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Factors influencing the ACRE decision: Characteristics of enrolled and non-enrolled farms, with analysis of which factors may affect the likelihood of participation in ACRE

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Abstract

The 2008 Farm Act introduced a wholly new type of commodity program intended to protect producers against price and yield variability through a market-oriented revenue guarantee. Expectations were high in 2009 that many producers would choose the new Alternative Crop Revenue Election (ACRE) program, but that did not happen. We analyze this unexpected outcome by using newly available farm-level administrative data to examine a range of characteristics of individual farms and multi-farm operations that enrolled and did not enroll in ACRE. We both confirm some previous survey and county-level findings and identify some additional characteristics associated with the decision. Using a logit model, we examine the probability that non-enrollment might be linked to the number of stakeholders on a farm, since enrollment required unanimous agreement. Unexpectedly, we find that the number of signatories on a base contract did not seem to affect the ACRE decision; if anything, there was a very slight probability that increasing the number of signatories might positively affect the ACRE decision. We also find that on multi-farm operations with some ACRE enrollment, those farms not enrolled in ACRE are distinctly different from the ACRE-enrolled farms and average farms in their regions, a finding we believe warrants additional investigation.

Keywords: commodity policy, Direct and Countercyclical Program (DCP), Average Crop Revenue Election (ACRE) program, Farm Services Administration (FSA), regional farm program participation

Factors influencing the ACRE decision: Characteristics of enrolled and non-enrolled farms, with analysis of which factors may affect the likelihood of participation in ACRE

Introduction

The 2008 Farm Act introduced a wholly new type of commodity program intended to protect producers against price and yield variability through a market-oriented revenue guarantee. High crop prices had reduced support for producers of a number of major commodities in the years preceding the Farm Act's passage, since traditional programs linked supports to historical payment rates and target prices set at a time when prices were much lower. A program linked to more recent prices, and to current rather than historical yields, seemed more likely to protect producers from large and rapid price drops that still might remain above the loss triggers for traditional programs.

Expectations were high in 2009 that many producers would choose the new program. But despite expected financial and risk management benefits, enrollment in the ACRE program has been low. Only 8% of eligible farms accounting for 13% of eligible acres enrolled in 2009, the first year of the program.

The ACRE program was designed with a double trigger system, such that when the actual revenue for a covered commodity was below a State's benchmark guarantee and the actual revenue for that commodity on a participating farm in the State fell below the farm's benchmark revenue,¹ then the producer would receive a payment based on the difference between the State

¹ The State benchmark guarantee is 90% of the product of the 5-year Olympic average yield per planted acre for a covered commodity and the 2-year national average price for that commodity. State actual revenue equals the product of the State yield per planted acre for the current year and the greater of the 12-month national average price or the reduced ACRE loan rate (30% less than the statutory loan rate) for the covered commodity. The farm

revenue guarantee and the actual State revenue, up to 25% of the guarantee level, proportionate to the farm's average yields compared to the State average. The State benchmark guarantee cannot rise or fall more than 10% from year to year, reducing potential volatility from the market orientation of the price portion of the guarantee. In return for the revenue guarantee, producers gave up their eligibility for Countercyclical Payments, accepted 20% lower Direct Payments, and 30% lower marketing assistance loan rates. Producers had to enroll all of a farm's base acres (program acres as determined for the Direct and Countercyclical Program in place since the 2002 Farm Act) in the new program and once enrolled, the farm had to remain in the program through the life of the Farm Act.

Many economists have analyzed these implementation rules and various other factors both to facilitate farmer decision-making and to explain low participation in the program.² Using simulations, survey results, and actual county-level ACRE enrollment data, researchers have identified several key considerations in the decision and suggestions for reasons behind the low enrollment. Although most analysis of likely payment levels over the 2009-2012 period favored ACRE enrollment, especially for producers specializing in corn, soybeans, and wheat, additional factors in the decision made it more complex and unpredictable. In addition to producers and

benchmark guarantee is the product of the 5-year Olympic average farm yield for the commodity and the 2-year national average price, plus the farm's crop insurance premium for that commodity. The farm's actual revenue is the product of the reported farm yield for the commodity for the current year and the greater of the 12-month national average price for the commodity or the ACRE reduced loan rate. A farm's payment is 83% of the product of the ratio of the farm's average yield to the State average yield, and the lesser of the difference between the State guarantee and the State actual revenue for the commodity in that year or 25% of the State guarantee.

² Studies of the ACRE enrollment decision began before the first enrollments were completed and have continued since. Among the earliest examples were Zulauf, Dicks, and Vitale (2008), who offered analysis of the program's differences from traditional programs and identified key decision factors for producers even before implementing rules had been written. Other key national-level and multi-commodity analyses include Olson and DalSanto (2008); Cooper (2009); Woolverton and Young (2009); Briggeman and Campiche (2010); Chen, Wang, and Patrick (2010); Lubben and Novak (2010); Zulauf, Schnitkey, and Langemeier (2010). Studies at the regional and State level include Edwards (2009, 2010, 2011); Mitchell (2009); Schnitkey and Paulson (2009); Campiche and Harris (2010); Flanders and Wailes (2010); Schnitkey (2010).

landowners needing to consider the trade-off between certain Direct Payments and uncertain ACRE payments, other factors noted as potentially complicating the decision were the requirement that all covered commodities on a farm must be enrolled, thus requiring estimates of potential gains and losses across multiple commodities for multiple years; the provision that once a farm is enrolled in the ACRE program, it must remain in the program through the end of the 2008 Farm Act, precluding a return to traditional programs if assumptions about future prices and yields proved mistaken; and the requirement that not only operators but also landlords must agree, in writing, in order to participate in the program. Since all owners and operators of a farm have to agree to make the change, the cost of negotiations is likely to be greater for those farms with a larger number of persons or entities involved in the farming operations.

This paper contributes to this discussion by using newly available farm-level administrative data to examine a range of characteristic of individual farms and multi-farm operations that enrolled and did not enroll in ACRE. We both confirm some previous survey and county-level findings and identify some additional characteristics associated with the decision. We also provide some regression analysis of which of these characteristics may be affecting enrollment decisions, looking especially at whether the number of signatories on a base acre contract—essentially the number of people involved in the ACRE decision—might affect the lower-than-expected enrollment.

It is virtually certain that some form of revenue protection program will be part of the next Farm Bill. The Agricultural Crop Risk (ARC) program included in the Senate Agriculture Committee's recently adopted bill provides for a county- or farm-level guarantee and loss

trigger, to be chosen by the producer on enrollment but to remain in place for the life of the Farm Act. Thus, producer choice remains part of the program, although the choice is much narrower than under ACRE and without the option of continuing with more familiar programs. Whether solutions to the regional/commodity equity issues recently raised by the program will involve some form of commodity-based program choices remains to be seen—if they do, then some of the choice issues inherent in the ACRE decision may continue to play a role for some producers. Better understanding of the basis for ACRE enrollment and the reasons behind the apparent reluctance of many producers to enroll should be useful for informing efforts to redesign those aspects of the program most responsible for its limited appeal.

Data and methods

We exploit newly available farm-level planting and program participation data from the USDA's Farm Service Agency (FSA). All producers who participate in USDA's commodity programs, including Direct Payments, Counter-Cyclical Payments, ACRE, and marketing loans and loan deficiency payments, must report detailed acreage information to the FSA. These annual data identify individual farms' total acreage across all crops. Other data are collected administratively on enrolled base acres and on commodity program payments reported for tax purposes.

We utilize data from three FSA administrative databases: the base acre enrollment contract file, which contains data from CCC-509 DCP and ACRE contracts, including crop base acres and owner/operator shares of program payments;³ the 578 compliance file detailing crop acres on the

³ We are using a preliminary base acre enrollment contract file, which does not include all enrolled farms in some States, particularly California.

farm, including planted acres, fallow, pasture, and acres in conservation reserve; and the s1099 payment file, which contains records of program payment amounts to eligible persons or entities associated with a farm. The data on enrolled base acres identify farms with reduced DCP payments due to ACRE enrollment. Additionally, we are able to track all the individuals or entities associated with the base acre contract for a particular farm and their specific roles as owner and/or operator on that farm.

FSA's records on farm acreage and plantings, historical base acres, and payments are based on administrative units – the “FSA farm.” FSA farms are units of agricultural land participating in commodity programs. They are generally associated with individual contiguous farm operations, but they may be operated and managed by multiple individuals. Moreover, a single individual may be associated with multiple FSA farms, often through ownership of non-contiguous farms and/or through operations on rental land associated with multiple separately owned farms. Each FSA farm is administratively independent, except for payment limitations rules, which are cumulative across all farms for individuals.

Each FSA farm is administratively linked to its owners and operators, which permits us to track data associated with all of the farm units linked to an individual. Consolidating individual farm-level data to the operation level through this process allows us to consider factors in crop and land management decisions that may involve balancing programs and practices across multiple FSA farms. For example the decision to enroll a farm in ACRE is made by individuals who may also be considering aspects of a broader operation encompassing more than one FSA farm. Individual FSA farms may also enter into the decision matrices of individuals involved in

different operations. For this reason, we incorporate characteristics from the operation level into the farm level analysis.

The analysis is two-fold. First, using FSA data for the 2009 program year, the first year producers could enroll, we investigate whether there are differences between farms that were enrolled in ACRE and those that were not for a series of specific characteristics. Farms enrolled in ACRE are identified using payment information which indicates DCP payments reduced due to ACRE program enrollment.⁴ Additionally, because we can link producers to all of the program farms they operate, we are able to identify farms that are part of operations with at least one farm enrolled in ACRE and those on operations that forgo the program entirely.

The universe of farms included in our analysis of characteristics of ACRE enrolled farms vs. those not enrolled in ACRE include all farms that had base acres eligible for direct payments, had a 2009 DCP or ACRE contract, had reported acreage in the compliance database, and had DCP payment information. Of 1.9 million farms in the database that met these basic data requirements, 241 thousand were excluded because not all farms on the operation of which they were a part had payment information. An additional two thousand were excluded because they had more than one primary operator associated on the farm. Analysis examines three ACRE enrollment categories: farms not enrolled in ACRE and no other farm in the operation enrolled; farms not enrolled in ACRE but at least one other farm in the operation enrolled; and farms enrolled in ACRE. Farms not enrolled in ACRE and no other farm in the operation enrolled made up 86.3 percent of the total, farms not enrolled in ACRE but at least one other farm in the

⁴ Direct Payments are reduced 20% for farms enrolled in the ACRE program. The FSA payment file distinguishes between direct payments made to ACRE-enrolled farms and those only enrolled in DCP, and therefore not subject to a 20% reduction. Accordingly, the FSA payment database allows us to identify farms enrolled in ACRE.

operation enrolled made up 5.8 percent, and farms enrolled in ACRE made up the remaining 7.9 percent.

Characteristics we examine include the size of enrolled and non-enrolled farms, including total acreage and total base; the commodity specialization of farms, based on the commodity accounting for more than 50 percent of an operation's planted acres; and the ownership structure and base acre contract structure of the farms, including whether the farm is owner-operated, cash rented, or share leased, and the number of signatories on the DCP/ACRE enrollment contract and the number of farms in the operation of which the farm is a part. We examine these characteristics both nationally and regionally.

Second, using a logit model predicting ACRE enrollment, we examine the extent to which these factors affect the odds of ACRE program participation. We also use the logit model to estimate predicted probabilities, given certain farm characteristics, to examine how the likelihood of ACRE enrollment changes as the number of signatories on a DCP/ACRE contract increases.

The estimable logit model after transformation is represented as:

$$(1) \quad L_i = \ln\left(\frac{P_t}{1-P_t}\right) = Z_i = \beta_0 + \sum \beta_i X_i$$

Where L_i is the logarithm of the odds of participation in the ACRE program (called the logit), X_i represents the independent variables, P_t is the conditional probability of a producer enrolling the farm in the ACRE program given X_i , and β_i denotes parameters to be estimated.

The dependent variable (ACRE PARTICPATION) is a dichotomous variable indicating whether farm i is enrolled in the ACRE Program. A value of 1 is assigned to those farms enrolled in

ACRE and 0 for those not enrolled. To control for farm size, we included the sum of base acres across all commodities on the farm (TOTALBASE). As an indicator of the importance of the individual farm to the total operation, we calculated the farm's share in an operation's total base acres (SHARE_OPER_BA) by dividing the individual farm's total base acres by the total base acres of the operation of which the farm is a part.

The key question motivating our research was whether the number of individuals who must agree to enroll in a program is a hindrance to enrollment. TOTALCUSTALL indicates the number of signatories to a contract. Since all persons on a contract must agree to enroll in ACRE, TOTALCUSTALL are the people who must unanimously agree to enroll the farm. The parameter associated with this variable tells us whether the number of signatories increases or decreases the probability of enrolling in ACRE. Examining the results of the logit model will tell us if this variable impacts the probability in a statistically significant way. Conceptually, our expectation was that the more people who must agree to enroll in ACRE, the less likely they will agree to enroll the farm in ACRE.

Other dummy variables identify the type of farm as defined by primary commodity produced. We created several dummy variables that categorized a farm based on the crop which accounted for more than half of its planted acres. Including type of farm by commodity was intended to allow us to test expectations that the enrollment decision would vary by commodity produced. Wheat (MainPA_Wheat) and Corn (MainPA_CORN) farms, for example, would seem to have more of an incentive to enroll in the program than Rice and Upland Cotton (MAINPA_UPCN) farms because of differences in DCP payment rates and expected price and yield variability. A

dummy variable (CASHRENT) was also included to identify farms where producers receive all the DCP payments.

We also created dummy variables based on the resource region definitions developed by USDA's Economic Research Service to enable us to examine the possibility of regional differences in ACRE enrollment.

Results and discussion

As found and predicted by others who have looked at the ACRE decision, our analysis shows some differences in characteristics between farms enrolled in ACRE and those remaining in the DCP program. Roughly summarizing, the findings confirm early expectations and county-level findings that larger farms, farms specializing in corn, soybeans, and wheat--commodities experiencing high recent price increases--have been most likely to enroll in ACRE. Somewhat less expected, the share of ACRE enrolled farms that were rented, especially through share leases, was higher than that share of all FSA farms that are rented, confounding some expectations that the more complex the operating contract, the less likely a farm would enroll in ACRE. Similarly, the number of signatories on a base contract seemed to have no relationship to enrollment in ACRE; if anything, more signatories was slightly more linked to enrollment. Perhaps most intriguing, we found pronounced differences from other categories for farms not enrolled in ACRE but on operations with at least one farm enrolled in the program.

Farm size and base acre characteristics

On average, farms that enrolled in the ACRE program in 2009 were nearly twice the size in terms of both base acres and planted acres as farms remaining in the DCP program (table 1). These farms also have a larger share of their base acres planted to program crops than the average for all farms. When we looked at whole operations, those with at least one farm enrolled in ACRE were also larger and were made up of more separate FSA farms on average than those with no farms enrolled in ACRE.

Interestingly, despite the larger number of base acres on ACRE enrolled farms, the average share of an operation's base represented by a single farm in the operation was higher for farms on operations with no farms enrolled in ACRE compared with the average for farms on operations fully enrolled in ACRE. The smallest average of an operation's base was on farms not enrolled in ACRE but on operations that had at least one other farm enrolled in ACRE. Although this finding is not entirely straightforward to interpret, it may suggest that operations that split the ACRE decision may have focused on farms in the operation with a higher share of base acres and chosen not to invest in the cost of changing programs for farms in the operation with fewer eligible acres. Farms not enrolled in ACRE but part of an operation with at least one farm enrolled in ACRE also have a lower than average share of the operation's planted acres, suggesting these farms may be primarily used for hay and pasture.⁵

Commodity characteristics

Most farms enrolled in ACRE have corn, wheat, and soybean base acres; together, these three crops accounted for 92 percent of historical base on farms that enrolled in ACRE in 2009 (table

⁵ A farm does not have to plant crops on its base acres in order to receive DCP payments. Producers are only required to maintain the farm land in agriculturally good standing.

2). Farms enrolled in ACRE were also more likely to be specialized in corn, wheat, and corn production than those that remained in the DCP program (table 3). Majority corn and wheat farms were also more likely to enroll in ACRE than farms specialized in other program crops. On farms enrolled in ACRE, the average number of wheat and corn acres planted was about twice the average for all farms, while the average number of upland cotton acres was only 2 percent of the average for all farms (see table 4). Average base acres for corn, wheat, and cotton on ACRE-enrolled farms shows the same pattern.

Ownership/contract structure

The structural characteristics we examined were among the more difficult to interpret. We found that the share of farms enrolled in ACRE that were share leased by operators was slightly higher than the average share for all farms, and the share of ACRE-enrolled farms that were owner-operated farms was somewhat lower than for all farms (table 5). For farms not enrolled in ACRE that were part of operations with at least one farm enrolled in ACRE, however, two-thirds were cash rented, compared with about half of all farms, and only 9 percent were owner-operated, compared with a third of all farms. A strong interpretive framework for these differences is not apparent, although it may suggest that split ACRE enrollment decisions occur on operations made up of more heterogeneous farms that lend themselves to concentrating the ACRE enrollment on a set of farms with particular characteristics. In general for farms on operations with at least one farm enrolled in ACRE we found higher than average total acreage, total planted acres, total acreage in program crops, and total base (table 1).

Given the requirement that all those with a share in the base acre contract must agree to the ACRE election, most analysts have expected that negotiation costs would tend to reduce the number of ACRE enrollments on farms with larger than average numbers of contract signatories. Unexpectedly, our results show that the average number of signatories on a base acre contract was essentially the same for all farms, farms not enrolled in ACRE, and for farms enrolled in ACRE.

Regional differences

In light of the regional focus the Farm Bill debate has begun to take, we also examined these characteristics of ACRE-enrolled farms by ERS region.⁶ The region with the largest share of farms enrolled in ACRE in 2009 was the Heartland, followed closely by the Basin and Range and the Northern Great Plains (map 1). The lowest shares of farms enrolled in ACRE were in the Mississippi Portal, Southern Seaboard, Eastern Uplands, Fruitful Rim, and Northern Crescent regions. Examples of split enrollment, where farms not enrolled in ACRE were part of operations with at least one farm in the program, were more common in the Heartland, Northern Great Plains, and Prairie Gateway, with somewhat higher levels also in the Basin and Range and Northern Crescent (table 6). Within the regions, size, commodity specialization, and ownership/contract structure followed similar patterns to those apparent at the national level. In fact, those patterns were even more pronounced in the regions with lower overall enrollment.

Farm size and base acre characteristics by region. With regard to size, for example, in the Fruitful Rim, where only 4 percent of farmer enrolled in ACRE in 2009, the average acreage of

⁶ See <http://www.ers.usda.gov/briefing/arms/resourcereions/resourcereions.htm#new> for an explanation and delineation of the ERS Resource Regions.

enrolled farms was three times the average for all farms in the region, with the median more than 5 times the size of the median for all farms, and the average base per farm was also 3 times the regional average (see table 7). Similarly, farms enrolled in ACRE in the Southern Seaboard and Northern Crescent had twice the average acreage and twice the average base for all farms those regions. Not following this pattern, however, were farms in the Mississippi Portal region, where farms enrolled in acre had average acreage close to that for all farms and average base smaller than that for all farms.

Commodity characteristics by region. This region showed differences from other common regional and national patterns as well, which may account for their differences from the more common size pattern. Among farms enrolled in ACRE in the Mississippi Portal region, for example, two-thirds specialized in soybeans and one-third in corn in 2009 (table 8; maps 2-6). These specializations match the commodity patterns nationally and vary from the regional pattern for all farms--half of all farms in the Mississippi Portal region specialized in soybeans in 2009 and only 15 percent in corn, while 20 percent planted majority rice or cotton.

Similar patterns emerge in other regions as well. In the Southern Seaboard region, half of farms enrolled in ACRE specialized in corn, and two-thirds in soybeans, and only 4 percent in upland cotton. While the soybean share of ACRE enrollments was close to the share of soybean farms in the region, corn farms made up only a quarter of all farms while 16 percent were upland cotton farms. The difference is even more pronounced in the Fruitful Rim, although likely partially the result of the wide range of geographic areas included in this region. More than three-quarters of farms enrolled in ACRE in this region specialized in wheat production,

compared with only 17 percent of all farms in the region. Across all regions, more than half of all ACRE-enrolled farms specialized in corn, soybeans, or wheat.

Ownership/contract structure by region. The Mississippi Portal region stands out against the national pattern in ownership structure of ACRE-enrolled farms as well. While only a third of farms in that region are owner-operated, nearly half of farms enrolled ACRE are owner-operated. (table 9). In all other regions, the pattern of a smaller share of owner-operator farms enrolled in ACRE than the average for all farms holds, except for the Northern Crescent, where the shares are essentially the same. In most regions, the proportion of ACRE-enrolled farms that are share leased is greater than for all farms, similar to the national pattern, although the differences are more pronounced in the Basin and Range, Eastern Uplands, and Fruitful Rim. In the Prairie Gateway and Mississippi Portal regions, the number of share lease farms enrolled in ACRE is slightly smaller than the average for all farms in those regions. There may be some link here with commodity specializations, particularly in the regions with more pronounced patterns, but we have not investigated that yet.

We also investigated variations in farm size and commodity characteristics for farms not enrolled in ACRE that are part of operations with at least one ACRE-enrolled farm. We found a consistently smaller share across all regions of base on farms not enrolled in ACRE that were part of operations with other farms enrolled in the program, in comparison both with farms not enrolled in ACRE on operations with no enrolled farms and with farms enrolled in ACRE (see table 11). We found the same pattern for the share of planted acres on those farms, suggesting that for operations with split ACRE enrollment, operators may have chosen not to invest the

enrollment effort into farms with less base and fewer planted acres. The relatively small shares of an operation's planted acres represented by these farms suggests they may be largely devoted to pasture and forage or to conservation reserve, which would bring little likelihood of benefit from ACRE enrollment. We also found that operations with at least one ACRE-enrolled farm consistently averaged a larger number of crops planted on the operation than farms with no ACRE-enrolled farms (table 11). It may be that operations with split ACRE enrollments are making considered choices to take advantage of the expected differences in benefits from the DCP and ACRE programs across commodities.

We also looked at base contract structures across regions, but found a similar consistency across all enrollment categories as we found at the national level—number of signatories on a contract did not appear to be related to the ACRE enrollment decision (see table 12).

LOGIT model results

In order to look more closely at the possibility that number of signatories on a base contract could affect the ACRE decision by increasing the negotiating costs for changing to a new program, we used a LOGIT model to estimate probabilities that an increasing number of signatories on a base contract would decrease the likelihood of a farm being enrolled in ACRE. We also estimated the probabilities that other characteristics examined in our descriptive statistics would affect the ACRE decision.

The results for all farms in the analysis generally confirm the pattern evident in our other results (see table 13). Those characteristics that increase the odds of ACRE enrollment the most include

a commodity specialization in wheat or corn (soybean specialization was not included in the model). Those farm characteristics that lower the odds of ACRE enrollment included specialization in upland cotton, representing a large share of an operation's base, and the farm being cash rented. Those characteristics with little probability of affecting the decision at all included total base acres on the farm, upland cotton base acres, the number of farms in an operation, and the number of signatories on a base contract.

When we included only farms with at least one farm enrolled in ACRE, the results were in the same direction, but more pronounced, particularly in the case of wheat specialization and share of an operation's base. The negative effects of specialization in upland cotton and cash renting remained, and the impact of the total base acres on the farm, upland cotton base acres, the number of farms in the operation, and the number of signatories on a base contract remained neutral.

We also looked at these characteristics on both sets of farms for only the Heartland region, on the premise that since this region had the highest proportion of farms enrolling in ACRE in 2009, those that did not make that choice might more clearly reflect the characteristics mitigating against the decision to enroll. For all farms, we found that specialization in corn was the only characteristic that positively affected the ACRE decision. Share of an operation's base and cash renting, and specialization in upland cotton, had negative probabilities. The other characteristics—wheat, total base, upland cotton base acres, number of farms on the operation, and number of signatories on the base contract were neutral. For farms enrolled on operations with at least one farm enrolled in ACRE, the results were very different. Specialization in wheat

and corn were both positively linked to enrollment, and the farm's share of the operation's base was very positively linked to enrollment. Only cash rental was likely to negatively affect the ACRE enrollment decision (there were no farms with cotton specialization among operations in the Heartland region with at least one farm enrolled in ACRE). Total base acres, upland cotton base acres, number of farms on an operation, and number of signatories on the base contract were again neutral.

Conclusions

Using farm-level program data for 2009, we have identified a number of characteristics that are associated with farms that enrolled in ACRE. In the area of size and commodity specialization, we found ACRE-enrolled farms to be larger than average and have larger than average base; they specialize in producing corn, soybeans, and wheat, commodities that experienced unusually high prices in the years immediately preceding the initial ACRE enrollment decision; and they tend to have lower value historical base. These results confirm the findings and expectations of most analysts and these characteristics also are generally consistent in patterns of ACRE enrollment both nationally and in different regions.

Our findings in the area of ownership characteristics and base contract structure were more surprising. We found that ACRE-enrolled farms were more likely to be share leased than those that did not enroll, although that finding varied by region—ACRE-enrolled farms in the Mississippi Portal region were more likely to be owner-operated. We also found that the number of signatories on a base contract did not seem to affect the ACRE decision; if anything, there was a very slight probability that increasing the number of signatories might positively affect the

ACRE decision. Given expectations that the negotiating costs of changing to an ACRE enrollment on farms with multiple stakeholders might account for low ACRE adoption, these findings are unexpected. It is possible that in many cases of multiple stakeholders, rather than interfering with the ACRE decision, the larger number of stakeholders indicates a more sophisticated farming operation, perhaps with professional management. ACRE enrollment is also associated with larger farm sizes and operations with larger numbers of farms, so it may be that these multiple stakeholder operations enrolling in ACRE are larger commercial farms that are less risk averse and have more capacity to assess complex decisions. Since the effect of the number of signatories was neutral, it may even be that there are two groups with multiple signatories at opposite ends of the ACRE decision which counter-balance each other in the results. This will require additional investigation.

We think additional investigation is warranted by another set of our findings as well. By linking individual farms in the FSA farm-level data to the operations of which they were a part, we were able to identify characteristics associated with farms across three categories—farms not enrolled in ACRE on operations with no farms enrolled, farms not enrolled in ACRE on operations with at least one farm enrolled, and farms enrolled in ACRE. The characteristics identified with farms in the middle category—not enrolled in ACRE, but on operations with at least one farm enrolled--were among the most interesting of our findings. Across all three groups of characteristics-- size, commodity specialization, and ownership/contract structure—we found these farms were distinctly different.

We suggest these differences indicate that the split ACRE enrollment decision may reflect decisions by operators to avoid the costs of program changes for farms in their operations that may not be likely to benefit from ACRE. It could be that they would continue to benefit more from DCP enrollment, but our findings seem to suggest it could also be that they are not particularly benefited by the DCP program at all—they seem to have a lower share of base acres. But they also have a lower share of planted acres, suggesting they may be used for hay, pasture or forage. If that is the case, changing from DCP to ACRE would perhaps have even fewer benefits.

We have examined farms not enrolled in ACRE on operations that have at least one farm enrolled in ACRE. To further investigate the characteristics of split farm enrollment on operations, we plan to examine characteristics of farms enrolled in ACRE on farms with at least one farm not enrolled in ACRE, as well as farms enrolled in ACRE on operations with all farms enrolled in ACRE.

By identifying distinct characteristics on operations that enrolled some and not other farms in ACRE, we hope to pinpoint some of the factors that may support arguments against one-size-fits-all farm programs. If we find that there are no differences in ownership structure and base acre contracts that can explain why some farms are enrolled and not others, we may also learn more about producer decision-making in complex multi-farm operations with diverse production strategies.

Tables and Map

Table 1. Size characteristics

	All Farms	Farm NOT enrolled & no other farm enrolled in ACRE	Farm NOT enrolled but another farm enrolled in ACRE	Farm enrolled in ACRE
Average Total Base Acres	155	147	142	256
Average Total Reported Acres [†]	250	245	191	349
<i>Average planted acres</i>	167	158	149	273
<i>Average program crop</i>	145	135	139	257
Average ratio Base:Planted	1.03	1.03	1.02	1.02
Average ratio Base:pgm	1.17	1.19	1.09	1.06
Average Farm share of the operation's total base	39%	42%	11%	30%

[†] Acres include land planted for hay, or grass, as well as land enrolled in conservation programs.

* Data are based on the 1,625,975 FSA farms on operations with complete compliance, contract, DCP payment information for its farms.

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 2. Sum of base acres enrolled by commodity and ACRE enrollment

Base Acres	ALL	Direct Payment only	Farm enrolled in DP, but ACRE in operation	Farm enrolled in ACRE
Total Base Acres	251,947,039	205,695,279	13,312,238	32,939,522
WHEAT	28%	29%	24%	29%
OATS	1%	1%	1%	1%
RICE	2%	2%	0%	0%
UPCN	7%	8%	1%	0%
CORN	33%	31%	42%	40%
SORGH	4%	5%	3%	3%
PNUTS	1%	1%	0%	0%
SOYBN	20%	19%	25%	23%
BARLY	3%	3%	2%	4%
Minor Oilseeds	1%	1%	1%	1%

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 3. Planted commodity characteristics

Farm Type*	ACRE/DCP enrollment							
	Farm NOT enrolled & no other farm enrolled in ACRE		Farm NOT enrolled but another farm enrolled in ACRE		Farm enrolled in ACRE		All Farms	
	#	%	#	%	#	%	#	%
CORN	349,086	78.7	36,712	8.3	57,622	13.0	443,420	100%
HAY/FORAGE	157,406	96.6	3,937	2.4	1,687	1.0	163,030	100%
PNUTS	7,265	99.9	6	0.1	5	0.1	7,276	100%
RICE	8,758	99.8	15	0.2	6	0.1	8,779	100%
SOYBN	358,391	84.4	32,663	7.7	33,354	7.9	424,408	100%
UPCN	42,196	99.6	147	0.4	6	0.0	42,349	100%
WHEAT	136,746	82.8	9,080	5.5	19,353	11.7	165,179	100%
All Farms	1,122,846	85.0	84,819	6.4	113,914	8.6	1,321,579	100%

* Farms are categorized based on the crop which makes up more than 50% of their planted acres. Hay/Forage is included in a farm's planted acre. Farms without a majority crop are not included in this analysis.
Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 4. Comparison of planted and base acres for corn, wheat, and cotton

All farms	All Farms	Farm NOT enrolled & no other farm enrolled in ACRE	Farm NOT enrolled but another farm enrolled in ACRE	Farm enrolled in ACRE
Average UPCN acres planted	5.3	6.1	0.5	0.1
Average Wheat acres planted	33.4	31.6	24.3	60.1
Average Corn acres planted	49.0	42.8	58.6	109.5
Average UPCN base acres	10.7	12.3	1.9	0.2
Average Wheat base acres	43.9	41.8	34.1	73.6
Average Corn base acres	50.9	45.7	59.9	101.1

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 5—Ownership and contract characteristics

	All Farms	Farm NOT enrolled & no other farm enrolled in ACRE	Farm NOT enrolled but another farm enrolled in ACRE	Farm enrolled in ACRE
Percent of farms where operator				
Cash rents	45%	44%	66%	45%
Share leases	20	19	26	26
Also owns the farm	35	37	9	29
Average # of signatories on contract	2.7	2.7	2.9	2.8

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 6. Regional enrollment characteristics

Region	Enrollment			Number of Farms*
	Farm NOT enrolled & no other farm enrolled (%)	% Farm NOT enrolled but another farm enrolled (%)	% Farm enrolled in ACRE (%)	
<i>Nationwide</i>	86 %	6%	8%	1,625,975
Basin and Range	86 %	4 %	10 %	24,364
Eastern Uplands	97	2	2	63,807
Fruitful Rim	95	2	4	55,645
Heartland	80	9	12	665,911
Mississippi Portal	99	1	1	84,161
Northern Crescent	92	4	4	213,820
Northern Great Plains	84	6	10	121,230
Prairie Gateway	86	5	9	260,061
Southern Seaboard	99	1	1	136,976

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 7. Regional size characteristics

Region Name	All Farms	Farm NOT enrolled & no other farm enrolled	Farm NOT enrolled but another farm enrolled	Farm enrolled in ACRE
<i>Average Total Base Acre</i>				
Basin and Range	231	195	265	530
Eastern Uplands	59	56	87	212
Fruitful Rim	197	182	238	587
Heartland	139	130	127	204
Mississippi Portal	174	174	106	154
Northern Crescent	78	75	67	149
Northern Great Plains	346	324	283	555
Prairie Gateway	212	210	177	255
Southern Seaboard	80	79	85	188
<i>Average Total Acres</i>				
Basin and Range	746	735	548	924
Eastern Uplands	127	124	133	314
Fruitful Rim	351	324	472	1,024
Heartland	164	157	144	229
Mississippi Portal	207	208	151	215
Northern Crescent	115	112	87	200
Northern Great Plains	769	776	464	892
Prairie Gateway	386	391	281	403
Southern Seaboard	113	112	106	238

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 8. Regional commodity characteristics

Type of ACRE enrolled Farms in each region (%)

Farm Type	Basin and Range	Eastern Uplands	Fruitful Rim	Heartland	Mississippi Portal	Northern Crescent	Northern Great Plains	Prairie Gateway	Southern Seaboard
BARLY	1%	0%	12%	0%	1%	0%	2%	0%	1%
CORN	0%	40%	1%	56%	34%	57%	33%	30%	53%
HAYFOR	1%	9%	7%	1%	1%	8%	2%	1%	4%
SNFLR	0%	0%	0%	31%	0%	0%	4%	0%	0%
SORGH	0%	0%	0%	11%	0%	0%	0%	1%	0%
SOYBN	95%	39%	0%	0%	61%	26%	31%	11%	37%
WHEAT	0%	12%	77%	0%	2%	6%	26%	56%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 9. Regional ownership characteristics

Region Name	Cash rent	Share lease	Owned by Operator
<i>Nationwide – ALL FARMS</i>	45%	20%	35%
Basin and Range	35%	25%	40%
Eastern Uplands	27%	8%	65%
Fruitful Rim	44%	20%	36%
Heartland	47%	22%	31%
Mississippi Portal	37%	28%	35%
Northern Crescent	62%	4%	34%
Northern Great Plains	50%	18%	33%
Prairie Gateway	30%	37%	33%
Southern Seaboard	56%	4%	41%
<i>Nationwide – ACRE enrolled farms</i>	45%	26%	29%
Basin and Range	23%	58%	19%
Eastern Uplands	39%	15%	46%
Fruitful Rim	28%	50%	21%
Heartland	45%	26%	29%
Mississippi Portal	28%	23%	49%
Northern Crescent	59%	6%	35%
Northern Great Plains	55%	18%	27%
Prairie Gateway	40%	34%	26%
Southern Seaboard	68%	8%	25%

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 10. Average number of crops on an operation by region*

Region Name	All operations	No ACRE on the operation	ACRE on the operation
Nationwide	2.0	2.0	2.6
Basin and Range	1.8	1.8	2.3
Eastern Uplands	1.5	1.4	3.0
Fruitful Rim	1.5	1.5	2.1
Heartland	2.2	2.2	2.6
Mississippi Portal	1.2	1.2	2.3
Northern Crescent	2.6	2.6	3.2
Northern Great Plains	2.5	2.4	3.4
Prairie Gateway	1.8	1.7	2.2
Southern Seaboard	1.6	1.6	3.7

* There is a maximum number of 24 crops, a since crops put into 24 different categories before counting: WHEAT, OATS, RICE, UPCN, FLAX, CORN, BEANS, SORGH, PEAS, PNUTS, SNFLR, SFLWR, SOYBN, BARLY, RAPE, MUSTD, SESME, LENTI, CANOL, HAYFOR, WLDRIC, CRAMB, and Other.

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 11. Average size of an operation by region* (total acres)

Region Name	All operations	No ACRE on the operation	ACRE on the operation
Basin and Range	1,443	1,329	2,745
Eastern Uplands	190	181	968
Fruitful Rim	727	660	2,629
Heartland	481	417	926
Mississippi Portal	507	505	862
Northern Crescent	293	275	690
Northern Great Plains	1,832	1,731	2,670
Prairie Gateway	998	952	1,462
Southern Seaboard	260	256	1,254

*Operations are defined as all the FSA farms associated with the same producer serving as the primary operator. Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

Table 12. Regional contract structure characteristics

Average Number of Signatories on a contract

Region Name	All Farms	Farm NOT enrolled & no other farm enrolled	Farm NOT enrolled but another farm enrolled	Farm enrolled in ACRE
Basin and Range	3	3	3	4
Eastern Uplands	2	2	3	2
Fruitful Rim	3	3	3	4
Heartland	3	2	3	3
Mississippi Portal	3	3	3	3
Northern Crescent	3	3	3	3
Northern Great Plains	3	3	3	3
Prairie Gateway	3	3	3	3
Southern Seaboard	3	3	3	2

Source: USDA, Economic Research Service, calculated from USDA, Farm Service Agency data, 2009 contract, compliance, and payment databases.

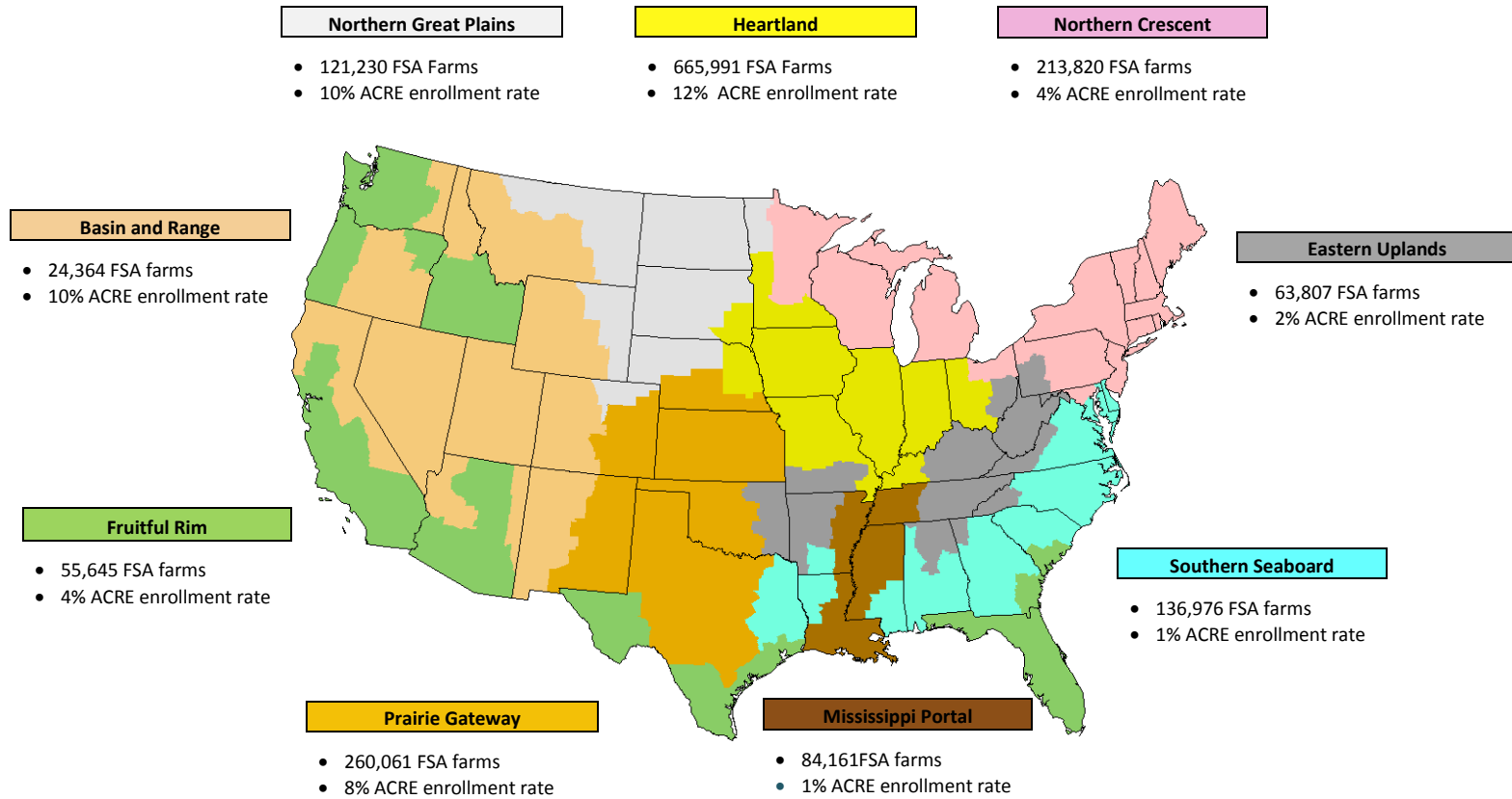
Table 13. Parameter estimates of factors affecting ACRE enrollment (N=1,625,974 farms)

Variable	β Coefficient	Standard Error	Wald Chi- Square	Odds Ratio Estimate
Constant	-3.249 **	0.013	66,281.916	
<i>totalCUSTall</i>	0.005 **	0.002	6.713	1.005
<i>MainPA_WHEAT</i>	0.486 **	0.010	2,205.035	1.625
<i>MainPA_CORN</i>	0.654 **	0.007	9,612.328	1.924
<i>MainPA_UPCN</i>	-3.669 **	0.379	93.936	0.026
<i>Totalbase</i>	0.001 **	0.000	10,428.528	1.001
<i>BA0021</i>	-0.039 **	0.001	1,505.507	0.962
<i>Share_OPER_BA</i>	-0.793 **	0.011	4,807.505	0.453
<i>cashrent</i>	-0.181 **	0.007	776.604	0.834
<i>FARM_COUNT_OPER</i>	0.005 **	0.000	158.021	1.005
Resource Region				
<i>Basin and Range vs Southern Seaboard</i>	0.878 **	0.022	1,637.431	11.491
<i>Eastern Uplands vs Southern Seaboard</i>	-0.599 **	0.030	410.210	2.625
<i>Fruitful Rim vs Southern Seaboard</i>	0.245 **	0.023	116.522	6.103
<i>Heartland vs Southern Seaboard</i>	1.017 **	0.010	11,113.673	13.209
<i>Mississippi Portal vs Southern Seaboard</i>	-1.474 **	0.042	1,211.448	1.095
<i>Northern Crescent vs Southern Seaboard</i>	-0.077 **	0.013	33.212	4.423
<i>Northern Great Plains vs Southern Seaboard</i>	0.737 **	0.013	3,419.461	9.986
<i>Prairie Gateway vs Southern Seaboard</i>	0.838 **	0.011	5,884.401	11.046
Log-likelihood Ratio Test Statistics = 93,102				
R-squared = 0.06				
Nagelkerke R-squared = 0.13				
Model Prediction Success = 92%				

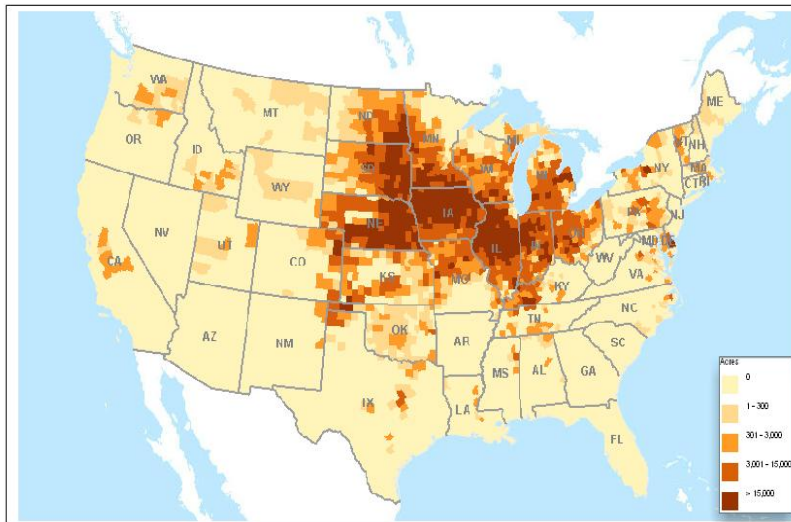
Note: Single and double asterisks (*) denote significance at the 5% and 1% levels, respectively
 β Coefficient from the Maximum Likelihood Analysis

Maps

Map 1. ACRE enrollment rates in ERS Resource Regions

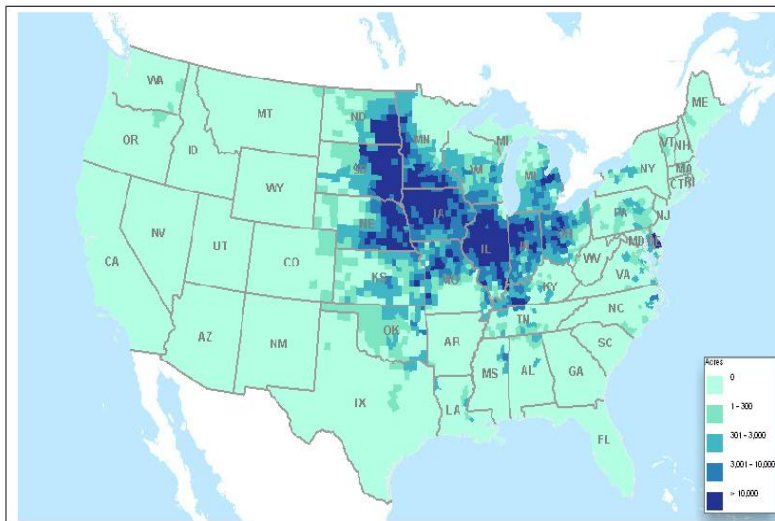


MAP 2. ACRE enrollment for corn base acres



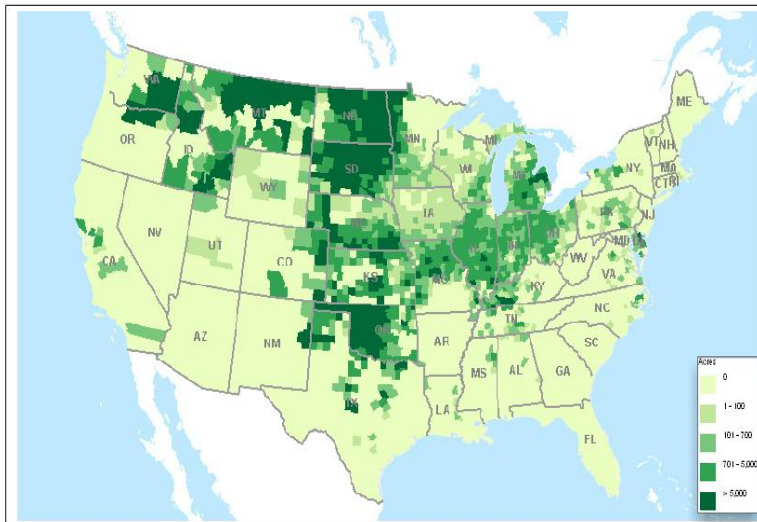
Source: USDA Economic Research Service, Farm Program Atlas.
<http://www.ers.usda.gov/data/farmprogramatlas/>

MAP 3. ACRE enrollment for soybean base acres



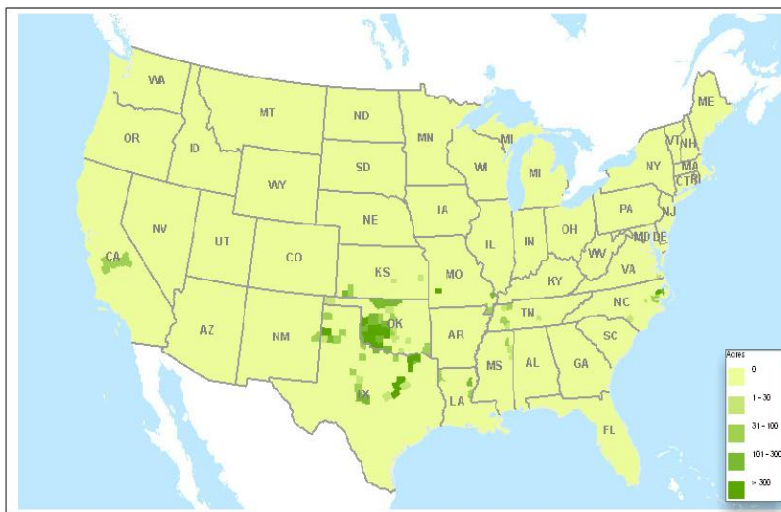
Source: USDA Economic Research Service, Farm Program Atlas.
<http://www.ers.usda.gov/data/farmprogramatlas/>

MAP 4. ACRE enrollment for wheat base acres



Source: USDA Economic Research Service, Farm Program Atlas.
<http://www.ers.usda.gov/data/farmprogramatlas/>

MAP 5. ACRE enrollment for cotton base acres



Source: USDA Economic Research Service, Farm Program Atlas.
<http://www.ers.usda.gov/data/farmprogramatlas/>

Map 6. ACRE enrollment for rice base



Source: USDA Economic Research Service, Farm Program Atlas.
<http://www.ers.usda.gov/data/farmprogramatlas/>

