provisions of the P&S Act.

Carcass Merit Purchasing

P&S monitors the use of electronic evaluation devices by hog slaughterers who purchase hogs on a carcass merit basis, in order to ensure that the electronic measuring is accurate and properly applied, and that the producer receives an accurate accounting of the sale. The accuracy rate for the application of the devices is about 97 percent.

Analysis of Structural Change

P&S examines structural changes in the livestock, meat packing, and poultry industries, and analyzes the competitive implications of these structural changes. The analyses assist in enforcing the P&S Act and in addressing public policy issues relating to the livestock and meat industries.

Congress recently directed P&S to undertake a major study of concentration in the red meat packing industry. The study, scheduled for completion late in 1995, will define relevant cattle procurement markets, examine cattle and hog procurement patterns, analyze the effects of concentration on cattle prices, and examine the implications of vertical coordination arrangements in beef and hog production.

Clear Title

The Clear Title provisions of the Food Security Act of 1985 permit States to establish central filing systems to inform parties about liens on farm products. The purpose of this program is to remove an obstruction to interstate commerce in farm products. GIPSA certifies when a State's central filing system complies with the act.

Appendix

Conversion Chart

Metric Conversions

To convert this	*to this*	*multiply by*
Length		
inches	millimeters (mm)	25.4
feet	centimeters (cm)	39
yards	meters (m)	.91
miles	kilometers (km)	1.61
millimeters	inches	.04
centimeters	inches	.4
meters	inches	39.37
meters	yards	1.1
kilometers	miles	.6
Weight		
ounces	grams(g)	28
pounds	kilograms (kg)	.45
short tons	metric tons	.9
kilograms	pounds	2.2
metric tons	pounds	2,204.6
metric tons	short tons	1.1
Area		
square inches	square centimeters	6.5
square feet	square meters	.09
square miles	square kilometers	2.6
acres	hectares	.4
square centimeters	square inches	.16
square meters	square yards	1.2
square kilometers	square miles	.4
hectares	acres	2.5
Volume		
teaspoons	milliliters	5
tablespoons	milliliters	15
fluid ounces	milliliters	30
cups	liters	.24
pints	liters	.47
quarts	liters	.95
gallons	liters	3.8
cubic feet	cubic meters	.03
cubic yards	cubic meters	.76

To convert this	*to this*	*multiply by*
milliliters	fluid ounces	.03
liters	pints	2.1
liters	quarts	1.06
liters	gallons	.26
cubic meters	cubic feet	35
cubic meters	cubic yards	1.3
Temperature		
Fahrenheit	Celsius	.56 (after subtracting 31)
Celsius	Fahrenheit	1.82 (then add 32)
Farm products		
pounds per acre	kilograms per hectare	1.14
short tons per acre	kilograms per hectare	2.25
kilograms per hectare	metric tons per hectare	.001
kilograms per hectare	pounds per acre	.88
tons per hectare	short tons per acre	.44
tons per hectare	kilograms per hectare	1,000

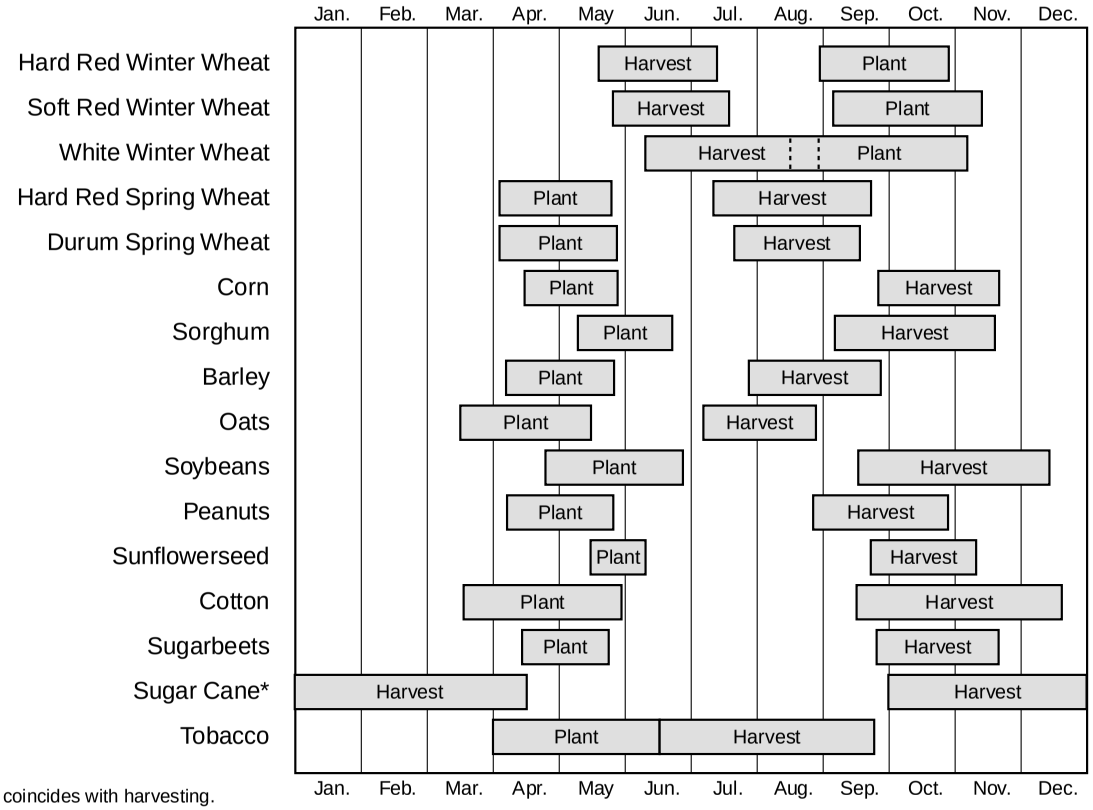
Bushel/Weight Conversions

1 bushel of:	*weight in pounds*	*weight in kilograms*
wheat, soybeans, potatoes	60	27
corn, grain sorghum, rye, flaxseed	56	25
beets, carrots	50	23
barley, buckwheat, peaches	48	22
oats, cottonseed	32	14

1 metric ton of:	*weight in pounds*	*number of bushels*
wheat, soybeans, potatoes	2,204.6	36.74
corn, grain sorghum, rye, flaxseed	2,204.6	39.37
beets, carrots	2,204.6	44.09
barley, buckwheat, peaches	2,204.6	45.93
oats, cottonseed	2,204.6	68.89

Figure A-1.

Planting and Harvesting Calendar for Most Major U.S. Crop Areas[1]



*Planting coincides with harvesting.

[1]Represents areas where production is concentrated, but not full spectrum of planting and harvesting periods for each crop.

Table A-1.

Wheat: Area, yield, supply, disappearance, and prices, 1960-94[1]

Year beginning June 1	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (mil bu)				Disappearance (mil bu)			Prices received by farmers (dol per bu)
	Planted	Harvested		Beginning stock	Production	Imports[1]	Total	Domestic use	Exports[1]	Total	
1960	54,906	51,879	26.1	1,384	1,355	8	2,747	591	654	1,245	1.74
1961	55,707	51,571	23.9	1,502	1,232	6	2,741	604	716	1,320	1.83
1962	49,274	43,688	25.0	1,421	1,092	5	2,518	599	649	1,248	2.04
1963	53.364	45,506	25.2	1,270	1,147	4	2,421	581	846	1,427	1.85
1964	55,672	49,762	25.8	993	1.283	2	2,279	635	723	1,358	1.37
1965	57,361	49,560	26.5	921	1,316	1	2,238	725	852	1,577	1.35
1966	54,105	49,613	26.3	660	1,305	2	1,967	683	T71	1,454	1.63
1967	67,264	58,353	25.8	513	1,508	1	2,021	626	765	1,391	1.39
1968	61,860	54,765	28.4	630	1,557	1	2,188	740	544	1,284	1.24
1969	53,450	47,146	30.6	904	1,443	3	2,350	764	603	1,367	1.25
1970	48,739	43,564	31.0	983	1,352	1	2,336	772	741	1,513	1.33
1971	53,822	47,685	33.9	823	1,619	1	2,442	849	610	1,459	1.34
1972	54,913	47,303	32.7	983	1,546	1	2,531	799	1,135	1,934	1.76
1973	59,254	54,148	31.6	597	1,711	3	2,311	753	1,217	1,970	3.95
1974	71,044	65,368	27.3	340	1,782	3	2,125	672	1,018	1,690	4.09
1975	74,900	69,499	30.6	435	2,127	2	2,584	726	1,173	1,899	3.56
1976	80,395	70,927	30.3	666	2,149	3	2,817	754	950	1,704	2.73
1977	75,410	66,686	30.7	1,113	2,046	2	3,161	859	1,124	1,983	2.33
1978	65,989	56,495	31.4	1,178	1,776	2	2,955	837	1,194	2,031	2.98
1979	71,424	62,454	34.2	924	2,134	2	3,060	783	1,375	2,158	3.80
1980	80,788	71,125	33.5	902	2,381	3	3,285	783	1,514	2,296	3.99
1981	88,251	81,642	34.5	989	2,785	3	3,777	847	1,771	2,618	3.69
1982	86,232	77,937	35.5	1,159	2,765	8	3,932	908	1,509	2,417	3.45

—continued

Table A-1 continued.

Wheat: Area, yield, supply, disappearance, and prices, 1960-94[1]

Year beginning June 1	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (mil bu)			Disappearance (mil bu)				Prices received by farmers (dol per bu)
	Planted	Harvested		Beginning stock	Production	Imports[1]	Total	Domestic use	Exports[1]	Total	
1983	76,419	61,390	39.4	1,515	2,420	4	3,939	1,114	1,426	2,540	3.51
1984	79,213	66,928	38.8	1,399	2,595	9	4,003	1,156	1,421	2,578	3.39
1985	75,575	64,734	37.5	1,425	2,424	16	3,866	1,051	909	1,961	3.08
1986	72,068	60,723	34.4	1,905	2,091	21	4,017	1,197	999	2,196	2.42
1987	65,834	55,945	37.7	1,821	2,108	16	3,945	1,096	1,588	2,684	2.57
1988	65,829	53,189	34.1	1,261	1,812	23	3,096	979	1,415	2,394	3.72
1989	76,615	62,189	32.7	702	2,037	23	2,761	992	1,232	2,224	3.72
1990	77,041	69,103	39.5	537	2,730	36	3,303	1,365	1,070	2,435	2.61
1991	69,881	57,803	34.3	868	1,980	41	2,889	1,132	1,282	2,414	3.00
1992	72,219	62,761	39.3	475	2,467	70	3,002	1,127	1,354	2,481	3.24[2]
1993	72,168	62,712	38.2	531	2,396	109	3,036	1,239	1,228	2,467	3.26
1994[2]	70,421	61,771	37.6	569	2,321	90	2,979	1,238	1,250	2,488	3.45

[1]Imports and exports include flour and other products expressed in wheat equivalents. [2]Projected, April 1995.

Table A-2.

Corn (grain only): Area, yield, supply, disappearance, and prices, 1960-94[1]

Year[2]	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (mil bu)				Disappearance (mil bu)			Prices received by farmers (dol per bu)
	Planted for all purpose	Harvested for grain		Beginning stock	Production	Imports	Total	Domestic use	Exports[3]	Total	
1960	81,425	71,422	54.7	1,787	3,907	1	5,696	3,387	292	3,679	1.00
1961	65,919	57,634	62.4	2,016	3,598	1	5,615	3,527	435	3,962	1.10
1962	65,017	55,726	64.7	1,653	3,606	1	5,260	3,479	416	3,895	1.12
1963	68,771	59,227	67.9	1,365	4,019	1	5,385	3,348	500	3,848	1.11
1964	65,823	55,369	62.9	1,537	3,484	1	5,022	3,305	570	3,875	1.17
1965	65,171	55,392	74.1	1,147	4,103	1	5,251	3,722	687	4,409	1.16
1966	66,347	57,002	73.1	842	4,168	1	5,011	3,698	487	4,184	1.24
1967	71,156	60,694	80.1	826	4,860	1	5,687	3,885	633	4,518	1.03
1968	65,126	55,980	79.5	1,169	4,450	1	5,620	3,966	536	4,502	1.08
1969	64,264	54,574	85.9	1,118	4,687	1	5,806	4,189	612	4,801	1.16
1970	66,863	57,358	72.4	1,005	4,152	4	5,161	3,978	517	4,495	1.33
1971	74,179	64,123	88.1	667	5,646	1	6,314	4,392	796	5,187	1.08
1972	67,126	57,513	97.0	1,127	5,580	1	6,708	4,742	1,258	6,000	1.57
1973	72,253	62,143	91.3	708	5,671	1	6,380	4,653	1,243	5,896	2.55
1974	77,935	65,405	71.9	484	4,701	2	5,187	3,677	1,149	4,826	3.02
1975	78,719	67,625	86.4	558	5,841	2	6,400	4,103	1,664	5,767	2.54
1976	84,588	71,506	88.0	633	6,289	2	6,925	4,144	1,645	5,789	2.15
1977	84,328	71,614	90.8	1,136	6,505	2	7,643	4,311	1,896	6,207	2.02
1978	81,675	71,930	101.0	1,436	7,268	1	8,705	4,882	2,113	6,995	2.25
1979	81,394	72,400	109.5	1,710	7,928	1	9,638	5,203	2,402	7,604	2.48
1980	84,043	72,961	91.0	2,034	6,639	1	8,675	4,891	2,391	7,282	3.12
1981	84,097	74,524	108.9	1,392	8,119	1	9,511	4,978	1,997	6,975	2.47

—continued

Table A-2 continued.

Corn (grain only): Area, yield, supply, disappearance, and prices, 1960-94[1]

Year[2]	Area (1,000 acres) Planted for all purpose	Area (1,000 acres) Harvested for grain	Yield per harvested acre (bu)	Supply (mil bu) Beginning stock	Supply (mil bu) Production	Supply (mil bu) Imports	Supply (mil bu) Total	Disappearance (mil bu) Domestic use	Disappearance (mil bu) Exports[3]	Disappearance (mil bu) Total	Prices received by farmers (dol per bu)
1982	81,857	72,719	113.2	2,537	8,235	1	10,772	5,428	1,821	7,249	2.55
1983	60,207	51,479	81.1	3,523	4,174	2	7,699	4,806	1,886	6,693	3.21
1984	80,517	71,897	106.7	1,006	7,672	2	8,680	5,182	1,850	7,032	2.63
1985	83,398	75,209	118.0	1,648	8,875	10	10,534	5,267	1,227	6,494	2.23
1986	76,580	68,907	119.4	4,040	8,226	2	12,267	5,893	1,492	7,385	1.50
1987	66,200	59,505	119.8	4,882	7,131	4	12,016	6,041	1,716	7,757	1.94
1988	67,717	58,250	84.6	4,259	4,929	3	9,191	5,232	2,026	7,260	2.54
1989	72,322	64,783	116.3	1,930	7,532	2	9,464	5,752	2,368	8,120	2.36
1990	74,166	66,952	118.5	1,344	7,934	3	9,282	6,036	1,725	7,761	2.28
1991	75,957	68,822	108.6	1,521	7,475	20	9,046	6,332	1,584	7,916	2.37
1992	79,311	72,077	131.5	1,100	9,477	7	10,584	6,808	1,663	8,471	2.07
1993	73,235	62,921	100.7	2,113	6,336	21	8,470	6,292	1,328	7,620	2.50
1994[4]	79,158	72,917	138.6	850	10,103	10	10,963	7,350	2,025	9,375	2.25

[1]Revised data, 1979-82. [2]Marketing year beginning October 1, 1960-1974; September 1 marketing year from 1975 to date. [3]Grain and grain equivalent of corn products.
[4]As of April 1995.

Table A-3.

Soybeans: Area, yield, supply, disappearance, and prices, 1960-94[1]

Year beginning Sept. 1	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (mil bu)			Disappearance (mil bu)				Prices received by farmers (dol per bu)
	Planted	Harvested		Beginning stock	Production	Total	Seed, feed residual	Exports	Crushed (mil bu)	Total	
1960	24,440	23,655	23.5	51.8	555.1	606.9	39	134.7	406.1	579.8	2.13
1961	27,787	27,003	25.1	27.1	678.6	705.7	47	149.4	431.4	627.4	2.28
1962	28,418	27,608	24.2	78.3	669.2	747.5	48	180.5	472.8	701.5	2.34
1963	29,462	28,615	24.4	46.0	699.2	745.2	54	187.2	436.8	677.9	2.51
1964	31,721	30,793	22.8	67.3	700.9	768.2	47	212.2	479.0	738.5	2.62
1965	35,227	34,449	24.5	29.7	845.6	875.3	52	250.6	537.5	839.7	2.54
1966	37,294	36,546	25.4	35.6	928.5	964.1	53	261.6	559.4	874.0	2.75
1967	40,819	39,805	24.5	90.1	976.4	1,066.6	57	266.6	576.4	900.2	2.49
1968	42,265	41,391	26.7	166.3	1,107.0	1,273.3	53	286.8	605.9	946.4	2.43
1969	42,534	41,337	27.4	326.8	1,131.1	1,458.0	58	432.6	737.3	1,228.0	2.35
1970	43,082	42,249	26.7	229.8	1,127.1	1,356.9	64	433.8	760.1	1,258.2	2.85
1971	43,476	42,705	27.5	98.8	1,176.1	1,274.9	65	416.8	720.4	1,202.9	3.03
1972	46,866	45,683	27.8	72.0	1,201.0	1,273.0	12	479.4	721.8	1,213.0	4.37
1973	56,549	55,667	27.8	59.6	1,548.0	1,608.0	77	539.1	821.3	1,436.4	5.68
1974	52,479	51,341	23.7	170.8	1,216.3	1,387.0	77	420.7	701.3	1,198.9	6.64
1975	54,590	53,617	28.9	188.2	1,549.0	1,735.5	71	555.1	865.1	1,490.6	4.92
1976	50,269	49,401	26.1	244.9	1,288.6	1,533.5	77	564.1	790.2	1,429.6	6.81
1977	58,978	57,830	30.6	102.9	1,767.3	1,870.2	82	700.5	926.7	1,709.0	5.88
1978	64,708	63,663	29.4	161.2	1,868.7	2,029.9	97	739.2	1,018.0	1,854.2	6.66
1979	71,411	70,343	32.1	176.0	2,261.0	2,437.0	81	875.0	1,123.0	2,079.0	6.28
1980	69,930	67,813	26.5	358.0	1,798.0	2,156.0	99	724.0	1,020.0	1,843.0	7.57
1981	67,543	66,163	30.1	313.0	1,989.0	2,302.0	89	929.0	1,030.0	2,048.0	6.07

—continued

Table A-3 continued.

Soybeans: Area, yield, supply, disappearance, and prices, 1960-94[1]

Year beginning Sept. 1	Area (1,000 acres)		Yield per harvested acre (bu)	Supply (mil bu)			Disappearance (mil bu)				Prices received by farmers (dol per bu)
	Planted	Harvested		Beginning stock	Production	Total	Seed, feed residual	Exports	Crushed (mil bu)	Total	
1982	70,884	69,442	31.5	254.0	2,190.0	2,444.0	86	905.0	1,108.0	2,099.0	5.71
1983	63,779	62,525	26.2	345.0	1,636.0	1,981.0	79	743.0	983.0	1,805.0	7.83
1984	67,755	66,113	28.1	176.0	1,861.0	2,037.0	93	598.0	1,030.0	1,721.0	5.84
1985	63,145	61,599	34.1	316.0	2,099.0	2,415.0	86	740.0	1,053.0	1,879.0	5.05
1986	60,405	58,312	33.3	536.0	1,943.0	2,479.0	106	757.0	1,179.0	2,042.0	4.78
1987	58,180	57,172	33.9	436.0	1,938.0	2,374.0	97	802.0	1,174.0	2,072.0	5.88
1988	58,840	57,373	27.0	302.0	1,549.0	1,855.0	88	527.0	1,058.0	1,673.0	7.42
1989	60,820	59,538	32.3	182.0	1,924.0	2,109.0	101	623.0	1,146.0	1,870.0	5.69
1990	57,795	56,512	34.1	239.0	1,926.0	2,168.0	95	557.0	1,187.0	1,839.0	5.74
1991	59,180	58,011	34.2	329.0	1,987.0	2,319.0	103	684.0	1,254.0	2,041.0	5.58
1992	59,180	58,233	37.6	278	2,190	2,471	130	770	1,279	2,179	5.56
1993	60,135	57,347	32.6	292	1,871	2,170	100	589	1,272	1,961	6.40
1994[1]	61,940	61,129	41.9	209	2,558	2,775	170	800	1,370	2,340	5.40

[1]As of April 1995.

Table A-4.

Cotton (all kinds): Area, yield, supply, disappearance, and prices, 1964-94

Year[1]	Area (1,000 acres)		Yield per harvested acre	Supply (1,000 bales)				Disappearance (1,000 bales)			Prices received by farmers[2]
	Planted	Harvested	(pounds)	Beginning stock	Production	Imports	Total	Domestic mill use	Exports	Total	(cents per pound)
1964	14,835	14,055	517	12,351	15,144	118	27,613	9,261	4,195	13,456	31.0
1965	14,152	13,615	527	14,249	14,951	118	29,318	9,596	3,035	12,631	29.3
1966	10,349	9,552	480	17,028	9,555	105	26,688	9,574	4,832	14,406	21.7
1967	9,448	7,997	447	12,344	7,443	149	19,936	9,077	4,361	13,438	26.7
1968	10,912	10,160	516	6,584	10,925	68	17,577	8,332	2,825	11,157	23.1
1969	11,882	11,058	434	6,544	9,990	52	16,586	8,114	2,878	10,992	22.0
1970	11,945	11,155	438	5,843	10,192	37	16,072	8,204	3,897	12,101	22.9
1971	12,355	11,471	438	4,203	10,477	72	14,752	8,259	3,385	11,644	28.2
1972	14,001	12,984	507	3,258	13,704	34	16,996	7,769	5,311	13,080	27.3
1973	12,480	11,970	520	4,221	12,974	48	17,243	7,472	6,123	13,595	44.6
1974	13,679	12,547	441	3,808	11,540	34	15,382	5,860	3,926	9,786	42.9
1975	9,478	8,796	453	5,708	8,302	92	14,102	7,250	3,311	10,561	51.3
1976	11,636	10,914	465	3,681	10,581	38	14,300	6,674	4,784	11,458	64.1
1977	13,680	13,275	520	2,928	14,389	5	17,322	6,483	5,484	11,967	52.3
1978	13,375	12,400	420	5,347	10,856	4	16,207	6,352	6,180	12,532	58.4
1979	13,978	12,831	547	3,958	14,629	5	18,592	6,506	9,229	15,735	62.5
1980	14,534	13,215	404	3,000	11,122	27	14,149	5,891	5,926	11,817	74.7
1981	14,330	13,841	542	2,668	15,646	26	18,340	5,264	6,567	11,831	54.3
1982	11,345	9,734	590	6,632	11,963	20	18,615	5,512	5,207	10,719	59.4
1983	7,926	7,348	508	7,937	7,771	12	15,721	5,928	6,786	12,714	66.4
1984	11,145	10,379	600	2,775	12,982	25	15,781	5,540	6,215	11,755	57.8
1985	10,685	10,229	630	4,102	13,432	33	17,567	6,399	1,960	8,359	56.3

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Table A-4 continued.

Cotton (all kinds): Area, yield, supply, disappearance, and prices, 1964-94

Year[1]	Area (1,000 acres) Planted	Area (1,000 acres) Harvested	Yield per harvested acre (pounds)	Supply (1,000 bales) Beginning stock	Supply (1,000 bales) Production	Supply (1,000 bales) Imports	Supply (1,000 bales) Total	Disappearance (1,000 bales) Domestic mill use	Disappearance (1,000 bales) Exports	Disappearance (1,000 bales) Total	Prices received by farmers[2] (cents per pound)
1986	10,045	8,468	552	9,348	9,731	3	19,082	7,452	6,684	14,136	52.4
1987	10,397	10,030	706	5,026	14,760	2	19,788	7,617	6,582	14,199	64.3
1988	12,515	11,948	619	5,771	15,411	5	21,187	7,782	6,148	13,930	56.6
1989	10,587	9,538	614	7,092	12,196	2	19,290	8,759	7,694	16,453	66.2
1990	12,348	11,732	634	3,000	15,505	4	18,509	8,657	7,793	16,450	67.1
1991	14,052	12,960	652	2,344	17,614	13	19,971	9,613	6,646	16,259	6.8
1992	13,240	11,123	700	3,704	16,218	1	19,923	10,250	5,201	15,451	53.7
1993	13,438	12,783	606	4,662	16,134	6	20,802	10,418	6,862	17,280	58.0
1994[3]	13,726	13,328	708	3,530	19,670	10	23,210	11,300	10,000	21,300	72.0

[1]Marketing year beginning August 1. [2]Upland cotton, weighted season average price received by farmers. [3]As of April 1995.

Table A-5.

Cattle and calves: Inventory numbers, calf crop, disposition, production, and prices, 1960-94[1]

Year	Inventory Jan.1[2] (1,000 head)	Calf crop (1,000 head)	Inship-ments (1,000 head)	Marketings[2] (1,000 Head)		Farm Slaughter[3] (1,000 Head) Cattle and Calves	Deaths (1,000 Head)		Production[4]	Marketings[5]	Price per 100 pounds (dollars)	
				Cattle	Calves		Cattle	Calves			Cattle	Calves
1960	96,236	39,355	13,477	34,254	12,034	1,195	1,567	2,533	28,795,880	35,722,510	20.40	22.90
1961	97,700	40,180	14,761	35,138	11,898	1,218	1,532	2,486	29,902,448	36,821,343	20.20	23.70
1962	100,369	41,441	16,583	36,403	12,182	1,194	1,583	2,542	30,774,859	37,668,658	21.30	25.10
1963	104,448	42,268	16,182	37,863	11,918	1,213	1,560	2,480	32,776,777	40,033,778	19.90	24.00
1964	107,903	43,809	15,595	40,280	12,552	1,242	1,595	2,637	34,836,138	42,655,520	18.00	20.40
1965	109,000	43,928	17,464	43,482	12,603	1,196	1,641	2,607	34,002,808	44,623,119	19.90	22.00
1966	108,862	43,537	18,624	45,038	12,488	665	1,625	2,424	34,949,625	46,284,623	22.20	26.00
1967	108,783	43,803	18,597	44,781	12,365	622	1,533	2,512	36,122,064	46,684,824	22.30	26.30
1968	109,371	44,315	19,509	45,860	12,742	568	1,527	2,485	36,530,247	47,494,093	23.40	27.60
1969	110,015	45,177	19,942	45,559	12,598	486	1,532	2,591	37,146,953	47,194,719	26.20	31.60
1970	112,369	45,871	20,059	46,926	12,036	462	1,583	2,714	39,342,987	49,459,720	27.10	34.50
1971	114,578	46,738	22,673	49,143	12,086	456	1,634	2,808	39,434,379	50,685,799	29.00	36.40
1972	117,862	47,682	24,831	51,043	12,164	503	1,780	3,346	41,225,193	53,141,798	33.50	44.70
1973	121,539	49,194	24,133	48,369	11,652	570	2,099	4,388	44,231,455	51,022,731	42.80	56.60
1974	127,788	50,873	18,103	48,383	9,514	729	2,006	4,104	42,760,575	50,208,435	35.60	35.20
1975	132,028	50,183	20,095	54,331	12,253	750	2,396	4,596	40,878,016	54,877,016	32.30	27.20
1976	127,980	47,384	21,238	54,410	12,525	722	1,821	3,369	41,368,299	57,169,770	33.70	34.20
1977	122,810	45,931	23,241	56,342	12,722	700	2,000	4,000	40,829,023	58,426,941	34.50	36.90
1978	116,375	43,818	23,573	54,622	11,952	550	1,940	3,860	39,766,559	57,381,035	48.50	59.00
1979	110,864	42,596	22,322	48,358	10,151	430	1,900	3,700	38,803,335	51,874,758	66.10	88.70
1980	111,242	44,938	20,513	46,026	10,502	401	1,795	3,618	40,283,777	50,210,836	62.40	76.80
1981	114,351	44,666	18,914	46,647	10,383	398	1,700	3,359	41,178,209	50,896,754	58.60	64.00

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Table A-5 continued.

Cattle and calves: Inventory numbers, calf crop, disposition, production, and prices, 1960-94[1]

Year	Inventory Jan.1[2] (1,000 head)	Calf crop (1,000 head)	Inship-ments (1,000 head)	Marketings[2] (1,000 Head)		Farm Slaughter[3] (1,000 Head) Cattle and Calves	Deaths (1,000 Head)		Production[4]	Marketings[5]	Price per 100 pounds (dollars)	
				Cattle	Calves		Cattle	Calves			Cattle	Calves
1982	115,444	44,200	21,289	49,549	10,560	395	1,843	3,586	40,714,722	53,272,291	56.70	59.80
1983	115,001	43,885	19,210	48,089	10,443	410	1,877	3,617	40,301,302	51,990,001	55.50	61.70
1984	113,360	42,470	20,515	50,862	10,253	388	1,873	3,591	40,030,471	54,644,756	57.30	59.90
1985	109,582	41,050	19,864	49,243	10,530	370	1,701	3,345	40,157,633	54,483,633	53.70	62.10
1986	105,378	41,182	21,211	49,963	10,498	351	1,738	3,300	40,464,719	55,398,117	52.60	61.10
1987	102,118	40,152	22,222	49,232	10,423	330	1,700	3,100	40,327,023	54,449,464	61.10	78.50
1988	99,622	39,318	22,413	49,308	10,451	281	1,609	2,964	40,617,645	53,761,675	66.60	89.20
1989	96,740	38,817	21,679	46,642	10,176	241	1,505	2,856	40,240,800	52,765,220	69.50	90.80
1990	95,816	38,613	23,278	46,766	9,978	244	1,529	2,798	40,386,144	53,315,858	74.60	95.60
1991	96,393	38,583	22,533	45,921	9,545	242	1,540	2,707	41,089,597	53,988,403	72.70	98.00
1992	97,556	38,933	22,492	45,632	9,565	242	1,677	2,689	40,913,865	53,131,604	71.30	89.00
1993	99,176	39,448	22,920	46,022	9,679	226	1,703	2,927	40,875,341	53,030,343	72.60	91.20
1994	100,988	40,729	22,237	46,607	9,587	227	1,584	2,684	42,721,254	54,178,593	66.70	87.20

[1]Balance sheet estimates. Total of marketings, farm slaughter. deaths and onhand end of year equals total of births, inshipments, and onhand beginning of year. Includes Alaska and Hawaii beginning 1961. [2]All cattle and calves. [3]Data for 1966 not comparable with previous years due to change in definition to include custom slaughtering in plants for farmers as part of the commercial meat. [4]Adjustments made for inshipments and changes in inventory. [5]Excludes interfarm sales.

Table A-6.

Hogs: Inventory numbers, pig crop, disappearance, and prices, 1960-94[1]

Year	Inventory Dec.1[2] (1,000 head)	Pig crop (1,000 head)	Inshipments (1,000 head)	Marketings[3] (1,000 head)	Farm slaughter[4] (1,000 head)	Deaths (1,000 head)	Production[5] (1,000 lb)	Marketings (1,000 lb)	Price per 100 pounds (dollars)
1960	59,026	88,216	2,500	79,831	5,114	9,223	19,203,234	18,622,151	15.30
1961	55,560	92,713	2,293	80,326	4,639	8,984	20,166,822	18,917,418	16.60
1962	56,619	93,608	2,639	81,743	4,093	9,037	20,274,620	19,310,335	16.30
1963	57,993	94,056	2,657	86,163	3,795	7,991	20,960,460	20,273,936	14.90
1964	56,757	87,544	2,718	86,088	3,269	6,872	20,216,732	20,487,965	14.80
1965	56,106	78,941	2,364	78,127	2,678	6,089	18,252,141	18,426,743	19.60
1966	50,519	87,604	2,489	75,761	1,375	6,351	19,148,989	17,773,114	23.50
1967	57,125	91,668	2,855	85,258	1,301	6,273	20,636,444	19,948,881	19.10
1968	58,818	94,156	3,181	87,728	1,262	6,338	21,034,221	20,381,499	18.50
1969	60,829	88,676	3,092	88,074	1,134	6,343	20,600,325	20,708,223	22.20
1970	57,046	101,714	3,211	86,919	1,235	6,532	21,822,826	20,347,354	22.70
1971	67,285	97,924	3,639	98,644	1,210	6,584	22,832,335	23,147,614	17.50
1972	62,412	90,574	3,360	89,555	1,158	6,617	20,918,802	20,922,577	24.10
1973	59,017	88,123	3,902	82,419	1,095	6,914	20,154,425	19,606,900	38.40
1974	60,614	83,744	3,979	85,504	1,321	6,819	19,976,384	20,299,581	43.20
1975	54,693	71,186	3,806	73,959	1,193	5,631	16,798,843	16,980,920	46.10
1976	49,267	84,395	4,191	75,744	1,175	6,001	18,110,651	17,085,365	43.30
1977	54,934	86,162	4,258	80,917	1,145	6,754	19,124,424	18,409,468	39.40
1978	56,539	88,442	4,713	81,428	1,099	7,067	19,610,887	18,749,389	46.60
1979	60,356	102,792	5,003	92,499	1,070	7,265	22,617,129	21,485,876	41.80
1980	67,318	101,720	4,668	100,651	1,100	7,494	23,401,728	23,473,775	38.00
1981	64,462	93,853	4,147	95,986	895	6,883	21,812,966	22,258,979	43.90
1982	58,598	85,189	3,827	86,972	655	5,552	19,657,921	20,154,962	52.30
1983	54,534	93,155	3,527	89,129	517	4,875	21,195,347	20,834,899	46.80

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Table A-6 continued.

Hogs: Inventory numbers, pig crop, disappearance, and prices, 1960-94[1]

Year	Inventory Dec.1[2] (1,000 head)	Pig crop (1,000 head)	Inshipments (1,000 head)	Marketings[3] (1,000 head)	Farm slaughter[4] (1,000 head)	Deaths (1,000 head)	Production[5] (1,000 lb)	Marketings (1,000 lb)	Price per 100 pounds (dollars)
1984	56,694	86,586	3,527	87,344	473	4,917	20,195,699	20,490,921	47.10
1985	54,073	86,029	3,696	86,694	446	4,345	20,164,269	20,360,970	44.00
1986	52,313	82,283	3,463	86,608	358	4,133	19,362,696	19,362,696	49.30
1987	50,920	88,347	3,746	83,857	328	4,208	20,408,228	19,943,130	51.20
1988	54,384	92,883	3,722	90,420	335	4,767	21,669,577	21,626,216	42.30
1989	55,466	91,920	3,643	92,432	316	4,494	21,941,772	22,176,985	42.50
1990	53,788	90,100	4,317	89,240	279	4,269	22,808,605	22,553,539	53.70
1991	54,416	95,315	4,670	92,220	264	4,268	22,808,605	22,553,539	49.10
1992	57,649	99,142	4,871	98,589	272	4,600	24,278,519	24,285,468	41.60
1993	58,202	97,050	5,675	98,351	222	4,451	23,692,553	23,996,987	45.20
1994	57,904	101,400	6,172	100,709	208	4,568	24,458,776	24,513,580	39.90

[1]Balance sheet estimates. Total of marketings, farm slaughter, deaths, and onhand end of year equals totals of births, inshipments, and onhand beginning of year. Includes Alaska and Hawaii beginning 1981. [2]All hogs and pigs. Beginning with 1967 number onhand is estimate as of December 1 previous year. [3]Excludes interfarm sales. [4]Data for 1966 not comparable with previous years due to change in definition to include custom slaughtering in plants for farmers as part of the commercial meat production estimates beginning with January. [5]Adjustments made for inshipments and changes in inventory.

Table A-7.

Sheep and lambs: Inventory numbers, lamb crop, disposition, production, and prices, 1962-94[1]

Year	Inventory Jan. 1[2] (1,000 head)	Lamb crop (1,000 head)	Inshipments (1,000 head)		Marketings[3] (1,000 head)		Farm slaughter[4] (1,000 head)		Deaths (1,000 head)		Production[5] (1,000 lb)	Marketings[3] (1,000 lb)	Price per 100 pounds (dollars)	
			Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs			Sheep	Lambs
1962	30,969	19,712	636	5,198	3,788	18,783	113	218	2,430	2,007	1,490,722	2,074,148	5.63	17.80
1963	29,176	18,516	620	4,962	3,720	17,956	113	212	2,268	1,889	1,393,141	2,002,402	5.76	18.10
1964	27,116	16,994	736	4,838	3,437	16,757	107	193	2,265	1,797	1,330,507	1,860,420	6.00	19.90
1965	25,127	16,312	5,165		2,454	15,213	294		2,199	1,711	1,217,139	1,639,762	6.34	22.80
1966	24,734	15,881	4,679		2,785	14,674	268		940	1,674	1,249,097	1,651,261	6.84	23.40
1967	23,953	15,017	4,030		2,911	13,993	245		1,980	1,649	1,153,596	1,603,247	6.35	22.10
1968	22,223	14,443	4,035		2,298	13,448	237		1,789	1,580	1,166,190	1,487,480	6.58	24.40
1969	21,350	13,723	4,119		2,282	12,873	233		1,826	1,556	1,065,074	1,446,504	8.10	27.20
1970	20,423	13,465	4,032		1,983	12,840	249		1,638	1,478	1,099,385	1,435,918	7.52	26.40
1971	19,731	12,998	4,004		2,202	12,627	236		1,482	1,446	1,070,502	1,447,047	6.56	25.90
1972	18,739	12,599	3,976		2,170	12,383	224		1,417	1,480	1,004,102	1,411,461	7.26	29.10
1973	17,641	11,500	3,275		2,198	10,879	202		1,386	1,441	895,776	1,278,090	12.90	35.10
1974	16,310	10,509	2,629		2,172	9,888	217		1,248	1,409	806,755	1,177,539	11.20	37.00
1975	14,515	9,857	2,343		1,771	8,997	212		1,081	1,343	781,120	1,072,665	11.30	42.10
1976	13,311	8,888	2,466		1,445	8,071	197		983	1,202	732,765	961,780	13.20	46.90
1977	12,766	8,606	2,173		1,504	7,405	198		910	1,181	703,942	896,568	13.40	51.30
1978[6]	12,322	8,020	2,151		1,470	6,606	174		905	1,117	696,929	856,668	21.70	62.70
1979	12,365	7,974	2,143		1,347	6,336	172		867	1,063	704,593	806,765	25.70	66.70
1980	12,699	8,257	2,216		1,395	6,743	166		894	1,026	746,343	854,830	21.30	63.60
1981	12,947	8,820	1,885		1,510	7,103	189		818	1,035	772,382	885,634	21.20	54.90
1982	12,997	8,580	2,115		2,124	7,358	195		815	1,060	785,425	1,017,918	19.50	53.10
1983	12,140	8,209	1,838		1,820	7,140	171		674	934	767,553	966,515	15.70	53.90
1984	11,487	7,788	1,859		1,821	7,007	141		792	929	694,116	944,552	16.40	60.10

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Table A-7 continued.

Sheep and lambs: Inventory numbers, lamb crop, disposition, production, and prices, 1962-94[1]

Year	Inventory Jan. 1[2] (1,000 head)	Lamb crop (1,000 head)	Inshipments (1,000 head)		Marketings[3] (1,000 head)		Farm slaughter[4] (1,000 head)		Deaths (1,000 head)		Production[5] (1,000 lb)	Marketings[3] (1,000 lb)	Price per 100 pounds (dollars)	
			Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs			Sheep	Lambs
1985	10,443	7,412	1,693		1,569	6,478	135		544	839	694,217	868,942	23.90	67.70
1986	9,983	7,356	1,792		1,310	6,084	128		496	777	721,464	809,588	25.60	69.00
1987	10,389	7,190	1,814		1,232	6,024	113		503	736	728,863	799,111	29.50	77.60
1988	10,945	7,205	1,971		1,610	6,350	100		511	699	707,148	625,734	25.60	69.10
1989	10,853	7,721	2,452		1,129	7,201	98		509	731	775,620	827,968	24.40	66.10
1990	11,358	7,686	2,004		1,628	6,823	95		519	809	757,236	879,829	23.20	55.50
1991	11,174	7,651	2,186		1,719	7,187	92		476	741	762,815	926,780	19.70	52.20
1992	10,797	7,225	2,389		1,923	7,007	89		434	759	711,339	905,541	25.80	59.50
1993	10,201	6,379	2,379		1,952	6,752	74		391	688	688,594	986,454	28.60	64.40
1994	9,742	5,902	2,158		1,529	6,358	76		337	610	625,896	882,919	30.90	65.60

[1]Balance sheet estimates. Total of marketings, farm slaughter, deaths, and onhand end of year equals total of births, inshipments, and onhand beginning of year. Includes Alaska beginning 1961; Hawaii not available. [2]All sheep and lambs. [3]Excludes interfarm sales. [4]Data for 1966 not comparable with previous years due to change in definition to include custom slaughtering in plants for farmers as part of the commercial estimates beginning with January 1966. [5]Adjustments made for inshipments and changes in inventory. [6]Excludes inventory and supply and disposition items for AL, AR, DE, FL, GA, MS, RI, and SC, and is comparable to other supply and disposition items for 1978. Actual Jan 1, 1978, inventory is 12,369,000 head.

Table A-8.

Milk: Supply, utilization, and prices, 1960-94[1]

Year	Supply (mil lb)						Utilization (mil lb)			Prices received by farmers for all milk (dol. per cwt)	Milk feed ratios[5]
	Average number of milk cows[2] (1,000 head)	Milk production per cow[3] (lb)	Beginning stocks	Production	Imports	Total	Domestic disappearance	Export and shipments[4]	Total		
1960	17,515	7,029	4,167	123,109	604	127,880	121,451	1,029	122,480	4.21	1.45
1961	17,243	7,290	5,400	125,707	760	131,867	121,032	932	121,964	4.22	1.45
1962	16,842	7,496	9,903	126,251	795	136,949	123,075	1,718	124,793	4.09	1.40
1963	16,260	7,700	12,156	125,202	915	138,273	123,092	5,493	128,585	4.10	1.36
1964	15,677	8,099	9,688	126,967	830	137,485	124,741	7,454	132,195	4.15	1.38
1965	14,953	8,305	5,290	124,180	923	130,393	123,579	2,358	125,937	4.23	1.40
1966	14,071	8,522	4,456	119,912	2,791	127,159	121,092	1,208	122,300	4.81	1.53
1967	13,415	8,851	4,859	118,732	2,908	126,499	117,423	824	118,247	5.02	1.56
1968	12,832	9,135	8,252	117,225	1,780	127,257	118,852	1,771	120,623	5.24	1.70
1969	12,307	9,434	6,634	116,108	1,621	124,363	117,699	1,419	119,118	5.49	1.74
1970	12,000	9,751	5,192	117,007	1,874	124,073	117,303	964	118,267	5.71	1.74
1971	11,839	10,015	5,776	118,566	1,346	125,688	117,495	3,120	120,615	5.87	1.71
1972	11,700	10,259	5,073	120,025	1,694	126,792	119,085	2,205	121,290	6.07	1.72
1973	11,413	10,119	5,502	115,491	3,860	124,853	119,150	1,302	120,452	7.14	1.46
1974	11,230	10,293	4,401	115,586	2,923	122,910	115,967	1,155	117,122	8.33	1.34
1975	11,139	10,360	5,788	115,398	1,669	122,855	118,004	1,048	119,052	8.75	1.40
1976	11,032	10,894	3,803	120,180	1,943	125,926	119,245	1,030	120,275	9.66	1.53
1977	10,945	11,206	5,651	122,654	1,968	130,273	120,517	995	121,512	9.72	1.57
1978	10,803	11,243	8,761	121,461	2,310	132,532	122,643	982	123,625	10.60	1.74
1979	10,743	11,488	8,907	123,350	2,305	134,562	124,818	1,021	125,839	12.02	1.80
1980	10,810	11,889	8,723	128,406	2,109	139,238	125,119	993	126,112	13.05	1.76
1981	10,923	12,177	13,126	132,770	2,329	148,225	125,744	3,929	129,673	13.77	1.72

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Table A-8 continued.

Milk: Supply, utilization, and prices, 1960-94[1]

Year	Supply (mil lb)						Utilization (mil lb)			Prices received by farmers for all milk (dol. per cwt)	Milk feed ratios[5]
	Average number of milk cows[2] (1,000 head)	Milk production per cow[3] (lb)	Beginning stocks	Production	Imports	Total	Domestic disap-pearance	Export and shipments[4]	Total		
1982	11,011	12,306	18,552	135,505	2,477	156,534	130,294	5,944	136,238	13.61	1.83
1983	11,098	12,585	20,296	139,588	2,617	162,501	135,760	3,890	139,650	13.58	1.72
1984	10,833	12,503	22,851	135,351	2,741	160,943	139,674	4,485	144,159	13.46	1.65
1985	11,016	12,994	16,784	143,012	2,776	162,572	143,338	5,522	148,860	12.75	1.73
1986	10,813	13,260	13,682	143,124	2,732	159,538	144,069	2,547	146,616	12.50	1.79
1987	10,327	13,819	12,922	142,709	2,490	158,121	147,600	3,048	150,648	12.54	1.84
1988	10,224	14,185	7,473	145,152	2,394	155,019	144,444	2,197	146,641	12.26	1.58
1989	10,046	14,323	8,378	144,239	2,498	155,115	141,305	4,774	146,079	13.56	1.65
1990	9,993	14,782	9,036	148,313	2,690	160,039	143,899	2,781	146,680	13.74	1.71
1991	9,826	14,031	13,359	148,477	2,625	164,461	144,318	4,303	148,621	12.27	1.58
1992	9,688	15,574	15,840	151,647	2,521	170,008	145,684	9,110	155,794	13.15	1.69
1993	9,589	15,704	14,214	150,954	2,806	167,974	149,183	9,221	158,404	12.86	1.64
1994	9,525	16,128	9,570	153,622	2,979	166,171	------	------	-------	13.04	1.62

[1]Supply-utilization data, milk equivalent fat solids bases. [2]Average number on farms during the year; heifers that have not freshened excluded. [3]Excludes milk sucked by calves. [4]Includes sales for dollars, government-to-government sales P.L. 480, and AID programs. Exports only beginning 1988. [5]Pounds of average concentrate ration equal in value to 1 pound of milk.

Acid soil. Soil with a pH of less than 7.0.

Acreage reduction program (ARP). A voluntary land retirement program conducted by the Commodity Credit Corporation (CCC) in which participating farmers idle a prescribed portion of their crop acreage base of wheat, feed grains, cotton, or rice. The base is the average of the acreage planted for harvest and considered to be planted for harvest for the previous 5 years. Acreage considered to be planted includes any acreage not planted because of acreage reduction and diversion programs during a period specified by law. Farmers are not given a direct payment for ARP participation, although they must participate to be eligible for benefits such as CCC loans and deficiency payments. Participating producers are sometimes offered the option of idling additional land under a paid diversion program, which gives them a specific payment for each idled acre.

Advance deficiency payments. A portion of eligible deficiency payments made to crop producers when they sign up for Federal commodity programs. The Secretary is required to make advance payments when an ARP is in effect and deficiency payments are expected to be paid. Advance deficiency payments can range from 30 to 50 percent of expected payments, depending on the crop. Up to 50 percent of the advance payment may be made as commodity certificates. If total deficiency payments are less than the advance amount, producers must refund the excess portion.

Agricultural Adjustment Act of 1933 (P.L. 73-10) Signed May 12, 1933, this law introduced the price support programs, including production adjustments, and the incorporation of the Commodity Credit Corporation (CCC), under the laws of the State of Delaware on October 17, 1933. The program benefits were financed mostly by processing taxes on the specific commodity. The act also made price support loans by the CCC mandatory for the designated "basic" (storable) commodities: corn, wheat, and cotton. Support for other commodities was authorized upon the recommendation by the Secretary of Agriculture with the President's approval. Commodity loan programs carried out by the CCC from 1933 to 1937 included programs for cotton, corn, turpentine, rosin, tobacco, peanuts, dates, figs, and prunes. The production control and processing taxes were later declared unconstitutional by the Supreme Court in 1936.

Agricultural Adjustment Act of 1938 (P.L. 75-430). Signed February 16, 1938, this law was the first to make price support mandatory for corn, cotton, and wheat to help maintain a sufficient supply for low production times along with marketing quotas to keep supply in line with market demand. It also established permissive supports for butter, dates, figs, hops, turpentine, rosin, pecans, prunes, raisins, barley, rye, grain sorghum, wool, winter cover-crop seeds, mohair, peanuts, and tobacco for the 1938-40 period. This act established the Federal Crop Insurance Corporation as a Government corporation. The 1938 Act is considered part of permanent agriculture legislation. Provisions of this law are often superseded by more current legislation. However, if the current legislation expires and new legislation is not enacted, the law reverts back to the permanent provisions of the 1938 Act, along with the Agricultural Act of 1949.

Agronomy. The science of crop production and soil management.

Alfalfa. A valuable leguminous crop for forage or hay used in livestock feeding.

Alkaline soil. Soil with a pH of more than 7.0.

Alternative farming. Production methods other than energy- and chemical-intensive one-crop (monoculture) farming. Alternatives include using animal and green manure rather than chemical fertilizers, integrated pest management instead of chemical pesticides, reduced tillage, crop rotation (especially with legumes to add nitrogen), alternative crops, or diversification of the farm enterprise.

Animal unit. A standard measure based on feed requirements, used to combine various classes of livestock according to size, weight, age, and use.

Aquaculture. The production of aquatic plants or animals in a controlled environment, such as ponds, raceways, tanks, or cages, for all or part of their life cycle. In the United States, baitfish, catfish, clams, crawfish, freshwater prawns, mussels, oysters, salmon, shrimp, tropical (or ornamental) fish, and trout account for most of the aquacultural production. Less widely established but growing species include alligator, hybrid striped bass, carp, eel, red fish, northern pike, sturgeon, and tilapia.

Arid climate. A dry climate with an annual precipitation usually less than 10 inches. Not suitable for crop production without irrigation.

Artificial insemination (AI). The mechanical injection of semen into the womb of the female animal with a syringe-like apparatus.

Back hoe. A shovel mounted on the rear of a tractor, hydraulically operated to dig trenches or pits in soil.

Basic commodities. Six crops (corn, cotton, peanuts, rice, tobacco, and wheat) that are covered by legislated price support programs.

Biological control of pests. Control, but not total eradication, of insect pests achieved by using natural enemies, either indigenous or imported, or diseases to which the pest is susceptible. It includes such nontoxic pesticides as *Bacillus thuringiensis (Bt).*

Biologics. Immunization materials made from living or "killed" organisms and their products used for the detection and prevention of diseases; includes serums, vaccines, bacterins, antigens, and antitoxins.

Biotechnology. The use of technology, based on living systems, to develop processes and products for commercial, scientific, or other purposes. These include specific techniques of plant regeneration and gene manipulation and transfer (see also *genetic engineering*).

Blended credit. A form of export subsidy which combines direct government export credit and credit guarantees to reduce the effective interest rate.

Brucellosis A contagious disease in beef and dairy cattle, which causes abortion. Same disease in humans is known as undulant fever.

BST (bovine somatotropin) (also called BGH, for bovine growth hormone). A protein hormone produced naturally in the pituitary gland of cattle. Recombinant BST, or rBST, is BST produced using recombinant DNA biotechnology. BST controls the amount of milk produced by cows.

Cargo preference. A law that requires a certain portion of goods or commodities financed by the U.S. Government to be shipped on U.S. flag ships. The law has traditionally applied to P.L. 480 and other concessional financing or donations programs.

Carryover. Existing supplies of a farm commodity not used at the end of a marketing year, and remaining to be carried over into the next year. Marketing years generally start at the beginning of a new harvest for a commodity, and extend to the same time in the following year.

Cash grain farm. A farm on which corn, grain sorghum, small grains, soybeans, or field beans and peas account for at least 50 percent of value of products sold.

Census of Agriculture. A count taken by the U.S. Bureau of the Census every 5 years (including 1987 and 1992) of the number of farms, land in farms, crop acreage and production, livestock numbers and production, farm spending, farm facilities and equipment, farm tenure, value of farm products sold, farm size, type of farm, etc. Data are obtained for States and counties.

Checkoff programs. Research and promotion programs authorized by law and financed by assessments. The programs are paid for by specified industry members such as producers, importers, and handlers.

Combine. A self-propelled machine for harvesting grain and other seed crops. In one operation, it cuts, threshes, separates, and cleans the grain and scatters the straw.

Commodity certificates. Payments issued by the Commodity Credit Corporation (CCC) in lieu of cash payments to program participants. Holders of the certificates may exchange them with the CCC for CCC-owned commodities.

Commodity Credit Corporation (CCC). A federally owned and operated corporation within USDA. The CCC was created to stabilize, support, and protect farm income and prices through loans, purchases, payments, and other operations. The CCC functions as the financial institution through which all money transactions are handled for agricultural price and income support and related programs. The CCC also helps maintain balanced, adequate supplies of agricultural commodities and helps in their orderly distribution. The CCC does not have any operating personnel or facilities.

Complementary imports. Agricultural import items not produced in appreciable commercial volume in the United States, such as bananas, coffee, rubber, cocoa, tea, spices, and cordage fiber (see also *supplementary imports*).

Compost. Organic residues, or a mixture of organic residues and soil, which have been piled, moistened, and allowed to undergo biological decomposition for use as a fertilizer.

Concessional sales. Credit sales of a commodity in which the buyer is allowed more favorable payment terms than those on the open market. For example, Title I of the Food for Peace Program (P.L. 480) provides for financing sales of U.S. commodities with low-interest, long-term credit.

Conservation district. Any unit of local government formed to carry out a local soil and water conservation program.

Conservation plan. A combination of land uses and practices to protect and improve soil productivity and to prevent soil deterioration. A conservation plan must be approved by the local conservation district for acreage offered in the Conservation Reserve Program. The plan sets forth the conservation measures and maintenance that the owner or operator will carry out during the term of the contract.

Conservation practices. Methods which reduce soil erosion and retain soil moisture. Major conservation practices include conservation tillage, crop rotation, contour farming, stripcropping, terraces, diversions, and grassed waterways.

Conservation Reserve Program (CRP). A program authorized by the Food Security Act of 1985, designed to reduce erosion on 40-45 million acres of U.S. farmland. Under the program, producers who sign contracts agree to convert highly erodible cropland to approved conservation uses for 10 years. In exchange, participating producers receive annual rental payments and cash or payments-in-kind to share up to 50 percent of the cost of establishing permanent vegetative cover.

Conservation tillage. Any of several farming methods that provide for seed germination, plant growth, and weed control yet maintain effective ground cover throughout the years and disturb the soil as little as possible. The aim is to reduce soil loss and energy use while maintaining crop yields and quality. No-till is the most restrictive (soil-conserving) form of conservation tillage. Other practices include ridge-till, strip-till, and mulch-till.

Contour farming. Field operations such as plowing, planting, cultivating, and harvesting on the contour, or at right angles to the natural slope, to reduce soil erosion, protect soil fertility, and use water more efficiently.

Cooperative. An organization formed for the purpose of producing and marketing goods or products owned collectively by members who share in the benefits.

Cooperative Extension System. A system of State, local, and Federal organizations working together to provide practical educational services outside the classroom on agriculture, household management, and other topics. States participate mostly through their Land-Grant Universities, while the Federal partner is USDA's Extension Service.

Cost of production. The sum, measured in dollars, of all purchased inputs and other expenses necessary to produce farm products. Cost of production statistics may be expressed as an average per animal, per acre, or per unit of production (bushel, pound, or hundredweight) for all farms in an area or in the country.

County extension agent. A worker who is jointly employed by the county, State Cooperative Extension Service, and the U.S. Department of Agriculture's Extension Service, to bring agricultural and homemaking information to local people and to help them resolve farm, home, and community

problems. Also called extension agent, farm and home advisor, agricultural agent, extension home economist, and 4-H or youth agent.

Cover crop. A close-growing crop grown to protect and improve soils between periods of regular crops or between trees and vines in orchards and vineyards.

Crop rotation. The practice of growing different crops in recurring succession on the same land. Crop rotation plans are usually followed for the purpose of increasing soil fertility and maintaining good yields.

Crop year. The year in which a crop is harvested. For wheat, barley, and oats, the crop year is from June 1 to May 31. For corn, sorghum, and soybeans, it is from September 1 to August 31. For cotton, peanuts, and rice, the crop year is from August 1 to July 31.

Custom work. Specific farm operations performed under contract between the farmer and the contractor. The contractor furnishes labor, equipment, and materials to perform the operation. Custom harvesting of grain, spraying and picking of fruit, and sheep shearing are examples of custom work.

Deficiency payment. A payment made by the Commodity Credit Corporation to farmers who participate in wheat, feed grain, rice, or cotton programs. The payment rate is per bushel, pound, or hundredweight. It is based on the difference between the price level established by law (target price) and the higher of (1) the price support (loan) rate, and (2) the market price during a period specified by law.

Developing countries. Countries whose economies are mostly dependent on agriculture and primary resources and that do not have a strong industrial base. These countries generally have a gross national product below $1,890 per capita (as defined by the World Bank in 1986). The term is often used synonymously with less-developed and underdeveloped countries.

Disaster payments. Federal payments made to farmers because of a natural disaster when (1) planting is prevented or (2) crop yields are abnormally low because of adverse weather and related conditions. Disaster payments may be provided under existing legislation or under special legislation enacted after an extensive natural disaster.

Distance Education. Delivery of instructional material over a wide geographical area via one or more technologies, including video, computer, and laser.

DNA. Deoxyribonucleic acid, a polymeric chromosomal constituent of living cell nuclei, composed of deoxyribose (a sugar), phosphoric acid, and four nitrogen bases—adenine, cytosine, guanine, and thymine. It contains the genetic information for living organisms, and consists of two strands in the shape of a double helix. A gene is a piece of DNA.

Double crop. Two different crops grown on the same area in one growing season.

Dryland farming. A system of producing crops in semiarid regions (usually with less than 20 inches of annual rainfall) without the use of irrigation. Frequently, part of the land will lie fallow in alternate years to conserve moisture.

Erosion. The process in which water or wind moves soil from one location to another. Types of erosion are (1) **sheet and rill**—a general washing away of a thin uniform sheet of soil, or removal of soil in many small channels or incisions caused by rainfall or irrigation runoff; (2) **gully**—channels or incisions cut by concentrated water runoff after heavy rains; (3) **ephemeral**—a water-worn, short-lived or seasonal incision, wider, deeper and longer than a rill, but shallower and smaller than a gully; and (4) **wind**—the carrying away of dust and sediment by wind in areas of high prevailing winds or low annual rainfall.

Ethanol. An alcohol fuel that may be produced from an agricultural foodstock such as corn, sugarcane, or wood, and may be blended with gasoline to enhance octane, reduce automotive exhaust pollution, and reduce reliance on petroleum-based fuels.

Extra-long staple (ELS) cotton. Cottons having a staple length of 1-3/8 inches or more, according to the classification used by the International Cotton Advisory Committee. This cotton is also characterized by fineness and high-fiber strength, contributing to finer and stronger yarns needed for thread and higher valued fabrics. American

types include American Pima and Sea Island cotton.

Family Farm. An agricultural business which (1) produces agricultural commodities for sale in such quantities so as to be recognized as a farm rather than a rural residence; (2) produces enough income (including off-farm employment) to pay family and farm operating expenses, to pay debts, and to maintain the property; (3) is managed by the operator; (4)has a substantial amount of labor provided by the operator and family; and (5) may use seasonal labor during peak periods and a reasonable amount of full-time hired labor.

Farm. A tract or tracts of land, with improvements, available to produce crops or livestock, including fish. The Bureau of the Census defined a farm in 1978 as any place that has $1,000 or more in gross sales of farm products per year.

Farm Credit System. The system made up of cooperatively owned financial institutions in districts covering the United States and Puerto Rico that finance farm and farm-related mortgages and operating loans. Institutions within each district specialize in farmland loans and operating credit, or lending to farmer-owned supply, marketing, and processing cooperatives. FCS institutions rely on the bond market as a source of funds.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (P.L. 80-104). Signed June 25, 1947, this law required the registration of pesticide products to ensure that they meet stated health, safety, and environment criteria. Amendments to the law required previously registered pesticides to be reregistered by 1997 to meet updated standards. The Environmental Protection Agency, which administers FIFRA, can cancel registration of pesticides not meeting the required criteria, require label changes, or order immediate termination of use.

Federal land bank associations. Local farmer-owned organizations through which farmers obtain long-term (up to 40 years) loans on land. The associations are an integral part of the Farm Credit System.

Federal marketing orders and agreements. USDA is authorized to issue marketing orders and agreements for a variety of agricultural commodities and their products. Marketing orders have been established for milk, fruits and vegetables, and other commodities. The orders may regulate the handling of fruits and vegetables in a variety of ways including limiting quantities that may be marketed, or establishing grade, size, maturity, or quality requirements.

Feed grain. Any of several grains most commonly used for livestock or poultry feed, including corn, grain sorghum, oats, rye, and barley.

Fertilizer. Any organic or inorganic material of natural or synthetic origin which is added to soil to provide nutrients, including nitrogen, phosphorus, and potassium, necessary to sustain plant growth.

FFA. An organization for high school students studying vocational agriculture.

Flood plains. Lowland and relatively flat areas adjoining inland and coastal waters, including floodprone areas of islands. This land includes, at a minimum, those areas that are subject to a 1 percent or greater chance of flooding in any given year.

The Food, Agriculture, Conservation, and Trade Act of 1990 (P.L. 101-624). Signed November 28, 1990, the 5-year farm bill continues to move agriculture in a market-oriented direction. It freezes minimum target prices and allows more planting flexibility. New titles include rural development, forestry, fruit and vegetable, grain quality, organic certification, global climate change, and commodity promotion programs.

Food grain. Cereal seeds most commonly used for human food, chiefly wheat and rice.

Forage. Vegetable matter, fresh or preserved, that is gathered and fed to animals as roughage; includes alfalfa hay, corn silage, and other hay crops.

Forward contracting. A method of selling crops before harvest by which the buyer agrees to pay a specified price to a grower for a portion, or all, of the grower's crops.

Fungicide. A chemical substance used as a spray, dust, or disinfectant to kill fungi infesting plants or seeds.

Futures contract. An agreement between two people, one who sells and agrees to deliver and one who buys and agrees to

receive a certain kind, quality, and quantity of product to be delivered during a specified delivery month at a specified price.

Genetic engineering. Genetic modification of organisms by recombinant DNA, recombinant RNA, or other specific molecular gene transfer or exchange techniques.

Genome. All the genetic material in the chromosomes of a particular organism.

Gleaning. Collecting of unharvested crops from the fields, or obtaining agricultural products from farmers, processors, or retailers without charge.

Gopher. The Internet Gopher client/server is a distributed information delivery system around which a campuswide information system can readily be constructed. While providing a delivery vehicle for local information, Gopher facilitates access to other Gopher and information servers throughout the world.

Grade A milk. Milk, also referred to as fluid grade, produced under sanitary conditions that qualify it for fluid (beverage) consumption. Only Grade A milk is regulated under Federal milk marketing orders.

Grade B milk. Milk, also referred to as manufacturing grade, not meeting Grade A standards. Less stringent standards generally apply.

Grafting. The process of inserting a scion of a specified variety into a stem, root, or branch of another plant so that a permanent union is achieved.

Great Plains. A level to gently sloping region of the United States that lies between the Rockies and approximately the 98th meridian. The area is subject to recurring droughts and high winds. It consists of parts of North Dakota, South Dakota, Montana, Nebraska, Wyoming, Kansas, Colorado, Oklahoma, Texas, and New Mexico.

Green manure. Any crop or plant grown and plowed under to improve the soil, by adding organic matter and subsequently releasing plant nutrients, especially nitrogen.

Ground water. Water beneath the Earth's surface between saturated soil and rock, which supplies wells and springs.

Hedgerow. Trees or shrubs grown closely together so that branches intertwine to form a continuous row.

Herbicide. Any agent or chemical used to destroy plants, especially weeds.

Humus. The well decomposed, relatively stable portion of the partly or wholly decayed organic matter in a soil, which provides nutrients and helps the soil retain moisture.

Hydroponics. Growing of plants in water containing dissolved nutrients, rather than in soil. This process is being used in greenhouses for intensive off-season production of vegetables.

Infrastructure. The transportation network, communications systems, financial institutions, and other public and private services necessary for economic activity.

Integrated crop management. An agriculture management system that integrates all controllable agricultural production factors for long-term sustained productivity, profitability, and ecological soundness.

Integrated pest management (IPM). The control of pests or diseases by using an array of crop production strategies, combined with careful monitoring of insect pests or weed populations and other methods. Some approaches include selection of resistant varieties, timing of cultivation, biological control methods, and minimal use of chemical pesticides so that natural enemies of pests are not destroyed. These approaches are used to anticipate and prevent pests and diseases from reaching economically damaging levels.

International trade barriers. Regulations used by governments to restrict imports from other countries. Examples include tariffs, embargoes, import quotas, and unnecessary sanitary restrictions.

Internet. The global connection of interconnected local, mid-level, and wide-area automated information/communications networks.

Land-Grant universities. Institutions, including State colleges and universities and Tuskegee University, eligible to receive funds under the Morrill Acts of 1862 and 1890. The Federal Government granted land to each State and territory to encourage practical education in agriculture, homemaking, and mechanical arts.

Land-use planning. Decisionmaking process to determine present and future uses of land. The resulting plan is the key element of a comprehensive plan describing recommended location and intensity of development of public and private land uses such as residential, commercial, industrial, recreation and agricultural.

Leaching. The process of removal of soluble materials by the passage of water through soil.

Legumes. A family of plants that includes many valuable food and forage species such as peas, beans, soybeans, peanuts, clovers, alfalfas, and sweet clovers. Legumes can convert nitrogen from the air to nitrates in the soil through a process known as nitrogen fixation. Many of these species are used as cover crops and are plowed under for soil improvement.

Lint. Cotton fiber remaining after the seeds have been ginned out.

Loan deficiency payments. Commodity Credit Corporation payments provided to producers who, although eligible to obtain a marketing loan for a wheat, feed grains, upland cotton, rice, or oilseed crop, agree to forgo obtaining the loan. The payment is determined by multiplying the loan payment rate by the amount of commodity eligible for loan. The payment rate per unit is the announced loan level minus the repayment level used in the marketing loan.

Loan rate (also called price support rate). The price per unit (bushel, bale, pound, or hundredweight) at which the Commodity Credit Corporation will provide loans to farmers enabling them to hold their crops for later sale.

Low-Input Sustainable Agriculture (LISA). Alternative methods of farming that reduce the application of purchased inputs such as fertilizer, pesticides, and herbicides. The goals of these alternative practices are to diminish environmental hazards while maintaining or increasing farm profits and productivity. Methods include crop rotations and mechanical cultivations to control weeds; integrated pest management strategies such as introducing harmless natural enemies; planting legumes that transform nitrogen from the air into a form plants can use; application of livestock manures, municipal sludge, and compost for fertilizer; and overseeding of legumes into maturing fields of grain crops, or as post-season cover crops to curtail soil erosion.

Market basket of farm foods. Average quantities of U.S. farm foods purchased annually per household in a given period. Retail cost of these foods used as a basis for computing an index of retail prices for domestically produced farm foods. Excluded are fishery products, imported foods, and meals eaten away from home.

Marketing spread. The difference between the retail price of a product and the farm value of the ingredients in the product. This farm-retail spread includes charges for assembling, storing, processing, transporting, and distributing the products.

Marketing year. Year beginning at harvest time during which a crop moves to market.

Metropolitan statistical area (MSA). A county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or twin cities with a combined population of at least 50,000. In addition, contiguous counties are included in an MSA if they are socially and economically integrated with a central city.

Migrant farmworker. A person who travels across State or county boundaries to do agricultural work of a seasonal or other temporary nature, and who is required to be absent overnight from his or her permanent place of residence. Exceptions are immediate family members of an agricultural employer or a farm labor contractor, and temporary foreign workers.

National forest. A Federal reservation dedicated to protection and management of natural resources for a variety of benefits—including water, forage, wildlife habitat, wood, recreation, and minerals. National forests are administered by USDA's Forest Service, while national parks are administered by the Interior Department's National Park Service.

National grassland. Land, mainly grass and shrub cover, administered by the Forest Service as part of the National Forest System for promotion of grassland agriculture, watersheds, grazing wildlife, and recreation.

Nematode. Microscopic soil worm, which may attack root or other structures of plants and cause extensive damage.

Net farm income. A measurement of the profit or loss associated with a given year's production. It is an approximation of the net value of agricultural production, regardless of whether the commodities were sold, fed, or placed in inventory during the year. Net farm income equals the difference between gross farm income and total expenses. It includes nonmoney items such as depreciation, the consumption of farm-grown food, and the net imputed rental value of operator dwellings. Additions to inventory are treated as income.

Network. A group of machines connected together so they can transmit information to one another. There are two kinds of networks: local networks and remote networks.

Nitrogen. A chemical element essential to life and one of the primary plant nutrients. Animals get nitrogen from protein feeds; plants get it from soil; and some bacteria get it directly from air.

Nonfarm income. Includes all income from nonfarm sources (excluding money earned from working for other farmers) received by farm operator households.

Nonpoint source pollution. Pollutants that cannot be traced to a specific source, including stormwater runoff from urban and agricultural areas.

Nonprogram crops. Crops—such as potatoes, vegetables, fruits, and hay—that are not included in Federal price support programs.

Nonrecourse loans. The major price support instrument used by the Commodity Credit Corporation to support the price of wheat, feed grains, cotton, rice, honey, sugar, peanuts, and tobacco. Farmers who agree to comply with all commodity program provisions may pledge a quantity of a commodity as collateral and obtain a loan from the CCC. The borrower may elect either to repay the loan with interest within a specified period and regain control of the collateral commodity, or to forfeit it to the CCC. In case of a forfeiture, the borrower forfeits without penalty the collateral to the CCC and the CCC accepts it as satisfaction of the loan. This includes the accumulated interest, regardless of the price of the commodity in the market at the time of forfeiture.

Normal flex acreage. This provision of the Omnibus Budget Reconciliation Act of 1990 (P.L. 101-508) requires a mandatory 15-percent reduction in payment acreage. Under this provision, producers are ineligible to receive deficiency payments on 15 percent of their crop acreage base (not including any acreage removed from production under any production adjustment program). Producers, however, are allowed to plant any crop on this acreage, except fruits and vegetables.

Nutrient. A chemical element or compound that is essential for the metabolism and growth of an organism.

Off-farm income. Includes wages and salaries from working for other farmers, plus non-farm income, for all owner operator families (whether they live on a farm or not).

Oilseed crops. Primarily soybeans, and other crops such as peanuts, cottonseed, sunflower seed, flaxseed, safflower seed, rapeseed, sesame seed, castor beans, canola, rapeseed, and mustard seeds used to produce edible and/or inedible oils, as well as high-protein animal meal.

Oilseed meal. The product obtained by grinding the cakes, chips, or flakes that remain after most of the oil is removed from oilseeds. Used as a feedstuff for livestock and poultry.

Optional flex acreage. Under the planting flexibility provision of the 1990 Farm Act, producers can choose to plant up to 25 percent of the crop acreage base to other Commodity Credit Corporation-specified crops (except fruits and vegetables) without a reduction in crop acreage bases on the farm, but receiving no deficiency payments on this acreage. The Omnibus Budget Reconciliation Act of 1990 (P.L. 101-508) made a 15-percent reduction in payment acreage mandatory. The remaining 10 percent is the optional flex acreage.

Organic farming. There is no universally accepted definition, but in general organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, and livestock feed additives. To the maximum extent feasible, organic farming systems rely on crop rotation, crop residues, animal manures, legumes, green

manure, off-farm organic wastes, mechanical cultivation, mineral bearing rocks, and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients and to control weeds, insects, and other pests.

Parity. Equality in the present purchasing power of a unit (bushel, cwt) of a product compared with its purchasing power during the period 1910-14. Parity price for any commodity equals its 10-year average price multiplied by the ratio of the current Parity Index compared to the 10-year average of Prices Received Index. The Parity Index reflects prices paid by farmers for items of production and family living, including interest, taxes, and wage rates. Both Parity Index and Prices Received Index are expressed on a base of 1910-14 equaling 100. The near threefold gains in farm productivity are not reflected in parity prices.

Parity Ratio. A measure of relative purchasing power of farm products. The ratio between index of prices received by farmers for all farm products and index of prices paid by farmers for commodities and services used in farm production and family living. The parity ratio measures price relationships (prices received and prices paid). It does not measure farm income or farmers' total purchasing power. It does not reflect farmers' off-farm income, Government payments, or farmers' assets.

Payment limitations. Limitations set by law on the amount of money any one person may receive in Federal farm program payments each year under the feed grain, wheat, cotton, rice, and other farm programs.

Percolation. The downward movement of water through soil under the influence of gravity.

Plant germplasm. Living material such as seeds, rootstock, or leaf plant tissue from which new plants can grow.

Pomology. The science or study of growing fruit.

Price index. An indicator of average price change for a group of commodities that compares price for those same commodities in some other period, commonly called the base period.

Price support level. The price for a unit of a farm commodity (bushel, pound) that the Government will support through price-support loans, purchases, and/or payments. Price support levels are determined by law and are set by the Secretary of Agriculture.

Price support programs. Government programs that aim to keep farm prices received by participating producers from falling below specific minimum levels. Price support programs for major commodities are carried out by providing loans and purchase agreements to farmers so that they can store their crops during periods of low prices. The loans can later be redeemed if commodity prices rise sufficiently to make the sale of the commodity on the market profitable, or the farmer can forfeit the commodity to the Commodity Credit Corporation (CCC). With a purchase agreement, the producer may sell the commodity to the CCC.

Production Credit Associations. Lending groups, owned by their farmer-borrowers, that provide short and intermediate-term loans for up to 10 years from funds obtained from investors in money markets. These associations are an integral part of the Farm Credit System.

Productive capacity. The amount that could be produced within the next season if all the resources currently available were fully employed using the best available technology. Productive capacity increases whenever the available resources increase or the production of those resources increases.

Productivity. The relationship between the quantity of inputs (land, labor, tractors, feed, etc.) employed and the quantity of outputs produced. An increase in productivity means that more outputs can be produced from the same inputs or that the same outputs are produced with fewer inputs. Both single-factor and multifactor indexes are used to measure productivity. Single-factor productivity indexes measure the output per unit of one input at the same time other inputs may be changing. Multifactor productivity indexes consider all productive resources as a whole, netting out the effects of substitution among inputs. Crop yield per acre, output per work hour, and livestock production per breeding animal are all single-factor productivity indi-

cators. The Total Farm Output per Unit of Input Index is a multifactor measure.

Public Law 480 (PL-480). Common name for the Agricultural Trade Development and Assistance Act of 1954, which seeks to expand foreign markets for U.S. agricultural products, combat hunger, and encourage economic development in developing countries. Title I of the Food for Peace Program, as it is called, makes U.S. agricultural commodities available through long-term dollar credit sales at low interest rates for up to 40 years. Donations for emergency food relief needs are provided under Title II. Title III authorizes "food for development" grants.

Rangeland. Land which is predominantly grasses, grasslike plants, or shrubs suitable for grazing and browsing. Rangeland includes natural grasslands, savannahs, many wetlands, some deserts, tundra, and certain shrub communities. It also includes areas seeded to native or adapted and introduced species that are managed like native vegetation.

Renewable resources. Resources such as forests, rangeland, soil, and water that can be restored and improved.

Riparian rights. Legal water rights of a person owning land containing or bordering on a water course or other body of water in or to its banks, bed, or waters.

RNA (ribonucleic acid). A molecule similar to DNA that functions primarily to decode instructions for protein synthesis that are carried by genes.

Ruminant. Animal having a stomach with four compartments (rumen, reticulum, omasum, and abomasum). Their digestive process is more complex than that of animals having a true stomach. Ruminants include cattle, sheep and goats, as well as deer, bison, buffalo, camels, and giraffes.

Rural. An area that has a population of fewer than 2,500 inhabitants and is outside an urban area. A rural area does not apply only to farm residences or to sparsely settled areas, since a small town is rural as long as it meets the above criteria.

Saline soil. A soil containing enough soluble salts to impair its productivity for plants.

Set-aside. The acreage a farmer must devote to soil conserving uses (such as grasses, legumes, and small grain that is not allowed to mature), in order to be eligible for production adjustment payments and price-support loans and purchases.

Silage. Prepared by chopping green forage (grass, legumes, field corn, etc.) into an airtight chamber, where it is compressed to exclude air and undergoes an acid fermentation that retards spoilage. Contains about 65 percent moisture.

Silviculture. A branch of forestry dealing with the development and care of forests.

Sodbuster. A provision authorized by the Food Security Act of 1985 which is designed to discourage the conversion of highly erodible land from extensive conserving uses to intensive agricultural production. If highly erodible grassland or woodland is used for crop production without appropriate conservation measures, producers may lose eligibility for participation in many USDA programs.

Staple. Term used to designate length of fiber in cotton, wool, or flax.

State Agricultural Experiment Station. State-operated institutions, established under the Hatch Act of 1887 and connected to land-grant universities in each State, which carry out research of local and regional importance in the areas of food, agriculture, and natural resources.

Stubble mulch. A protective cover provided by leaving plant residues of any previous crop as a mulch on the soil surface when preparing for the following crop.

Subsistence farm. A low-income farm where the emphasis is on production for use of the operator and the operator's family rather than for sale.

Supplementary imports. Farm products shipped into this country that add to the output of U.S. agriculture. Examples include cattle, meat, fruit, vegetables, and tobacco (see *complementary imports*).

Sustainable agriculture. An integrated system of plant and animal production practices having a site-specific application that will, over the long term, satisfy food and fiber needs; enhance environmental quality and

natural resources; make the most efficient use of nonrenewable resources and on-farm resources; integrate natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life.

Swampbuster. This provision was authorized by the Food Security Act of 1985; it discourages the conversion of natural wetlands to cropland use. With some exceptions, producers converting a wetland area to cropland may lose eligibility for many USDA program benefits.

Target prices. A price level established by law for wheat, corn, sorghum, barley, oats, rice, and upland and extra-long-staple cotton. Farmers participating in Commodity Credit Corporation commodity programs receive the difference between the target price and either the market price during a period prescribed by law or the price support (loan) rate, whichever is higher.

Terminal market. A metropolitan market that handles all agricultural commodities.

Tissue culture. The technique of growing a whole plant from a single engineered cell or piece of plant tissue.

Unit cost. The average cost to produce a single item. The total cost divided by the number of items produced.

Upland cotton. A fiber plant developed in the United States from stock native to Mexico and Central America. Includes all cotton grown in the continental United States except Sea Island and American Pima cotton. Staple length of upland cotton ranges from 3/4 inch to 1 1/4 inches.

Urban. A concept defining an area that has a population of 2,500 or more inhabitants.

Vegetative cover. Trees or perennial grasses, legumes, or shrubs with an expected lifespan of 5 years or more.

Viticulture. The science and practice of growing grapes.

Watershed. The total land area, regardless of size, above a given point on a waterway that contributes runoff water to the flow at that point. A major subdivision of a drainage basin. The United States is generally divided into 18 major drainage areas and 160 principal river drainage basins containing some 12,700 smaller watersheds.

Water table. The upper limit of the part of the soil or underlying rock material that is wholly saturated with water.

Wetlands. Land that is characterized by an abundance of moisture and that is inundated by surface or ground water often enough to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wholesale price index. Measure of average changes in prices of commodities sold in primary U.S. markets. “Wholesale” refers to sales in large quantities by producers, not to prices received by wholesalers, jobbers, or distributors. In agriculture, it its the average price received by farmers for their farm commodities at the first point of sale when the commodity leaves the farm.

Zoonotic diseases. Diseases that, under natural conditions, are communicable from animals to humans.

4-H. Club for young people (9-19 years old) sponsored by the Agricultural Extension Service to foster agricultural, homemaking, and other skills. The 4 H’s stand for Head, Heart, Hands, and Health.

0/92. A USDA acreage diversion program provision that allows wheat and feed grain producers to devote all or a portion of their permitted acreage to conserving uses and receive deficiency payments on that acreage. The program makes deficiency payments for a maximum of 92 percent of a farm’s maximum payment acreage. Under other types of acreage diversion programs, such as acreage reduction programs, producers cannot receive deficiency payments unless permitted acres are devoted to producing a crop.

50/92. A USDA acreage diversion program provision that allows cotton and rice growers who plant at least 50 percent of their permitted acreage to receive 92 percent of their deficiency payments under certain conditions.

1890 Land-Grant Colleges and Universities and Tuskegee University. Historically Black land-grant colleges and universities. Through the Act of August 30, 1890, and several other authorities, these institutions may receive Federal funds for agricultural research, extension, and teaching.

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