Free markets. Real solutions.

R STREET POLICY STUDY NO. 61
April 2016

LIMITING PREMIUM SUBSIDIES FOR CROP INSURANCE

Vincent H. Smith

CONTENTS

Introduction	1
Crop insurance premium subsidies	2
Crop prices	3
Expected yields	4
Insurance plans and coverage levels	5
Representative farms	9
Simulation methods and results	10
Corn and soybean farms	10
Wheat	13
Cotton, peanuts and wheat	14
Rice	15
Conclusion	16
About the author	17
Appendix A	18

INTRODUCTION

One of the most persistent inaccurate claims made by some farm-lobby advocates, not to mention elected representatives with agricultural constituencies, is that any change to the Federal Crop Insurance Corp. program that does not expand subsidies to farmers will devastate U.S. crop production.[1] Whether the proposal is a modest reduction in subsidies to private crop insurers, as was debated in November 2015 thanks to a provision of the 2015 bipartisan budget act, or a proposal to place modest caps – in the range of $40,000 to $50,000 – on the premium subsidies an individual farm may receive, the outcry from farm-subsidy proponents is the same.

Such claims not only are unsubstantiated, but they also are inconsistent with available evidence on the determinants of crop production. However, relatively little data-based evidence has been collected on the extent to which farm revenues, or any other aspect of farmers' lives, would be affected by premium subsidy caps.[2]

Also underexplored are the potential impacts of various proposals to restrict farm subsidy payments based on an individual farm family or landowner's taxable income. Some federal farm subsidy programs – with the crop insurance program as a notable exception — already prohibit payments to farm families or farm owners with annual taxable gross incomes that average more $900,000 over a three-year period.[3] Economists generally have regarded such caps as ineffective, as anything short of draconian enforcement mechanisms would still leave farm owners able to reconfigure the structure of their ownership to avoid such payment restrictions.[4] Therefore, the focus has been on the extent to which caps on crop insurance premium subsidies to farms would affect the farm sector.

1. For example, in response to a proposal to reduce subsidy and subsidy-related payments by $300 million a year in the bipartisan Omnibus Budget Agreement announced in October 2015, House Agriculture Committee Chairman Mike Conaway, R-Texas, was quoted claiming: "The overall impact (of the proposal) would be to flush insurance companies out of business." Philip Brasher, "'Devastating' crop insurance cut sends lawmakers scrambling," *Agripulse*, Oct. 27, 2015. www.agri-pulse.com/Devastating-crop-insurance-cut-sends-lawmakers-scrambling-10272015.asp

2. See, e.g., Vincent H. Smith, "Premium Payments: Why Crop Insurance Costs Too Much," American Enterprise Institute, July 12, 2011; Vincent H. Smith and Joseph W. Glauber, "Agricultural Insurance in Developed Countries: Where Have We Been and Where Are We Going?," *Applied Economic Perspectives and Policy* (2012), volume 34, number 3, pp. 363–390. http://aepp.oxfordjournals.org/content/early/2012/08/29/aepp.pps029.abstract

3. Agricultural Act of 2014, Section 1605(a)1 states that "a person or legal entity shall not be eligible to receive any benefit described in paragraph (2) during a crop, fiscal, or program year, as appropriate, if the average adjusted gross income of the person or legal entity exceeds $900,000." Paragraph 2 of the same section identifies the subsidies to which the constraint applies, including a broad range of direct and other subsidies. The income average is computed using three consecutive years of tax returns for the individual eligible for farm subsidies. . Economist Ron Durst noted that, in 2005, less than 0.5 percent of all sole proprietors of farms reported adjusted gross farm incomes in excess of $1 million. Ron Durst, "New Payment Limits, Lower Income Cap Unlikely To Have Significant Impact," U.S. Department of Agriculture Economic Research Service. http://www.ers.usda.gov/amber-waves/2008-november/new-payment-limits,-lower-income-cap-unlikely-to-have-significant-impact.aspx#.VxlnCzArKhe

4. Barry K. Goodwin, "We're Not in Kansas Anymore: Is There Any Case for Ag Subsidies?," American Enterprise Institute, July 12, 2011. http://www.aei.org/publication/were-not-in-kansas-anymore-is-there-any-case-for-ag-subsidies/

Two major questions are examined in this study. The first is whether different premium-subsidy caps would have any impact on the subsidies farms receive – if so, how many farms would be affected and how many would not. The second is the extent to which those farms affected by premium-subsidy caps would see a substantial reduction in the gross income from their crop operations (market revenues plus government subsidies), not simply in dollar terms, but in terms of the likely proportional declines in their gross incomes. Net farm-income effects are not considered, for two reasons. First, all estimates of farm costs of production are highly imprecise and include many outlays that would be viewed as consumption expenditures for nonfarm households. Second, at the farm level, costs genuinely associated with the production of a crop vary substantially among farms, not least because of wide variations in soil quality, topography, climate and management skills. However, if the reductions in gross incomes that result from premium caps are negligible in percentage terms, then the impacts on farm household incomes are also almost surely negligible.

The analysis is based on publicly available data collected by U.S. Department of Agriculture agencies through three major vehicles: the most recent (2012) agricultural census; the annual survey of farms carried out by the National Agricultural Statistical Service; and the data on federally subsidized crop insurance premium rates and program participation rates that are provided, maintained and collected by the USDA Risk Management Agency. The focus is on farms producing major crops that are heavily insured in 12 states. Six are "Corn Belt" states in which corn and soybeans are major crops: Illinois, Indiana, Iowa, Minnesota, Nebraska and Ohio. Three – Kansas, North Dakota and Oklahoma – historically have been viewed as "wheat" states, although corn is now raised more extensively in Kansas and North Dakota than in the 1990s and early 2000s. The other states are Georgia (cotton and peanuts), Arkansas (rice) and Texas (cotton and wheat).

The approach is to identify typical crop-oriented farm operations in each of the states by farm size, in terms of acreage allocated to the crops of interest; to identify typical crop insurance products used by producers in the states; to obtain representative premium rates for the requisite products; to identify the crop insurance coverage levels (the amount of protection on a per-acre basis) selected by most producers for each crop; and to calculate premiums and premium subsidies for each size class of farm.

We find only about 9 percent of the estimated 254,233 farms in the 12 states that plant corn, cotton, peanuts, rice, soybeans and wheat would experience a reduction in their crop insurance premium subsidy payments under a $50,000 premium subsidy cap. The absolute size of the reductions in those payments, in dollar-amount terms, would be relatively small for most of the affected farms and would be close to negligible relative to their annual average revenues from market sales, which for the vast majority of the affected farms are well over $750,000 a year (and in many cases, are in the multiples of millions of dollars).

More substantial premium caps would affect a larger proportion of farms. For example, a $30,000 premium-subsidy cap could affect premium-subsidy payments of an estimated 14 percent of all farms considered in the analysis. A $10,000 premium cap would affect 37 percent of farms considered in the analysis. However, even in the case of a $10,000 premium-subsidy cap, the financial impacts would be modest and manageable for nearly all farms.

Despite these generally modest and negligible impacts, regional and crop-specific differences with respect to the effects of the premium caps are likely to result in vigorous lobbying efforts by agricultural commodity groups to prevent legislation that propose such caps. In addition, because effective premium-subsidy caps may reduce the demand for many widely used federal crop insurance products, the crop insurance industry also is likely to oppose the introduction of such limits on premium-subsidy payments.

CROP INSURANCE PREMIUM SUBSIDIES

On a per-acre basis, premium payments for crop insurance contracts tied to a farm's production of the crop are determined by the following formula. The expected per-acre revenue (r^*) from the crop is defined as the crop's expected yield (y^*), determined by the farm's historical yield for the crop on the insured area, multiplied by the crop's expected national average price (p^*), as determined by USDA RMA; that is, $r^* = y^*p^*$.

The farmer then choses a coverage level (c) which, in many areas where rain is relatively plentiful, ranges from 50 percent to 85 percent of the expected per-acre revenue. In areas that are semi-arid, available coverage levels range from 50 percent to 75 percent. The farmer also chooses what is called a price election, which can range from 30 percent to 100 percent of the crop's expected national average price. Overwhelmingly, farmers choose a price election of 100 percent, unless they are simply seeking very low levels of coverage to satisfy mandates from third parties associated with their operations (for example, their lending institution). It's reasonable to assume that most farmers value their crops at p^* for insurance purposes.[5]

On a per-acre basis, the maximum indemnity a farmer can receive for a crop loss is when there is no yield (a complete

5. This assumption induces an upward bias to estimates of the number of farms affected by any given premium-subsidy cap.

wipeout of the crop) and is therefore equal to the coverage level selected by the farm, multiplied by the per-acre expected revenue for the crop. The maximum indemnity is also called the liability (L) associated with the contract; thus, L = c p*y*. The total premium payment for the farm's insurance coverage (P) is then defined as the premium rate (r) associated with the coverage level selected by the farm, multiplied by the liability associated with that coverage level. Thus:

$$P = r\,L = r\,c\,p^*y^*.$$

Premium subsidies are tied to the coverage level selected by the farm. Higher coverage levels result in lower premium-subsidy rates. Typical subsidy rates for each coverage level for a farm-yield-based insurance contract are as follows.[6]

Coverage level (%)	Premium subsidy rates (%)
50	67
55	64
60	64
65	59
70	59
75	55
80	48
85	38

SOURCE: USDA Risk Management Agency.

The total premium payment is divided between the federal government and the farmer, with the government's contribution (S) defined as the total premium payment (P) multiplied by the applicable subsidy rate (s); that is S = sP. The farmer pays the remaining portion of the total premium, or (1 –s) P. The government subsidy payment is therefore:

$$S = sP = s\,r\,L = s\,r\,c\,p^*y^*.$$

Crop prices

The above equation shows that subsidy payments are proportional to expected crop prices and expected yields, the determinants of expected revenues. For most populations of insured farmers, and especially for major crops, expected yields generally change relatively little from one year to the next. However, expected prices for different crops can vary quite substantially, with important effects on subsidy levels.

Consider the following simple example. An Iowa farm with a proven corn yield of 180 bushels per-acre plants 1,000 acres of corn and insures all of those acres. As is currently the case for most Iowa corn growers, the farmer selects an insurance coverage level of 80 percent, with a subsidy rate of 48 percent of his premium. The total premium rate for the revenue insurance product he uses is assumed to be 6 percent. If the price of corn were close or equal to $5 per bushel, as was the case in several years over the period 2007 to 2013, the farmer's per-acre total premium payment would be:

$$P = r\,L = r\,c\,p^*y^* = 6 \text{ percent x } 80 \text{ percent x } \$5 \text{ x } 185 \text{ bushels} = \$44 \text{ per acre}$$

The per-acre subsidy payment (S) would then be 48 percent of the per-acre total payment; that is:

$$S = sP = 48 \text{ percent x } \$44 \text{ per acre} = \$21.13$$

As the farmer insures all 1,000 acres of corn at an 80 percent coverage level, the insurance policy would result in a total premium payment of $44,000 ($44 per acre x 1,000 acres) made to the insurance pool. However, the government would make a total premium-subsidy payment of $21,130 ($21.13 per acre), paying 48 percent of the total premium on the farmer's behalf. The farmer would only pay the remaining $22,870.

If the price of corn declined by 24 percent – from $5 to $3.80 per bushel (approximately the national average price expected for corn harvested in 2015) – the total per-acre premium payment would fall to $33.74 (6 percent x 80 percent x $3.80 x 185 bushels) and the farmer's total premium payment for insuring 1,000 acres of corn would decline by the same proportion to $33,740. The total subsidy payment would also fall by 24 percent to $16,197.

Clearly, as the above example demonstrates, in a scenario where crop prices are expected to be lower (higher) than in the recent past, crop insurance premium subsidies also are likely to be lower (higher), and any given cap on premium-subsidy payments is likely to affect fewer (more) farmers. In developing estimates of the effects of alternative subsidy caps (for example, a $20,000 cap, compared to a $50,000 cap), assumptions about crop prices will have a substantial impact on those estimates.

6. Many corn and soybean farmers in the Corn Belt states select an 80 percent coverage level. In the more arid Northern and Southern Great Plains regions, 80 percent and 85 percent coverage levels may not be available for wheat and other crops raised on non-irrigated (dryland) crop land. Coverage levels chosen by farmers operating under those conditions are typically either 70 percent or 75 percent. A more detailed discussion of the allocation of land planted to different crops between different coverage levels and insurance plans is provided later in this report.

TABLE I: CBO BASELINE PRICE PROJECTIONS FOR SELECTED CROPS, 2015-2018

Crop		2015 ($)	2016 ($)	2017 ($)	2018 ($)
Corn	(bushels)	3.60	3.58	3.59	3.72
Cotton	(pounds)	0.59	0.60	0.60	0.61
Peanuts	(pounds)	0.18	0.18	0.18	0.18
Rice	(cwt)	13.80	14.59	14.94	14.91
Soybeans	(bushels)	8.70	8.58	$8.76	8.84
Wheat	(bushels)	5.00	4.65	4.66	4.84

Table 1 shows the 2016 Congressional Budget Office forecasts of expected prices for corn, cotton, peanuts, rice, soybeans and wheat.[7] These forecasts exhibit relatively little year-to-year variation, but suggest that, over the next four years, corn is likely to average about $3.60 per bushel; cotton, $0.60 per pound; peanuts, $0.18 per pound; rice, $14.65 per hundred weight (cwt); soybeans, $8.75 per bushel; and wheat, $4.85 per bushel. In this study, these prices are used to compute the primary estimates of the impacts of alternative subsidy caps, in terms of the proportion of farms that would be affected by those caps. A sensitivity analysis also is carried out in which a low price and a high price for each of the crops is used, where the low price is 20 percent below and the high price 20 percent above the average price indicated by the CBO projections. The crop prices used in all three scenarios are presented in Table 2.

TABLE 2: ALTERNATIVE CROP PRICE SCENARIOS

Crop	Expected Price Scenario	Low Price Scenario	High Price Scenario
Corn (bushels)	$3.60	$2.88	$4.32
Cotton (pounds)	$0.60	$0.48	$0.72
Peanuts (pounds)	$0.18	$0.14	$0.22
Rice (cwt)	$14.65	$11.72	$17.58
Soybeans (bushels)	$8.70	$6.96	$10.44
Wheat (bushels)	$4.85	$3.88	$5.82

Expected yields

Expected yields also affect premiums and premium subsidies. Farms with higher expected yields have higher per-acre expected revenues. Therefore, on a per-acre basis, they receive higher premium subsidies at each specific coverage level under any given insurance plan. Within a given state, expected yields will vary by county and, within a given county, they will vary by farm. However, it's less clear whether crop yields are tied in predictable ways to the amount of land planted with a given crop.

We assume here that farms' expected yields equal their approved actual production history (APH) yields, which are used for insurance-coverage purposes.[8] In the simulations presented in this study, those expected or insurance yields are assumed to equal the average of the statewide yields reported by the USDA National Agricultural Statistical Service for each crop in the 2013 and 2014 crop years. These yields are reported in Table 2 for the six crops considered in this study: corn (Illinois, Indiana, Iowa, Minnesota, Nebraska, North Dakota and Ohio); soybeans (Illinois, Indiana, Iowa, Minnesota, Nebraska, North Dakota and Ohio); wheat (Kansas, Minnesota, North Dakota, Oklahoma and Texas); cotton (Georgia, Texas); peanuts (Georgia); and rice (Arkansas).

To the extent that farms, especially larger farms, have approved insurance yields that are lower (higher) than the yields reported in Table 2, the estimates of the number of farms affected by different caps on insurance premium subsidies obtained through the simulations described below will tend to overstate (understate) the impacts of the subsidy caps. If farms in a given size category have yields that are generally higher (lower) than the statewide average yield for a crop, the estimates could be substantially misleading. However, there is little evidence that such is the case. Given that the number of farms in the three largest "size of farm" categories each represent a small proportion of all farms that purchase insurance coverage (in terms of the total number of farms affected by different subsidy caps), errors are likely to be very small, except for subsidy caps that are relatively more severe (for example, a $10,000 subsidy cap, as opposed to a $50,000 subsidy cap).

Insurance plans and coverage levels

Farmers have multiple options in terms of the different policies under which they may insure most of their crops. Policies that establish and pay indemnities on the basis of a farm's current and historical yields, widely called APH policies, account for more than 92 percent of all federal insurance contracts. Other policies, such as those based on county average yields instead of the farmer's own yields, are used much less widely and generally ignored by producers of such major crops as corn, soybeans, wheat, cotton, peanuts and rice – the crops examined in this study.

The APH contracts available to farmers fall into three categories: yield insurance contracts, revenue insurance contracts that include what is called the "harvest price option" and revenue insurance contracts that do not include the harvest price contract.

7. Congressional Budget Office, "CBO's January 2016 Baseline for Farm Programs," Jan. 26, 2016. https://www.cbo.gov/sites/default/files/51317-2016-01-USDA.pdf

8. The USDA Risk Management Agency determines a farm's approved APH yield, typically using the farm's reported data on their crop yields over the previous four to 10 years. The APH determination process can involve a more complex approach if the farm has inadequate information on crop yields. For a more detailed discussion, see the USDA RMA fact sheet, "Actual Production History Yield Exclusion," available at http://www.rma.usda.gov/pubs/rme/aphye.pdf, as well as various USDA RMA Handbooks for the administration of crop insurance policies.

TABLE 3: AVERAGE YIELDS FOR SELECTED CROPS AND STATES

State	Corn (bushels/acre)	Soybeans (bushels/acre)	Wheat (bushels/acre)	Cotton (pounds/acre)	Rice (pounds/acre)	Peanuts (pounds/acre)
Arkansas	-	-	-	-	7560	-
Georgia	-	-	-	866	-	4283
Illinois	189	53	-	-	-	-
Indiana	183	54	-	-	-	-
Iowa	171	48	-	-	-	-
Kansas	-	-	33	-	-	-
Minnesota	158	42	-	-	-	-
Nebraska	174	54	42	-	-	-
North Dakota	117	33	46	-	-	-
Ohio	175	51	-	-	-	-
Oklahoma	-	-	24	-	-	-
Texas	-	-	30	646	-	-

The crop yields reported in this table are the averages of statewide yields for the 2013 and 2014 crop years as reported by the USDA National Agricultural Statistical Service. For insurance purposes, farms obtain coverage based on their actual four-to-10-year production history yields. In some cases, these are adjusted for yield trends and, where historical data are missing, substitute yields. The above yields are reasonably representative of those obtained by and reported by many farms in each state for each crop. Dashes indicate that, for a given state, that crop is not being considered in the analysis presented in this study.

Under a yield insurance contract, the farmer establishes her APH yield (e.g., 200 bushels an acre for corn) and selects a coverage level (e.g., 80 percent). The trigger yield would be equal to the coverage level multiplied by her APH yield, or 160 bushels an acre, in this example. If her actual yield exceeds her trigger yield, the farmer receives no indemnity as she has not experienced an indemnifiable loss. However, if her actual yield is lower than her trigger yield, she will receive an indemnity for the difference between the trigger yield and the actual yield for each insured acre. For example, if the farmer's trigger yield for corn is 160 bushels and her actual production yield is 130 bushels, she is deemed to have experienced an insurable loss of 30 bushels of corn. If she was able to elect a price of $4 per bushel when she purchased the insurance to value that loss, she would be indemnified by the insurance policy in the amount of $120 for each insured acre.

Revenue insurance works differently, in that the farmer establishes the same proven yield – 200 bushels, in the example – and uses a price at which to value production when she purchases the insurance policy (e.g., $4 per bushel). That price is determined by RMA using the 30-day-average price before sign-up for a predetermined harvest time futures contract for the crop of interest. She has then established an expected per-acre revenue of $800 (her APH yield multiplied by the expected price at harvest time, as determined by the USDA Risk Management Agency). She selects her coverage level which, when multiplied by the expected per-acre revenue for the crop, establishes her trigger revenue. If her actual yield multiplied by the harvest time price of the crop (which is determined by the average price of the crop in the relevant futures market contract over 30 days before it closes at time of harvest), she receives an indemnity that, on a per-acre basis, equals the difference between her trigger revenue and her estimated actual revenue from the crop. In this example, if the farmer chooses an 80 percent coverage level, she would establish a trigger revenue of $640 (80 percent of $800) and receive an indemnity for each insured acre when her estimated per-acre revenue falls below that level.

Premium rates typically are lower for revenue contracts than for similar yield contracts, because when farm yields for a crop fall, the price of the crop tends to increase. However, beginning in 2000, as a result of a subsidy-extending provision included in the 2000 Agricultural Risk Protection Act (ARPA), most farmers now use a revenue insurance product that includes what is called the "harvest price option." Under the harvest price option, if the RMA price for the crop at the time of harvest is higher than the price at which the crop was valued in the initial contract, the farmer's liability is increased by valuing her expected production at the higher harvest time price. The harvest time option form of revenue insurance is much more heavily used for most crops for which it is available, because on average, the option results in higher indemnity payments. As a result, the contract is typically more expensive than a standard revenue insurance policy or a yield insurance policy. In the simulations presented below, the harvest price revenue insurance option is assumed to be used by farmers wherever it is available.

The question is whether farmers use yield insurance or revenue insurance for the crops of interest in this analysis and at what coverage levels (higher coverage levels result in higher premium payments and higher subsidy payments). Tables 4 through 9, developed using data for 2015 obtained from

TABLE 4: ALLOCATION OF ACRES PLANTED TO CORN BY INSURANCE PLAN AND COVERAGE LEVELS IN SELECTED STATES

State	Insurance Plan	Corn: Coverage level								Share of Total Acres in Each Plan
		50%	55%	60%	65%	70%	75%	80%	85%	
Iowa	Revenue	0.08%	0.02%	0.06%	0.5%	2.4%	10.9%	34.1%	52.0%	97.9%
	Yield	17.6%	0.03%	0.04%	0.2%	0.2%	0.5%	0.4%	0.5%	2.1%
Illinois	Revenue	0.4%	0.1%	0.3%	0.6%	3.8%	12.9%	32.5%	49.4%	96.4%
	Yield	39.9%	0.9%	3.0%	7.6%	6.8%	16.4%	13.2%	12.3%	3.6%
Indiana	Revenue	0.3%	0.03%	0.4%	0.6%	4.4%	17.3%	35.6%	41.4%	96.4%
	Yield	44.5%	1.7%	1.9%	6.2%	7.3%	19.7 %	9.2%	9.5%	3.6%
Kansas	Revenue	0.5%	0.05%	1.1%	5.8%	34.5%	39.1%	16.5%	2.5%	94.1%
	Yield	26.3%	0.4%	2.2%	26.4%	32.1%	10.2%	2.2%	0.2%	5.9%
Minnesota	Revenue	0.4%	0.1%	0.3%	1%	5.9%	19.9%	41.5%	31.0%	97.2%
	Yield	37.5%	1.7%	4.1%	12.5%	18.1%	12.2%	6.3%	7.5%	2.8%
North Dakota	Revenue	0.7%	0.4%	1.3%	3.7%	23.8%	58.0%	11.7%	0.5%	95.4%
	Yield	23.3%	4.6%	6.7%	19.5%	31.0%	14.0%	0.9%	0.0%	4.6%
Nebraska	Revenue	0.6%	0.1%	0.5%	3.8%	19.3%	37.0%	28.7%	10.0%	92.0%
	Yield	13.7%	0.4%	4.0%	17.4%	24.7%	21.4%	13.7%	1.3%	8.0%
Ohio	Revenue	0.3%	0.04%	0.4%	0.8%	4.6%	22.1%	47.1%	24.7%	96.2%
	Yield	38.7%	1.3%	4.6%	10.3%	14.2%	20.0%	7.5%	3.5%	3.8%

Observations with reported values of 0.0 percent contain less than 0.01 percent of the acreage insured at the relevant coverage level under the insurance plan.

USDA RMA, show the proportion of total acres in each state planted to a crop that were insured under a yield contract or under the most widely used revenue contract. For each yield or revenue contract, the tables also show proportion of total acres insured under that contract at each available coverage level, which ranges from 50 percent to 85 percent, in 5 percent increments. In the eight states for which farms raising corn and soybeans are considered, the proportion of total corn acres insured under the revenue contact ranges from 92 percent (Nebraska) to 97.9 percent (Iowa). In Iowa, Indiana and Illinois, as shown in Table 4, more than 80 percent of all revenue-insurance-product corn acres were insured at the 80 percent or 85 percent coverage level. In other states, the most widely used coverage levels for corn were generally 75 percent or 70 percent. Soybeans (for which, plan coverage choices are shown in Table 5) follow a very similar pattern; the proportion of total acres insured with a yield contract ranges from 92.7 percent (Nebraska) to 97.4 percent (Iowa) and the most widely used coverage levels for the revenue contract are the 75 percent, 80 percent and 85 percent coverage levels. For corn and soybeans, therefore, farmers are assumed to insure their crop using a harvest price option revenue insurance product at the 80 percent coverage level.

In the five states where wheat farms are of interest, wheat farmers also typically insured their crop using a harvest price option. As reported in Table 6, the proportion of total acres insured under a revenue contract in 2015 ranged from 85.3 percent (Texas) to 93.4 percent (Minnesota). However, wheat in those states generally was insured at a lower coverage level, with 70 percent and 75 percent being the most widely chosen coverage options. The most widely used coverage level varies among the states. In Kansas, Oklahoma and Texas, wheat producers are assumed to select a 70 percent coverage level harvest price option revenue contract, while wheat producers in Minnesota and North Dakota are assumed to select a 75 percent coverage level harvest price option revenue contract.

Cotton is examined in two states: Georgia, where a farm is assumed to raise cotton and peanuts, and Texas, where a farm is assumed to raise wheat and cotton. In Georgia, as reported in Table 7, 65 percent of insured cotton acres were covered using a revenue insurance product, with the most widely selected coverage levels being 70 percent and 75 percent. In Texas, 90.4 percent of cotton acres were insured under a revenue product, with 44.1 percent being insured at the 70 percent coverage level. In both states, therefore, farms are assumed to insure cotton using a 70 percent coverage revenue insurance product. Peanuts are a crop of interest only in Georgia (where, as discussed above, in the simulations presented below, farms are assumed to raise both cotton and peanuts). In Georgia, as shown in Table 8, 68 percent of insured acres are covered under a revenue contract, with 40.1 percent of those acres insured at the 70 percent coverage level. Thus, Georgia peanut growers are assumed to insure their peanut crop under a 70 percent coverage level revenue product.

Rice is the crop of interest in only one state, Arkansas. As shown in Table 9, only 35.8 percent of the Arkansas crop was insured under a revenue contract, most frequently at the 75 percent level. In the simulations, farmers are assumed to insure their crops under a 75 percent revenue contract, as

TABLE 5: ALLOCATION OF ACRES PLANTED TO SOYBEANS BY INSURANCE PLAN AND COVERAGE LEVELS IN SELECTED STATES

State	Insurance Plan	Soybeans: Coverage level								Share of Total Acres in Each Plan
		50%	55%	60%	65%	70%	75%	80%	85%	
Iowa	Revenue	0.2%	0.0%	0.1%	0.8%	3.3%	14.0%	35.8%	45.8%	97.4%
	Yield	20.6%	1.0%	2.1%	10.8%	11.1%	19.6%	15.8%	19.2%	2.6%
Illinois	Revenue	1.4%	0.3%	0.7%	1.3%	5.7%	17.2%	33.0%	40.4%	94.5%
	Yield	44.5%	1.5%	2.9%	8.2%	7.4%	15.0%	10.6%	10.0%	5.5%
Indiana	Revenue	0.8%	0.1%	0.6%	1.0%	5.3%	18.3%	35.8%	38.1%	96.3%
	Yield	42.9%	2.3%	2.0%	8.2%	10.5%	15.2%	11.4%	7.5%	3.7%
Kansas	Revenue	0.3%	0.1%	0.7%	6.4%	33.2%	42.3%	15.9%	1.1%	92.1%
	Yield	18.8%	0.3%	1.8%	34.5%	29.9%	12.9%	1.7%	0.3%	7.9%
Minnesota	Revenue	0.4%	0.2%	0.4%	1.8%	9.6%	26.7%	34.6%	26.4%	97.6%
	Yield	25.9%	1.5%	4.3%	17.0%	24.5%	16.9%	5.9%	3.8%	2.4%
North Dakota	Revenue	0.2%	0.2%	0.9%	3.6%	29.5%	52.3%	12.8%	0.6%	97.8%
	Yield	20.3%	0.8%	4.6%	28.6%	32.9%	12.0%	0.4%	0.01%	2.2%
Nebraska	Revenue	0.4%	0.1%	0.5%	3.5%	17.4%	36.6%	31.1%	10.5%	92.7%
	Yield	10.3%	0.6%	4.1%	17.3%	26.7%	26.4%	11.0%	3.5%	7.3%
Ohio	Revenue	0.4%	0.1%	0.3%	1.1%	5.9%	25.0%	45.7%	21.6%	95.7%
	Yield	29.5%	1.9%	6.3%	13.1%	18.2%	22.7%	6.9%	1.4%	4.3%

Observations with reported values of 0.0 percent contain less than 0.01 percent of the acreage insured at the relevant coverage level under the insurance plan.

TABLE 6: ALLOCATION OF ACRES PLANTED TO WHEAT BY INSURANCE PLAN AND COVERAGE LEVELS IN SELECTED STATES

State	Insurance Plan	Wheat: Coverage level								Share of Total Acres in Each Plan
		50%	55%	60%	65%	70%	75%	80%	85%	
Kansas	Revenue	0.5%	0.1%	1.0%	7.5%	40.4%	36.0%	13.1%	1.3%	92.8%
	Yield	21.5%	0.1%	0.3%	2.3%	2.3%	1.0%	0.1%	0.02%	7.2%
Minnesota	Revenue	2.1%	0.2%	1.3%	6.5%	24.9%	51.5%	11.5%	1.9%	93.4%
	Yield	38.1%	3.2%	4.4%	17.7%	20.3%	13.3%	2.4%	0.6%	6.6%
North Dakota	Revenue	0.5%	0.2%	1.2%	5.1%	44.9%	42.5%	5.3%	0.3%	93.2%
	Yield	16.9%	0.5%	5.3%	17.6%	42.7%	15.2%	1.7%	0.05%	6.8%
Oklahoma	Revenue	1.4%	0.1%	3.4%	12.4%	42.1%	35.1%	5.3%	0.1%	92.8%
	Yield	38.4%	0.8%	5.4%	28.3%	21.0%	5.8%	0.3%	0.01%	7.2%
Texas	Revenue	7.4%	1.2%	13.5%	17.6%	30.8%	29.5%	-	-	85.3%
	Yield	57.6%	1.6%	8.5%	20.9%	4.9%	6.4%	-	-	14.7%

Observations with reported values of 0.0 percent contain less than 0.01 percent of the acreage insured at the relevant coverage level under the insurance plan.

that coverage has a higher premium rate than the most frequently used yield contract (a 50 percent coverage level yield contract). The insurance contracts farmers are assumed to use for each of the six crops in each of the 12 states considered in the simulations presented below are summarized in Table 10.

Unsubsidized premium rates for each insurance plan were obtained using the USDA RMA cost estimator, a tool that provides users with estimated total premiums and premium subsidies for standard versions of yield and revenue insurance contracts on a county-specific basis for each available coverage level. For rates, the county used to represent the state for a given crop was selected using USDA NASS data on total acres planted to each crop in each county in 2013 and 2014 by identifying the county, or counties, with the largest planted acres. Where premium rates seemed atypically high or low, the RMA cost estimator was used to identify premium rates in other counties for comparison purposes.

TABLE 7: ALLOCATION OF ACRES PLANTED TO COTTON BY INSURANCE PLAN AND COVERAGE LEVELS IN SELECTED STATES

State	Insurance Plan	Cotton: Coverage level								Share of Total Acres in Each Plan
		50%	55%	60%	65%	70%	75%	80%	85%	
Georgia	Revenue	1.8%	0.2%	4.0%	11.6%	48.3%	26.3%	5.7%	2.0%	69.5%
	Yield	46.0%	0.3%	2.7%	7.1%	9.5%	3.2%	0.7%	0.1%	30.5%
Texas	Revenue	4.9%	1.4%	17.5%	17.1%	44.1%	13.4%	1.5%	0.05%	90.4%
	Yield	30.1%	1.5%	11.4%	30.2%	18.4%	7.0%	1.3%	0.1%	9.6%

Observations with reported values of 0.0 percent contain less than 0.01 percent of the acreage insured at the relevant coverage level under the insurance plan.

TABLE 8: ALLOCATION OF ACRES PLANTED TO PEANUTS BY INSURANCE PLAN AND COVERAGE LEVELS IN SELECTED STATES

State	Insurance Plan	Peanuts: Coverage level								Share of Total Acres in Each Plan
		50%	55%	60%	65%	70%	75%	80%	85%	
Georgia	Revenue	1.8%	0.2%	3.4%	10.6%	40.1%	27.8%	13.6%	2.4%	68.4%
	Yield	42.2%	0.4%	3.5%	18.8%	22.5%	10.7%	1.9%	0.03%	31.6%

Observations with reported values of 0.0 percent contain less than 0.01 percent of the acreage insured at the relevant coverage level under the insurance plan.

TABLE 9: ALLOCATION OF ACRES PLANTED TO RICE BY INSURANCE PLAN AND COVERAGE LEVELS IN SELECTED STATES

State	Insurance Plan	Rice: Coverage level								Share of Total Acres in Each Plan
		50%	55%	60%	65%	70%	75%	80%	85%	
Arkansas	Revenue	11.8%	0.6%	2.1%	5.6%	27.9%	42.1%	6.1%	3.8%	35.8%
	Yield	57.4%	1.7%	2.3%	3.1%	15.4%	13.2%	5.3%	1.6%	64.2%

Observations with reported values of 0.0 percent contain less than 0.01 percent of the acreage insured at the relevant coverage level under the insurance plan.

TABLE 10: REPRESENTATIVE COVERAGE LEVELS AND PREMIUM RATES BY STATE AND CROP

State	Corn	Soybeans	Wheat	Cotton	Rice	Peanuts
Arkansas					75 percent, 7.18 percent	
Georgia				70 percent, 32.68 percent		70 percent, 16.51 percent
Illinois	80 percent, 9.47 percent	80 percent, 6.73 percent				
Indiana	80 percent, 14.57 percent	80 percent, 14.74 percent				
Iowa	80 percent, 2.91 percent	80 percent, 3.8 percent				
Kansas			70 percent, 12.77 percent			
Minnesota	80 percent, 5.03 percent	80 percent, 52.00 percent	75 percent, 8.80 percent			
Nebraska	80 percent, 29.47 percent	80 percent, 18.19 percent				
North Dakota	80 percent, 28.66 percent	80 percent, 26.01 percent	75 percent, 23.96 percent			
Ohio	80 percent, 11.89 percent	80 percent, 41.47 percent				
Oklahoma			70 percent, 35.93 percent			
Texas			70 percent, 30.75 percent	70 percent, 48.13 percent		

In each contract, the first number indicates the coverage level and the second the premium rate.

TABLE 11: DISTRIBUTION OF CORN AND SOYBEAN CROP PRODUCTION AMONG IOWA FARMS IN 2012 BY AREA PLANTED TO EACH CROP

Farm category	Corn			Soybeans		
	Number of farms	Total crop area (acres)	Avg. area per-farm (acres)*	Number of farms	Total crop area (acres)	Avg. area per-farm (acres)*
1-14 acres	3,028	22,786	7.5	2,283	18,097	7.9
15-24 acres	1,971	37,600	19.1	1,950	37,418	19.2
25-49 acres	4,624	167,225	36.2	4,839	176,048	36.4
50-99 acres	7,740	551498	71.3	7,699	547,790	71.2
100-249 acres	12,359	2,024,131	163.8	11,994	1,941,056	161.8
250-499 acres	8,524	3,354,683	393.6	8,256	2,866,353	347.2
500-999 acres	6,097	4,081,230	669.4	3,874	2,524,252	651.6
1,000-1,999 acres	1,737	2,236,337	1,287.5	697	861,823	1,236.5
2,000-2,999 acres	252	575,927	2,285.4	89	200,582	2,253.7
3,000-4,999 acres	103	368,995	3,582.5	22	80,668	3,666.7
> 5,000 acres	41	289,315	7,056.5	7	47,497	6,785.3
Total	46,476	13,709,727	-	41,710	9,301,584	-

For each size category, average area planted by farms is the total area planted by farms in the category divided by the number of farms in the category.

SOURCE: USDA National Agricultural Statistical Service 2012 Agricultural Census

REPRESENTATIVE FARMS

The USDA National Agricultural Statistical Service (NASS) carries out an agricultural census once every five years, with the most recent completed in 2012. Among a multitude of variables, for each state, the NASS Agricultural Census reports the number of farms that plant any of their land to a given crop in each of 11 size categories. Table 11 reports the NASS data for the numbers of farms producing corn and soybeans in Iowa.

The data show the distribution of all farms in Iowa producing corn and soybeans by number of farms in 11 planted-area-size categories, ranging from 1-14 acres to more than 5,000 acres, as well as the total area planted to the crop in the state in each size category. It is thus possible to compute the average area planted to the crop by farm in each size category. For example, in 2012, 3,028 Iowa farms each planted between 1 and 14 acres of corn for a statewide total of 22,786 acres of corn in that category and an average of 7.5 acres per farm.

TABLE 12: DISTRIBUTION OF REPRESENTATIVE IOWA CORN AND SOYBEAN FARMS

Representative model farms	Avg. acres planted to corn	Avg.acres planted to soybeans	Proportion of Iowa corn and soybean farms represented by each model farm
Farm 1	7.5	7.9	6.5%
Farm 2	19.1	19.2	4.2%
Farm 3	36.2	36.4	9.9%
Farm 4	71.3	71.2	16.7%
Farm 5	163.8	161.8	26.6%
Farm 6	393.6	347.2	18.3%
Farm 7	669.4	651.6	13.1%
Farm 8	1,287.5	1,236.5	3.7%
Farm9	2,285.4	2,253.7	0.5%
Farm 10	3,582.5	3,666.7	0.2%
Farm 11	7,056.5	6,785.3	0.1%

As discussed above, for each state in every category, each representative farm is assumed to have an expected and insurable yield equal to the statewide average yield for each crop, as reported in Table 3.

Similarly, 41 Iowa farms each planted more than 5,000 acres of corn for a statewide total of 289,312 acres of corn in that category and an average of 6,785.3 acres per farm.

In 2012, a total of 46,476 Iowa farms planted corn and 41,710 farms planted soybeans. Thus, in developing a set of representative farms for each state where the farm is assumed to produce more than one crop and where farms are differentiated by size, we adopt the following approach. The distribution of farms by category size is assumed to be determined by the distribution of the number of farms in each of the 11 size categories for the crop produced by the larger number of farms. Thus, for Iowa corn and soybean farms, the distribution of farms by size with respect to corn is used. For example, 12,359 Iowa farms – 26.6 percent of the 46,467 farms raising corn that year – planted between 100 and 249 acres of corn in 2012. Thus, 26.6 percent of Iowa corn and soybean farms are assumed to plant between 100 and 249 acres of corn *and* between 100 and 249 acres of soybeans.

Further, the amount of land planted to a crop by farms in a given size category is assumed to be the average for that category. For example, Iowa farms in the 100 to 249 acre category planted an average of 163.6 acres to corn and 161.8 acres to soybeans. Thus, for that size category (which accounts for 26.6 percent of all farms planting corn in Iowa), a representative farm is assumed to plant 163.6 acres of corn and 161.8 acres of soybeans. Using this approach, Table 12 identifies the representative farms in each size category and the proportion of all Iowa corn and soybean farms within that category.

By state, the crops the representative farms raise, are:

Arkansas:	Rice
Georgia:	Cotton and Peanuts
Illinois:	Corn and Soybeans
Indiana:	Corn and Soybeans
Iowa:	Corn and Soybeans
Kansas:	Wheat
Minnesota (a):	Corn and Soybeans
Minnesota (b):	Wheat
North Dakota (a):	Corn and Soybeans
North Dakota (b):	Wheat
Ohio:	Corn and Soybeans
Oklahoma:	Wheat
Texas:	Cotton and Wheat

The crop mixes were selected to account for crops that are extensively insured in states that either account for substantial proportions of the total federal crop insurance book of business (for example, the Corn Belt states) and/or involve crops whose lobbying groups appear to have been exceptionally effective in their rent-seeking efforts (for example, peanuts and rice).

Two states, Minnesota and North Dakota, have two sets of representative farms, a set of corn-soybean farms and a set of wheat farms. In Minnesota, many farms in the eastern and central regions of the state produce corn and soybeans, but in the western regions, a substantial number of farms raise wheat, either in rotation with barley or oil-seed crops, or on a summer fallow rotation (plant one year, but fallow the land the next year) or a variant of that rotation. Similarly, in eastern North Dakota, many farms now plant corn and soybeans, but in more arid central and western regions of the state, many farms plant wheat using a variant of a summer fallow rotation or in rotation with oil seeds and barley.

SIMULATION METHODS AND RESULTS

As discussed above, on a state-by-state basis, each representative farm is assumed to have an insurance yield equal to the statewide average yield for each crop, as reported in Table 3, regardless of the farm's size. For each crop in each state, the farm is assumed to use the crop-specific revenue insurance product described in Table 10, with the unsubsidized premium rate reported for that contract, also as reported in Table 10. Using this information and the state-specific information obtained from the USDA 2012 Census of Agriculture on the distribution of farms by area planted to each crop (described above for Iowa), the representative farms' insurance liabilities, total premiums and premium subsidies for each crop and in total for the farm are calculated under an average price, low-price and high-price scenario (as shown in Table 2 for each crop). Detailed simulation results for each of the 14 sets of representative farms are presented in tables A1-A14 in Appendix A, where total premiums and total premium subsidies are reported for each farm size category, as well as the proportion and number of farms in those categories.

Corn and soybean farms

Tables 13-15 present the estimates of total subsidies received by representative farms in each size category for the seven states that have extensive corn and soybean producers under the average expected price scenario. Results for the low-price and high-price scenarios are presented in the more detailed tables in Appendix A. Table 16 presents similar estimates for the three states with representative wheat operations; Table 17 presents estimates for the Texas cotton and wheat representative farms and the Georgia cotton and peanut representative farms; and Table 18 presents estimates for the Arkansas representative rice farm.

The results in these tables permit an assessment of the impact of alternative caps on total premium subsidies to individual farms. A $50,000 premium-subsidy cap has been widely considered and included in some legislative initiatives. Lower caps are certainly feasible, and some commenters have suggested premium subsidy caps as low as $10,000 per farm.

We therefore examine the proportion and number of farms producing different crop mixes in the 12 states that would be affected by alternative restrictions on total premium subsidy payments, with caps ranging from $50,000 to $10,000 per farm.

In Illinois, Indiana, Iowa, Minnesota, Nebraska, North Dakota and Ohio, more than 230,000 farms in 2012 produced corn and soybeans on their operations, a majority of the U.S. farms that raised corn and soybeans that year. Nearly all of those farm insured their crops under a harvest price option revenue insurance product. Table 13 presents premium subsidy estimates for Illinois and Iowa corn and soybean farmers. In the average price scenario, based on the CBO 2016 baseline forecasts of expected crop prices, Illinois farms that plant less than 2,000 acres to corn and less than 2,000 acres to soybeans represented 98 percent of all farms. Virtually none of these farms are likely to receive crop insurance premium subsidy payments in excess of $50,000 in the average price scenario.[9] Thus a $50,000 premium cap would not affect those farms, as farms in the 1,000 to 2,000 acre farm size category, with an average of more than 2,500 acres planted to the two crops, are estimated to receive about $48,000 in premium subsidies.

Farms in smaller categories receive much lower subsidies and also would not be affected. The effects of a $30,000 premium cap would not be binding for the 6 percent of Illinois corn and soybean farmers in the 500 to 999 acre category, as their estimated premium subsidies are about $24,000. A $10,000 premium cap would affect farms with between 250 and 1,000 acres of land planted to corn and similar areas planted to soybeans, as well as farms in higher categories. These farms make up about 21 percent of the total number of Illinois corn and soybean farms, but premium subsides received by the other 79 percent of corn and soybean producers would not be affected by a $10,000 premium subsidy cap.

In Iowa, only the largest category of farms – those planting more than 5,000 acres to each of the two crops – would be affected by a $50,000 premium cap in the average price scenario. In 2012, only 41 farms were in that category, planting an average of 7,056 acres to corn and 6,785 acres to soybeans. The other 99 percent of the estimated 46,476 Iowa corn and soybean farms would not be affected by such a cap. A $30,000 premium-subsidy cap would also be binding for the 0.2 percent of all farms in the 3,000 to 4,000 acre category, but not for the other 99.7 percent of Iowa corn and soybean farms. A $10,000 premium cap would affect about 5 percent of all Iowa corn and soybean farms; farms in the 1,000-1,999 acre category are estimated to receive an average of about $16,000 in premium subsidies. The other 95 percent would not be affected by the $10,000 cap. It is important to note that the reason for the differences in impacts in Iowa and Illinois derives from the differences in the unsubsidized premium rates for similar coverage levels in the two states; 2.91 percent and 3.8 percent, respectively, for corn and soybeans in Iowa and 9.47 percent and 6.73 percent in Illinois.

In Indiana and Ohio (Table 14), the impacts of a $50,000 premium-subsidy cap for corn and soybeans are similar to those in Illinois; 6 percent and 7 percent, respectively, of farms raising corn and soybeans, are estimated to be affected by the cap. A $30,000 cap would affect an additional 10 percent of farms in Indiana and 9 percent of farms in Ohio, while a $10,000 premium cap would affect a further 12 percent of farms in Indiana and a further 18 percent of farms in Ohio.

Impacts on corn and soybean farms in Minnesota, Nebraska and North Dakota are more substantial, largely because premium rates in those states are higher on a per-acre basis. As a result, per-acre premium subsidy payments are larger. A $50,000 premium-subsidy cap would affect 12 percent of corn and soybean farms in Minnesota, 25 percent in Nebraska and 43 percent in North Dakota. A $30,000 cap would affect no additional corn and soybean farms in Minnesota and North Dakota, but an additional 22 percent in Nebraska. A $10,000 premium cap would affect substantially more corn and soybean farmers in all three states – an additional 35 percent of corn and soybean farms in Minnesota; an additional 26 percent in Nebraska (an estimated 73 percent of all corn and soybean farms in that state); and an additional 31 percent in North Dakota.

Corn and soybean farms in Iowa, Illinois, Indiana and Ohio that would be affected by the $50,000 premium cap all have expected annual revenues that top $3 million and all farms affected by the $10,000 premium cap have expected revenues of more than $500,000. In those states, even the most draconian cap would reduce subsidies to farms with expected sales revenues of between $500,000 and $1 million by no more than about $12,000, scarcely an onerous financial burden that would have any substantial effect on the economic viability of those farms.

In Minnesota, North Dakota and Nebraska, corn and soybean farms likely to be affected by a $50,000 premium cap have expected market revenues from corn and soybean sales in excess of $800,000, $600,000, and $900,000. Further, under a $50,000 premium cap, more than half of the North Dakota farms would face a reduction in premium subsidies of less than $2,000 a year. The other 21 percent of North Dakota corn and soybean operations affected by such a cap have expected annual revenues in excess of $900,000. Relatively few additional corn and soybean farms in those states would be affected by a $30,000 premium cap, but a substantial number of additional farms would be affected by a $10,000 premium

9. The estimated subsidy in that scenario for representative farms in that 500-999 acre category for both crops is $24,892. Those farms are assumed to plant 683 acres to corn and an additional 668 acres to soybeans.

TABLE I3: TOTAL PREMIUM SUBSIDY ESTIMATES FOR IOWA AND ILLINOIS CORN AND SOYBEAN FARMS IN THE AVERAGE PRICE SCENARIO

Farm-size category by area planted to a single crop	Illinois			Iowa		
	Number of farms	Proportion of farms	Avg. price premium subsidy	Number of farms	Proportion of farms	Avg. price premium subsidy
1-14 acres	2,840	7.7%	$293	3,028	6.5%	$100
15-24 acres	1,920	5.2%	$698	1,971	4.2%	$248
25-49acres	3,934	10.7%	$1,324	4,624	9.9%	$471
50-99 acres	5,405	14.7%	$2,619	7,740	16.7%	$925
100-249 acres	8,781	24.0%	$5,927	12,359	26.6%	$2,116
250-499 acres	6,264	17.1%	$12,947	8,524	18.3%	$4,829
500-999 acres	4,750	13.0%	$24,892	6,097	13.1%	$8,586
1,000-1,999 acres	2,194	6.0%	$48,066	1,737	3.7%	$16,412
2,000-2,999 acres	352	1.0%	$84,635	252	0.5%	$29,494
3,000-4,999 acres	151	0.4%	$130,464	103	0.2%	$47,052
> 5,000 acres	64	0.2%	$278,019	41	0.1%	$90,005
Total farms	36,655	100%	-	46,476	100%	-

Dash symbol indicates not applicable.

TABLE I4: TOTAL PREMIUM SUBSIDY ESTIMATES FOR INDIANA AND OHIO CORN AND SOYBEAN FARMS IN THE AVERAGE PRICE SCENARIO

Farm-size category by area planted to a single crop	Indiana			Ohio		
	Number of farms	Proportion of farms	Avg. price premium subsidy	Number of farms	Proportion of farms	Avg. price premium subsidy
1-14 acres	3,532	15.4%	$504	4,911	19.8%	$828
15-24 acres	2,051	8.9%	$1,194	2,710	10.9%	$18,789
25-49acres	3,119	13.6%	$2,241	4,266	17.2%	$3,537
50-99 acres	3,374	14.7%	$4,451	4,357	17.6%	$6,982
100-249 acres	4,412	19.2%	$9,990	4,662	18.8%	$15,654
250-499 acres	2,871	12.5%	$22,136	2,212	8.9%	$34,493
500-999 acres	2,233	9.7%	$43,427	1,181	4.8%	$66,856
1,000-1,999 acres	1,085	4.7%	$83,241	408	1.6%	$128,369
2,000-2,999 acres	198	0.9%	$150,470	44	0.2%	$232,533
3,000-4,999 acres	79	0.3%	$236,661	24	0.1%	$356,857
> 5,000 acres	31	0.1%	$406,272	14	0.1%	$628,683
Total farms	22,985	100%	-	24,789	100%	-

Dash symbol indicates not applicable.

cap. With a $10,000 cap, farms with annual sales revenues in the range of $150,000 to $200,000 would see a reduction in their annual premium subsidies of $1,000 to $2,000.

In summary, almost no corn and soybean farms in the above seven states would suffer any measurable financial hardship from a $50,000 premium cap. Further, the farms that would experience a substantial reduction in their premium subsidies from a $30,000 or even a $10,000 premium-subsidy cap have substantial revenues from market sales; they are unlikely to experience the kinds of financial difficulties that would cause farm failures. In proportional terms, the impacts on gross farm incomes be would be modest or negligible. Given that debt-to-asset ratios in the U.S. farm sector average around 13 percent,[10] overwhelmingly the farms likely to be affected by any of the proposed caps are typically well-placed to manage any reduction in farm subsidies.

10. USDA Economic Research Service, "U.S. Farm Sector Financial Indicators, 2011-2016," Feb. 9, 2016. http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/data-files-us-and-state-level-farm-income-and-wealth-statistics.aspx.

TABLE I5: TOTAL PREMIUM SUBSIDY ESTIMATES FOR MINNESOTA, NORTH DAKOTA AND NEBRASKA CORN AND SOYBEAN FARMS IN THE AVERAGE PRICE SCENARIO

Farm-size category by area planted to a single crop	Minnesota			North Dakota			Nebraska		
	Number of farms	Proportion of farms	Avg. price premium subsidy	Number of farms	Proportion of farms	Avg. price premium subsiday	Number of farms	Proportion of farms	Avg. price premium subsidy
1-14 acres	2,745	8.3%	$679	76	1.1%	$593	665	2.9%	$853
15-24 acres	1,964	5.9%	$1,619	51	0.7%	$943	626	2.7%	$2,006
25-49acres	4,366	13.2%	$3,007	239	3.3%	$2,726	1,570	6.8%	$3,756
50-99 acres	6,387	19.2%	$5,890	532	7.4%	$5,380	3,247	14.1%	$7,405
100-249 acres	8,190	24.7%	$13,226	1566	21.7%	$12,099	6,061	26.4%	$16,851
250-499 acres	4,983	15.0%	$29,256	1636	22.6%	$26,319	5,157	22.4%	$36,442
500-999 acres	3,023	9.1%	$56,338	1615	22.4%	$51,175	3,544	15.4%	$69,740
1,000-1,999 acres	1,244	3.7%	$108,026	1086	15.0%	$99,597	1,657	7.2%	$134,977
2,000-2,999 acres	197	0.6%	$199,708	284	3.9%	$175,115	307	1.3%	$244,698
3,000-4,999 acres	72	0.2%	$302,554	115	1.6%	$270,910	103	0.4%	$371,478
> 5,000 acres	27	0.1%	$562,266	23	0.3%	$1,919,598	40	0.2%	$707,471
Total farms	33,198	100%	-	7223	100%	-	22,977	100%	-

Dash symbol indicates not applicable.

In addition, it should be noted that premium-subsidy-cap impacts would be substantially smaller in the low-price scenario, for which results are reported in the tables in Appendix A. Relative to farm incomes, the impact of the reduction in premium subsidies would be quite similar, as farms would have lower revenues from selling their crops. Similarly, in the high-price scenarios, for which results also are reported in Appendix A, the impact on the subsidies received by affected producers would be substantially larger. Relative to farm incomes, the impact of the reduction in premium subsidies would be quite similar, as those farms would have substantially higher revenues from market sales of their crops.

Wheat

Table 16 presents estimates of total premium subsidies, under the average expected price scenario, received by representative farms in each size category for the three states that have extensive wheat production. In all three states, for farms whose major crop is wheat, proportional premium-subsidy caps have an impact on a smaller number and proportion of those farms. A $50,000 premium cap would affect premium-subsidy payments to fewer than 40 wheat farms in Kansas (less than 0.1 percent of all farms reported to grow wheat in the 2012 Agricultural Census); 7 percent of wheat farms in North Dakota; and 1 percent of wheat farms in Oklahoma. A $30,000 premium-subsidy cap would affect 1 percent of wheat farms in Kansas; 8 percent of wheat farms in North Dakota; and 3 percent of wheat farms in Oklahoma. Finally, a $10,000 premium-subsidy cap would affect 12 percent of wheat farms in Kansas; 27 percent of wheat farms in North Dakota; and 27 percent of wheat farms in Oklahoma. For the additional 8.5 percent of farms in Kansas and in Oklahoma that would be subject to a $10,000 cap, but not a $30,000 premium subsidy cap, the average reduction in their premium subsidies would be on the order of $1,000 to $1,500 per farm.

For the 22.8 percent of farms in North Dakota that would be subject to a $10,000 cap, but not a $30,000 cap, the average reduction in premium subsidies would be more substantial, around $3,000 to $6,000 per farm. Those additional North Dakota farms have average expected revenues from market sales in excess of $150,000 per farm and, as is the case for most farms, more than 90 percent of the farm households that manage those operations have additional household incomes from nonfarm sources; many of the operations have substantial incomes from livestock sales.

A cautionary note is especially important with respect to the results reported in Table 16 for the representative wheat farms in the three states. The representative farms are constructed on the assumption that the operations only grow wheat. Many also grow other crops, such as barley and a wide range of oil-seed crops (sunflowers, safflower, etc., but not soybeans) and/or have extensive livestock operations. To the extent that the farms in each of the size categories for wheat raise other crops that they also insure, estimates of the impact of premium subsidy caps for these farms are understated. However, the farms' gross revenues from sales

TABLE I6: TOTAL PREMIUM-SUBSIDY ESTIMATES FOR KANSAS, NORTH DAKOTA AND OKLAHOMA WHEAT FARMS IN THE AVERAGE PRICE SCENARIO

Farm-size category by area planted to a single crop	Kansas			North Dakota			Oklahoma		
	Number of farms	Proportion of farms	Avg. price premium subsidy	Number of farms	Proportion of farms	Avg. price premium subsidy	Number of farms	Proportion of farms	Avg. price premium subsidy
1-14 acres	790	3.7%	$76	83	0.8%	$200	228	2.3%	$76
15-24 acres	872	4.1%	$165	117	1.1%	$422	235	2.4%	$165
25-49acres	1,987	9.2%	$306	326	3.1%	$810	850	8.5%	$306
50-99 acres	3,092	14.4%	$597	774	7.5%	$1,609	1,423	14.3%	$597
100-249 acres	5,014	23.3%	$1,354	2,084	20.1%	$3,631	2,769	27.8%	$1,354
250-499 acres	4,014	18.6%	$2,985	2,151	20.7%	$7,770	1,773	17.8%	$2,985
500-999 acres	3,315	15.4%	$5,814	2,366	22.8%	$15,638	1,500	15.1%	$5,814
1,000-1,999 acres	1,837	8.5%	$11,238	1,613	15.6%	$30,036	843	8.5%	$11,238
2,000-2,999 acres	415	1.9%	$19,688	513	4.9%	$52,604	221	2.2%	$19,688
3,000-4,999 acres	160	0.7%	$30,503	268	2.6%	$81,050	88	0.9%	$30,503
> 5,000 acres	32	0.1%	$51,676	75	0.7%	$142,867	16	0.2%	$51,676
Total farms	21,528	100%	-	10,370	100%	$200	9,946	100%	-

Dash symbol indicates not applicable.

also are understated and, therefore, comparisons between reduced premium-subsidy payments and those farms' gross sales revenues more closely reflect potential premium-subsidy-cap impacts on the farms' financial viability.

Cotton, peanuts and wheat

Table 17 presents the estimates of total premium subsidies, under the average expected price scenario, received by representative farms in each size category for farms that raise cotton and peanuts in Georgia and cotton and wheat in Texas. Results for the low-price and high-price scenarios are presented in the more detailed tables in Appendix A. In both Georgia and Texas, cotton is not an especially highly valued crop on a per-acre basis. Per-acre yields average about 865 pounds in Georgia and 650 pounds in Texas. The CBO forecasts that cotton prices are likely to average about 60 cents a pound over the period 2015-2018, implying per-acre revenues on the order of $520 in Georgia and $390 in Texas.

However, cotton prices are volatile and, in many Texas counties, cotton yields are similarly variable. As a result, for any given coverage level, unsubsidized premium rates for wheat and cotton in Texas are relatively high. Further, Texas producers generally insure their crops at lower coverage levels, in the 65 percent to 75 percent range for wheat and cotton revenue insurance contracts with higher subsidy rates (between 59 percent and 64 percent). Thus, in Texas, premium-subsidy payments are relatively large on a per-acre basis for both crops. In Georgia, peanut yields are substantial, averaging just over 4,200 pounds an acre over the two-year period 2013-2014. At an average price of 14 cents a pound, peanuts generate expected revenues on the order of $750 an acre. In addition, premium rates for cotton are also relatively high. Thus, per-acre premium subsidies are also relatively substantial for both cotton and peanuts in Georgia.

A premium-subsidy cap of $50,000 is therefore likely to affect about 16 percent of the estimated 2,833 Georgia farms that produce peanuts and cotton and 23 percent of the 7,409 Texas farms estimated to produce cotton and wheat. The Georgia farms affected by the $50,000 premium-subsidy cap are estimated generally have revenues from market sales in excess of $750,000. The Texas farms affected by the $50,000 premium-subsidy cap generally to have revenues from market sales in excess of $100,000. A $10,000 premium-subsidy cap would have an impact on 65 percent of the Georgia cotton and peanut representative farms and 67 percent of the Texas wheat and cotton farms.

These results provide important insights about the incentives for both Georgia peanut growers and Texas cotton and wheat growers to oppose any premium-subsidy caps vigorously. It also explains why successive representatives in Congress from North Texas rural constituencies, where many of those producers are located, consistently have expressed intransigence toward any proposal to cap or limit crop insurance subsidies on a per-farm basis, or for that matter, in any way at all. The findings also shed light on why, over the past 30 years, successive legislators from that region have sought leadership positions on the House Agriculture Committee.

TABLE 17: TOTAL PREMIUM-SUBSIDY ESTIMATES FOR GEORGIA COTTON AND PEANUT FARMS AND TEXAS COTTON AND WHEAT FARMS IN THE AVERAGE PRICE SCENARIO

Farm-size category by area planted to a single crop	Georgia			Texas		
	Number of farms	Proportion of farms	Avg. price premium subsidy	Number of farms	Proportion of farms	Avg. price premium subsidy
1-14 acres	114	4.0%	$1,105	315	4.3%	$767
15-24 acres	105	3.7%	$2,337	235	3.2%	$1,811
25-49acres	237	8.4%	$4,291	692	9.3%	$3,534
50-99 acres	345	12.2%	$8,510	1,208	16.3%	$6,737
100-249 acres	953	33.6%	$20,543	2,009	27.1%	$15,564
250-499 acres	768	27.1%	$42,570	1,258	17.0%	$33,862
500-999 acres	229	8.1%	$82,899	947	12.8%	$65,517
1,000-1,999 acres	82	2.9%	$173,304	489	6.6%	$127,048
2,000-2,999 acres	-	-	-	152	2.1%	$222,794
3,000-4,999 acres	-	-	-	79	1.1%	$345,794
> 5,000 acres	-	-	-	25	0.3%	$613,377
Total farms	2,833	100%	-	7,409	100%	-

Dash symbol indicates not applicable.

TABLE 18: PREMIUM-SUBSIDY ESTIMATES FOR ARKANSAS RICE FARMS IN THE AVERAGE PRICE SCENARIO

Farm-size category by area planted to a single crop	Arkansas		
	Number of farms	Proportion of farms	Avg. price premium subsidy
1-14 acres	12	0.5%	$323
15-24 acres	31	1.3%	$649
25-49acres	125	5.3%	$1,208
50-99 acres	188	8.0%	$2,364
100-249 acres	461	19.7%	$5,417
250-499 acres	547	23.3%	$11,792
500-999 acres	612	26.1%	$22,258
1,000-1,999 acres	294	12.5%	$41,891
2000-2999 acres	54	2.3%	$76,234
3000-4999 acres	19	0.8%	$131,260
> 5000 acres	2	0.1%	$213,297
Total farms	2345	100%	-

Dash symbol denotes not applicable.

Rice

Arkansas is a major producer of rice. Here, it's assumed that farms specialize only in rice production. Among rice producers in Arkansas, a $50,000 premium cap would have an impact on only 3 percent of those operations; a $30,000 premium cap would affect 16 percent; and a $10,000 premium cap would affect 65 percent of those farms. However, rice production in Arkansas is concentrated among relatively large operations; 42 percent of all Arkansas rice producers – farmers that would be affected by the most stringent $10,000 premium-subsidy cap – plant 500 acres or more of rice. As a result, almost all of those farms have expected annual average market revenues from rice sales in excess of $700,000.

TABLE 19: IMPACTS OF ALTERNATIVE PREMIUM CAPS BY STATE IN THE AVERAGE PRICE SCENARIO

State	Total farms in all state categories	$50,000 premium cap		$30,000 premium cap		$10,000 premium cap	
		Number of affected farms	Proportion of total farms affected	Number of affected farms	Proportion of total farms affected	Number of affected farms	Proportion of total farms affected
Arkansas	2,345	75	3%	369	16%	981	42%
Georgia	2,833	369	16%	981	42%	1528	65%
Illinois	36,655	2,761	8%	2,761	8%	13775	38%
Indiana	22,985	1,393	6%	3626	16%	6497	28%
Iowa	46,476	41	0.2%	144	0.5%	2133	5%
Kansas	21,528	32	0.1%	192	1%	5759	27%
Minnesota	38,697	4,565	12%	4,584	12%	18036	47%
Nebraska	22,977	5,651	25%	10,808	47%	16869	73%
North Dakota	17,593	3,979	23%	5,592	32%	11160	63%
Ohio	24,789	1,671	7%	3,883	16%	8545	34%
Oklahoma	9,946	104	1%	325	3%	2668	27%
Texas	7,409	1,692	23%	2,950	40%	4959	67%
Total of 12 states	254,233	22,333	9%	36,215	14%	92910	37%

The additional 23 percent of all Arkansas rice farms affected by the $10,000 premium cap (but not the $50,000 or $30,000 cap) would, on average, experience premium-subsidy-payment reductions under that cap of about $2,000; less than 0.5 percent of their estimated annual average revenues from market sales of rice of about $400,000.

A cautionary note is also especially important with respect to the results reported in Table 18. As is the case of the representative wheat farms in Kansas, North Dakota and Oklahoma, the representative Arkansas rice farms are constructed on the assumption that the operations only grow rice. Many also grow corn, soybeans and a wide range of other crops. They also may have extensive livestock operations. To the extent that the farms in each of the size categories for rice raise other crops that they also insure, estimates of the impact of premium-subsidy caps on these farms are understated. However, the farms' gross revenues from sales are also understated and, therefore, comparing reduced premium-subsidy payments and those farms' gross sales revenues will more closely reflect potential premium-subsidy cap impacts on the farms' financial viability.

CONCLUSION

The simulation results presented in Tables 13-18 and Appendix A provide useful insights about the impacts of alternative premium caps. These results are summarized in Table 19 under the assumption of an average price scenario, the scenario that uses the January 2016 CBO baseline price forecasts to estimate future farm program expenditures. Table 16 also shows the overall impacts of a $50,000, $30,000 or $10,000 premium-subsidy cap on all the farms estimated to produce the six crops considered in this study in all 12 states.

About 9 percent of the estimated 254,233 farms in the 12 states that plant corn, cotton, peanuts, rice, soybeans and wheat would experience a reduction in their crop insurance premium subsidy payments under a $50,000 cap. However, the absolute size of the reductions in those payments, in absolute dollar amount terms, would be relatively small for most of those farms and even smaller (close to negligible) relative to their annual average revenues from market sales, which for the vast majority of the affected farms are well over $750,000 a year (and in many cases, are in the multiple millions of dollars).

A $30,000 premium cap would have an impact on an estimated 14 percent of all 254,233 farms, an increase of 5 percentage points, but the impacts on those additional farms would also be relatively small and unlikely to create any substantial adverse financial impacts. A $10,000 premium cap would affect 37 percent of all 254,233 farms. Again, impacts on premium-subsidy payments to the additional 23 percent of farms that would be affected by the $10,000 cap but not the $30,000 cap are likely to be small. Further, the largest farms, which are affected by both the $30,000 and $50,000

caps, are likely to experience reductions in premium-subsidy payment that would not create genuine financial difficulties. However, some farms (perhaps especially moderate-sized wheat farms in North Dakota and Kansas) that would be affected only marginally by a $30,000 premium cap could experience more substantial financial effects from a $10,000 premium-subsidy cap.

The summary results presented in Table 19 also provide insights about the regional and crop-specific impacts of premium-subsidy caps. Impacts of all the premium caps are generally lower in most of the Corn Belt states (Iowa, Indiana, Illinois, Ohio and, to a lesser extent, Minnesota), as well as Oklahoma and Kansas, than in Georgia and Texas (the states that raise peanuts and cotton) and in North Dakota and Nebraska (both "fringe" corn and soybean states). However, with the exception of Iowa, a $10,000 premium-subsidy cap would affect (if only modestly) relatively substantial proportions of farms in most states (proportions range from 27 percent in Ohio and Kansas to 73 percent in Nebraska, and average 37 percent among all 254,233 farms considered in the analysis).

Finally, it is useful to consider the actual impact of a premium-subsidy cap. In other countries, when farmers have simply been given a fixed amount of subsidy to purchase crop insurance, those subsidies have simply been used to buy coverage at relatively high levels for the amount of acres that the lump-sum payment will allow them to purchase at no cost to themselves. Generally, the farmers have then chosen to use their own funds for other purposes. This is not a surprising result. There is compelling evidence that most farmers will not pay even close to actuarially fair premium rates for crop insurance because they can use the funds more effectively in other ways.[11] It makes sense for farmers to insure only those crops and acres for which subsidies are available.

The premium-subsidy caps considered in this study are all limits on total subsidies where the subsidies are paid as a proportion of the total premium payment. Thus, the likely response of a farm to any binding premium cap would be to reduce coverage levels and the numbers of acres insured (at the optimal coverage level for the farm) until the premium subsidy associated with the insured crop acres just equals the premium-subsidy cap. Other acres previously insured (and in some cases, an entire crop such as barley on a wheat and barley operation) would no longer be insured.

One set of interest groups that would be very concerned about this shift is the crop insurance industry itself, including the private primary insurers that service all federal crop insurance policies, the independent insurance agents that sell those policies and the multinational reinsurance companies that, historically, have handled much of the insurance risk faced by the private primary crop insurers. In other words, it is reasonable to expect that a broad-based coalition of farm and crop insurance groups would strongly oppose all legislative initiatives to introduce premium-subsidy caps, no matter how reasonable, from the broader perspective of social policy, those initiatives might be.

ABOUT THE AUTHOR

Vincent H. Smith is a professor of economics in the Department of Agricultural Economics and Economics at Montana State University and an associate fellow of the R Street Institute. He is the director of Montana State's Agricultural Marketing Policy Center and has been a visiting scholar at the American Enterprise Institute since 2011. He received his doctorate in economics from North Carolina State University in 1987.

11. See, for example Wright, Brian D., and Julie A. Hewitt, "All Risk Crop Insurance: Lessons from Theory and Experience," pages 73-109 in Economics of Agricultural Crop Insurance: Theory and Evidence, 2014, edited by Darell L. Hueth and William H. Furtan, Boston: Kluwer Academic Publishers.; B. K. Goodwin and V. H. Smith, "What Harm Does Crop insurance Do?", American Journal of Agricultural Economics, 2013; V. H. Smith and J. W. Glauber, V. H. Smith and J. W. Glauber, "Agricultural Insurance in Developed Countries: Where Have We Been and Where Are We Going?," Applied Economic Perspectives and Policy (2012), volume 34, number 3, pp. 363–390; and M. Miranda and K. Farrin, "Index Insurance for Developing Countries," Applied Economic Perspectives and Policies (2012), 34(3):391-427.

APPENDIX A: PREMIUM SUBSIDY ESTIMATES FOR REPRESENTATIVE FARMS BY STATE AND CROP MIX

TABLE AI: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR ARKANSAS RICE FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to rice (acres)	Total premium			Total premium subsidy		
				Average price	Low price	High price	Average price	Low price	High price
1-14 acres	12	0.5%	9.8	$587	$469	$704	$323	$258	$387
15-24 acres	31	1.3%	19.8	$1,180	$944	$1,416	$649	$519	$779
25-49acres	125	5.3%	36.8	$2,197	$1,757	$2,636	$1,208	$966	$1,450
50-99 acres	188	8.0%	72.0	$4,298	$3,439	$5,158	$2,364	$1,891	$2,837
100-249 acres	461	19.7%	165.1	$9,849	$7,879	$11,819	$5,417	$4,334	$6,500
250-499 acres	547	23.3%	359.3	$21,439	$17,151	$25,727	$11,792	$9,433	$14,150
500-999 acres	612	26.1%	678.3	$40,468	$32,374	$48,561	$22,258	$17,806	$26,709
1,000-1,999 acres	294	12.5%	1276.6	$76,164	$60,931	$91,396	$41,891	$33,513	$50,269
2,000-2,999 acres	54	2.3%	2323.1	$138,604	$110,883	$166,325	$76,234	$60,987	$91,481
3,000-4,999 acres	19	0.8%	4000.0	$238,649	$190,919	$286,378	$131,260	$105,008	$157,511
> 5,000 acres	2	0.1%	6500.0	$387,804	$310,243	$465,365	$213,297	$170,637	$255,956
Total farms	2,345	100%	-	-	-	na	-	-	-

Rice yields for the Arkansas farms are assumed to be 7560 pounds per acre (the statewide yields averaged for 2013 and 2014); dash symbole denotes not applicable.

TABLE A2: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR GEORGIA PEANUT AND COTTON FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to peanuts (acres)	Avg. area planted to cotton (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Average price	Low Price	High Price
1-14 acres	114	4.0%	8.7	9.2	$1,874	$1,499	$2,248	$1,105	$884	$1,326
15-24 acres	105	3.7%	18.8	19.2	$3,960	$3,168	$4,753	$2,337	$1,869	$2,804
25-49acres	237	8.4%	34.6	35.3	$7,274	$5,819	$8,728	$4,291	$3,433	$5,150
50-99 acres	345	12.2%	68.1	70.3	$14,424	$11,539	$17,309	$8,510	$6,808	$10,212
100-249 acres	953	33.6%	165.5	169.0	$34,818	$27,854	$41,782	$20,543	$16,434	$24,651
250-499 acres	768	27.1%	333.8	357.1	$72,153	$57,722	$86,584	$42,570	$34,056	$51,084
500-999 acres	229	8.1%	674.6	676.9	$140,506	$112,405	$168,607	$82,899	$66,319	$99,478
1,000-1,999 acres	82	2.9%	1,570.5	1,294.9	$293,736	$234,989	$352,483	$173,304	$138,643	$207,965
Total farms	2,833	100%	-	-	-	-	-	-	-	-

Peanut yields for the Georgia farms are assumed to be 4,282.5 pounds per acre and Cotton yields to be 865.5 pounds per acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A3: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR ILLINOIS CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to corn (acres)	Avg. area planted to soybeans (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Averageprice	Low price	High Price
1-14 acres	2,840	7.7%	7.9	8.1	$611	$489	$733	$293	$235	$352
15-24 acres	1,920	5.2%	19.0	19.1	$1,454	$1,163	$1,744	$698	$558	$837
25-49acres	3,934	10.7%	36.1	36.1	$2,759	$2,207	$3,310	$1,324	$1,059	$1,589
50-99 acres	5,405	14.7%	71.5	71.3	$5,456	$4,365	$6,547	$2,619	$2,095	$3,143
100-249 acres	8,781	24.0%	161.4	162.1	$12,348	$9,878	$14,817	$5,927	$4,742	$7,112
250-499 acres	6,264	17.1%	354.3	350.5	$26,973	$21,578	$32,367	$12,947	$10,358	$15,536
500-999 acres	4,750	13.0%	683.8	668.5	$51,859	$41,487	$62,231	$24,892	$19,914	$29,871
1,000-1,999 acres	2,194	6.0%	1,322.6	1286.0	$100,138	$80,111	$120,166	$48,066	$38,453	$57,680
2,000-2,999 acres	352	1.0%	2,317.9	2287.2	$176,324	$141,059	$211,588	$84,635	$67,708	$101,562
3,000-4,999 acres	151	0.4%	3,559.4	3553.8	$271,800	$217,440	$326,160	$130,464	$104,371	$156,557
> 5,000 acres	64	0.2%	8,380.8	5922.1	$579,207	$463,366	$695,048	$278,019	$222,415	$333,623
Total farms	36,655	100%	-	-	-	-	-	-	-	-

Corn yields for the Illinois farms are assumed to 189 bushels per acre and soybean yields to be 53 bushels per acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A4: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR INDIANA CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to corn (acres)	Avg. area planted to soybeans (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Average price	Low price	High price
1-14 acres	3,532	15.4%	7.8	8.2	$1,051	$841	$1,261	$504	$403	$605
15-24 acres	2,051	8.9%	18.8	19.0	$2,487	$1,989	$2,984	$1,194	$955	$1,432
25-49acres	3,119	13.6%	35.5	35.6	$4,668	$3,735	$5,602	$2,241	$1,793	$2,689
50-99 acres	3,374	14.7%	70.4	70.7	$9,272	$7,418	$11,126	$4,451	$3,560	$5,341
100-249 acres	4,412	19.2%	158.1	158.5	$20,813	$16,651	$24,976	$9,990	$7,992	$11,989
250-499 acres	2,871	12.5%	350.9	350.6	$46,116	$36,893	$55,340	$22,136	$17,709	$26,563
500-999 acres	2,233	9.7%	689.0	686.9	$90,473	$72,378	$108,568	$43,427	$34,742	$52,113
1,000-1,999 acres	1,085	4.7%	1,329.7	1,304.1	$173,419	$138,735	$208,103	$83,241	$66,593	$99,889
2,000-2,999 acres	198	0.9%	2,301.3	2,500.0	$313,479	$250,783	$376,175	$150,470	$120,376	$180,564
3,000-4,999 acres	79	0.3%	3,570.8	4,000.0	$493,044	$394,435	$591,652	$236,661	$189,329	$283,993
> 5,000 acres	31	0.1%	6,392.8	6,500.0	$846,401	$677,120	$1,015,681	$406,272	$325,018	$487,527
Total farms	22,985	100%	-	-	-	-	-	-	-	-

Corn yields for the Indiana farms are assumed to be 182.5 bushels per-acre and soybean yields to be 53.5 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A5: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR IOWA CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of farms	Avg. area planted to corn (acres)	Avg. area planted to soybeans (acres)	Total Premium			Total Premium Subsidy		
					Average price	Low price	High price	Average price	Low price	High price
1-14 acres	3,028	6.5%	7.5	7.9	$209	$167	$251	$100	$80	$120
15-24 acres	1,971	4.2%	19.1	19.2	$518	$414	$621	$248	$199	$298
25-49 acres	4,624	9.9%	36.2	36.4	$981	$785	$1,178	$471	$377	$565
50-99 acres	7,740	16.7%	71.3	71.2	$1,927	$1,542	$2,312	$925	$740	$1,110
100-249 acres	12,359	26.6%	163.8	161.8	$4,407	$3,526	$5,289	$2,116	$1,692	$2,539
250-499 acres	8,524	18.3%	393.6	347.2	$10,059	$8,047	$12,071	$4,829	$3,863	$5,794
500-999 acres	6,097	13.1%	669.4	651.6	$17,888	$14,310	$21,465	$8,586	$6,869	$10,304
1,000-1,999 acres	1,737	3.7%	1,287.5	1,236.5	$34,191	$27,353	$41,029	$16,412	$13,130	$19,695
2,000-2,999 acres	252	0.5%	2,285.4	2,253.7	$61,444	$49,155	$73,732	$29,494	$23,595	$35,393
3,000-4,999 acres	103	0.2%	3,582.5	3,666.7	$98,022	$78,418	$117,627	$47,052	$37,642	$56,463
> 5,000 acres	41	0.1%	7,056.5	6,785.3	$187,503	$150,002	$225,003	$90,005	$72,004	$108,006
Total farms	46,476	100%	-	-	-	-	-	-	-	-

Corn yields for the Iowa farms are assumed to be 183 bushels per-acre and soybean yields to be 53 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A6: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR KANSAS WHEAT FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to wheat (acres)	Total premium			Total premium subsidy		
				Average price	Low price	High price	Average price	Low price	High price
1-14 acres	790	3.7%	9.0	$129	$103	$155	$76	$61	$92
15-24 acres	872	4.1%	19.5	$279	$223	$335	$165	$132	$197
25-49acres	1,987	9.2%	36.2	$518	$415	$622	$306	$245	$367
50-99 acres	3,092	14.4%	70.7	$1,011	$809	$1,214	$597	$477	$716
100-249 acres	5,014	23.3%	160.5	$2,296	$1,836	$2,755	$1,354	$1,084	$1,625
250-499 acres	4,014	18.6%	353.6	$5,059	$4,048	$6,071	$2,985	$2,388	$3,582
500-999 acres	3,315	15.4%	688.7	$9,854	$7,883	$11,824	$5,814	$4,651	$6,976
1,000-1,999 acres	1,837	8.5%	1,331.3	$19,047	$15,238	$22,857	$11,238	$8,990	$13,486
2,000-2,999 acres	415	1.9%	2,332.4	$33,369	$26,695	$40,043	$19,688	$15,750	$23,625
3,000-4,999 acres	160	0.7%	3,613.6	$51,700	$41,360	$62,040	$30,503	$24,402	$36,603
> 5,000 acres	32	0.1%	6,122.0	$87,587	$70,069	$105,104	$51,676	$41,341	$62,011
Total farms	21,528	100%	-	-	-	-	-	-	-

Wheat yields for the Kansas farms are assumed to be 33 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A7: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR MINNESOTA CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to corn (acres)	Avg. area planted to soybeans (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Average price	Low price	High price
1-14 acres	2,745	8.3%	7.6	8.2	$1,414	$1,131	$1,697	$679	$543	$815
15-24 acres	1,964	5.9%	19.1	19.4	$3,373	$2,698	$4,048	$1,619	$1,295	$1,943
25-49acres	4,366	13.2%	36.2	36.0	$6,265	$5,012	$7,518	$3,007	$2,406	$3,609
50-99 acres	6,387	19.2%	70.1	70.6	$12,270	$9,816	$14,724	$5,890	$4,712	$7,067
100-249 acres	8,190	24.7%	158.8	158.4	$27,554	$22,043	$33,064	$13,226	$10,581	$15,871
250-499 acres	4,983	15.0%	349.9	350.6	$60,950	$48,760	$73,140	$29,256	$23,405	$35,107
500-999 acres	3,023	9.1%	673.9	675.0	$117,371	$93,897	$140,845	$56,338	$45,071	$67,606
1,000-1,999 acres	1,244	3.7%	1,312.6	1291.3	$225,055	$180,044	$270,066	$108,026	$86,421	$129,632
2,000-2,999 acres	197	0.6%	2,337.2	2400.7	$416,057	$332,846	$499,269	$199,708	$159,766	$239,649
3,000-4,999 acres	72	0.2%	3,674.2	3616.8	$630,320	$504,256	$756,384	$302,554	$242,043	$363,064
> 5,000 acres	27	0.1%	7,915.7	6557.4	$1,171,388	$937,110	$1,405,665	$562,266	$449,813	$674,719
Total farms	33,198	100%	-	-	-	-	-	-	-	-

Corn yields for the Minnesota are assumed to be 157.5 bushels per-acre and soybean yields to be 41.8 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A8: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR MINNESOTA WHEAT FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to wheat (acres)	Total premium			Total premium subsidy		
				Average price	Low price	High price	Average price	Low price	High price
1-14 acres	472	8.6%	8.5	$152	$122	$183	$84	$67	$101
15-24 acres	573	10.4%	19.0	$339	$271	$407	$186	$149	$224
25-49acres	914	16.6%	35.5	$633	$506	$760	$348	$279	$418
50-99 acres	1,031	18.7%	68.7	$1,225	$980	$1,470	$674	$539	$809
100-249 acres	1,063	19.3%	154.9	$2,763	$2,211	$3,316	$1,520	$1,216	$1,824
250-499 acres	637	11.6%	358.2	$6,391	$5,113	$7,669	$3,515	$2,812	$4,218
500-999 acres	509	9.3%	698.4	$12,461	$9,969	$14,953	$6,854	$5,483	$8,224
1,000-1,999 acres	239	4.3%	1,321.7	$23,582	$18,865	$28,298	$12,970	$10,376	$15,564
2,000-2,999 acres	40	0.7%	2,328.9	$41,553	$33,243	$49,864	$22,854	$18,283	$27,425
3,000-4,999 acres	19	0.3%	4,000.0	$71,370	$57,096	$85,644	$39,253	$31,403	$47,104
> 5,000 acres	2	0.04%	6,500.0	$115,976	$92,781	$139,171	$63,787	$51,030	$76,544
Total farms	5,499	100%	-	-	-	-	-	-	-

Wheat yields for the Minnesota farms are assumed to be 55.8 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A9: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR NEBRASKA CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to corn (acres)	Avg. area planted to soybeans (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Average price	Low price	High price
1-14 acres	665	2.9%	8.3	8.2	$1,778	$1,422	$2,133	$853	$683	$1,024
15-24 acres	626	2.7%	19.3	19.5	$4,179	$3,343	$5,015	$2,006	$1,605	$2,407
25-49acres	1,570	6.8%	36.3	36.3	$7,825	$6,260	$9,390	$3,756	$3,005	$4,507
50-99 acres	3,247	14.1%	71.6	71.3	$15,427	$12,341	$18,512	$7,405	$5,924	$8,886
100-249 acres	6,061	26.4%	162.6	163.0	$35,106	$28,085	$42,128	$16,851	$13,481	$20,221
250-499 acres	5,157	22.4%	353.7	348.0	$75,922	$60,737	$91,106	$36,442	$29,154	$43,731
500-999 acres	3,544	15.4%	681.2	656.8	$145,291	$116,233	$174,349	$69,740	$55,792	$83,688
1,000-1,999 acres	1,657	7.2%	1,321.8	1,263.8	$281,202	$224,962	$337,443	$134,977	$107,982	$161,973
2,000-2,999 acres	307	1.3%	2,334.5	2,425.1	$509,788	$407,830	$611,745	$244,698	$195,759	$293,638
3,000-4,999 acres	103	0.4%	3,560.5	3,645.8	$773,913	$619,130	$928,695	$371,478	$297,183	$445,774
> 5,000 acres	40	0.2%	7,084.4	6,284.5	$1,473,898	$1,179,119	$1,768,678	$707,471	$565,977	$848,965
Total farms	22,977	100%	-	-	-	-	-	-	-	-

Corn yields for the Nebraska farms are assumed to be 174 bushels per-acre and soybean yields to be 53.8 bushels per acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A10: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR NORTH DAKOTA CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to corn (acres)	Avg. area planted to soybeans (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Average price	Low price	High price
1-14 acres	76	1.1%	8.1	7.7	$1,236	$989	$1,483	$593	$475	$712
15-24 acres	51	0.7%	19.3	1.8	$1,964	$1,571	$2,357	$943	$754	$1,131
25-49acres	239	3.3%	36.8	36.1	$5,678	$4,543	$6,814	$2,726	$2,181	$3,271
50-99 acres	532	7.4%	71.9	72.5	$11,209	$8,967	$13,451	$5,380	$4,304	$6,457
100-249 acres	1,566	21.7%	160.7	164.7	$25,206	$20,165	$30,248	$12,099	$9,679	$14,519
250-499 acres	1,636	22.6%	349.9	357.5	$54,832	$43,866	$65,799	$26,319	$21,056	$31,583
500-999 acres	1,615	22.4%	679.0	697.4	$106,615	$85,292	$127,938	$51,175	$40,940	$61,410
1,000-1,999 acres	1,086	15.0%	1,327.9	1,346.6	$207,494	$165,995	$248,993	$99,597	$79,678	$119,517
2,000-2,999 acres	284	3.9%	2,347.6	2,346.7	$364,824	$291,859	$437,788	$175,115	$140,092	$210,138
3,000-4,999 acres	115	1.6%	3,608.4	3,668.7	$564,397	$451,517	$677,276	$270,910	$216,728	$325,092
> 5,000 acres	23	0.3%	37,152.3	6,980.3	$3,999,162	$3,199,330	$4,798,995	$1,919,598	$1,535,678	$2,303,517
Total farms	7,223	100%	-	-	-	-	-	-	-	-

Corn yields for the North Dakota farms are assumed to be 117 bushels per-acre and soybean yields to be 32.5 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE A11: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE

CATEGORY FOR NORTH DAKOTA CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to wheat (acres)	Total premium			Total premium subsidy		
				Average price	Low price	High price	Average price	Low price	High price
1-14 acres	83	0.8%	9.1	$364	$291	$436	$200	$160	$240
15-24 acres	117	1.1%	19.2	$767	$614	$921	$422	$338	$506
25-49acres	326	3.1%	36.9	$1,473	$1,178	$1,767	$810	$648	$972
50-99 acres	774	7.5%	73.2	$2,926	$2,341	$3,511	$1,609	$1,287	$1,931
100-249 acres	2,084	20.1%	165.2	$6,602	$5,282	$7,922	$3,631	$2,905	$4,357
250-499 acres	2,151	20.7%	353.5	$14,128	$11,302	$16,953	$7,770	$6,216	$9,324
500-999 acres	2,366	22.8%	711.5	$28,433	$22,747	$34,120	$15,638	$12,511	$18,766
1,000-1,999 acres	1,613	15.6%	1,366.5	$54,611	$43,689	$65,533	$30,036	$24,029	$36,043
2,000-2,999 acres	513	4.9%	2,393.3	$95,644	$76,515	$114,772	$52,604	$42,083	$63,125
3,000-4,999 acres	268	2.6%	3,687.5	$147,364	$117,891	$176,836	$81,050	$64,840	$97,260
> 5,000 acres	75	0.7%	6,499.9	$259,758	$207,806	$311,709	$142,867	$114,293	$171,440
Total farms	10,370	100%	-	-	-	-	-	-	-

Wheat yields for the North Dakota farms are assumed to be 45.9 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE AI2: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR OHIO CORN AND SOYBEAN FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to corn (acres)	Avg. area planted to soybeans (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Average price	Low price	High price
1-14 acres	4,911	19.8%	7.8	8.6	$1,724	$1,380	$2,069	$828	$662	$993
15-24 acres	2,710	10.9%	19.2	258.1	$39,145	$31,316	$46,974	$18,789	$15,032	$22,547
25-49acres	4,266	17.2%	35.2	35.7	$7,369	$5,895	$8,843	$3,537	$2,830	$4,244
50-99 acres	4,357	17.6%	69.9	70.4	$14,545	$11,636	$17,455	$6,982	$5,585	$8,378
100-249 acres	4,662	18.8%	156.4	157.9	$32,612	$26,090	$39,135	$15,654	$12,523	$18,785
250-499 acres	2,212	8.9%	346.8	347.0	$71,860	$57,488	$86,232	$34,493	$27,594	$41,391
500-999 acres	1,181	4.8%	670.3	673.3	$139,283	$111,426	$167,140	$66,856	$53,485	$80,227
1,000-1,999 acres	408	1.6%	1,285.1	1293.6	$267,435	$213,948	$320,922	$128,369	$102,695	$154,043
2,000-2,999 acres	44	0.2%	2,324.1	2344.8	$484,443	$387,555	$581,332	$232,533	$186,026	$279,039
3,000-4,999 acres	24	0.1%	3,590.8	3588.6	$743,452	$594,761	$892,142	$356,857	$285,485	$428,228
> 5,000 acres	14	0.1%	6,074.2	6424.6	$1,309,756	$1,047,804	$1,571,707	$628,683	$502,946	$754,419
Total farms	24,789	100%	-	-	-	-	-	-	-	-

Corn yields for the Ohio farms are assumed to be 175 bushels per-acre and soybean yields to be 51 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE AI3: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR OKLAHOMA WHEAT FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to wheat (acres)	Total premium			Total premium subsidy		
				Average price	Low price	High price	Average price	Low price	High price
1-14 acres	228	2.3%	9.1	$268	$214	$321	$158	$126	$189
15-24 acres	235	2.4%	19.1	$560	$448	$672	$330	$264	$396
25-49acres	850	8.5%	36.5	$1,069	$855	$1,283	$631	$505	$757
50-99 acres	1,423	14.3%	71.0	$2,079	$1,663	$2,495	$1,227	$981	$1,472
100-249 acres	2,769	27.8%	158.2	$4,630	$3,704	$5,556	$2,732	$2,185	$3,278
250-499 acres	1,773	17.8%	353.2	$10,341	$8,273	$12,409	$6,101	$4,881	$7,321
500-999 acres	1,500	15.1%	691.6	$20,247	$16,198	$24,297	$11,946	$9,557	$14,335
1,000-1,999 acres	843	8.5%	1,338.9	$39,199	$31,359	$47,038	$23,127	$18,502	$27,753
2,000-2,999 acres	221	2.2%	2,317.4	$67,844	$54,275	$81,413	$40,028	$32,022	$48,034
3,000-4,999 acres	88	0.9%	3,543.8	$103,747	$82,997	$124,496	$61,211	$48,968	$73,453
> 5,000 acres	16	0.2%	6,183.4	$181,023	$144,818	$217,228	$106,804	$85,443	$128,164
Total farms	9,946	100%	-	-	-	-	-	-	-

Wheat yields for the Oklahoma farms are assumed to be 24 bushels per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.

TABLE AI4: ESTIMATED TOTAL PREMIUMS AND PREMIUM SUBSIDIES BY FARM-SIZE CATEGORY FOR TEXAS WHEAT AND COTTON FARM OPERATIONS

Farm-size category by area planted to a single crop	Number of farms	Proportion of total farms	Avg. area planted to wheat (acres)	Avg. area planted to cotton (acres)	Total premium			Total premium subsidy		
					Average price	Low price	High price	Average price	Low price	High price
1-14 acres	315	4.3%	8.3	8.0	$1,300	$1,040	$1,559	$767	$613	$920
15-24 acres	235	3.2%	19.5	18.9	$3,069	$2,455	$3,683	$1,811	$1,449	$2,173
25-49acres	692	9.3%	35.8	37.4	$5,990	$4,792	$7,188	$3,534	$2,827	$4,241
50-99 acres	1,208	16.3%	70.7	70.8	$11,419	$9,135	$13,702	$6,737	$5,390	$8,084
100-249 acres	2,009	27.1%	159.5	164.5	$26,380	$21,104	$31,655	$15,564	$12,451	$18,677
250-499 acres	1,258	17.0%	346.3	358.1	$57,394	$45,915	$68,873	$33,862	$27,090	$40,635
500-999 acres	947	12.8%	688.1	688.6	$111,045	$88,836	$133,254	$65,517	$52,413	$78,620
1,000-1,999 acres	489	6.6%	1,319.5	1,338.7	$215,336	$172,269	$258,403	$127,048	$101,638	$152,458
2,000-2,999 acres	152	2.1%	2,359.0	2,336.9	$377,616	$302,093	$453,139	$222,794	$178,235	$267,352
3,000-4,999 acres	79	1.1%	3,747.5	3,606.8	$586,091	$468,873	$703,309	$345,794	$276,635	$414,952
> 5,000 acres	25	0.3%	6,762.7	6,370.6	$1,039,622	$831,697	$1,247,546	$613,377	$490,701	$736,052
Total farms	7,409	100%	-	-	-	-	-	-	-	-

Wheat yields for the Texas farms are assumed to be 29.5 bushels per-acre and cotton yields to be 645.5 pounds per-acre (the statewide yields averaged for 2013 and 2014); dash symbol denotes not applicable.