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New Farm Bill, new safety net
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The 2014 Farm Bill introduced several changes to the commodity programs available through the Farm Service Administration (FSA) and created a new insurance program to complement one commodity program through the Risk Management Agency (RMA). This article provides an overview of the new safety net available to Iowa crop farmers from 2014 to 2018, explains the timing of the decisions involved in selecting a farm program, and highlights the factors that affect program election through three numerical examples.

New FSA commodity programs
The 2014 Farm Bill established two new programs, Price Loss Coverage (PLC) and Agricultural Risk Coverage (ARC), and repealed the Direct and Counter-Cyclical Program, the Supplemental Revenue Assistance Program, and the Average Crop Revenue Election Program. The ARC program is offered at the Individual farm level (ARC-IC) and at the County level (ARC-CO). The Marketing Assistance Loan program was extended until 2018 with the same loan rates, providing a safety net against very low prices.

For each FSA farm, farmers can choose between (1) enrolling each crop in PLC or ARC-CO; and (2) enrolling all program crops on the farm in ARC-IC. For example, a farm can have corn base acres participating in ARC-CO and soybeans base acres participating in PLC. However, if ARC-IC is elected for a farm, then all crops in that farm must participate in it, and the farm can participate in neither of the other two programs.

In order to participate in the new commodity programs, producers are required to (1) be certified as “actively engaged in farming,” (2) have an average adjusted annual gross income (AGI) of up to $900,000 over the most recent three years, (3) submit an acreage report for all cropland on the farm, (4) comply with the Highly Errodible Land Conservation and Wetland Conservation provisions, and (5) have more than 10 base acres on a farm (unless the producer is a socially disadvantaged farmer or is a limited resource farmer). Previous AGI provisions distinguished between farm and non-farm income, while the current provision averages across farm and non-farm income. The third prerequisite for eligibility also applies to marketing assistance loans and loan deficiency payments.

The total amount of payments received, directly and indirectly, by a person or entity (except joint ventures or general partnerships) for PLC, ARC-CO, ARC-IC, marketing loan gains, and loan deficiency payments may not exceed $125,000 per crop year. Each couple has a limit of $250,000 on total payments.

Payments for PLC, ARC-CO, and ARC-IC are based on base acres (not planted acres) and are issued after the end of the respective crop year, but not before October 1. Base acres are defined by FSA as “a farm’s crop-specific acreage of wheat, feed grains, rice, oilseeds, pulse crops, or peanuts eligible used for FSA program purposes. Base acres do not necessarily align with current plantings.” Planted acres are only relevant for the Agricultural Risk Coverage-Individual program, where they are used to determine the weights applied in the calculation of actual and benchmark revenues.

Price Loss Coverage (PLC)
PLC offers price protection. Payments are triggered when the Effective Price of a covered commodity is lower than the Reference Price for that commodity. The Reference Prices for corn and soybeans were set over 2014-2018 by statute at $3.70 and $8.40 per bushel, respectively.

The Effective Price is the higher of the Marketing Year Average (MYA) Price or the National Loan Rate ($1.95 per bushel of corn and $5.00 per bushel of soybeans). The MYA Prices for corn and soybeans are the average prices observed between November of one year and the following September.

The PLC Payment equals 85% of the Base Acres of the covered commodity times the difference between the Reference Price and the Effective Price times the Program Payment Yield for the covered commodity. It is important to highlight that payments are made on base acres, not on planted acres.

Unless farmers choose to change the Program Payment Yield (see section on Implementation Process below), they...
will keep the current payment yields at the levels used in the 2008 Farm Bill Counter-Cyclical Payments (CCP) program.

**Agricultural Risk Coverage-County (ARC-CO)**

ARC-CO offers shallow loss revenue protection at the county level. Payments are triggered when the Actual County Crop Revenue of a covered commodity is less than the ARC-CO Guarantee Revenue for that commodity. Both the guarantee and the actual revenue are computed using base acres, not planted acres; and county yields, not individual farm yields.

The ARC-CO Payment equals 85% of the base acres of the covered commodity times the lower of (a) the difference between the ARC-CO Guarantee Revenue and the Actual County Crop Revenue for the covered commodity; and (b) 10% of the Benchmark County Revenue. The ARC-CO Guarantee Revenue equals 86% of the Benchmark County Revenue.

The Benchmark County Revenue is equal to the ARC-CO Guarantee Price (Olympic average of previous 5-year MYA prices) times the ARC-CO Guarantee Yield (Olympic average of the previous 5-year county yields). The Olympic average is obtained by eliminating the highest and the lowest values from the list and computing the average over the remaining values (in this case, 3 values).

If the county yield for the covered commodity for any of the 5 most recent crop years is less than 70% of the transitional yields as determined by the Secretary of Agriculture for each crop and county, the amounts used for any of those years in the calculation of the ARC-CO Guarantee Yield shall be 70% of the transitional yield. Similarly, if the MYA price for any of the most recent 5 crop years is lower than the Reference Price for the covered commodity, the Reference Price shall be used for any of those years in the calculation of ARC-CO Guarantee Price.

The Actual County Crop Revenue for a covered commodity in a particular year equals the Actual Average County Yield times the higher of the MYA Price or the national average loan rate for a marketing assistance loan.

**Agricultural Risk Coverage-Individual (ARC-IC)**

ARC-IC offers shallow loss revenue protection at an individual farm level across all farms enrolled. Payments are made when the Actual Crop Revenue across all covered commodities on “farm” is less than the ARC-IC Revenue Guarantee across those covered commodities on the “farm.”

For ARC-IC, “farm” is defined as the sum of the producer’s interests in all ARC-IC participating farms in the state. Therefore, if a producer enrolls two or more farms with corn and soybean base acres in the state of Iowa into the ARC-IC program, then his or her revenue (actual and guarantee) is computed as a weighted average of individual revenue from corn and soybeans, with the weights being the ratio of the sum of planted acres to each crop across his or her ARC-IC farms divided by the sum of planted acres to all crops across his or her ARC-IC farms.

The ARC-IC payment equals 65% of the sum of the base acres of all covered commodities on “farm”, times the lower of (a) the difference between the ARC-IC Guarantee Revenue and the Actual Crop Revenue across all covered commodities planted on the “farm,” and (b) 10% of the Individual Benchmark Revenue for all covered commodities on the farm. The ARC-IC Guarantee Revenue equals 86% of the Individual Benchmark Revenue.

The Individual Benchmark Revenue is the weighted sum across all planted crops under ARC-IC of the Olympic average of the most recent 5-year crop revenues, with the weights being the shares of planted acres to each crop among all planted acres on the “farm.” Crop revenue for each crop for each year equals the individual yield times the MYA price. If any of those 5 individual yields is less than 70% of the transitional yield, the individual yield shall be replaced in the Olympic average formula for 70% of the transitional yield. If any of those 5 MYA Prices is lower than the reference price, then the latter price is used in place of the former.

The Actual Crop Revenue is the weighted sum of the actual revenues per crop, with the weights being the shares of planted acres to each crop among all planted acres on “farm.” Actual revenue per crop equals the actual individual yield times the highest of the MYA price or the national loan rate.

Planted acres to each crop are used in the computation of the program payment per acre to weight individual revenues from each crop across farms and crops; while total base acres across farms and crops is used in the final step to calculate the total program payment.
Timing of decisions

Participation in the new commodity programs requires farmers to make three choices: first, to choose whether to update base acres and payment yields, then to elect a program, and finally to enroll in the chosen program.

Between September 29, 2014 and February 27, 2015, land owners have a one-time opportunity to update payment yields for PLC and/or reallocate base acres based on recent production history. Since both choices are recorded in one FSA form (CCC-858), land owners must be prepared to fill out both portions of the form when they head to their local FSA office (Plastina 2014a).

Between November 17, 2014 and March 31, 2015 “current producers” will have a one-time opportunity to elect among PLC, ARC-IC and ARC-CO. That election will be binding for the life of the 2014 Farm Bill. A “current producer” is a party at risk on the date of signing the election form (cash rent owners cannot sign an election form). Failure to make an election by the deadline will result in PLC election starting in 2015 through 2018 and no payments for 2014.

The election of a program is a necessary but not sufficient condition to participate in it: each year, producers will have to enroll in the elected program to participate. The alternative is not to enroll and not to participate in PLC, ARC-IC and ARC-CO for that year. For crop years 2014 and 2015, the enrollment period to participate in FSA programs will start in mid-April 2015 and it will end sometime in the summer of 2015.

New crop insurance endorsement: SCO

The 2014 Farm Bill introduced the Supplemental Coverage Option (SCO), a new endorsement to farm-level crop insurance policies available through the Common Crop Insurance program (COMBO). SCO offers shallow loss revenue protection at a county level by covering a portion of the producer’s crop insurance deductible based on county yields or revenue (depending on the underlying COMBO policy).

Starting in 2015, producers of corn, soybeans, wheat, grain sorghum, cotton, spring barley and rice in select counties will be able to purchase SCO from crop insurance agents. SCO is administered by the Risk Management Agency (RMA), and therefore payments received under SCO do not count towards the $125,000 payment limit per person per crop year for Farm Service Agency (FSA)-administered programs.

In order to be eligible for SCO, a crop in a particular farm (1) cannot be enrolled in ARC-CO or ARC-IC; and (2) has to be insured under Yield Protection (YP), Revenue Protection (RP), Revenue Protection with Harvest Price Exclusion (RPHPE), (3) with a coverage level of up to 85% in the underlying policy.

Producers will have the option to enroll or not to enroll in SCO annually, and the choice of COMBO product and level of coverage will affect the cost of participation in SCO as well as the expected indemnities. SCO payments are triggered only by county average revenue or yield, and are not affected by whether the producer receives a payment from his or her underlying policy.

The interdependence between COMBO products and SCO increases the number and complexity of choices faced by producers in the creation of their own safety net. Therefore, land owners and operators might benefit from jointly analyzing the pros and cons of the different combinations of programs available for 2014 through 2018 using the ISU Farm Bill Analyzer (Excel file) or an equivalent decision tool (Plastina 2014b).

For crops under YP, SCO payments are triggered when the yield losses in the county exceed 14% of normal yield levels. For crops under RP or RPHPE, SCO payments are triggered when the revenue losses in the county exceed 14% of normal revenue levels. The determination of “normal” levels, as well as premiums and administrative fees for SCO will be done by the Federal Crop Insurance Corporation. The 2014 Farm Bill establishes that producers must pay administrative fees and 35% of the premium to participate in SCO. This is another substantial difference with FSA-administered plans that do not carry premiums or administrative fees for producers.

The Supplemental Protection under SCO is calculated as the Expected Crop Value times the Supplemental Coverage Range (86%-coverage level in COMBO product).

The Expected Crop Value under YP and RPHPE is calculated as insured acres times the Actual Production History (APH) times the projected price. The Projected Prices are the CME Group price averages during February of December futures contract for corn and November for soybeans.
The Expected Crop Value under RP is calculated as insured acres times the APH times the highest of the projected and the harvest price. The Harvest Prices are the averages of December for corn and November for soybeans of the CME Group futures contract prices during October.

The Supplemental Protection is the highest potential indemnity under SCO, but the actual Indemnity is adjusted by a Payment Factor based on Area Performance: Payment Factor = (86%-Area Performance) / Supplemental Coverage Range. Area Performance is calculated differently for alternative underlying policies (Table 1).

<table>
<thead>
<tr>
<th>Underlying policy</th>
<th>Formula for Area Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP</td>
<td>Actual county yield divided by “normal” county yields</td>
</tr>
<tr>
<td>RP</td>
<td>Harvest price times actual county yield divided by the product of “normal” county yields and the highest of projected and harvest prices</td>
</tr>
<tr>
<td>RPHPE</td>
<td>Harvest price times actual county yield divided by the product of “normal” county yields and the projected price</td>
</tr>
</tbody>
</table>

For example, consider an operator's corn crop has an expected value of $702.00 per acre (180 bushels at $3.9 per bushel) who buys RP with a 75% coverage level. The underlying policy covers 75% (or $526.5) of the expected crop value and leaves 25% (or $175.5) uncovered as a deductible. If the producer buys SCO, then a maximum of 11% = 86%-75% (or $77.22) of that deductible is covered by SCO. SCO begins to pay when county average revenue falls below 86% of its expected level, and the full amount of the Supplemental Protection is paid out when the county average revenue falls to 75%.

Factors affecting program election

The set of information available to producers when making the election decision consists of crop production history (planted acres and yields), base acres, crop insurance records, payment yields, and county average yields. The unknowns that affect both the likelihood of receiving payments and their magnitude in 2014 through 2018 are the trajectory of farm and county yields and national crop prices.

The optimal commodity program choice depends as much on the specific production system in each farm as on the producer's expectations about future yields and prices. Furthermore, the risk profile of producers will weigh heavily in the decision. The following three examples illustrate the impact of price expectations and producer's risk profile on the election process.

The ISU Farm Bill Analyzer (Excel file) provides a set of projections of farm and county yields based on historical and user-provided data, and three different sets of price forecasts to choose from: USDA, FAPRI, and futures-based. Additionally, the user can choose between three levels of expected price volatility (average, high, and low) that impact both the expected net indemnities from crop insurance and from the new SCO program. Expected payments are calculated over 500 draws from a Monte Carlo simulation of prices and yields for each year (Plastina 2014b).

Consider a 125 acre farm in Boone County with 55.2 corn base acres and 44.8 soybean base acres (after reallocation), and updated PLC payment yields of 147.5 bushels per acre for corn and 44.3 bushels per acre for soybeans. Alfalfa is regularly planted on the farm, but it is not a covered commodity. The yield history is reported on table 2. Every year between 2014 and 2018, the land owner plans to plant 60 acres to corn and 50 acres to soybeans and will consider buying Revenue Protection at the 85% coverage level for corn and at the 80% coverage level for soybeans.
Table 2. Actual farm yields per planted acre.

<table>
<thead>
<tr>
<th>Year</th>
<th>Corn (bu/acre)</th>
<th>Soybeans (bu/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>173.1</td>
<td>47.7</td>
</tr>
<tr>
<td>2009</td>
<td>173.9</td>
<td>50.1</td>
</tr>
<tr>
<td>2010</td>
<td>160.5</td>
<td>50.1</td>
</tr>
<tr>
<td>2011</td>
<td>165.2</td>
<td>50.4</td>
</tr>
<tr>
<td>2012</td>
<td>147.0</td>
<td>47.6</td>
</tr>
<tr>
<td>2013</td>
<td>163.3</td>
<td>45.5</td>
</tr>
</tbody>
</table>

Table 3. Projected marketing year average prices for corn and soybeans ($ per bushel)

<table>
<thead>
<tr>
<th>Year</th>
<th>USDA (Oct 10 2014)</th>
<th>Futures contracts (Oct 31 2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corn ($ per bushel)</td>
<td>Soybeans ($ per bushel)</td>
</tr>
<tr>
<td></td>
<td>Corn ($ per bushel)</td>
<td>Soybeans ($ per bushel)</td>
</tr>
<tr>
<td>2014</td>
<td>$3.40</td>
<td>$10.00</td>
</tr>
<tr>
<td>2015</td>
<td>$3.00</td>
<td>$8.85</td>
</tr>
<tr>
<td>2016</td>
<td>$3.35</td>
<td>$8.90</td>
</tr>
<tr>
<td>2017</td>
<td>$3.45</td>
<td>$9.05</td>
</tr>
<tr>
<td>2018</td>
<td>$3.60</td>
<td>$9.25</td>
</tr>
</tbody>
</table>

_Price Expectations_

If the producer's price expectations align with USDA price projections (Table 3), then the combination of programs that maximizes the net present value of expected payments is PLC and SCO for corn and ARC-CO for soybeans (figure 1). This combination of programs would result in an expected net present value of $33,535 in program payments and net indemnities from Revenue Protection and SCO.
If the producer's price expectations are more in line with the futures prices from October 31, 2014 instead, then the combination of programs that maximizes the net present value of expected payments is ARC-CO for both crops and Revenue Protection only for corn (figure 2).
Risk Profile

If the producer is concerned about his or her safety net in years of very low yields or very low prices, then his or her goal might not be to maximize expected payments over the entire range of possible revenues per year, but to maximize expected payments over the bottom 10% of possible revenues. In these cases, the producer is truly looking at the flow of payments during loss years.

If the producer expects the futures prices from October 31, 2014 to hold, then the combination of programs that maximize the net present value of expected payments in a low crop revenue scenario is PLC, Revenue Protection, and SCO for corn and ARC-CO and Revenue Protection for soybeans (figure 3).

These last two examples highlight how risk preferences can influence the farm bill program choice. Given the same expected prices and yields, producers may reach different choices. The program that offers the highest expected payment may not be the program that minimizes the largest expected loss.

Figure 3. Expected payments and net indemnities during loss years using futures prices as of Oct. 31, 2014.

References


