

The Enrollment Decision in 2009 and Beyond

With the introduction of the ACRE program, farmers must now choose between continued enrollment in the 2002 Farm Act farm income-support programs or enrolling in the ACRE program. Either choice has its own set of benefits and tradeoffs. As the previous scenarios and discussion illustrate, the decision to elect to participate in ACRE depends on a wide range of factors, including market expectations and producer risk preferences, and varies with commodity mix in production.

The ACRE program is revenue-based—payments are equally based on prices and yields. However, given recent historical price trends, the price component of the program will likely have a large influence on enrollment decisions. Prices for most program commodities were at or near historical highs in 2008 and 2009 (see fig. 7, p. 8). While prices are projected to decline somewhat for the next several years, they are projected to remain at historically high levels. The ACRE guarantee price for the 2009/10 crop will be calculated using the 2007/08 and 2008/09 prices.

Table 1 presents a comparison of the ACRE guarantee price with projected prices for 2009-10, as well as the marketing loan rate and effective counter-cyclical target price. The price projections indicate that prices for all of the commodities will be lower than the average for the 2 prior years. If we assume that 2009 yields per planted acre are similar to the 2004-08 Olympic (5-year) average, the price relationships indicate that many producers will strongly consider election of ACRE. Price projections for corn, grain sorghum, barley, oats, and wheat are over 10 percent lower than the ACRE price guarantee, creating a high probability of ACRE payments in 2009/10. Price projections for soybeans and upland cotton are almost 10 percent lower than the 2-year average. Upland cotton producers will find ACRE less attractive due to the low price projection for upland cotton (\$0.54/lb.), which is near the marketing loan rate and below the effective counter-cyclical target price. Upland cotton producers will likely receive higher payments from 2002 Farm Act programs.

The Farm-Level Decision

There is a high probability of ACRE payments in 2009/10 based on the USDA price projections (Cooper, 2009b). We illustrate some factors that will influence participation by producers of various commodities in four regions:

1. A Corn Belt corn/soybean farm (Iowa)
2. A Northern Plains wheat farm (South Dakota)
3. A Southeastern cotton/corn farm (Georgia)
4. A Delta rice/soybean farm (Mississippi)

For these examples, we base our typical farms on representative-crop acreage and base-acreage data for the selected regions, using the Agricultural Resource Management Survey, conducted by the Economic Research Service and the National Agricultural Statistics Service, USDA. To estimate ACRE payments, we assume that individual Farm ACRE Benchmark Revenue per planted acre is equal to the State ACRE Guarantee per planted acre for the respective States.

The case for a typical Iowa farm is illustrated in table 4. We assume that the farm has 585 base acres, but plants 710 acres total. If the farmer elects to participate in ACRE, he or she must forgo \$2,478 in direct payments each year. A farmer electing ACRE in 2009 would need \$9,900 of ACRE payments over 4 years to offset the forgone direct payments.

We assume that the farm and State face across-the-board crop revenue shortfalls ranging from 0 to 20 percent for each commodity and have the same level of revenue (i.e., the same yield and price). With a 5-percent revenue reduction, the farm will receive \$755 (\$10.07/acre on planted wheat acres) in wheat ACRE payments.

If revenue declines by 10 percent, ACRE payments would also be available for planted corn and soybean acres. However, ACRE payment acres cannot exceed the farm's historical base acres. When planted acres equal historical base acres, the ACRE payment acres equal 83.3 percent of the planted acres (85 percent in 2012). In this example, base acres are less than 83.3 percent of the planted acres (710 planted acres x 0.833 = 591.4 > 585 base acres).¹⁷

Based on these considerations, the Iowa producer would likely choose to designate all planted soybean acres as potential payment acres and designate the

¹⁷Farmers would need to designate acreage for ACRE payments by September 30 of each year of participation.

Table 4

ACRE 2009/10 payouts for a typical Iowa corn/soybean farm

	Corn	Soybeans	Wheat	2009 payments ¹
Acres planted	350	285	75	
2009 expected yield per planted acre	173	51	44	
2009 price expectation	\$3.50	\$9.40	\$5.20	
Olympic average yield per planted acre	166	50	41	
ACRE 2-year price guarantee	\$4.13	\$10.05	\$6.63	
ACRE revenue guarantee (per acre)	\$616	\$455	\$242	
ACRE revenue guarantee (total farm)	\$194,127	\$129,665	\$18,125	
Expected market revenue (per acre)	\$606	\$479	\$229	
Expected market revenue:				
0-percent revenue shortfall	\$211,925	\$136,629	\$18,125	\$0
ACRE payment per planted acre	\$0.00	\$0.00	\$0.00	
5-percent revenue shortfall	\$201,329	\$129,798	\$17,219	\$755
ACRE payment per planted acre	\$0.00	\$0.00	\$10.07	
10-percent revenue shortfall	\$190,733	\$122,966	\$16,312	\$9,865
ACRE payment per planted acre	\$8.08	\$19.58	\$20.13	
15-percent revenue shortfall	\$180,136	\$116,135	\$15,406	\$24,995
ACRE payment per planted acre	\$33.30	\$39.55	\$30.20	
20-percent revenue shortfall	\$169,540	\$109,303	\$14,500	\$40,202
ACRE payment per planted acre	\$58.52	\$59.51	\$40.26	
Base acres	335	240	10	585
Direct and counter-cyclical payment yield	116	36	36	
Traditional program benefits:				
Direct payments	\$9,064	\$3,167	\$158	\$12,388
Expected counter-cyclical payments	\$0	\$0	\$0	\$0
Expected marketing loan benefits	\$0	\$0	\$0	\$0

Note: ACRE payments can only be received on 585 base acres.

¹Farm would also be eligible to receive 80 percent of direct payments with ACRE.

Source: USDA, Economic Research Service calculations based on Agricultural Resource Management Survey (ARMS) data. ARMS is produced by USDA's National Agricultural Statistics Service and ERS.

remaining base acres as potential corn or wheat payment acres. In this example, the farmer has 285 planted acres of soybeans and will receive ACRE payments on 237.4 acres (285 planted acres x 0.833) of soybeans. The 237.4 payment acres are subtracted from the total base acres within the farm unit to determine remaining corn or wheat ACRE payment acres (485 base acres – 237.4 soybean payment acres = 247.6 acres remaining). At lower levels of revenue reductions (5 percent), the producer would maximize payments by giving up payments on 6.4 acres of corn plantings. If a 10-percent revenue shortfall occurred, the producer would receive ACRE payments of \$9,865, offsetting almost the entire 4 years of forgone direct payments.

If the revenue shortfall increases to 15 percent, the producer would maximize payments by forgoing payments on wheat plantings, since ACRE payments per planted acre would be larger for corn.

Our typical wheat farm can expect ACRE payments with average yields (no reduction in expected revenue) in 2009 (table 5). While wheat, corn, and sorghum prices are projected to be relatively high in 2009/10, they are more than 10 percent lower than the 2007/08-2008/09 average. This producer could expect ACRE payments with average yields. Expected ACRE payments would offset 4 years of forgone direct payments with no reduction in expected revenue in 1 of 4 years. ACRE payments per acre of wheat and

Table 5

ACRE payouts for a typical South Dakota wheat farm

	Corn	Soybeans	Wheat	Sorghum	Barley	2009 payments ¹
Acres planted	22	15	678	69	18	
2009 expected yield per planted acre	113	36	42	29	28	
2009 price expectation	\$3.50	\$9.40	\$5.20	\$3.00	\$2.80	
Olympic average yield per planted acre	110.2	34	40.5	29	28	
ACRE 2-year price guarantee	\$4.13	\$10.05	\$6.63	\$3.64	\$4.09	
ACRE revenue guarantee (per acre)	\$409	\$308	\$242	\$95	\$103	
ACRE revenue guarantee (total farm)	\$9,001	\$4,613	\$163,848	\$6,555	\$1,855	
Expected market revenue (per acre)	\$396	\$338	\$218	\$87	\$78	
Expected market revenue:						
0-percent revenue shortfall	\$8,701	\$5,076	\$148,075	\$6,003	\$1,411	\$14,218
ACRE payment per planted acre	\$11.34	\$0.00	\$19.38	\$6.67	\$20.55	
5-percent revenue shortfall	\$8,266	\$4,822	\$140,671	\$5,703	\$1,341	\$21,057
ACRE payment per planted acre	\$27.82	\$0.00	\$28.47	\$10.29	\$23.81	
10-percent revenue shortfall	\$7,831	\$4,568	\$133,268	\$5,403	\$1,270	\$27,932
ACRE payment per planted acre	\$44.29	\$2.47	\$37.57	\$13.91	\$27.08	
15-percent revenue shortfall	\$7,396	\$4,315	\$125,864	\$5,103	\$1,200	\$34,982
ACRE payment per planted acre	\$60.76	\$16.57	\$46.67	\$17.54	\$30.34	
20-percent revenue shortfall	\$6,961	\$4,061	\$118,460	\$4,802	\$1,129	\$42,032
ACRE payment per planted acre	\$77.23	\$30.66	\$55.76	\$21.16	\$33.61	
Base acres	22	29	628	65	60	804
Direct and counter-cyclical payment yield	63	28.6	24.4	42.2	32.7	
Traditional program benefits:						
Direct payments	\$323	\$304	\$10,467	\$800	\$392	\$12,286
Expected counter-cyclical payments	\$0	\$0	\$0	\$0	\$0	\$0
Expected marketing loan benefits	\$0	\$0	\$0	\$0	\$0	\$0

¹Farm would also be eligible to receive 80 percent of direct payments with ACRE.

Source: USDA, Economic Research Service calculations based on Agricultural Resource Management Survey (ARMS) data. ARMS is produced by USDA's National Agricultural Statistics Service and ERS.

feed barley planted are greater than for the other commodities until revenue losses approach 10 percent. At 10-percent revenue losses for each planted commodity, corn ACRE payments per acre are higher.

Our third farm is a Southeastern cotton/corn farm (table 6). Almost 85 percent of this farm's base acres are cotton base. The farm has shifted the majority of its acreage to corn in recent years. With cotton prices projected to be \$0.54 per pound, which is about the average for the 2 prior years, the farmer can expect to receive ACRE payments with a 15-percent revenue shortfall. However, cotton base has a high value per acre, given direct payment rates and potential counter-cyclical payments. A 1-year decline in cotton revenue of almost 15 percent would be required to offset 4 years of forgone direct payments for this farm. The potential counter-cyclical payment loss for cotton base and cotton marketing-loan benefits make it unlikely that this farm would elect to participate in the ACRE program. Electing to enroll cotton acres in the ACRE program would require giving up potential counter-cyclical payments of \$46,688 per year. Thus, even though this farm could likely receive ACRE payments for corn on over half of its planted acreage, the ACRE payments are not likely to offset forgone cotton direct and counter-cyclical payments. This example points out that farms expecting to receive counter-cyclical payments or marketing-loan benefits during 2009-2012 (upland cotton and peanuts) are less likely to find ACRE an attractive option.¹⁸

¹⁸Each producer's mix of base acres and program yields, coupled with expectations of ACRE payments, will likely influence his or her ultimate decision.

Table 6

ACRE payouts for a typical Georgia cotton/corn farm

	Corn	Soybeans	Wheat	Cotton	2009 payments ¹
Acres planted	490	25	13	380	
2009 expected yield per planted acre	111	29	31	812	
2009 price expectation	\$3.50	\$9.40	\$5.20	\$0.54	
Olympic average yield per planted acre	108.9	27.7	25.8	802	
ACRE 2-year price guarantee	\$4.13	\$10.05	\$6.63	\$0.54	
ACRE revenue guarantee (per acre)	\$404	\$251	\$154	\$391	
ACRE revenue guarantee (total farm)	\$198,103	\$6,264	\$2,001	\$148,662	
Expected market revenue (per acre)	\$389	\$273	\$161	\$438	
Expected market revenue:					
0-percent revenue shortfall	\$190,365	\$6,815	\$2,096	\$166,622	\$6,446
ACRE payment per planted acre	\$13.15	\$0.00	\$0.00	\$0.00	
5-percent revenue shortfall	\$180,847	\$6,474	\$1,991	\$158,291	\$14,383
ACRE payment per planted acre	\$29.34	\$0.00	\$0.67	\$0.00	
10-percent revenue shortfall	\$171,329	\$6,134	\$1,886	\$149,960	\$22,507
ACRE payment per planted acre	\$45.52	\$4.34	\$7.39	\$0.00	
15-percent revenue shortfall	\$161,810	\$5,793	\$1,781	\$141,629	\$36,686
ACRE payment per planted acre	\$61.70	\$15.69	\$14.10	\$15.42	
20-percent revenue shortfall	\$152,292	\$5,452	\$1,676	\$133,298	\$51,905
ACRE payment per planted acre	\$77.88	\$27.04	\$20.82	\$33.68	
Base acres	0	0	138	770	908
Direct and counter-cyclical payment yield	62.5	15	35.2	688	
Traditional program benefits:					
Direct payments	\$0	\$0	\$2,104	\$29,434	\$31,538
Expected counter-cyclical payments	\$0	\$0	\$0	\$46,688	\$46,688
Expected marketing loan benefits	\$0	\$0	\$0	\$0	\$0

¹Farm would also be eligible to receive 80 percent of direct payments with ACRE.

Source: USDA, Economic Research Service calculations based on Agricultural Resource Management Survey (ARMS) data. ARMS is produced by USDA's National Agricultural Statistics Service and ERS.

Our fourth farm (table 7) is a rice/soybean farm in the Delta Region (Mississippi). Rice comprises about two-thirds of the farm's base with the remainder as soybean and wheat base. Potential ACRE payments will need to be high for this farm to offset the forgone direct payments. Rice base acres have the highest direct payments per base acre (Young et al.). ACRE payments would need to exceed \$44,000 to offset the forgone direct payments.¹⁹ However, as with other commodities, long-grain rice prices were high in 2007 and 2008, which resulted in a high ACRE guarantee price. Long-grain rice prices in 2009 are projected by USDA to be around 8 percent lower than the ACRE guarantee price. To offset total forgone direct payments over 4 years, this farm would need at least 1 year when some combination of commodity revenue is over 12 percent lower than expected revenue in 2009.

Our wheat farm could expect ACRE payments to offset forgone direct payments over the 2009-12 crop years with no decline in expected revenue this year, whereas the corn/soybean and rice farms would require 1-year declines of 10 and 15 percent, respectively. ACRE payments (primarily from corn) for our cotton farm would likely offset forgone direct payments with a 10-percent decline in revenue in any one year, but these producers would find ACRE less attractive (depending on the share of cotton base acres on the

¹⁹This farm would have direct payments and potential ACRE payments that would exceed allowable payment limits if only one individual operator is involved with the farm operation. If multiple operators are involved in the farm operation, payment limits will be less of an issue.

Table 7

ACRE 2009/10 payouts for a typical Mississippi rice/soybean farm

	Rice	Soybeans	Wheat	2009 payments ¹
Acres planted	578	303	70	
2009 expected yield per planted acre	71	39	52	
2009 price expectation	\$12.50	\$9.40	\$5.20	
Olympic average yield per planted acre	69	37	49	
ACRE 2-year price guarantee	\$13.70	\$10.05	\$6.63	
ACRE revenue guarantee (per acre)	\$854	\$338	\$292	
ACRE revenue guarantee (total farm)	\$493,883	\$102,500	\$20,467	
Expected market revenue (per acre)	\$888	\$367	\$270	
Expected market revenue:				
0-percent revenue shortfall	\$512,975	\$111,080	\$18,928	\$1,282
ACRE payment per planted acre	\$0.00	\$0.00	\$18.31	
5-percent revenue shortfall	\$487,326	\$105,526	\$17,982	\$7,532
ACRE payment per planted acre	\$9.45	\$0.00	\$29.57	
10-percent revenue shortfall	\$461,678	\$99,972	\$17,035	\$31,792
ACRE payment per planted acre	\$46.41	\$6.95	\$40.84	
15-percent revenue shortfall	\$436,029	\$94,418	\$16,089	\$58,572
ACRE payment per planted acre	\$83.38	\$22.22	\$52.10	
20-percent revenue shortfall	\$410,380	\$88,864	\$15,142	\$85,352
ACRE payment per planted acre	\$120.34	\$37.49	\$63.36	
Base acres	627	208	94	930
Direct and counter-cyclical payment yield	42	20	34	
Traditional program benefits:				
Direct payments	\$51,385	\$1,517	\$1,403	\$54,304
Expected counter-cyclical payments	\$0	\$0	\$0	\$0
Expected marketing loan benefits	\$0	\$0	\$0	\$0

¹Farm would also be eligible to receive 80 percent of direct payments with ACRE.

Source: USDA, Economic Research Service calculations based on Agricultural Resource Management Survey (ARMS) data. ARMS is produced by USDA's National Agricultural Statistics Service and ERS.

farm) due to the significant counter-cyclical payments and marketing-loan benefits that they would forgo.

A less quantifiable feature of ACRE is the potential for stabilizing effects on farm revenue even at higher market prices. Producers who value the revenue-stabilizing features of ACRE will likely elect ACRE even if it is not clear that expected payments would offset potential losses in direct payments. Given the high probability of State-level ACRE payments being triggered, these farmers are likely to elect ACRE. Zulauf (2009) estimates that, when State-level revenue declines by 10 percent or more, a farm-level trigger will be met on more than 80 percent of farms in Illinois.

Based on our four typical farms, expected revenue decisions, and using the framework adopted here, it is likely that many farmers will view ACRE as an attractive alternative to 2002 Farm Act programs. High market prices in 2007 and 2008 resulted in relatively high ACRE price guarantees used to calculate ACRE payouts. Many corn, wheat, and soybean producers can expect ACRE to offset most, if not all, of the forgone 20 percent of direct payments (Cooper, 2009b). In addition, it is unlikely that counter-cyclical payments or marketing-loan benefits will be triggered for these commodities during 2009-12. Even if payments under the 2002 Farm Act price-based programs are triggered, the price declines would likely result in substantial ACRE payments. If we assume that prices decline sufficiently to trigger the maximum reductions in the ACRE guarantee (10 percent) every year until 2012, the ACRE guarantee prices would remain well above effective target price levels for corn, soybeans, wheat, and rice. However, for farms that expect to receive counter-cyclical payments and marketing-loan benefits in 2009 (upland cotton and peanut producers), ACRE payments are unlikely to offset forgone payments for these programs.

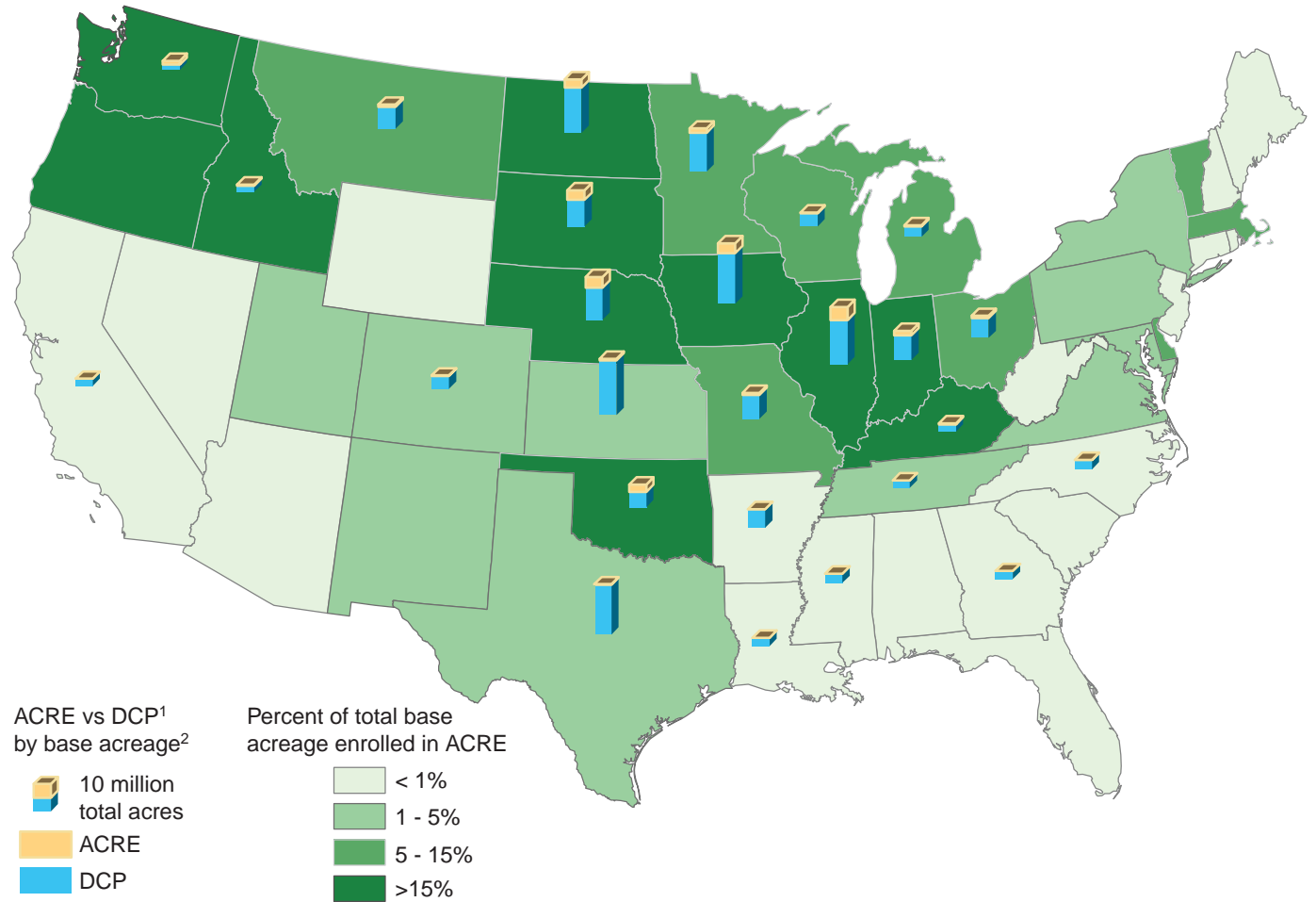
2009 Average Crop Revenue Election Program Enrollment

Producers had until August 14, 2009, to elect to participate in ACRE for 2009 crops. USDA released initial ACRE enrollment data in October 2009 (USDA, FSA, 2009). These data indicate that 128,620 farms (or 7.7 percent of FSA farms with base acreage enrolled in either the direct and counter-cyclical payments program or the ACRE program) elected to participate in ACRE in 2009. Farms electing ACRE are larger than average and represent 32.5 million base acres, or 12.8 percent of total enrolled base acreage. Enrollment is concentrated in regions that typically grow wheat, corn, and soybeans (fig. 11). On farms that elected to participate in ACRE, 40 percent of their base acres are corn, 23 percent are soybeans, and 28 percent are wheat.

The highest shares of base acres enrolled are in the wheat-producing States of Washington (43 percent) and Oklahoma (33 percent). Lower wheat prices and below-average yields in 2009 will trigger high ACRE payments for wheat in those States. (ACRE payments in those two States are projected to be capped at 25 percent of the State ACRE Guarantee.) Farm enrollment is much lower in regions where upland cotton, rice, and peanuts are grown, due to relatively high direct payments per base acre and greater likelihood of counter-cyclical payments and marketing loan benefits. As a result, almost three-fourths of the upland cotton base acres and two-thirds of the rice base acres on farms

Figure 11

ACRE participation begins, 2009-10



¹DCP = direct and counter-cyclical payments.

²Excludes States with less than 2 million base acres.

Source: USDA, Economic Research Service calculations based on data from USDA, Farm Service Agency, and USDA, National Agricultural Statistics Service.

that elected ACRE are located in Oklahoma where wheat plantings predominated. Farmers in Oklahoma who elected ACRE planted only 2,300 acres of upland cotton in 2009 even though there are 19,600 upland cotton base acres on farms that elected to participate in ACRE in Oklahoma. The strong likelihood of wheat ACRE payments for crop year 2009 encouraged some farmers to forgo 20 percent of their direct payments and all of their counter-cyclical payments for upland cotton and rice in return for ACRE payments.

Crop plantings on enrolled acreage are predominantly corn, soybeans, and wheat, which is consistent with ACRE payment and tradeoff expectations (fig. 12).²⁰ Barley and sunflowers are the next largest plantings on ACRE farms. The majority of corn plantings (65 percent) and soybean plantings (69 percent) that were on farms enrolled in ACRE are in Illinois, Iowa, Nebraska, South Dakota, and North Dakota. Plantings of wheat enrolled in ACRE are concentrated in Oklahoma, Washington, South Dakota, Montana, and North Dakota, accounting for 74 percent, with the largest being Oklahoma (32 percent).

²⁰Crop plantings are defined as planted and considered planted for payment purposes and reflected in the data compiled by FSA.

We estimate the maximum potential payouts for ACRE to provide a perspective on program costs. In order to approximate potential maximum ACRE payments, we combine State-level enrollment data with August 2009 National Agricultural Statistics Service estimates of State-level yields and USDA's August 2009 projections of national prices for 2009 corn, soybeans, and wheat. For simplicity we assume that:

- all regions experience identical percentage revenue reductions
- when a State-level trigger is met, all farm-level plantings in the State are triggered
- no adjustment is made for farms that planted more land than they have base
- no adjustment in payout is made to reflect payment differentials in States with irrigated and nonirrigated payments
- payment rates are not capped at 25 percent of the program guarantee
- most importantly, payout is not reduced to reflect the 20-percent reduction in direct payments.

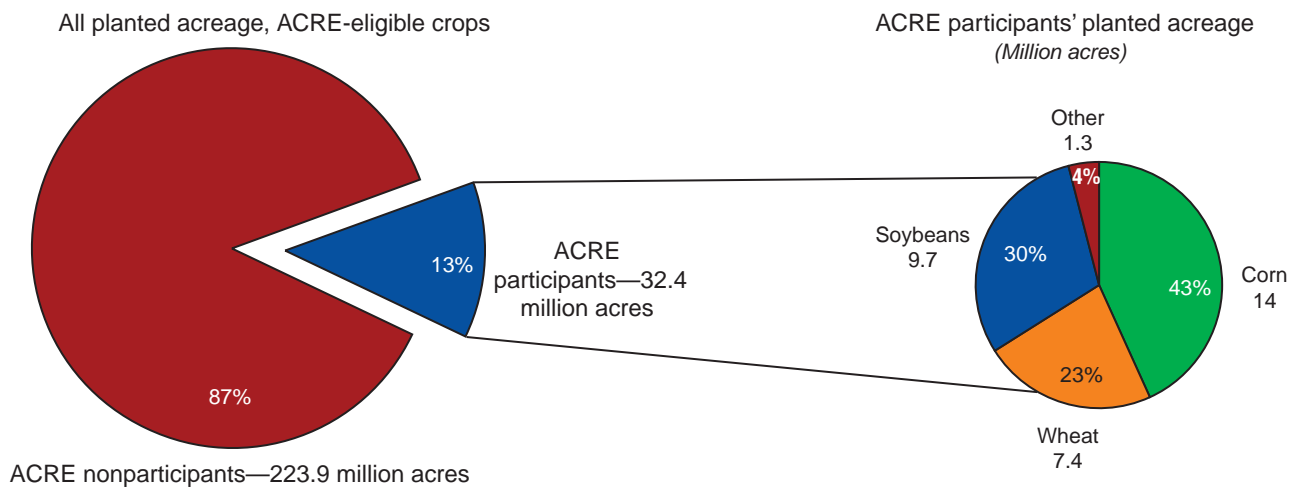
With this set of simplifying and conservative assumptions, we are overestimating likely ACRE payments. Under these assumptions, ACRE payments would be about \$440 million (table 8). Wheat is estimated to receive almost 70 percent of the total payments. However, for scenarios with further revenue reductions (through either lower prices or yields than currently forecast), corn payments would increase significantly.

Overall, actual enrollment is somewhat lower than might have been expected based on the preceding analysis of revenue-based benefits associated with ACRE participation (pp. 22-24). However, as noted previously there are a number of factors that could have limited farmer participation, including:

- ACRE is a new and complicated program. Some producers may lack a full understanding of the program details needed to assess the variables

Figure 12

Majority of crop plantings remain outside of ACRE program, 2009-10



Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency and USDA, National Agricultural Statistics Service.

that cause both State- and farm-level triggers for a farm to be eligible for a payment (see box, “ACRE Definitions,” p. 29).

- It takes time to learn how the new ACRE program will affect individual farm operations relative to State-level triggers. Many farmers are not accustomed to thinking about how their revenue per planted acre compares to State-level revenue per planted acre. They are more familiar with actual revenue and national-level prices and harvested yields.
- All landowners and operators must agree to participate. If one landowner or operator associated with a farm operation was unwilling to elect ACRE, the farm was not eligible.
- Detailed records are needed to verify production of all ACRE-eligible crops on the farm for the previous 5 years or an ACRE county yield may be used. The ACRE county yield is 95 percent of the county average yield, which may have been significantly lower than the average yield for the farm.
- Electing to participate in ACRE is an irreversible decision. Once a farm is enrolled in ACRE, it must remain in the program through 2012.
- ACRE may be attractive for some crops, but not for all crops (see discussion of a representative Southeastern cotton/corn farm, table 6, p. 20).
- Direct payments on ACRE farms are reduced 20 percent and the marketing assistance loan rates for crops produced on ACRE farms are reduced 30 percent. They are no longer eligible for counter-cyclical payments, a fact that likely limited participation by upland cotton producers.
- ACRE payments are not paid until the end of the marketing year. This timing of the receipt of payments could affect cash flow and producers’ ability to pay bills in the short run.
- Producers may not have valued the risk management benefits of ACRE highly.
- Finally, producers who have not yet enrolled in ACRE will have an option to elect ACRE in a subsequent year. Some may have decided to see how the program performs this year before committing.

Table 8
Aggregate costs for ACRE program for three crops, 2009¹

	Base case	Revenue reductions from base case	
		5-percent reduction	10-percent reduction
<i>Million dollars</i>			
Corn	67.0	239.1	530.9
Soybeans	41.3	113.5	217.5
Wheat	331.3	389.1	451.1
Total	439.6	741.7	1,199.5

¹Assumes planted acreage enrolled in ACRE and that all regions experience identical percentage-yield reductions.

Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency, and USDA, National Agricultural Statistics Service.