FARM ECONOMICS: *Facts & Opinions*
FARM BUSINESS MANAGEMENT
Department of Agricultural and Consumer Economics
University of Illinois at Urbana-Champaign

FEFO 09-04
February 27, 2009

THE ACRE PROGRAM DECISION AND SOME ILLUSTRATIVE EXAMPLES

A fundamental change in commodity title programs in the 2008 Farm Bill resulted in the creation of the new Average Crop Revenue Election Program (ACRE). ACRE is a revenue-based support program that effectively acts as a put option on state-level revenue for each program crop. Starting with the 2009 crop year, producers of program crops will have the option of electing coverage under ACRE, or defaulting to support under the existing suite of commodity programs. This choice will be made on a FSA farm basis. The decision can be deferred to future crop years, but if a farm is elected into the ACRE program, the decision is irrevocable. Thus, once elected, the farm will be covered by ACRE throughout the life of the current Farm Bill which goes through the 2012 crop year.

If elected, ACRE replaces the current price-based countercyclical program (PCCP). ACRE farms continue to be eligible for direct payments and marketing loan programs. However, direct payment rates are reduced by 20% and the loan rates, which define the marketing loan programs, are cut by 30%. Table 1 compares direct payment and loan rates for corn, soybeans, and wheat under the traditional and ACRE program options as outlined in the 2008 Farm Bill.

Table 1. Direct Payment and Loan Rates Under the Traditional and ACRE Program Options

	Traditional Option				ACRE Option	
	Direct Payment Rate	Loan Rate	PCCP Target Price	Direct Payment Rate	Loan Rate
Corn	$0.28	$1.95	$2.63	$0.224	$1.365
Soybeans	$0.44	$5.00	$6.00*	$0.352	$3.50
Wheat	$0.58	$2.94*	$4.17*	$0.464	$2.058

*Represent slight increases from current levels which won't take effect until the 2010 crop year.

Payment limits under the two program options are similar, although allocated differently across programs. Under the traditional option, the payment limit on direct payments is $40,000 per actively engaged producer. If ACRE is elected the payment limit on direct payments is reduced by 20%. The limit on countercyclical payments is set at $65,000 while the cap on ACRE program payments is $65,000 plus the 20% direct payment reduction. There is no limit on marketing loan gains or loan deficiency payments under either program option.

ACRE Program Details

The new ACRE program is based on a revenue index at the state-level. In any crop year, a revenue guarantee for each program crop is defined as 90% of the product of the 5-year Olympic[1] average state-level yield and the 2-year average of the U.S. marketing year average (MYA) price. By definition, the revenue guarantee adjusts each year with changes in market prices and yield levels. However, the adjustments to the state-level revenue guarantee are limited to 10% from the previous crop year's level. This rule sets lower and upper limits, or cups and caps, on the revenue guarantee for each crop year beginning in 2010. Actual revenue for the crop year is then equal to the product of the actual state-level yield and U.S. MYA price. State-level ACRE payments are defined when actual revenue falls below the revenue guarantee.

However, the ACRE program operates under a "double trigger" eligibility rule. Farm-level revenue losses must also be proven for a producer to be eligible for an ACRE payment. The farm-level revenue guarantee, or farm benchmark, is calculated as the product of the 5-year Olympic average of farm-level yields and the 2-year average of the U.S. MYA price. Any crop insurance premium expense paid by the producer is also included in the farm's benchmark revenue. Actual farm-level revenue is calculated as the product of actual farm yield and the U.S. MYA price for the

current year. An important implication of the double trigger rule is that not all farms may receive an ACRE payment for a crop year in which actual revenue falls below the guarantee at the state-level.

If both state- and farm-level revenue measures fall below their respective guarantees the producer is eligible to receive an ACRE payment. The payment per planted acre equals 83.3% of the product of the state revenue shortfall and a farm yield factor. The farm yield factor is equal to the ratio of the farm and state benchmark yields, and acts as a scaling factor to tailor payment levels to farm-level productivity. Additionally, ACRE payments cannot exceed 25% of the revenue guarantee for the year on a per acre basis.

$$ACRE\ Payment = minimum\ of$$

$$0.833\ X\ [State\ Revenue\ Guarantee - Actual\ State\ Revenue]\ X\ \frac{Farm\ Benchmark\ Yield}{State\ Average\ Yield}$$

$$or$$

$$0.833\ X\ [0.25\ X\ State\ Revenue\ Guarantee]\ X\ \frac{Farm\ Benchmark\ Yield}{State\ Average\ Yield}$$

ACRE Example Scenarios

The following examples illustrate the mechanics of the ACRE program and provide comparisons of payment outcomes under the traditional and ACRE options for a range of price scenarios. For the 2009 crop year the ACRE revenue guarantee will be determined by state yield levels from 2004-2007 and U.S. MYA prices for 2007 and 2008. While the historic yields are known, the 2008 MYA price will not be finalized until the marketing year ends in August 2009. For corn acres in Illinois the yield component of the guarantee will be roughly 164 bu/acre and the price component is currently projected to be around $4.05 per bushel, implying a state-level revenue guarantee of approximately $600 per acre for corn (0.90 X 164 bu/acre X $4.05/bu ≈ $600/acre). Similarly, the current projections for the revenue guarantees for soybean and wheat acres for 2009 are approximately $400 and $345 per acre, respectively.

Consider a typical central IL farm with 60% of total base acres as corn and the remaining 40% of its base enrolled as soybean acres. Table 2 summarizes the direct payment and countercyclical program base yields for a typical central IL farm. ACRE benchmark yields for the example farm were set at 175 and 50 bu/acre for corn and soybeans, respectively.

Table 2. Example Farm Program Yield Measures

	Corn Acres (60% of Base)	Soybean Acres (40% of Base)
Direct Payment Yield	125	40
Countercyclical Yield	145	45
ACRE Benchmark Yield	175	50

*Values are reported in bushels per base acre.

Table 3 provides a direct payment comparison for the example farm under the traditional and ACRE options. Election of the ACRE program would result in a direct payment reduction of $6 per base corn acre and $3 per base soybean

Table 3. Direct Payment Comparison Under Traditional and ACRE Program Options

	Corn Base	Soybean Base	Weighted Average
Traditional	$30	$15	$24
ACRE	$24	$12	$19
Difference	$6	$3	$5

*Values are reported in dollars per base acre.

acre, or an average direct payment reduction of $5 per acre for the whole farm. The tradeoff for electing ACRE is the loss of $5 per base acre each year in guaranteed direct payments for the possibility of receiving ACRE payments, or uncertain dollars contingent on actual yield and price realizations.

Table 4 reports ACRE payment outcomes for corn acres under different U.S. MYA price and farm-level yield scenarios. Two MYA price scenarios are considered - $3.50 and $2.60 per bushel. Two farm level yields are also considered – 180 and 205 bushels per acre. The state revenue guarantee is assumed to be $600 per acre, the current projection for the ACRE program for the 2009 crop year.

Table 4. Program Outcomes Under Different U.S. Price and Farm Yield Scenarios, Corn Acres

	Actual U.S. MYA Price and Farm Level Yields			
	MYA Price = $3.50		MYA Price = $2.60	
	180 bu/acre	205 bu/acre	180 bu/acre	205 bu/acre
Actual State Revenue	$595	$595	$442	$442
State-level Revenue Shortfall	$5	$5	$158	$158
Actual Farm Revenue	$630	$718	$468	$520
Farm Eligible?	Yes	No	Yes	Yes
ACRE Payment	$4.44	$0	$133.33	$133.33

*Assumes a state-level revenue guarantee of $600 per acre, a farm benchmark revenue of $711 per acre, and an actual state yield of 170 bushels per acre. All values are reported in dollars per planted acre.

For the $3.50 MYA price scenario a $5 revenue shortfall would be realized at the state level, triggering the potential for ACRE payments on enrolled IL corn acres. Eligibility for the ACRE payment would also depend on individual farm performance. If the example farm yielded 180 bushels per acre, the farm would be eligible for an ACRE payment and receive $4.44 per planted corn acre because the actual farm revenue measure of $630 (180 bu/acre X $3.50/bu) falls below the farm's benchmark revenue of $711 per acre. ACRE payment calculations for this example are as follows:

$$ACRE\ Payment = 0.833\ X\ [\$600 - \$595]\ X\ \frac{175}{164} = \$4.44$$

If the actual corn yield was 205 bushels per acre, the farm would not be eligible for the ACRE payment because actual farm revenue of $718 (205 bu/acre X $3.50/bu) exceeds the farm's $711 benchmark revenue level. In this higher yield case the farm would have been eligible for the ACRE payment if the producer had purchased crop insurance coverage at a premium level of at least $8 per acre (farm benchmark = $711 + $8 = $719 > $718 = actual farm revenue).

For the MYA price scenario of $2.60 per bushel, actual state-level revenue would be $442 per acre ($175 bu/acre X $2.60/bu) and the revenue shortfall at the state-level would be $158 per acre ($600-$442). In this example the $150 cap (0.25 X $600) on the size of the ACRE payment would be exceeded, and ACRE payments to the farm would be calculated based on the cap level. The farm would be eligible for an ACRE payment under both farm-level yield scenarios and would receive $133.33 per planted corn acre in both cases. ACRE payment calculations for these examples are as follows:

$$ACRE\ Payment = 0.833\ X\ \$150\ X\ \frac{175}{164} = \$133.33$$

Another feature to note is that the MYA price scenarios considered here would not trigger countercyclical payments as corn prices remain above $2.35 per bushel. Given current price levels and the design of the ACRE revenue guarantee, significantly large ACRE payments could be triggered due to negative price movements that would not trigger countercyclical payments.

ACRE scenarios for soybean acres can also be examined in a similar fashion. Table 5 reports ACRE outcomes for MYA soybean price levels of $8.25 and $6.00 per bushel, and farm-level yields of 55 and 60 bushels per acre. For the $8.25/bu price scenario the farm would be eligible for an ACRE payment of $3.31 per planted acre if the farm yielded 55 bushels per acre. If the farm yielded 60 bushels per acre the farm would not be eligible for the ACRE payment unless insurance coverage costing more than $20 per acre was purchased. For the $6.00/bu price scenario the ACRE payment cap of 25% of the revenue guarantee is met, and the farm would be eligible for a $88.56 per planted acre payment. Similar to the corn examples, both price levels outlined here would not trigger countercyclical payments.

Table 5. ACRE Program Outcomes Under Different Price and Farm Yield Scenarios, Soybean Acres

	Actual U.S. MYA Price and Farm Level Yields			
	MYA Price = $8.25		MYA Price = $6.00	
	55 bu/acre	60 bu/acre	55 bu/acre	60 bu/acre
Actual State Revenue	$396	$396	$288	$288
State-level Revenue Shortfall	$4	$4	$112	$112
Actual Farm Revenue	$454	$495	$330	$360
Farm Eligible?	Yes	No	Yes	Yes
ACRE Payment	$3.31	$0	$88.56	$88.56

*Assumes a state-level revenue guarantee of $400 per acre, a farm benchmark revenue of $473 per acre, and an actual state yield of 48 bushels per acre. All values are reported in dollars per planted acre.

Historical Analysis

Potential performance of the ACRE program was assessed in an historical sense using U.S. price, IL state yield, and Farm Business and Farm Management (FBFM) data for IL farms over the past 31 years. ACRE payments on corn acres in IL would have been triggered in 10 out of the past 31 years. ACRE payments on corn acres would have averaged $17 per planted acre across all years, and averaged $53 per acre over the 10 years in which payments occurred. Payments on IL soybean acres would have only been triggered in 5 of the 31 years examined, with an average payment of $6 per planted acre across all years. In the 5 years in which a payment was triggered on soybean acres, the average payment size was $37 per planted acre.

For both corn and soybean acres, the average payment across all years is greater than the average reduction in direct payments from enrolling in the ACRE program. However, the farm trigger rule must also be considered – the triggering of ACRE payments at the state-level does not guarantee farm eligibility. On corn acres, between 78% and 86% of FBFM farms would have met the farm-level trigger criteria for ACRE payment eligibility in years in which a payment was triggered at the state level. On soybean acres between 81% and 93% of FBFM farms would have met the farm-trigger criteria in ACRE payment years. Adding a $20 crop insurance payment increases the percentage of farms meeting the criteria by 5-10% for both corn and soybean acreage.

While historical conditions are not necessarily representative of future conditions, this analysis does provide a gauge for the expected frequency and size of ACRE payments. Moreover, ACRE payments may be likely to be triggered more often than indicated by the historical data due to higher expected price volatility.

Decision Considerations

The decision to elect ACRE program coverage or to stick with existing programs hinges on a number of factors. The ACRE program is based on a state-level revenue index that will adjust over time whereas the countercyclical program is based on fixed target price levels. If state revenue levels remain fairly stable or increase through 2012 the likelihood of ACRE payments being triggered is relatively low and total payments from the traditional programs will be larger because of higher direct payments. If price levels decline but stay above target price levels the ACRE program may generate large payments while no support would come from the countercyclical program. If prices fall below target price or loan rate levels the ACRE program would likely hit payment caps. In this situation countercyclical payments would also be triggered, and any marketing loan gains or loan deficiency payments that would be generated would be larger under the traditional option because of the 30% reduction in loan rates under the ACRE program. Therefore producers need to assess their expectations with respect to future price levels.

In general the traditional program option will result in $5 higher direct payments, but provide little support for price declines in the range of current levels and target prices. The 30% reduction in loan rates under ACRE should also not be overlooked. While current price levels make the possibility of loan deficiency payments seem highly unlikely, producers who use marketing loans to cover production and operating costs will be more directly affected by this rule.

Other issues that need to be considered include the relationship between farm and state yields and the availability of historical records and documentation requirements for proving farm-level yields. If farm yields tend to closely follow the IL average, the farm trigger criteria will have a greater chance of being met in years when ACRE payments are triggered. The timing of payments is yet another issue that should be considered. Because of the definition of the price component used by the ACRE program, the revenue guarantee will not be completely established prior to expected sign-up periods in the spring and the actual revenue measure used to determine ACRE payments in a given year will not be finalized until just before harvest of the following crop year.

Base acre allocations and future plans for planted acreage should also be examined. The actual reduction in direct payments will be larger for farms with higher proportions of corn base acres relative to soybeans or wheat. Because payments are based on planted acreage, support offered by the ACRE program will more accurately reflect current practices if they differ considerably from base acre allocations.

Summary

Introduction of the new ACRE program gives producers the option of electing commodity program support based on a state-level revenue index that adjust to changes in the market. ACRE is an alternative to the fixed price-based support offered by the existing countercyclical program. Because the revenue guarantee for the ACRE program is based on recent historical price and yield levels, it has the potential to generate potentially large payments at price levels well above those which would trigger payments from the countercyclical program. However, producers must give up a portion of their direct payments to elect the ACRE option, meaning they must forego guaranteed dollars to be eligible for an uncertain payment from the ACRE program.

Moreover, the ACRE program will require the producer to prove yields for the farm both on a historical basis and for every crop year moving forward. The specific rules and documentation requirements for proving farm-level yields for the ACRE program have not yet been established, so producers should carefully monitor these rules as they become finalized and announced over the coming months. Producers also need to consider their expectations for future crop prices as well as aspects specific to their operation when making the decision to elect the ACRE program or defaulting to existing commodity programs.

An ACRE comparison tool was developed by researchers at the University of Illinois through support from the National Corn Growers Association. It is designed to help farmers in selecting between the ACRE and traditional program options by allowing them to compare outcomes under different price and yield scenarios. The tool can be downloaded from the farmdoc website at: http://www.farmdoc.uiuc.edu/fasttools/index.asp

Submitted by: Nicholas D. Paulson, Department of Agricultural and Consumer Economics, University of Illinois.

[1] An Olympic average is calculated by dropping the minimum and maximum observations and taking the simple average of the remaining values. In the case of a 5-year Olympic yield average, the previous 5 years of yields would be used. The highest and lowest yields would be dropped, and the average would be taken for the remaining 3 years of yield data.