# Step-By-Step RA Premium Calculator Worked Example

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This worked example takes the reader through an RA premium calculation for an example farm using the 2003 RA premium calculator. Please refer to the accompanying document "Programming Instructions for Revenue Assurance Premium Calculations for 2003" for the equations referred to in this document by number and the definitions of variables.

The example is for a farm with three basic units of corn and three basic units of soybeans. Corn is grown in three different sections of land. Soybeans are grown in three different sections of land. Basic unit, enterprise unit, and whole-farm premiums are calculated for this farm.

**Prices**:

The projected harvest price for corn is $2.30.
The projected harvest price for soybeans is $4.50.

The example farms reside in Jasper County, Iowa. For Jasper County the reference yield for corn is 121 and the reference yield for soybeans is 39 for soybeans. The prevented planting factors are 1.020 and 1.05 for 65% and 70% prevented planting coverage respectively.

Here are the farm-specific data.

| | Corn Units | | | | Soybean Units | | | |
|---|---|---|---|---|---|---|---|---|
| Unit No. | APH yield | BPR | Acreage | Share | APH yield | BPR | Acreage | Share |
| 1 | 140 | 0.03590928 | 100 | 1.0 | 50 | 0.02364661 | 100 | 1.0 |
| 2 | 120 | 0.04205008 | 100 | 0.75 | 35 | 0.03588003 | 100 | 0.75 |
| 3 | 100 | 0.05161601 | 100 | 0.5 | 40 | 0.03006825 | 100 | 0.5 |

The Chicago Board of Trade volatilities are
cvpc 0.18 cvps 0.16

## Coverage Levels for Basic Units, Enterprise Units, and Whole-Farm Units

The producer selects 75% coverage for basic unit quotes. The per-acre revenue guarantees for basic units are:

**Eq (1)**
revb(c,1) = 0.75*140*2.30 = 241.50
revb(c,2) = 0.75*120*2.30 = 207.00
revb(c,3) = 0.75*100*2.30 = 172.50

**Eq (1)**
revb(s,1) = 0.75*50*4.50 = 168.75
revb(s,2) = 0.75*35*4.50 = 118.13
revb(s,3) = 0.75*40*4.50 = 135.00

The producer selects 75% coverage for enterprise unit quotes. The per-acre revenue guarantees for enterprise units are:

<u>Enterprise Units</u>

**Eq (2)** reve(c) = .75*2.30*(1.0*100*140 + 0.75*100*120 + 0.50*100*100)/(1.0*100 + 0.75*100+ 0.50*100) = 214.66667 = 214.67

**Eq (2)** reve(s) = .75*4.50*(1.0*100*50 + 0.75*100*35 + 0.5*100*40)/(1.0*100 + 0.75*100 + 0.5*100) = 144.375 = 144.38

The producer selects 85% coverage for a whole-farm unit quote. The per-acre revenue guarantees for the whole-farm unit is:

Whole-Farm Unit

**Eq (3)** revwf = .85*(2.30*(1.0*100*140 + 0.75*100*120 + 0.50*100*100) + 4.50*(1.0*100*50 + 0.75*100*35 + 0.5*100*40))/(1.0*100 + 0.75*100+ 0.50*100 + 1.0*100 + 0.75*100 + 0.5*100) = 203.46

## Basic Unit Premiums

The first step is to multiply the APH rates, crateou and srateou, by the basic unit discount which is 0.9.
**Eq (4)**

| Unit No. | APH yield | BPR | APH yield | BPR |
|---|---|---|---|---|
| 1 | 140 | 0.03231835 | 50 | 0.02128195 |
| 2 | 120 | 0.03784507 | 35 | 0.03229203 |
| 3 | 100 | 0.04645441 | 40 | 0.02706143 |

This farmer does not select the harvest price option for either corn or soybeans.

The coefficients and the value of the rating factors shown in **equation (9)** are given below for the three corn units.

| Variable | Coefficient | Variable Value By Unit No. 1 | 2 | 3 |
|---|---|---|---|---|
| Constant | -0.06702 | 1 | 1 | 1 |
| Rate(c) | 0.71182 | 0.032318 | 0.037845 | 0.046454 |
| Rate(c)$^2$ | -0.05698 | 0.001044 | 0.001432 | 0.002158 |
| Cover(c) | 0.00038 | 0.75 | 0.75 | 0.75 |
| Cover(c)$^2$ | 0.17031 | 0.5625 | 0.5625 | 0.5625 |
| Fyld(c)/yldREF(c) | 0.04712 | 1.157025 | 0.991736 | 0.826446 |
| (fyld(c)/yldREF(c))$^2$ | 0.00591 | 1.338706 | 0.983539 | 0.683013 |
| cvp(c) | -0.22933 | 0.18 | 0.18 | 0.18 |
| cvp(c)$^2$ | 0.27952 | 0.0324 | 0.0324 | 0.0324 |
| rate(c) x (fyld(c)/yldREF(c)) | 0.43886 | 0.024239 | 0.028384 | 0.034841 |
| rate(c) x cover(c) | 0.04572 | 0.037393 | 0.037532 | 0.038392 |
| rate(c) x cvp(c) | -0.12068 | 0.005817 | 0.006812 | 0.008362 |
| Cover(c) x (fyld(c)/yldREF(c)) | -0.0898 | 0.867769 | 0.743802 | 0.619835 |
| cover(c) x cvp(c) | 0.22556 | 0.135 | 0.135 | 0.135 |
| (fyld(c)/yldREF(c)) x cvp(c) | -0.00652 | 0.208264 | 0.178512 | 0.14876 |

The results of multiplying the coefficients by the variable values and the resulting summation of results is given below. The sum is the premium rate for basic units. This rate is rounded to four digits.

**Eq (5)**

| Multiplication result by unit 1 | 2 | 3 |
|---|---|---|
| -0.06702000 | -0.06702000 | -0.06702000 |
| 0.02300485 | 0.02693888 | 0.03306718 |
| -0.00005951 | -0.00008161 | -0.00012296 |
| 0.00028500 | 0.00028500 | 0.00028500 |
| 0.09579938 | 0.09579938 | 0.09579938 |
| 0.05451901 | 0.04673058 | 0.03894215 |
| 0.00791176 | 0.00581272 | 0.00403661 |
| -0.04127940 | -0.04127940 | -0.04127940 |
| 0.00905645 | 0.00905645 | 0.00905645 |
| 0.01063742 | 0.01245652 | 0.01529024 |
| 0.00170961 | 0.00171598 | 0.00175529 |
| -0.00070203 | -0.00082209 | -0.00100910 |
| -0.07792562 | -0.06679339 | -0.05566116 |
| 0.03045060 | 0.03045060 | 0.03045060 |
| -0.00135788 | -0.00116390 | -0.00096992 |

The corn basic unit rates are

| Unit 1 | Unit 2 | Unit 3 |
|---|---|---|
| 0.04502962 | 0.05208571 | 0.06262034 |

These are rounded to 4 digits.

<u>Corn Basic Unit Premium Rates:</u>

| premr(c,1) | premr(c,2) | premrc(c,3) |
|---|---|---|
| 0.04500000 | 0.05210000 | 0.06260000 |

The results of doing the same process for soybeans is given below.

**Eq (5)**
Soybean Basic Unit Premium Rates

| premr(s,1) | premr(s,2) | premr(s,3) |
|---|---|---|
| 0.03950000 | 0.05460000 | 0.04770000 |

The premium rate must be adjusted for prevented planting if the farmer selects 65% or 70% prevented planting coverage. This farmer selects 70% prevented planting coverage for corn and soybeans. Then the adjusted premium rate is multiplied by liability (the selected per-acre revenue guarantee) to obtain the per-acre premium.

**Eq (8)** LP(c,1) = 0.0450*241.50 *1.05 = 11.410188 = 11.41
LP(c,2) = 0.0521*207.00 *1.05 = 11.323935 = 11.32
LP(c,3) = 0.0626*172.50 * 1.05 = 11.3384 = 11.34

**Eq (8)** LP(s,1) = 0.0395*168.75 *1.05 = 6.9989 = 7.00
LP(s,2) = 0.0546*118.13 *1.05 = 6.77239 = 6.77
LP(s,3) = 0.0477*135.00 * 1.05 = 6.761575 = 6.76

**Eq (9)** TLP(c,1) = 11.40*100*1.0 = 1,141.
TLP(c,2) = 11.32*100*0.75 = 849
TLP(c,3) = 11.34*100*0.5 = 567

**Eq (9)** TLP(s,1) = 7.00*100*1.0 = 700
TLP(s,2) = 6.77*100*0.75 = 507.75 = 508
TLP(s,3) = 6.76*100*0.5 =338

## Enterprise Unit Premiums

First we need to calculate the variables avgrate(c), efyld(c), avgrate(s), efyld(s), erate(c), and erate(s).

**Eq (11)** avgrate(c) = (1.0*100*.03231835 + 0.75*100*.03784507+ 0.50*100*.04645441)/
(1.0*100 + 0.75*100 + 0.50*100) = 0.0373

**Eq (12)** efyld(c) = (1.0*100*140 + 0.75*100*120 + 0.50*100*100)/
(1.0*100 + 0.75*100 + 0.50*100) = 124.4444 = 124.4

**Eq (11)** avgrate(s) = (1.0*100*.02128195 + 0.75*100*.03229203+ 0.50*100*.02706143)/
(1.0*100 + 0.75*100 + 0.50*100) = 0.0262

**Eq (12)** efyld(s) = (1.0*100*50 + 0.75*100*35 + 0.50*100*40)/
(1.0*100 + 0.75*100 + 0.50*100) = 42.77778 = 42.8

ecrate = 0.0373*(1 – (3 – 1)*.4/9)= 0.033984 = .0340

esrate = 0.0262*(1 – (3 – 1)*.5/9) = 0.023289 = .0233

**Eq (13)** epremrc = 0.04772 = .0477

**Eq (13)** epremrs = 0.043013 =. 0430

The premium rate must be adjusted for prevented planting if the farmer selects 65% or 70% prevented planting coverage. This farmer selects 70% prevented planting coverage for corn and soybeans. Then the

adjusted premium rate is multiplied by liability (the selected per-acre revenue guarantee) to obtain the per-acre premium.

**Eq (16)** LEP(c) = 0.0477 * 214.67 *1.05 = 10.751747 = 10.75

**Eq (16)** LEP(s) = 0.0430 * 144.38 *1.05 = 6.518757 = 6.52

Total loaded premium is found by multiplying by insured acres on each unit (and by option factors which are set to one so they do not appear here), rounding to zero and summing across units.

**Eq (17)** TLP(c) = 1075 + 806 + 538 = 2,419

**Eq (17)** TLEP(s) = 652 + 489 + 326 = 1,467

## Whole-Farm Unit Premiums

This farmer does not select the harvest price option for either corn or soybeans.
Below are the values of the variables, the coefficients, and the result of multiplying the two together. The rate for the whole-farm unit equals the sum of the results in the last column. These calculations are presented on pages 10 – 18 of the programming instructions.

| Index | Variable Value | Coefficient | Result of Multiplication |
|---|---|---|---|
| 1 | 1 | -0.02171 | -0.02171 |
| 2 | 0.034 | -0.10031 | -0.00341 |
| 3 | 0.0233 | 0.90903 | 0.02118 |
| 4 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 |
| 8 | 0.001156 | -0.19842 | -0.00023 |
| 9 | 0.000543 | -0.26458 | -0.00014 |
| 10 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 |
| 14 | 0.000792 | 0.39732 | 0.000315 |
| 15 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| 27 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 |
| 29 | 0.85 | -0.08366 | -0.07112 |
| 30 | 0.7225 | 0.18319 | 0.132355 |
| 31 | 0.0289 | 0.26057 | 0.00753 |
| 32 | 0.019805 | 0.16385 | 0.003245 |
| 33 | 0 | 0 | 0 |
| 34 | 0 | 0 | 0 |
| 35 | 0 | 0 | 0 |
| 36 | 0 | 0 | 0 |
| 37 | 0.5979 | 0.016636 | 0.009947 |
| 38 | 0.4021 | 0 | 0 |
| 39 | 0 | 0 | 0 |
| 40 | 0 | 0 | 0 |
| 41 | 0 | 0 | 0 |
| 42 | 0 | 0 | 0 |
| 43 | 0.357484 | -0.30912 | -0.11051 |
| 44 | 0.161684 | 0 | 0 |
| 45 | 0 | 0 | 0 |
| 46 | 0 | 0 | 0 |
| 47 | 0 | 0 | 0 |
| 48 | 0 | 0 | 0 |
| 49 | 0.21374 | 0.29311 | 0.062649 |
| 50 | 0.065013 | 0 | 0 |
| 51 | 0 | 0 | 0 |
| 52 | 0 | 0 | 0 |
| 53 | 0 | 0 | 0 |
| 54 | 0 | 0 | 0 |
| 55 | 0.020329 | 0.60648 | 0.012329 |
| 56 | 0.013931 | -1.25369 | -0.01747 |
| 57 | 0 | 0 | 0 |
| 58 | 0 | 0 | 0 |
| 59 | 0 | 0 | 0 |
| 60 | 0 | 0 | 0 |
| 61 | 0.013671 | 0 | 0 |
| 62 | 0.009369 | 0 | 0 |
| 63 | 0 | 0 | 0 |
| 64 | 0 | 0 | 0 |
| 65 | 0 | 0 | 0 |
| 66 | 0 | 0 | 0 |
| 67 | 0 | 0 | 0 |
| 68 | 0 | 0 | 0 |
| 69 | 0 | 0 | 0 |
| 70 | 0 | 0 | 0 |
| 71 | 0 | 0 | 0 |
| 72 | 0 | 0 | 0 |
| 73 | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| 74 | 0 | 0 | 0 |
| 75 | 0 | 0 | 0 |
| 76 | 0 | 0 | 0 |
| 77 | 0 | 0 | 0 |
| 78 | 0 | 0 | 0 |
| 79 | 0 | 0 | 0 |
| 80 | 0 | 0 | 0 |
| 81 | 0 | 0 | 0 |
| 82 | 0 | 0 | 0 |
| 83 | 0 | 0 | 0 |
| 84 | 0 | 0 | 0 |
| 85 | 0 | 0 | 0 |
| 86 | 0 | 0 | 0 |
| 87 | 0 | 0 | 0 |
| 88 | 0 | 0 | 0 |
| 89 | 0 | 0 | 0 |
| 90 | 0 | 0 | 0 |
| 91 | 0.012154 | 0.48512 | 0.005896 |
| 92 | 0.008329 | 0.28393 | 0.002365 |
| 93 | 0 | 0 | 0 |
| 94 | 0 | 0 | 0 |
| 95 | 0 | 0 | 0 |
| 96 | 0 | 0 | 0 |
| 97 | 0.005497 | 0 | 0 |
| 98 | 0.003767 | 0 | 0 |
| 99 | 0 | 0 | 0 |
| 100 | 0 | 0 | 0 |
| 101 | 0 | 0 | 0 |
| 102 | 0 | 0 | 0 |
| 103 | 0 | 0 | 0 |
| 104 | 0 | 0 | 0 |
| 105 | 0 | 0 | 0 |
| 106 | 0 | 0 | 0 |
| 107 | 0 | 0 | 0 |
| 108 | 0 | 0 | 0 |
| 109 | 0 | 0 | 0 |
| 110 | 0 | 0 | 0 |
| 111 | 0 | 0 | 0 |
| 112 | 0 | 0 | 0 |
| 113 | 0 | 0 | 0 |
| 114 | 0 | 0 | 0 |
| 115 | 0 | 0 | 0 |
| 116 | 0 | 0 | 0 |
| 117 | 0 | 0 | 0 |
| 118 | 0 | 0 | 0 |
| 119 | 0 | 0 | 0 |
| 120 | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| 121 | 0 | 0 | 0 |
| 122 | 0 | 0 | 0 |
| 123 | 0 | 0 | 0 |
| 124 | 0 | 0 | 0 |
| 125 | 0 | 0 | 0 |
| 126 | 0 | 0 | 0 |
| 127 | 0.303862 | 0.34494 | 0.104814 |
| 128 | 0.137432 | 0 | 0 |
| 129 | 0 | 0 | 0 |
| 130 | 0 | 0 | 0 |
| 131 | 0 | 0 | 0 |
| 132 | 0 | 0 | 0 |
| 133 | 0.181679 | -0.35668 | -0.0648 |
| 134 | 0.055261 | 0 | 0 |
| 135 | 0 | 0 | 0 |
| 136 | 0 | 0 | 0 |
| 137 | 0 | 0 | 0 |
| 138 | 0 | 0 | 0 |
| 139 | 1.028099 | -0.00795 | -0.00817 |
| 140 | 1.097436 | -0.00901 | -0.00989 |
| 141 | 0 | 0 | 0 |
| 142 | 0 | 0 | 0 |
| 143 | 0 | 0 | 0 |
| 144 | 0 | 0 | 0 |
| 145 | 1.056988 | 0.001367 | 0.001445 |
| 146 | 1.204366 | 0.000801 | 0.000965 |
| 147 | 0 | 0 | 0 |
| 148 | 0 | 0 | 0 |
| 149 | 0 | 0 | 0 |
| 150 | 0 | 0 | 0 |
| 151 | 1.486944 | -0.00034 | -0.0005 |
| 152 | 0 | 0 | 0 |
| 153 | 0 | 0 | 0 |
| 154 | 0 | 0 | 0 |
| 155 | 0 | 0 | 0 |
| 156 | 0 | 0 | 0 |
| 157 | 0 | 0 | 0 |
| 158 | 0 | 0 | 0 |
| 159 | 0 | 0 | 0 |
| 160 | 0 | 0 | 0 |
| 161 | 0 | 0 | 0 |
| 162 | 0 | 0 | 0 |
| 163 | 0 | 0 | 0 |
| 164 | 0 | 0 | 0 |
| 165 | 0 | 0 | 0 |
| 166 | 2.211001 | 0.000004 | 8.84E-06 |
| 167 | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| 168 | 0 | 0 | 0 |
| 169 | 0 | 0 | 0 |
| 170 | 0 | 0 | 0 |
| 171 | 0 | 0 | 0 |
| 172 | 0 | 0 | 0 |
| 173 | 0 | 0 | 0 |
| 174 | 0 | 0 | 0 |
| 175 | 0 | 0 | 0 |
| 176 | 0 | 0 | 0 |
| 177 | 0 | 0 | 0 |
| 178 | 0 | 0 | 0 |
| 179 | 0 | 0 | 0 |
| 180 | 0 | 0 | 0 |
| 181 | 0.18 | -0.00555 | -0.001 |
| 182 | 0.16 | 0.088538 | 0.014166 |
| 183 | 0.2 | 0 | 0 |
| 184 | 0.1 | 0 | 0 |
| 185 | 0.2 | 0 | 0 |
| 186 | 0.2 | 0 | 0 |
| 187 | 0.0324 | 0.049061 | 0.00159 |
| 188 | 0.0256 | 0.025041 | 0.000641 |
| 189 | 0.04 | 0 | 0 |
| 190 | 0.01 | 0 | 0 |
| 191 | 0.04 | 0 | 0 |
| 192 | 0.04 | 0 | 0 |
| 193 | 0.00612 | 0.016171 | 9.9E-05 |
| 194 | 0.004194 | -0.19112 | -0.0008 |
| 195 | 0 | 0 | 0 |
| 196 | 0 | 0 | 0 |
| 197 | 0 | 0 | 0 |
| 198 | 0 | 0 | 0 |
| 199 | 0.00544 | -0.74971 | -0.00408 |
| 200 | 0.003728 | 0.016195 | 6.04E-05 |
| 201 | 0 | 0 | 0 |
| 202 | 0 | 0 | 0 |
| 203 | 0 | 0 | 0 |
| 204 | 0 | 0 | 0 |
| 205 | 0.0068 | 0 | 0 |
| 206 | 0.00466 | 0 | 0 |
| 207 | 0 | 0 | 0 |
| 208 | 0 | 0 | 0 |
| 209 | 0 | 0 | 0 |
| 210 | 0 | 0 | 0 |
| 211 | 0.0034 | 0 | 0 |
| 212 | 0.00233 | 0 | 0 |
| 213 | 0 | 0 | 0 |
| 214 | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| 215 | 0 | 0 | 0 |
| 216 | 0 | 0 | 0 |
| 217 | 0.0068 | 0 | 0 |
| 218 | 0.00466 | 0 | 0 |
| 219 | 0 | 0 | 0 |
| 220 | 0 | 0 | 0 |
| 221 | 0 | 0 | 0 |
| 222 | 0 | 0 | 0 |
| 223 | 0.0068 | 0 | 0 |
| 224 | 0.00466 | 0 | 0 |
| 225 | 0 | 0 | 0 |
| 226 | 0 | 0 | 0 |
| 227 | 0 | 0 | 0 |
| 228 | 0 | 0 | 0 |
| 229 | 0.001102 | -0.21696 | -0.00024 |
| 230 | 0.000755 | 0.40974 | 0.000309 |
| 231 | 0 | 0 | 0 |
| 232 | 0 | 0 | 0 |
| 233 | 0 | 0 | 0 |
| 234 | 0 | 0 | 0 |
| 235 | 0.00087 | 1.58392 | 0.001379 |
| 236 | 0.000596 | -0.30456 | -0.00018 |
| 237 | 0 | 0 | 0 |
| 238 | 0 | 0 | 0 |
| 239 | 0 | 0 | 0 |
| 240 | 0 | 0 | 0 |
| 241 | 0.00136 | 0 | 0 |
| 242 | 0.000932 | 0 | 0 |
| 243 | 0 | 0 | 0 |
| 244 | 0 | 0 | 0 |
| 245 | 0 | 0 | 0 |
| 246 | 0 | 0 | 0 |
| 247 | 0.00034 | 0 | 0 |
| 248 | 0.000233 | 0 | 0 |
| 249 | 0 | 0 | 0 |
| 250 | 0 | 0 | 0 |
| 251 | 0 | 0 | 0 |
| 252 | 0 | 0 | 0 |
| 253 | 0.00136 | 0 | 0 |
| 254 | 0.000932 | 0 | 0 |
| 255 | 0 | 0 | 0 |
| 256 | 0 | 0 | 0 |
| 257 | 0 | 0 | 0 |
| 258 | 0 | 0 | 0 |
| 259 | 0.00136 | 0 | 0 |
| 260 | 0.000932 | 0 | 0 |
| 261 | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| 262 | 0 | 0 | 0 |
| 263 | 0 | 0 | 0 |
| 264 | 0 | 0 | 0 |
| 265 | 0.107622 | 0.010022 | 0.001079 |
| 266 | 0.095664 | -0.1312 | -0.01255 |
| 267 | 0.11958 | 0 | 0 |
| 268 | 0.05979 | 0 | 0 |
| 269 | 0.11958 | 0 | 0 |
| 270 | 0.11958 | 0 | 0 |
| 271 | 0.072378 | 0 | 0 |
| 272 | 0.064336 | 0 | 0 |
| 273 | 0.08042 | 0 | 0 |
| 274 | 0.04021 | 0 | 0 |
| 275 | 0.08042 | 0 | 0 |
| 276 | 0.08042 | 0 | 0 |
| 277 | 0 | 0 | 0 |
| 278 | 0 | 0 | 0 |
| 279 | 0 | 0 | 0 |
| 280 | 0 | 0 | 0 |
| 281 | 0 | 0 | 0 |
| 282 | 0 | 0 | 0 |
| 283 | 0 | 0 | 0 |
| 284 | 0 | 0 | 0 |
| 285 | 0 | 0 | 0 |
| 286 | 0 | 0 | 0 |
| 287 | 0 | 0 | 0 |
| 288 | 0 | 0 | 0 |
| 289 | 0 | 0 | 0 |
| 290 | 0 | 0 | 0 |
| 291 | 0 | 0 | 0 |
| 292 | 0 | 0 | 0 |
| 293 | 0 | 0 | 0 |
| 294 | 0 | 0 | 0 |
| 295 | 0.064347 | 0.042676 | 0.002746 |
| 296 | 0.057198 | 0.051441 | 0.002942 |
| 297 | 0.071497 | 0 | 0 |
| 298 | 0.035748 | 0 | 0 |
| 299 | 0.071497 | 0 | 0 |
| 300 | 0.071497 | 0 | 0 |
| 301 | 0.029103 | 0 | 0 |
| 302 | 0.02587 | 0 | 0 |
| 303 | 0.032337 | 0 | 0 |
| 304 | 0.016168 | 0 | 0 |
| 305 | 0.032337 | 0 | 0 |
| 306 | 0.032337 | 0 | 0 |
| 307 | 0 | 0 | 0 |
| 308 | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| 309 | 0 | 0 | 0 |
| 310 | 0 | 0 | 0 |
| 311 | 0 | 0 | 0 |
| 312 | 0 | 0 | 0 |
| 313 | 0 | 0 | 0 |
| 314 | 0 | 0 | 0 |
| 315 | 0 | 0 | 0 |
| 316 | 0 | 0 | 0 |
| 317 | 0 | 0 | 0 |
| 318 | 0 | 0 | 0 |
| 319 | 0 | 0 | 0 |
| 320 | 0 | 0 | 0 |
| 321 | 0 | 0 | 0 |
| 322 | 0 | 0 | 0 |
| 323 | 0 | 0 | 0 |
| 324 | 0 | 0 | 0 |
| 325 | 0 | 0 | 0 |
| 326 | 0 | 0 | 0 |
| 327 | 0 | 0 | 0 |
| 328 | 0 | 0 | 0 |
| 329 | 0 | 0 | 0 |
| 330 | 0 | 0 | 0 |

The whole-farm premium rate for this example is 0.06326, which is rounded to .0633.

Again, this rate is found by multiplying all the variable values as shown in the second column of Table 1 beginning on page 9 of "Programming Instructions for Revenue Assurance Premium Calculations for 2002" by the appropriate column of whole-farm coefficients found .

Now we need to check to see if 0.0633 is less than 50% of the average enterprise unit premium rate. The enterprise unit premium rates <u>using the whole-farm coverage level</u> are found using equations (18).

Enterprise unit premium rates using whole-farm coverage level.

| Corn | Soybeans |
|---|---|
| 0.07130 | 0.066900 |

The weighted average of these two equals 0.0691. E**quation (19)**

.0691 = ((1.0*100 + 0.75*100 + 0.50*100)*0.0713+(1.0*100 + 0.75*100 + 0.50*100)*0.0669)/(1.0*100 + 0.75*100 + 0.50*100+1.0*100 + 0.75*100 + 0.50*100)

50% of this average rate is 0.03455, which is less than the whole-farm rate of 0.0633, so the 50% maximum discount has not been exceeded.

The whole-farm prevented planting coverage is 70%. Thus the per-acre whole-farm premium equals:

**Eq (23)** LWFP = 0.0633*203.46*1.05 = 13.52296 = 13.52

This equation would be more complicated except that the preventing planting factors for corn and soybeans are identical. If they were different then 1.05 in the above equation would be replaced by the weighted average of the corn and soybean 70% prevented planting factors.

The total loaded whole-farm premium is found by multiplying by insured acres on each unit (and by option factors which are set two one so they do not appear here), rounding to zero, and then summing across all units.

**Eq (29)** TLWFP = 1352 + 1014 + 676+ 1352 + 1014 + 676 = 6084

## Premium Subsidy

To calculate the producer paid premium we need calculate premium subsidy. For basic units the subsidy factor is 0.55 because the coverage level percent is 0.75. The subsidies are rounded to whole-dollar amounts.

**Eq (25)**

psub(c,1) = 0.55*1141 = 628
psub(c,2) = 0.55*849 = 467
psub(c,3) = 0.55*567 = 312

psub(s,1) = 0.55*700 = 385
psub(s,2) = 0.55*508 = 279
psub(s,3) = 0.55*338 = 186

**Eq (26)**

psube(c,1) = 0.55*1075 = 591
psube(c,2) = 0.55*806 = 443
psube(c,3) = 0.55*538 = 296
psube(c) = 591 + 443 + 296 = 1330

psube(s,1) = 0.55*652 = 359
psube(s,2) = 0.55*489 = 269
psube(s,3) = 0.55*326 = 179
psube(s) = 359 + 269 + 179 = 807

**Eq (27)**

psubwf(c,1) = 0.38*1352 = 514
psubwf(c,2) = 0.38*1014 = 385
psubwf(c,3) = 0.38*676 = 257

psubwf(s,1) = 0.38*1352 = 514
psubwf(s,2) = 0.38*1014 = 385
psubwf(s,3) = 0.38*676 = 257

psubwf = 514 + 385 + 257 + 514 + 385 + 257 = 2312

## Producer Paid Premium

Producer paid premium for corn and soybean basic units:

**Eq (28)**
TLPsub(c,1) = 1141 – 628 = 513
TLPsub(c,2) = 849 – 467 = 382
TLPsub(c,3) = 567 – 312 = 255

**Eq (28)**
TLPsub(s,1) = 700 – 385 = 315
TLPsub(s,2) = 508 – 279 = 229
TLPsub(s,3) = 338 – 179= 152

Producer paid premium for corn enterprise unit
**Eq (29)**
TLEPsub(c) = 2,419 – 1,330 = 1,089

Producer premium for soybean enterprise unit
**Eq (29)**
TLEPsub(s) = 1,467 – 807 = 660

Producer premium for whole-farm unit

**Eq (30)**
TLWFPsub = 6,084 – 2,312 = 3,772

# Optional Units

This example is for a farm in Jasper County that has optional units. Please refer to the first page of this document for relevant data.
Here are the farm-specific data.

| | Corn Units | | | | Soybean Units | | | |
|---|---|---|---|---|---|---|---|---|
| Unit No. | APH yield | BPR rate | Acreage | Share | APH yield | BPR rate | Acreage | Share |
| 1 | 140 | 0.03590900 | 100 | 1.0 | 35 | 0.03588000 | 100 | 1.0 |
| 2 | 100 | 0.05161600 | 100 | 1.0 | 40 | 0.03006800 | 100 | 1.0 |

The per-acre selected revenue guarantee is given below. The coverage level for both corn and soybeans is 0.750 Prevented planting coverage is 0.70.

Per-acre revenue guarantees:

| Unit No. | Corn | Soybeans |
|---|---|---|
| 1 | 241.50 | 118.13 |
| 2 | 172.50 | 135.00 |

Base premium rates using equation (5):

| Unit No. | Corn | Soybeans |
|---|---|---|
| 1 | 0.0450 | 0.0546 |
| 2 | 0.0626 | 0.0477 |

Per-acre premiums using equations (9):

| Unit No. | Corn | Soybeans |
|---|---|---|
| 1 | 11.41 | 6.77 |
| 2 | 11.34 | 6.76 |

**Optional Unit Premiums**

Here we use equation (14) to find the optional unit premiums.

TLP(c,1) = 11.41*100*1.0*1.1 = 1255.1 = 1,255
TLP(c,2) = 11.34*100*1.0*1.1 = 1247.4 = 1,247

TLP(s,1) = 6.77*100*1.0*1.10 = 744.7 = 745
TLP(s,2) = 6.76*100*1.0*1.10 = 743.6 = 744

**Subsidies by Unit**

**Eq (31)**
psub(c,1) = 0.55*1255 = 690.25 = 690
psub(c,2) = 0.55*1247 = 685.85 = 686

psub(s,1) = 0.55*745 = 409.75 = 410
psub(s,2) = 0.55*744 = 409.20 = 409

**Producer Paid Premiums**

**Eq (51)**
TLPsub(c,1) = 1255 – 690 = 565
TLPsub (c,2) = 1247 – 686 = 561

**Eq (52)**
TLPsub(s,1) = 745 – 410 = 335
TLPsub(s,2) = 744 – 409 = 335