Current Crop Insurance Policies

Ag Decision Maker

File A1-48

The 2014 Farm Bill left the farm-level COMBO products introduced by the Risk Management Agency in 2011 unchanged, but released the Area Risk Protection Insurance ARPI) to overhaul the county-level or Group products. This article describes COMBO and ARPI products and illustrates each of them with numerical examples.

Farm-level COMBO products[1]

The Common Crop Insurance policy provides three choices of buy-up plans: 1) insuring yields with the Yield Protection plan, or revenue with either; 2) the Revenue Protection plan, or; 3) the Revenue Protection with Harvest Price Exclusion plan. A fourth choice is to choose Catastrophic coverage, which is only available under the Yield Protection plan.

The basic practical difference between yield and revenue protection is that while the former only triggers indemnities when yields are low, the latter can trigger indemnities even with high yields if prices are sufficiently low, or it can fail to trigger indemnities with low yields if prices are sufficiently high.

The four plans are multi-peril insurance plans, and protect against a) adverse weather conditions (hail, frost, drought, excess moisture, etc.); b) failure of irrigation water supply if caused by an insured peril during the insurance period; c) fire, if due to natural causes; d) plant disease and insects, but not damage due to insufficient or improper application of pest or disease control measures; and e) wildlife damage.

Insurable corn includes yellow dent or white corn; mixed yellow and white, high amylase, waxy or high-lysine corn; high-oil corn blends containing mixtures of at least 90% high yielding yellow dent female plants with high-oil male pollinator plants; or commercial varieties of high-protein hybrids.

Insurable soybeans include both "commodity" type soybeans and the following "specialty" types: all other food grades, large seeded food grade, small seeded food grade, low linolenic acid, low saturated fat, and high protein.

Corn and soybeans may be insurable if: a) grown in the county on insurable acreage; b) premium rates are provided; c) farmer has a share; and d) corn is planted for harvest as grain, and soybeans are planted for harvest as beans.

The insurance period for both crops starts on the later of the date the Risk Management Agency accepts the application or the date when the crop is planted, and it ends with the earliest occurrence of one of the following: a) total destruction of the crop; b) harvest of the unit; c) final adjustment of a loss; d) abandonment of the crop; or e) December 10, 2014. Table 1 lists the most important dates for COMBO products. A detailed description of all important dates for crop insurance can be found in Ag Decision Maker File A1-50/FM-1858 **Important Crop Insurance Dates**.[2]

Table 1. Important dates for COMBO products

	Corn	Soybeans
Sales closing date	March 15, 2014	
Earliest planting date	April 11, 2014	April 21, 2014
Final planting date	May 31, 2014	June 15, 2014
Acreage reporting date	July 15, 2014	
Premium billing date	August 15, 2014	
Production reporting date	April 29, 2015	

Crop insurance costs paid by farmers are the result of the interplay of acreage insured, premiums per acre and administrative fees per crop per county. The premiums for all types of multi-peril crop insurance are subsidized by the Federal Crop Insurance Corporation. The administrative fees are $30 per crop per county for coverage levels above catastrophic coverage, and $300 per crop per county for catastrophic coverage.

[1] *This section is based on the Risk Management Agency Fact Sheets on Corn and Soybeans in Iowa for the 2014 Crop Year. Available online at* www.rma.usda.gov/aboutrma/fields/mn_rso/

[2] *The production reporting date for the current marketing year is April 29, 2015 instead of April 30).*

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Insurance policies offer an array of coverage levels (be it of yield or revenue) ranging from 50% to 85% in 5% increments. Farmers can also choose how to split their insurable acreage according to basic unit, optional unit, and enterprise unit for yield and revenue insurance. A fourth option, whole farm unit, is available for revenue insurance. A basic unit includes all of a farmer's insurable crop acreage (either corn or soybeans) in the county by share arrangement. If a basic unit consists of two or more sections of land, and certain record-keeping requirements are met, a farmer may apply for optional units by section. An enterprise unit is generally all the insured crop acreage (either corn or soybeans) in a county. A whole farm unit includes all the insured crops (corn and soybeans) in the county that are covered by the insurance plan.

Table 2 shows the coverage levels and premium subsidies currently available for corn and soybeans according to the units chosen. For basic and optional units, premium subsidies decline from 67% for a 50% buy-up coverage level to 38% for an 85% coverage level. But that is not the case for enterprise and whole farm units, for which premium subsidies are flat at 80% for coverage levels 50%-70% and 50%-75%, respectively, and only decline slightly for higher coverage levels, remaining at 53% and 56%, respectively, at the 85% coverage level.

By choosing enterprise or whole farm units instead of basic or optional units, farmers get higher premium subsidies for all coverage levels. These enterprise or whole farm unit "discounts" increase with the coverage level up to the 75% coverage level, reaching a maximum of 22 percentage points for the enterprise unit discount and 25 percentage points for the whole farm unit discount. The discounts for the 80% and 85% coverage levels are 2 and 7 percentage points lower, respectively, than their corresponding maximums.

Finally, farmers can choose to have their Actual Production History (APH) yields adjusted upwards based on their county's historical yield by paying higher premiums for their insurance policies. As a result, farms with yields below county averages can increase the likelihood of triggering indemnity payments while also increasing the potential amount of the gross indemnity. For example, the APH corn yield in Wright County, Iowa, for 2014 is 174 bushels per acre, while the Trend-Adjusted APH yield is 186 bushels per acre. One caveat is that Trend-Adjusted APH yields cannot be used with catastrophic coverage.

Yield Protection (YP)

The YP plan offers a production guarantee based on individual APH yield, which is an average of up to ten years of actual and/or assigned yields. An explanation of how the individual APH yield is determined can be found in Ag Decision Maker File A1-55/FM-1860 **Proven Yields and Insurance Units for Crop Insurance**.

The gross indemnity is calculated as the bushels per acre loss (production guarantee minus actual yields) times the projected price. The projected prices for corn and soybeans are, respectively, the averages of December and November CBOT futures contract prices during February. The Risk Management Agency (RMA) announces projected prices in March, and in 2014 they are $4.62 and $11.36 for corn and soybeans, respectively.

As an example, assume that Mr. Farmer, who insured his corn and soybean acreage with a YP plan at the 75% coverage level, and basic unit coverage, suffers substantial yield losses due to hail that leave him with a corn yield of 70 bushels per acre and a soybean yield of 20 bushels per acre. Assume also that his Trend-Adjusted APH yields for corn and soybeans are, respectively, 182 and 49 bushels per acre; and that producer premiums

Table 2. Coverage levels and premium subsidies for COMBO products

Item	Unit	Percent							
Coverage Level		50	55	60	65	70	75	80	85
Subsidy	Basic unit or Optional unit	67	64	64	59	59	55	48	38
	Enterprise unit	80	80	80	80	80	77	68	53
	Whole farm unit	80	80	80	80	80	80	71	56

(total premiums minus premium subsidies) amount to $6.25 and $4.45 per acre, respectively. The net indemnities collected by Mr. Farmer in this example are $300.98 and $185.83 per acre of corn and soybeans, respectively (Table 3).

Note that if Mr. Farmer's yields were at least 136.5 and 36.8 bushels per acre for corn and soybeans, respectively, he would receive no indemnities and would have lost $6.25 and $4.45 per acre of corn and soybeans, respectively, plus the $30 administrative fee per crop per county.

Revenue Protection (RP)

The RP plan offers a revenue guarantee based on individual APH yield and the highest of Projected and Harvest Price. The Projected Prices are the same ones used for the YP plan. The Harvest Prices for corn and soybeans are, respectively, the average of December and November CBOT futures contract prices during October. The RMA announces harvest prices in November.

As an example, assume that Mrs. Farmer faces identical production conditions as Mr. Farmer but she insured her crops with the RP plan instead of the YP plan, paying $11.60 and $7.00 premiums for corn and soybeans, respectively. The only piece of information missing to calculate her net indemnity per acre is the Harvest Price. Assuming for this example that in November 2014 the RMA announces harvest prices of $4.75 and $11.00 for corn and soybeans, respectively, the net indemnities per acre are $304.28 and $190.48 (Table 4).

Table 3. Numerical example for Yield Protection plan

Item		Corn	Soybeans	Comments
a	Trend-Adjusted APH Yield	182	49	From individual history
b	Coverage level	0.75	0.75	Chosen by farmer
c=a*b	Production guarantee	136.5	36.8	
d	Bushels per acre actually produced	70	20	
e=c-d	Bushels per acre loss	66.5	16.8	>0 to trigger payments
f	Projected Price	$4.62	$11.36	Announced by RMA-March 2014
g=e*f	Gross Indemnity per acre	$307.23	$190.28	
h	Producer premium per acre	$6.25	$4.45	Total premium - subsidy
i=g-h	Net Indemnity per acre	$300.98	$185.83	

Table 4. Numerical example for Revenue Protection plan

Item		Corn	Soybeans	Comments
a	Trend-Adjusted APH Yield	182	49	From individual history
b	Coverage level	0.75	0.75	Chosen by farmer
c	Projected price	$4.62	$11.36	Announced in Mar 2014
d	Harvest price	$4.75	$11.00	Announced in Nov 2014
e=max(c,d)	Greater of projected or harvest price	$4.75	$11.36	
f=a*b*e	Revenue Guarantee	$648.38	$417.48	
g	Bushels per acre actually produced	70	20	
h=d*g	Actual Revenue per acre	$332.50	$220.00	
i=f-h	Gross Indemnity per acre	$315.88	$197.48	=0 if actual revenue > revenue guarantee
j	Producer premium per acre	$11.60	$7.00	Total premium - subsidy
k=i-j	Net Indemnity per acre	$304.28	$190.48	

Note that if the actual revenues per acre obtained by Mrs. Farmer for corn and soybeans were at least of $648.38 and $4717.48, respectively, then Mrs. Farmer would collect no indemnity. The highest yields that would trigger indemnities in this example (maximum yield trigger = revenue guarantee / harvest price) are 136.5 bushels per acre for corn and 38.0 bushels per acre for soybeans.

Finally, to illustrate the fact that RP protects against price declines even with normal or high yields, assume that yields are 182 bushels per acre for corn and 49 bushels per acre for soybeans. In this case, gross indemnities are triggered by harvest prices under $3.39 for corn and $8.35 for soybeans. However, only harvest prices under $3.35 for corn and $8.08 for soybeans result in positive net indemnities.

Revenue Protection with Harvest Price Exclusion (RPHPE)

The RPHPE plan is similar to RP but carries a lower premium because the revenue guarantee is determined by the projected price only and excludes the possibility of benefiting from higher harvest prices.

Consider the case of Mr. Farmer Junior, whose production conditions are the same as those for Mr. and Ms. Farmer, but who saved some money by purchasing RPHPE instead of RP for his crops, paying premiums of $6.95 and $4.75 for corn and soybeans, respectively. Mr. Farmer Junior will collect the same gross indemnity per acre for soybeans as his mother, but since he saved $2.25 in premiums, his net indemnity per acre is $2.25 higher: $192.73.

However, Mr. Farmer Junior cannot benefit from the price increase between February and October for corn, and his net indemnity is $13.10 lower than his mother's (Table 5).

Catastrophic Coverage (CAT)

The CAT plan is offered under the YP plan at 50% of the APH yield and 55% of the projected price. It is not possible to use Trend-Adjusted APH yields with the CAT plan.

Assuming that Miss Farmer Junior has a similar operation to her father's with APH yields of 174 and 47 bushels per acre for corn and soybeans, respectively, and she contracts only the CAT plan, then her net indemnities per acre amount to $43.20 for corn and $21.87 for soybeans (Table 6). However, since Miss Farmer Junior paid $300 in administrative fees for each crop per county, she needs at least 7 acres of corn and 14 acres of soybeans in each county to break even.

Additional examples and discussion of other provisions affecting COMBO products (prevented planting and replanting, coverage units and discounts, maximum price movements, etc.) can be found in Ag Decision Maker File A1-54/FM-1853 **Revenue Protection Crop Insurance**.

Table 5. Numerical example for Revenue Protection with Harvest Price Exclusion plan

	Item	Corn	Soybeans	Comments
a	Trend-Adjusted APH Yield	182	49	From individual history
b	Coverage level	0.75	0.75	Chosen by farmer
c	Projected Price	$4.62	$11.36	Announced in Mar 2014
d=a*b*c	Revenue Guarantee	$630.63	$417.48	
e	Bushels per acre actually produced	70	20	
f	Harvest Price	$4.75	$11.00	Announced in Nov 2014
g=e*f	Actual Revenue per acre	$332.50	$220.00	
h=d-g	Gross Indemnity per acre	$298.13	$197.48	>0 to trigger payments
i	Producer premium per acre	$6.95	$4.75	Total premium - subsidy
j=h-i	Net Indemnity per acre	$291.18	$192.73	

Table 6. Numerical Example for Catastrophic Coverage Plan

Item		Corn	Soybeans	Comments
a	APH Yield	174	47	From individual history
b	Coverage level	0.5	0.5	Chosen by farmer
c=a*b	Production guarantee	87	23.5	
d	Bushels per acre actually produced	70	20	
e=c-d	Bushels per acre loss	17	3.5	>0 to trigger payments
f	Projected Price	$4.62	$11.36	Announced in Mar 2014
g=e*0.55*f	Gross Indemnity per acre	$43.20	$21.87	
h	Producer premium per acre	$0.00	$0.00	Premium fully subsidized
i=g-h	Net Indemnity per acre	$43.20	$21.87	

County-level ARPI products[3]

Area Risk Protection Insurance (ARPI) is a risk management tool to insure against widespread loss of yield or revenue in a county resulting from natural causes that cause the final county yield or the final county revenue to be less than the trigger yield or revenue. It was developed on the basis that when an entire county's crop yield is low, most farmers in that county would also have low yields. ARPI has less paperwork and generally lower premium costs than individual farm level insurance. However, a farmer may have low yield or low revenue on his/her acreage and still not receive a payment. Also, lenders may not accept ARPI coverage as collateral. In general, ARPI would be more attractive to farmers with low APH yields with respect to their expected yields and to those with expected yields similar to county yields seeking a higher price protection than offered by RP.

ARPI provides four plan choices: Area Yield Protection, Area Revenue Protection, Area Revenue Protection with Harvest Price Exclusion, and Catastrophic Coverage (which is only available under Area Yield Protection).

The ARPI policy replaces the Group Risk Plan (GRP) and Group Risk Income Protection (GRIP) plan policies that were available in the past. Schnitkey (2014) provides a detailed comparison of ARPI to the GRP/GRIP policies.

The requisites for corn and soybeans to be insurable under ARPI are similar to those to be insurable under the COMBO products. The main differences reside in that corn planted for seed may be insurable under ARPI but not under the COMBO products, and specialty soybeans are not insurable under ARPI.

The insurance period and most important dates for ARPI are identical to COMBO products. The only important date that differs is the production reporting date for both corn and soybeans: February 15, 2015 under ARPI and April 29, 2015 under COMBO products.

As with the COMBO products, crop insurance costs paid by farmers depend on area insured, premiums per acre, and administrative fees per crop per county. The administrative fees are $30 per crop per county for coverage levels above catastrophic coverage, and $300 per crop per county for catastrophic coverage.

Insurance policies offer coverage levels ranging from 70% to 90% in 5% increments, but are only available for basic units. Table 7 shows the coverage levels and premium subsidies currently available for corn and soybeans through the Federal Crop Insurance Corporation.

[3] *This section is based on the Risk Management Agency Fact Sheets on Corn ARPI and Soybeans ARPI in Iowa, Minnesota and Wisconsin for the 2014 Crop Year. Available online at* www.rma.usda.gov/aboutrma/fields/mn_rso/

Table 7. Coverage Levels and Premium Subsidies for ARPI products

Item	Percent				
Coverage Level	70	75	80	85	90
Premium Subsidy	59	59	55	55	51

Area Yield Protection (AYP)

The AYP plan offers protection against loss of yield due to a county level production loss. AYP offers similar protection to the COMBO's YP plan, except that AYP uses county yields instead of unit yields for indemnity calculation.

The expected county yield is determined using historical National Agricultural Statistics Service county average yields, as adjusted by the Federal Crop Insurance Corporation, and published by the Risk Management Agency annually.

The calculation of the net indemnity follows a similar procedure to the COMBO's YP plan, but two new elements must be accounted for in AYP: the protection factor and the loss limit factor (Table 8).

The protection factor is chosen by the farmer and used to increase or reduce the dollar amount of insurance per acre and policy protection, and it goes from 0.8 to 1.2. Policy premiums are higher for higher protection factors.

The loss limit factor represents the percentage of the expected county yield at which no additional indemnity amount is payable, and it is currently set at 0.18. For example, if the expected county yield is 100 bushels and the final county yield is 18 bushels, then no additional indemnity is due even if the yield falls below 18 bushels.

For illustration purposes, assume that Mr. Cropp plants corn and soybeans in the same county as Mr. Farmer from the YP example, but Mr. Cropp uses AYP to insure his crops. The expected county yields for corn and soybeans are, respectively, 186 and 50 bushels per acre. He chooses a coverage level of 85% and the maximum protection factor of 1.2, paying premiums of $18.50 and $7.00 for corn and soybeans, respectively.

Irrespectively of whether he has a bumper crop, total loss, or average yields in his farms, Mr. Cropp collects indemnity payments from the AYP plan because the actual county yields in this example are lower than the county production guarantees.

Area Revenue Protection (ARP)

The ARP plan offers protection against loss of revenue due to a county level production loss, price decline, or a combination of both, and includes upside harvest price protection. ARP offers similar protection to the COMBO's RP plan, except that ARP uses county revenue instead of unit revenue for indemnity calculation.

Table 8. Numerical Example for AYP Plan

Item		Corn	Soybeans	Comments
a	Expected county yield	186.0	50.0	Published by RMA
b	Coverage level	0.85	0.85	Chosen by farmer
c=a*b	County production guarantee	158.1	42.5	
d	Actual county yield	140.0	35.0	
e=c-d	County yield deficiency	18.1	7.5	>0 to trigger payments
f=b-0.18	Coverage level above loss limit factor	0.67	0.67	Loss limit factor = 0.18
g	Projected price	$4.62	$11.36	Announced in Mar 2014
h	Protection factor	1.2	1.2	Chosen by farmer
i=g*h*e/f	Gross indemnity per acre	$149.77	$152.60	
j	Producer premium per acre	$18.50	$7.00	Total premium - subsidy
k=i-j	Net indemnity per acre	$131.27	$145.60	

Consider the case where Mrs. Cropp plants corn and soybeans in the same county as his husband, but she uses ARP instead of AYP to insure her crops. Mrs. Cropp chooses a coverage level of 85% of county revenue and a protection factor of 1.2, and pays higher premiums for insuring revenues instead of yields only (Table 9). Although Mr. and Mrs. Cropp's policies are based on the same county yields (expected and actual), Mrs. Cropp collects a lower net indemnity per acre for corn than her husband, and a higher one for soybeans.

The net indemnities under the ARP depend not only on county yields and projected prices, but also on harvest prices and producer premiums. The higher gross indemnity per acre for corn in ARP versus AYP ($153.99 vs. $149.77) is driven by the harvest price, which is higher than the projected price $4.75 vs $4.62). However, the net indemnity for corn is lower under ARP than under AYP because of the higher producer premium ($41.85 vs. $18.50). It must be noted that under the ARP plan, a Harvest Price higher than the projected price produces two simultaneous effects: it increases the county revenue guarantee, and it increases the actual county crop revenue. Its final effect on the gross indemnity per acre depends on the coverage level, the protection factor, and expected and actual county yield.

For soybeans, the harvest price is lower than the projected price, so the gross indemnity per acre under ARP is higher than under AYP ($175.16 vs. $152.60). In fact, it is high enough to offset the difference in producer premiums ($17.25 vs. $7.00).

Area Revenue Protection with Harvest Price Exclusion (ARPHPE)

The ARPHPE is similar to the ARP but excludes upside harvest price protection. ARPHPE offers similar protection to the COMBO's RPHPE plan, except that ARPHPE uses county revenue instead of unit revenue for indemnity calculation.

As an example, consider the case where Mr. Cropp Junior decides to insure his corn and soybeans with ARPHPE because it requires lower producer premiums per acre than ARP: $31.80 vs. $41.85, and $15.35 vs. $17.25, respectively.

Since the Harvest Price is lower than the projected price for soybeans, Mr. Cropp Junior gets the same gross indemnity per acre as his mother. However, since he paid a lower premium, his net indemnity per acre is higher: $159.81 vs. $157.91.

Table 9. Numerical example for ARP plan

Item		Corn	Soybeans	Comments
a	Expected county yield	186	50	Published by RMA
b	Projected price	$4.62	$11.36	Announced in Mar 2014
c	Harvest price	$4.75	$11.00	Announced in Nov 2014
d=max(b,c)	Highest of Projected and Harvest Price	$4.75	$11.36	
e	Coverage level	0.85	0.85	Chosen by farmer
f=a*d*e	County revenue guarantee	$750.98	$482.80	Loss limit factor = 0.18
g	Actual county yield	140.0	35.0	
h=c*g	Actual county revenue	$665.00	$385.00	
i=f-h	County revenue deficiency	$85.97	$97.80	>0 to trigger payments
j	Protection factor	1.2	1.2	Chosen by farmer
k=e-0.18	Coverage level above loss limit factor	0.67	0.67	
l=i*j/k	Gross indemnity per acre	$153.99	$175.16	
m	Producer premium per acre	$41.85	$17.25	Total premium - subsidy
n=l-m	Net indemnity per acre	$112.14	$157.91	

Table 10. Numerical example for ARPHPE plan

Item		Corn	Soybeans	Comments
a	Expected county yield	186	50	Published by RMA
b	Projected price	4.62	11.36	Announced in Mar 2014
c	Coverage level	0.85	0.85	Chosen by farmer
d=a*b*c	County revenue guarantee	$730.42	$482.80	
e	Actual county yield	140.0	35.0	
f	Harvest price	$4.75	$11.00	Announced in Nov 2014
g=e*f	Actual county revenue	$665.00	$385.00	
h=d-g	County revenue deficiency	$65.42	$97.80	>0 to trigger payments
i	Protection factor	1.2	1.2	Chosen by farmer
j=c-0.18	Coverage level above loss limit factor	0.67	0.67	Loss limit factor = 0.18
k=h*i/k	Gross indemnity per acre	$117.17	$175.16	
l	Producer premium per acre	$31.80	$15.35	Total premium - subsidy
m=k-l	Net indemnity per acre	$85.37	$159.81	

For corn, the lower producer premium is not enough to compensate for the lower county revenue guarantee ($730.42 vs. $750.98). As a result, Mr. Cropp Junior collects a lower net indemnity per acre than his mother for corn.

Area Catastrophic Coverage (ACAT)

The ACAT coverage is available at 65% of the yield coverage and 45% of the price coverage. The total cost for ACAT coverage is an administrative fee of $300, since its premium is fully subsidized.

Consider the case where Mrs. Cropp Junior chose ACAT for her crops. The county production guarantees for corn and soybeans are, respectively 120.9 and 32.5 bushels per acre (Table 11). Therefore, actual county yields of 140 and 35 bushels per acre for corn and soybeans, respectively, do not trigger ACAT indemnities. Assume instead that the actual county yields for this example are 115 and 25 bushels per acre, respectively. In this case, given that the mandated price protection factor is 45%, the gross and net indemnities amount to $26.10 and $81.57 per acre.

Table 11. Numerical example for ACAT plan

Item		Corn	Soybeans	Comments
a	Expected county yield	186	50	Published by RMA
b	Coverage level	0.65	0.65	Chosen by farmer
c=a*b	County production guarantee	120.9	32.5	
d	Actual county yield	115	25	
e=c-d	County yield deficiency	5.9	7.5	>0 to trigger payments
f=b-0.18	Coverage level above loss limit factor	0.47	0.47	Loss limit factor = 0.18
g	Projected price	4.62	11.36	Announced in Mar 2014
h	Protection factor	0.45	0.45	Chosen by farmer
i=g*h*e/f	Gross indemnity per acre	$26.10	$81.57	
j	Producer premium per acre	$0.00	$0.00	Total premium - subsidy
k=i-j	Net indemnity per acre	$26.10	$81.57	

References

Schnitkey, Gary. 2014. Area Risk Protection Insurance Policy: Comparison to Group Plans. http://farmdocdaily.illinois.edu/2014/01/area-risk-protection-insurance-policy.html. Accessed on 07/18/2014.

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