



February 2015

CROP INSURANCE

In Areas with Higher
Crop Production
Risks, Costs Are
Greater, and
Premiums May Not
Cover Expected
Losses

Accessible Version

GAO Highlights

Highlights of [GAO-15-215](#), a report to congressional requesters

Why GAO Did This Study

The federally subsidized crop insurance program, which helps farmers manage the risk inherent in farming, has become one of the most important programs in the farm safety net. Since 2000, the government's costs for the crop insurance program have increased substantially. The program's cost has come under scrutiny as the nation's budgetary pressures have been increasing.

GAO was asked to identify the costs to the federal government for insuring crops in areas with higher production risks. This report examines, for these areas, (1) the government's cost of the crop insurance program and (2) the extent to which RMA's premium rates, as implemented, cover expected losses. GAO analyzed RMA crop insurance program data from 1994 through 2013 (the most recent year with complete program data) and premium rate data for 2013 and 2014; reviewed relevant studies, RMA documents, and documents from stakeholders including farm industry groups; and interviewed RMA officials.

What GAO Recommends

GAO recommends that RMA (1) monitor and report on crop insurance costs in areas that have higher crop production risks and (2), as appropriate, increase its adjustments of premium rates in these areas by as much as the full 20 percent annually that is allowed by law.

RMA disagreed with GAO's first recommendation and agreed with the second. GAO continues to believe that RMA can and should do more to monitor and report on crop insurance costs in higher risk areas, where government costs were found to be substantially higher.

View [GAO-15-215](#). For more information, contact Steve D. Morris at (202) 512-3841 or morriss@gao.gov.

February 2015

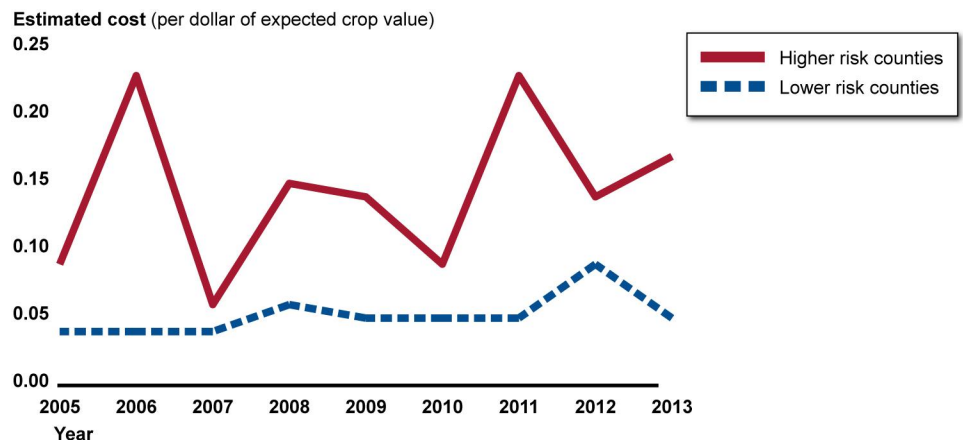
CROP INSURANCE

In Areas with Higher Crop Production Risks, Costs Are Greater, and Premiums May Not Cover Expected Losses

What GAO Found

The federal government's crop insurance costs are substantially higher in areas with higher crop production risks (e.g., drought risk) than in other areas. In the higher risk areas, government costs per dollar of crop value for 2005 through 2013 were over two and a half times the costs in other areas. The figure below shows the costs during this period. However, the U.S. Department of Agriculture's (USDA) Risk Management Agency (RMA)—the agency that administers the crop insurance program—does not monitor and report on the government's crop insurance costs in the higher risk areas.

Estimated Federal Government Crop Insurance Costs per Dollar of Expected Crop Value for 2005 through 2013



Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: The crops used for these calculations are corn, cotton, grain sorghum, soybeans, and wheat.

RMA implemented changes to premium rates in 2014, decreasing some rates and increasing others, but GAO's analysis of RMA data shows that, for some crops, RMA's higher risk premium rates may not cover expected losses. RMA made changes to premium rates from 2013 to 2014, but its plans to phase in changes to premium rates over time could have implications for improving actuarial soundness. USDA is required by statute to limit annual increases in premium rates to 20 percent of what the farmer paid for the same coverage in the previous year. However, GAO found that, for higher risk premium rates that required an increase of at least 20 percent to cover expected losses, RMA did not raise these premium rates as high as the law allows to make the rates more actuarially sound. Without sufficient increases to premium rates, where applicable, RMA may not fully cover expected losses and make the rates more actuarially sound. Furthermore, in analyzing data on premium dollars for 2013, GAO found that had RMA's higher risk premium rates been more actuarially sound, the federal government could have potentially collected tens of millions of dollars in additional premiums.

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Abbreviations

APH	actual production history
ASB	Actuarial Standards Board
CBO	Congressional Budget Office
OIG	Office of Inspector General
RMA	Risk Management Agency
USDA	U. S. Department of Agriculture

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Washington, DC 20548

Letter

U.S. GOVERNMENT ACCOUNTABILITY OFFICE

February 9, 2015

The Honorable Ron Johnson
Chairman
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable James Lankford
Chairman
Subcommittee on Regulatory Affairs and Federal Management
Committee on Homeland Security and Governmental Affairs
United States Senate

The federally subsidized crop insurance program, which helps farmers manage the risk inherent in farming, has become one of the most important programs in the farm safety net. Farmers can insure against losses caused by poor crop yields resulting from natural causes, declines in crop prices, or both, for each insurable crop they produce. The U.S. Department of Agriculture's (USDA) Risk Management Agency (RMA) has overall responsibility for administering the crop insurance program, including controlling costs. Currently, RMA partners with 19 private insurance companies that sell and service the insurance policies and share a percentage of the risk of loss and opportunity for gain associated with each policy. The federal government pays for (1) part of farmers' crop insurance premiums, which averaged about 62 percent of total premiums in 2013, and (2) administrative and operating expenses of insurance companies to cover their expenses for selling and servicing crop insurance policies.

Since 2000, the government's costs for the federal crop insurance program have increased substantially. Federal costs for the program averaged \$3.4 billion annually for fiscal years 2003 through 2007 and grew to an average of \$8.4 billion annually for fiscal years 2008 through 2013. The Congressional Budget Office (CBO) estimates that federal crop insurance costs will average \$8.9 billion per year for fiscal years 2015 through 2024.¹ The cost of the federal crop insurance program has come

¹This estimate includes projected costs associated with new crop insurance provisions in the Agricultural Act of 2014.

under scrutiny as the nation's budgetary pressures have been increasing. In an October 2013 review of the federal government's long-term fiscal outlook, we concluded that current fiscal policy is unsustainable over the long term and that addressing the fiscal challenges of the future will require looking at the entire range of federal activities and making difficult choices in setting priorities.²

Budget pressures have been increasing in recent years and, at the same time, net farm income reached historically high levels. According to USDA's Economic Research Service (ERS), a primary source of economic information and research, net farm income is forecast to be \$96.9 billion in 2014, down 23.4 percent from 2013's forecast of \$126.5 billion. If realized, according to ERS, the 2014 amount would be the lowest since 2010, but net farm income would still be more than \$14.5 billion higher than ERS' previous 10-year annual average (2004 through 2013).

In 2012 and 2013 reports, we suggested that Congress reduce crop insurance costs by limiting the amount of premium subsidies that an individual farmer can receive each year, reducing premium subsidy rates for all farmers, or by some combination of limiting and reducing these subsidies.³ The Senate approved farm legislation in 2013 that would have reduced premium subsidies for some farmers, but this provision was not included in the final 2014 farm bill. In March 2014, the President's fiscal year 2015 budget proposed reductions in some premium subsidy rates. In August 2014, we suggested that Congress consider reducing the level of federal premium subsidies for revenue crop insurance policies.⁴

Crop insurance premium subsidies contribute to relatively high government costs in areas of the country with higher crop production risks—that is, areas that have higher risks of crop losses from drought,

²GAO, *Fiscal Exposures: Improving Cost Recognition in the Federal Budget*, [GAO-14-28](#) (Washington, D.C.: Oct. 29, 2013).

³GAO, *Crop Insurance: Savings Would Result from Program Changes and Greater Use of Data Mining*, [GAO-12-256](#) (Washington, D.C.: Mar. 13, 2012) and *2013 Annual Report: Actions Needed to Reduce Fragmentation, Overlap, and Duplication and Achieve Other Financial Benefits*, [GAO-13-279SP](#) (Washington, D.C.: Apr. 9, 2013).

⁴GAO, *Crop Insurance: Considerations in Reducing Federal Premium Subsidies*, [GAO-14-700](#) (Washington, D.C.: Aug. 8, 2014).

excessive moisture, or other natural causes. Because premiums are typically higher for policies covering crops in these areas, and premium subsidies are set at fixed percentages of the premiums, the premium subsidies are also higher.

Current law directs RMA to adopt premium rates and coverage levels that improve the actuarial soundness of the federal crop insurance program.⁵ As a result, according to RMA, it must set premium rates and implement changes to premium rates in a timely manner to cover expected losses and allow for a reasonable reserve.⁶ Current law also directs RMA to conduct periodic reviews of premium rates, including the methodology the agency uses for establishing premium rates.⁷ RMA conducted its most recent study of its methodology for setting premium rates in 2010. Among other things, the study authors found that RMA's methodology was sound, but that the underlying data should be revised. Specifically, they concluded that the agency should place more weight on loss experience from more recent years to better account for current risks faced by farmers.⁸ RMA adopted findings from the study, and a revision of its methodology necessitated a change in premium rates. RMA is directed by statute to implement new rates in a timely manner in order to improve actuarial soundness. According to an RMA document, this provision ensures that the federal crop insurance program does not place an

⁵Federal Crop Insurance Act § 508(i)(1) (codified at 7 U.S.C. § 1508(i)(1)). Specifically, the law directs RMA to adopt, as soon as practicable, rates and coverages that will improve the actuarial soundness of RMA's insurance operations for those crops that are determined to be insured at rates that are not actuarially sound, except that no rate may be increased by an amount of more than 20 percent over the comparable rate of the preceding crop year. 7 U.S.C. § 1508(i)(1). According to RMA, it must set premium rates and implement rate changes in a timely manner to cover expected losses and a reasonable reserve.

⁶The Actuarial Standards Board (ASB), which is the standards-setting entity of the U.S. actuarial profession, has noted that the phrase "actuarial soundness" has different meanings in different contexts, and that its meaning in a particular context might be imposed by an entity outside of the actuarial profession (e.g., a statute). The ASB's standards state that if an actuary defines a process or result as "actuarially sound," the actuary should define the meaning of "actuarially sound" in that context. As stated previously, current law directs RMA to set premium rates and coverage levels that improve actuarial soundness of the federal crop insurance program.

⁷Federal Crop Insurance Act § 508(i)(2) (codified at 7 U.S.C. § 1508(i)(2)).

⁸RMA documents indicate that the agency also implemented additional recommendations from the 2010 study such as an adjustment of pre-1995 loss data and the use of weather data experience when adjusting premium rates.

unnecessary financial burden on farmers or the government through inaccurate premium rates.

In this context, you asked us to identify the costs to the federal government for insuring crops in areas with higher production risks in comparison with costs for insuring the same crops in areas with relatively lower production risks.⁹ Our objectives were to determine, for areas with higher crop production risks, (1) the government's cost of the crop insurance program and (2) the extent to which RMA's premium rates, as implemented, cover expected losses.

To address these objectives, we reviewed relevant provisions of the Food, Conservation, and Energy Act of 2008 (2008 farm bill) and the Agricultural Act of 2014 (2014 farm bill); other statutes; and USDA regulations. To address the first objective, we analyzed RMA crop insurance program data for the crop years 1994 through 2013, for the five major crops—corn, soybeans, wheat, cotton, and grain sorghum.¹⁰ To identify areas with higher production risks, we used 2013 county target premium rates—that is, the premium rates that RMA determines for each county and each crop based on the county's loss history.¹¹ We calculated a weighted average county target premium rate for each county in 2013 combining the county target premium rates for all five crops (and all of the crops' practices and crop types) using 2013 premium dollars. We then ranked the counties' weighted average county target premium rates from the highest to the lowest. We considered the 20 percent of counties that had the highest weighted average county target premium rates to have the highest crop production risks (or, "higher risk counties") and the remaining 80 percent to have the lowest crop production risks (or, "lower

⁹This request was originally made by Senator Tom Coburn, former Ranking Member, Committee on Homeland Security and Governmental Affairs.

¹⁰The five major crops represented 86 percent of the total crop insurance premiums for 2013.

¹¹An RMA official knowledgeable about the agency's process for setting county target premium rates told us that these premium rates reflect the best estimates that RMA has regarding the risk associated with insuring a crop in a county.

risk counties”).¹² To calculate total government costs in these higher risk counties, we analyzed RMA data.¹³ We also interviewed RMA officials regarding the RMA regional offices’ role in monitoring premium rates. In addition, we reviewed USDA’s and other studies that examined the costs of the crop insurance program and the role of premium subsidies and reviewed documents from other stakeholders, including farm industry groups. To address the second objective, we analyzed RMA data on county premium rates for the five major crops, for crop years 2013 and 2014.¹⁴ We also interviewed RMA officials in headquarters and two field offices—selected based on their experience administering policies in areas with higher production risks—regarding the agency’s method for setting and implementing changes to county premium rates. In addition, we reviewed USDA’s and other studies that examined the agency’s methodology for assigning premium rates and reviewed relevant audits by USDA’s Office of the Inspector General. To evaluate the reliability of all of the RMA data, we reviewed related documentation, interviewed knowledgeable agency officials, and reviewed related internal controls information. In each case, we concluded that the data were sufficiently reliable for the purposes of this report. A more detailed discussion of our objectives, scope, and methodology is presented in appendix I.

We conducted this performance audit from December 2013 to February 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to

¹² We calculated alternative cutoffs, including 50th, 70th, 90th and 95th percentiles. We determined that the 80th percentile cutoff is a compromise between having the cutoff too high—such as the 95th percentile, which might have too few higher risk counties to allow for meaningful estimates—and, having too broad of a cutoff—the 50th percentile cutoff, for example.

¹³ According to RMA, total government costs are equal to loss claim payments to farmers minus premiums and other income received by the government plus premium subsidies provided on behalf of farmers plus administrative and operating expenses paid to insurance companies plus other costs (e.g., RMA’s salaries and expenses for administering the program).

¹⁴ We used the same 2013 production-based (or yield) county target premium rates data from RMA to identify areas with higher production risks in both objectives. Production-based premium rates are RMA’s published county premium rates for production-based policies and are used to determine the premium rates for revenue policies, which protect against crop revenue loss resulting from declines in production, price, or both. Most crop insurance policies are either production-based or revenue policies. For production-based policies, a farmer can receive a payment if there is a production loss relative to the farmer’s historical production per acre.

obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The authorizing legislation for the federal crop insurance program states that the purpose of the program is to promote the national welfare by improving the economic stability of agriculture.¹⁵ According to RMA's mission statement, the agency provides risk-management tools, such as crop insurance, to strengthen the economic stability of agricultural producers and rural communities. Specifically, RMA's fiscal years 2011 to 2015 strategic plan states that the agency's goal for the federal crop insurance program is that it will provide a broad-based financial safety net for producers. The fiscal years 2011 to 2015 strategic plan includes the agency's strategic goals and core values in support of its mission. These goals are, among other things, to continue to expand participation, ensure actuarially sound products, safeguard the integrity of the program, and to do so as responsible stewards of taxpayer dollars and with transparency.

Through the federal crop insurance program, farmers insure against losses on more than 100 crops. These crops include the five major crops (corn, soybeans, wheat, cotton, and grain sorghum), as well as nursery crops and certain fruits and vegetables. According to an RMA document, the amount of federal crop insurance purchased based on planted acres is relatively high in comparison with the past for the five major crops. In 2012, corn acreage was 84 percent insured, soybean acreage was 84 percent insured, wheat acreage was 83 percent insured, cotton acreage was 94 percent insured, and grain sorghum acreage was 74 percent insured.

As shown in table 1, the federal government's crop insurance costs generally increased for fiscal years 2003 through 2013. A widespread drought and crop losses in crop year 2012 contributed to the spike in

¹⁵Federal Crop Insurance Act § 502 (codified at 7 U.S.C. § 1502). According to RMA, Congress first authorized federal crop insurance in the 1930s along with other initiatives to help agriculture recover from the combined effects of the Great Depression and the Dust Bowl.

government costs to \$14.1 billion in fiscal year 2012.¹⁶ In crop year 2013, weather conditions were more favorable, so government costs were lower than in fiscal year 2012. According to an April 2014 CBO estimate, for fiscal years 2014 through 2023, program costs are expected to average \$8.9 billion annually.

Table 1: Government Cost of Federal Crop Insurance, Fiscal Years 2003 through 2013

Dollars in millions

Fiscal year	Premiums and other income ^a	Loss claim payments	Loss claims paid in excess of premiums and other income	Premium subsidies	Administrative expenses	Other costs	Total government costs
2003	\$2,946	\$3,768	\$822	\$1,874	\$743	\$149	\$3,588
2004	3,133	2,828	(305)	2,387	900	143	3,125
2005	3,089	2,796	(293)	2,070	783	139	2,699
2006	3,617	3,585	(32)	2,517	960	126	3,571
2007	4,561	3,493	(1,068)	3,544	1,341	124	3,941
2008	6,741	5,024	(1,717)	5,301	2,016	137	5,737
2009	8,076	8,416	340	5,198	1,602	131	7,271
2010	5,282	2,759	(2,523)	4,680	1,371	143	3,671
2011	11,037	13,429	2,392	7,376	1,383	144	11,295
2012	13,058	18,428	5,370	7,149	1,411	141	14,071
2013	\$8,985	\$6,158	(\$2,827)	\$7,279	\$1,350	\$149	\$5,951

Source: GAO analysis of USDA's Risk Management Agency (RMA) data. | GAO-15-215

Note: According to an RMA document, total government costs are equal to loss claim payments to farmers minus premiums and other income received by the government plus premium subsidies provided on behalf of farmers plus administrative and operating expenses paid to insurance companies plus other costs.

^aPremiums and other income are equal to premiums paid by farmers plus premium subsidies plus interest and other income minus underwriting gain (or plus underwriting loss).

RMA charges premiums to farmers to cover the risk of insuring crops against expected crop losses. RMA calculates premiums by multiplying the value of the insured crop, a base premium rate, and adjustment factors, which individualize the premium rate to a farmer's particular crop,

¹⁶For the purposes of this report, as appropriate, we report data in calendar, fiscal, or crop years. According to ERS, a crop year (also known as a marketing year) is the 12-month period starting with the month when the harvest of a specific crop typically begins. For example, the 2008 wheat crop year was June 1, 2008, through May 30, 2009.

yield history, geographic dispersion of the lands insured, and the percentage of the crop value that the farmer chooses to insure. Premium rates vary by crop, practice (e.g., irrigated or nonirrigated), type (e.g., spring wheat or winter wheat), and location (i.e., county).

RMA distinguishes between “base” premium rates and “target” premium rates. RMA sets a “base” and “target” premium rate for each county. In this report, we refer to this base premium rate as the *county base premium rate* and the target premium rate as the *county target premium rate*.

The *county base premium rate* is the rate upon which a farmer’s individual premium rate is based.¹⁷ The county base premium rate reflects past loss experience. As RMA accumulates information about new loss experience, it incorporates that information into the *county base premium rate*. Generally, a high county base premium rate indicates a high past crop loss history, and a lower county base premium rate suggests the opposite. The *county target premium rate* is the rate that RMA estimates to be the actuarially sound premium rate. RMA calculates the county base premium rate for each crop in each county by averaging the crop loss history over the preceding 20-year period and adjusting the rate to a standardized coverage level, which RMA sets at the 65 percent coverage level. The county target premium rate is the rate RMA sets as the benchmark for the county base premium rate.

The county base premium rate is the premium rate that is charged to a farmer, and the county target premium rate is the premium rate that RMA would need to charge farmers to fully cover expected losses. To fully cover expected losses, the county base premium rate should equal the county target premium rate. However, the county base premium rate can, over time, become out of alignment so that it is less than or greater than the county target premium rate. The county base premium rate may differ from the county target premium rate because changes in the rates due to actual loss history may outpace RMA’s ability to increase or decrease rates due to statutory limitations and RMA’s practices for adjusting

¹⁷RMA calculates a farmer’s premium rate using a formula that includes the farmer’s actual production history yield (the expected yield), a reference yield (the average yield for all farmers planting a particular crop in a county), the county base premium rate, the crop type and practice, geographic dispersion of the land insured, and a coverage differential (fractions assigned to the various coverage levels).

rates.¹⁸ In addition to conducting required reviews of its methodology for determining premium rates, RMA conducts periodic reviews of county base premium rates and county target premium rates based on new information about county losses.¹⁹

The federal government's premium subsidies for crop insurance policies are not actual monetary payments to farmers, but they can be considered a financial benefit to farmers. Without a premium subsidy, a participating farmer would have to pay more because he would be responsible for the full amount of the policy premium. Congress sets premium subsidy rates, meaning the percentage of the premium paid by the government. Premium subsidy rates vary by the level of insurance coverage that the farmer chooses.²⁰ For most policies, the statutory premium subsidy rates range from 38 percent to 80 percent. Premium subsidy rates increased, as a percentage of total premiums, from an average of 37 percent in 2000 to an average of 62 percent in 2013. In addition, premium subsidies rose as crop prices increased because higher prices meant the insured value of the crop increased, and premiums are based on the value of what is insured.

The federal government provides crop insurance premium subsidies in part to achieve high crop insurance participation and coverage levels.²¹ Higher participation and coverage levels may reduce or eliminate the need for disaster assistance payments from congressionally authorized ad hoc disaster programs to help farmers recover from natural disasters,

¹⁸RMA is required by statute to limit yearly increases in premium rates to 20 percent of what the farmer paid for the same coverage in the previous year. RMA uses a capping procedure so that changes to any component of the premium rate do not increase the rate by more than the 20 percent limit set by statute.

¹⁹RMA reports that, generally, it conducts reviews of premium rates for any given crop every 3 years.

²⁰In addition, premium subsidy rates can vary based on the geographic diversity of the land parcels being insured. For example, at the 70 percent coverage level, the premium subsidy rate is 80 percent for an enterprise unit and 59 percent for a basic unit. An enterprise unit consists of all insurable acreage of the same insured crop in the county in which the farmer has a share on the date coverage begins for the crop year. In contrast, a basic unit consists only of acreage with the same farmer and landowner.

²¹Farmers select a coverage level—that is, the percentage of their normal yield or revenue they want to insure. In 2012, more than half of the enrolled corn and soybean acres were at coverage levels above 70 percent.

which can be costly. A 2005 USDA publication²² asserts that Congress passed the Federal Crop Insurance Act of 1980 and subsequent related legislation to strengthen participation in the crop insurance program with the goal of replacing costly disaster assistance programs. According to this publication, the government has historically attempted to increase participation in the federal crop insurance program by subsidizing premiums, including increasing the level of these subsidies over time. In 2012, a major drought occurred, but Congress did not authorize ad hoc disaster payments. According to several farm groups, there were no calls for ad hoc disaster assistance in 2012 because of the protection crop insurance provided. Another possible reason was that, according to a 2013 Congressional Research Service report, under budget rules, the cost of ad hoc disaster payments would have to have been offset by spending cuts elsewhere.

The 2014 farm bill included a provision that affects the dollar value that a farmer can insure when the farmer's county has experienced substantial crop losses in previous years. RMA uses the actual production history (APH)—4 to 10 years of historical crop yields— to establish a farmer's insurance guarantee. Existing law before the 2014 farm bill allowed a farmer to replace a low actual yield in the APH with a yield equal to 60 percent of the historical county crop yield. The 2014 farm bill enhanced this provision by allowing farmers to exclude without replacement any recorded or appraised yield from the APH calculation if the average crop yield in the county for any particular year is less than 50 percent of the 10-year county average. According to a USDA document, this provision will provide relief to farmers affected by severe weather, including drought, by allowing them to have a higher approved crop yield. In general, RMA will set increased premium rates for farmers who choose to use this option, meaning the subsidy provided by the federal government will increase. CBO estimated that this provision change will cost \$357 million over the 10 years from fiscal year 2014 through fiscal year 2023.

²²R. Dismukes and J. Glauber, "Why Hasn't Crop Insurance Eliminated Disaster Assistance?", Amber Waves, USDA Economic Research Service (June 2005).

The Government's Crop Insurance Costs Are Greater in Areas with Higher Crop Production Risks

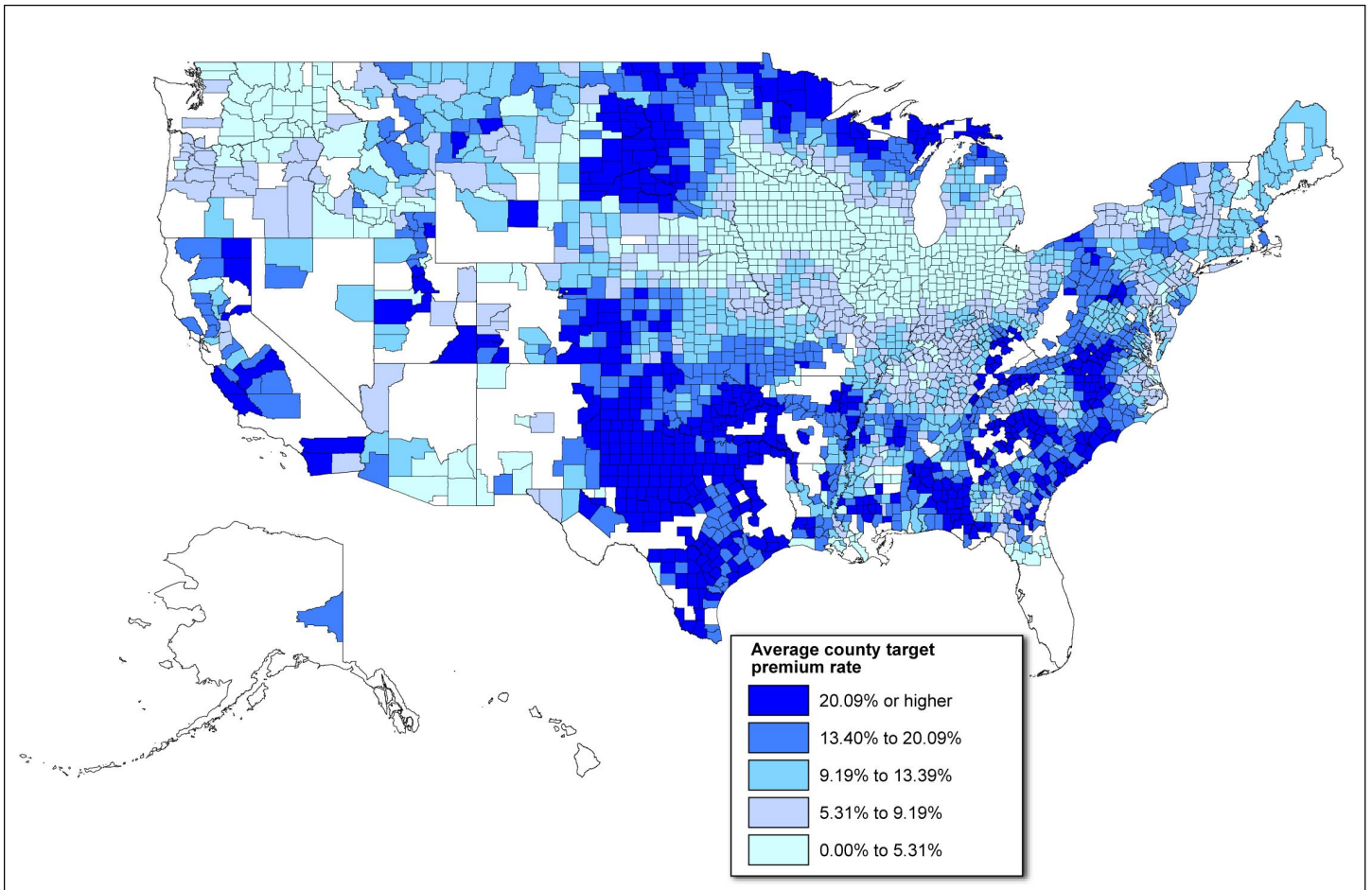
The government's crop insurance costs are substantially higher in areas with higher crop production risks than in other areas. From 2005 through 2013, government costs per dollar of crop value in areas with higher crop production risks were over two and a half times the costs in other areas. However, RMA does not monitor and report on the government's crop insurance costs in these higher risk areas.

According to an RMA official, RMA's county target premium rates are the best available measure of crop production risks. In the 20 percent (510) of U.S. counties with the highest average county target premium rates, these rates ranged from 20 percent to 83 percent, with a median rate of 25 percent.²³ In comparison with other types of property and casualty insurance, 25 percent is a relatively high premium rate. For example, at 25 percent, the annual homeowner's insurance premium on a house valued at \$400,000 would be \$100,000. The remaining 80 percent (2,044) of U.S. counties had lower average county target premium rates. Those rates ranged from 0.6 percent to nearly 20 percent, with the median rate of 9 percent.

Figure 1 shows counties organized in groups of 20 percent based on average county target premium rates, with the darker areas representing counties with higher average county target premium rates. The color-shaded counties represent all 2,554 counties that had county target premium rates for at least one of the five major crops.

²³These averages of 2013 target premium rates were weighted by county premium dollars. Specifically, we calculated weighted-average county target premium rates for each county based on the 2013 county premium dollars associated with each practice-crop type combination. We used these weighted-average county target premium rates because this measure indicates crop production risks, while being related to government costs through the weighting of the rates by county premium dollars. We used a weighted-average rather than a simple average because we wanted the average to reflect the relative importance of the different crop, practice, and crop-type combinations RMA used for premium calculations in 2013. Moreover, the use of weighted-average county target premium rates provides a single measure that facilitates the examination of government costs by geographic area. We selected 2013 because it was the most recent year for which complete RMA data on program costs was available at the time we did this analysis. The five major crops represented 86 percent of the total crop insurance premiums for 2013.

Figure 1: Average County Target Premium Rates for the Federal Crop Insurance Program by Groups of 20 Percent, 2013



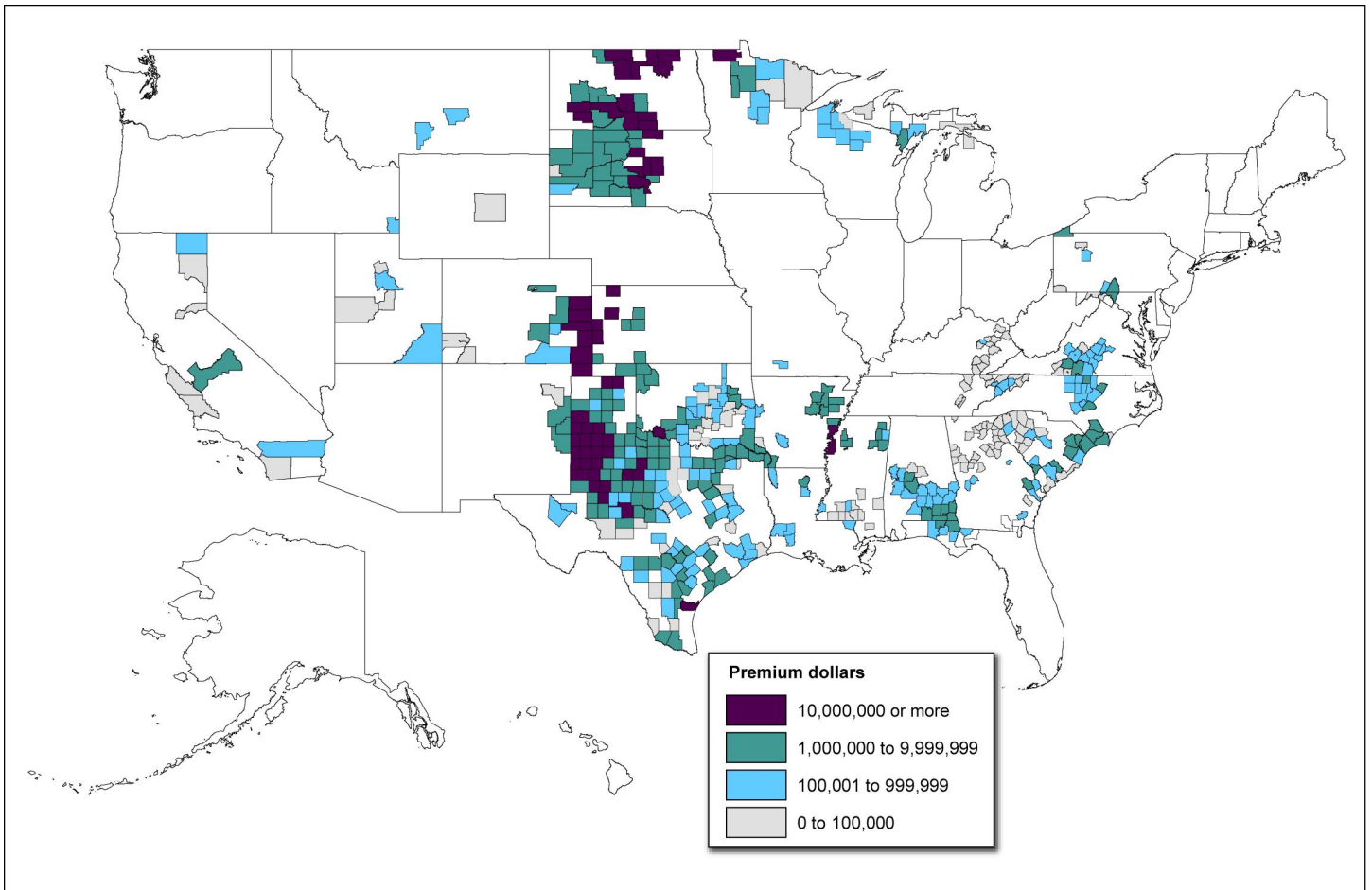
Sources: GAO analysis of USDA's Risk Management Agency crop insurance data; MapInfo (map). | GAO-15-215

Note: To identify areas with higher crop production risks, we determined the average of each county's 2013 county target premium rates for the five major crops—corn, soybeans, wheat, cotton, and grain sorghum. These averages were weighted by crop, crop type, and practice based on county premium dollars. The white areas on the map represent counties that did not have target rates for any of these crops.

Figure 2 shows the riskiest 20 percent of counties (510) in terms of average county target premium rates.²⁴ These 510 higher risk counties are color-shaded on the basis of their 2013 premium dollars to show which counties purchased the most crop insurance. The Great Plains, which has areas with relatively high drought risk, had a large portion of the higher risk counties' premium dollars.

²⁴Our use of the 20 percent of counties that had the highest average county target premium rates is for illustration purposes. In this report, we generally use these 20 percent of counties to examine crop insurance costs in areas that have higher crop production risks. We recognize that alternative groupings (or cutoff values) could be used. For example, a map showing the 10 percent of counties that had the highest average county target premium rates and the premiums in those counties is in appendix II.

Figure 2: Premiums for the Federal Crop Insurance Program in the Higher Risk Counties, 2013



Sources: GAO analysis of USDA's Risk Management Agency crop insurance data; MapInfo (map). | GAO-15-215

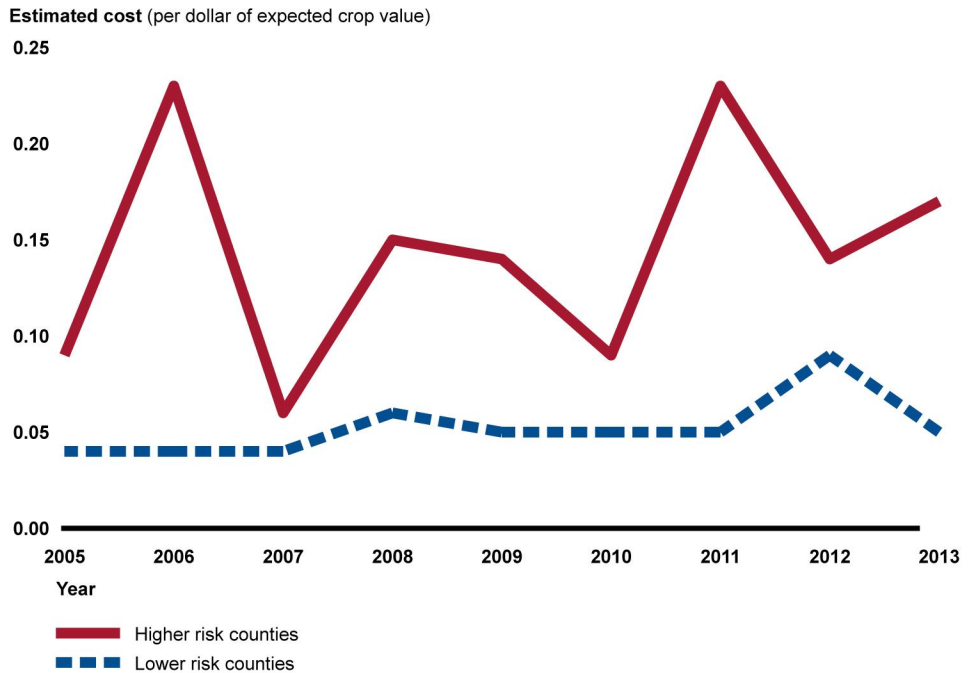
Note: To identify areas with higher crop production risks, we determined the average of each county's 2013 county target premium rates for the five major crops—corn, soybeans, wheat, cotton, and grain sorghum. These averages were weighted by crop, crop type, and practice based on county premium dollars. The map shows the 20 percent of U.S. counties—510 counties—that had the highest average target premium rates.

Figure 3 compares the estimated government crop insurance costs per dollar of expected crop value for the five major crops in the 510 higher risk counties with the costs in the 2,044 other U.S. counties from 2005

through 2013.²⁵ Total government crop insurance costs vary from year to year depending on weather-caused crop losses, crop prices, and farmers' decisions about how much insurance coverage to purchase. To control for variations in crop prices and farmers' purchase decisions, and to normalize the costs for higher risk counties and lower risk counties while still reflecting weather-caused crop losses, we expressed the estimated government costs in relation to expected crop value. As shown in figure 3, the costs in higher risk counties were substantially greater. Over the 9-year time frame, government costs averaged 14 cents per dollar of expected crop value in the higher risk counties and 5 cents per dollar in the other counties. For example, if two farms each had an expected crop value of \$1 million, the higher risk farm would have had an average annual government cost of \$140,000, and the lower risk farm would have had an average annual government cost of \$50,000. In 2013, the higher risk counties had a government cost of 17 cents per \$1 of expected crop value, 3 cents higher than the average during the time frame, and the other counties had a government cost of 5 cents per \$1 of expected crop value, the same as the time frame average.

²⁵Expected crop value is equal to the expected crop production multiplied by the expected (or elected) crop price. However, we did not have information on expected crop prices, so we calculated expected crop value by dividing the liability dollars by the coverage rate.

Figure 3: Estimated Federal Government Crop Insurance Costs per Dollar of Expected Crop Value for 2005 through 2013



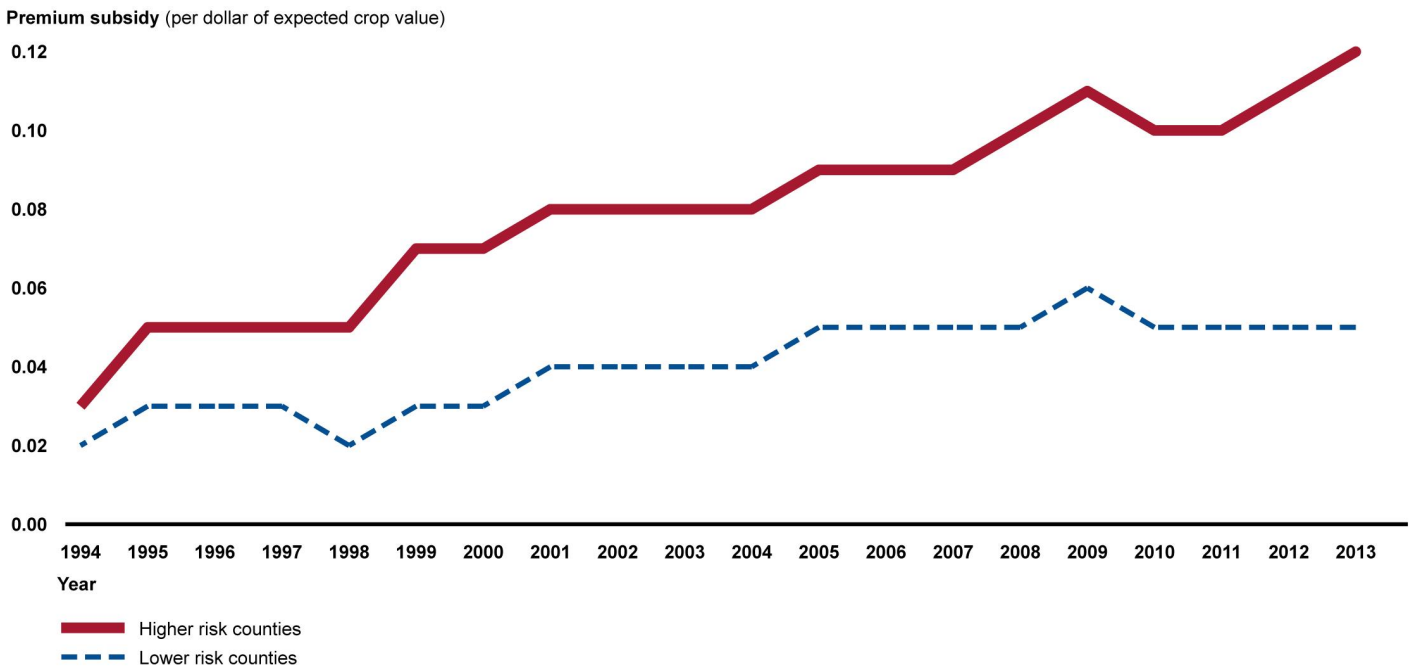
Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: These estimated government costs are based on our analysis of Risk Management Agency data on loss claim payments to farmers, premium subsidies provided on behalf of farmers, premiums paid by farmers, administrative and operating expense subsidies paid to insurance companies, and underwriting gains paid to insurance companies. The crop data used for these estimates are corn, cotton, grain sorghum, soybeans, and wheat. Higher risk counties are those 510 U.S. counties with the highest average county target premium rates in 2013, and lower risk counties are the other 2,044 counties.

Premium subsidies provided on behalf of farmers are a large component of government crop insurance costs. Figure 4 compares premium subsidies provided on behalf of farmers per dollar of expected crop value in the 510 higher risk counties with the premium subsidies in the 2,044 other counties from 1994 through 2013. Similar to the pattern shown in figure 3, figure 4 shows that premium subsidies in higher risk counties were substantially more than in the other counties. An important distinction between figure 3 and figure 4 is that figure 3 is indicative of differences in weather-related loss claim payments, which vary from year to year, while the measures of premium subsidies in figure 4 do not vary with weather-related loss claim payments and are related to the program design. In addition, figure 4 shows that the differences between higher risk counties and the other counties generally increased during the period

from 1994 through 2013. Some of these increasing differences likely resulted from statutory increases in premium subsidy rates. For example, the Agricultural Risk Protection Act of 2000 increased premium subsidy rates. As a result, the premium subsidies provided on behalf of farmers increased from an average of 37 percent of the total premiums in 2000 to 60 percent in 2001, when the increased premium subsidy rates took effect. According to RMA officials, another likely reason for the increasing difference between higher risk counties and the other counties is that relatively more farmers in the higher risk counties changed from yield insurance to revenue insurance during the latter part of this time frame. Such a change causes farmers' premium rates and their premium subsidies to increase. However, the officials could not quantify the extent to which this change affected farmers' premium subsidies per dollar of expected crop value.

Figure 4: Federal Crop Insurance Program Premium Subsidies Provided on Behalf of Farmers per Dollar of Expected Crop Value, 1994 through 2013

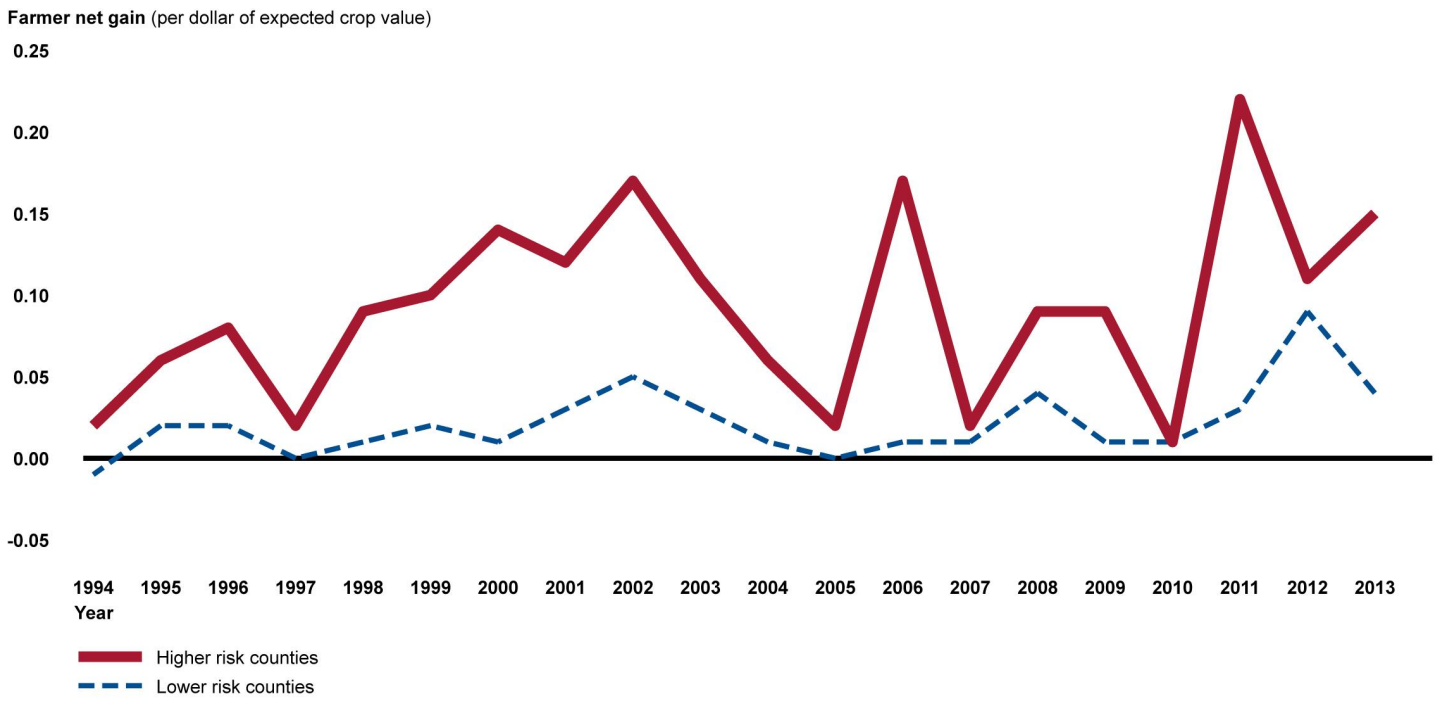


Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: The five major crops used in these calculations are corn, cotton, grain sorghum, soybeans, and wheat. Higher risk counties are those 510 U.S. counties with the highest average county target premium rates in 2013, and lower risk counties are the other 2,044 counties.

Farmers' net gains (i.e., loss claim payments received less premiums paid) from crop insurance offer another perspective on government costs in higher risk areas. Farmers' net gains are related to government costs. Premium subsidies are not only a large component of government costs but also an important factor in farmers' net gains from crop insurance. Figures 5 and 6 show, for 1994 through 2013, respectively, farmers' net gains per dollar of expected crop value and net gains per dollar of premium paid by farmers. If a farmer's net gain per dollar of premium paid is more than zero, it means the farmer received more in loss claim payments than he or she paid in premiums. As shown in these two figures, farmers' net gains fluctuated from year to year. Weather was a key factor for some of the years. For example, in the higher risk counties, farmers' net gains from crop insurance were relatively high in 2011 when areas of the Great Plains experienced a severe drought. Similarly, in the other areas, farmers' net gains were relatively high in 2012 when a large portion of the United States, including parts of the Corn Belt, had a major drought. During the 20-year time frame, farmers' net gains from crop insurance averaged 9 cents per \$1 of expected crop value in the higher risk counties and 2 cents per \$1 of expected crop value in the lower risk counties. In addition, farmers in higher risk counties averaged \$1.97 in net gains per \$1 of premiums paid compared with net gains averaging \$0.87 per \$1 of premiums paid for farmers in the lower risk counties over the 20-year time frame.

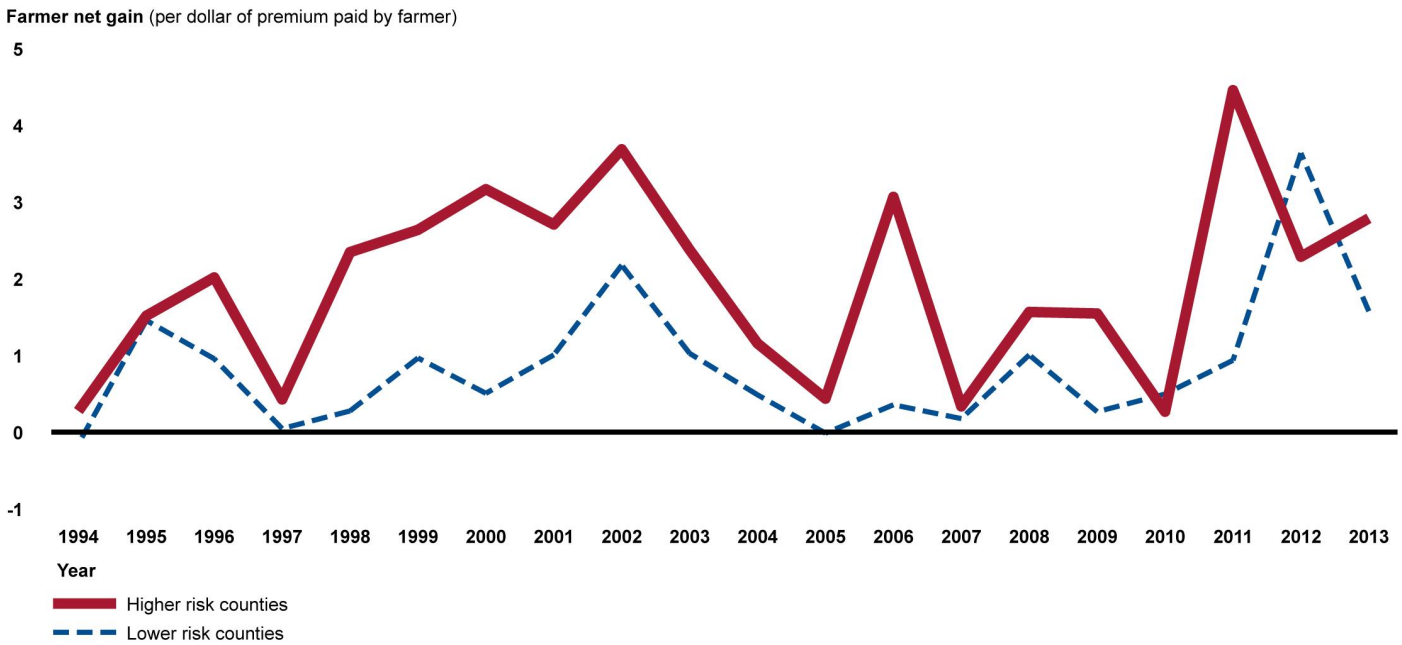
Figure 5: Farmers' Net Gains from the Federal Crop Insurance Program per Dollar of Expected Crop Value, 1994 through 2013



Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: The five major crops used in these calculations are corn, cotton, grain sorghum, soybeans, and wheat. Higher risk counties are those 510 U.S. counties with the highest average county target premium rates in 2013, and lower risk counties are the other 2,044 counties.

Figure 6: Farmers' Net Gains from the Federal Crop Insurance Program per Dollar of Premiums Paid by Farmers, 1994 through 2013



Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: The five major crops used in these calculations are corn, cotton, grain sorghum, soybeans, and wheat. Higher risk counties are those 510 U.S. counties with the highest average county target premium rates in 2013, and lower risk counties are the other 2,044 counties.

Figures 3, 4, 5, and 6 illustrate the extent to which higher risk areas have higher relative government costs, and farmers in those areas receive higher relative benefits. Furthermore, the difference between higher risk counties and lower risk counties in premium subsidies provided on behalf of farmers per dollar of expected crop value in 2013—11 cents per \$1 versus 4 cents per \$1, respectively, on average—indicates that the government's crop insurance costs might be reduced for farmers in higher risk counties without denying them sufficient risk protection. Specifically, if farmers in the other counties have sufficient risk protection while receiving premium subsidies of 4 cents per \$1 of expected crop value, farmers in the higher risk counties might have sufficient risk protection with premium subsidies of less than 11 cents per \$1 of expected crop value. Under the existing statutory premium subsidy structure, premium subsidies are a percentage of the premium, which means that the higher the premium, the higher the premium subsidies. As noted in a 2012 article in the *American Journal of Agricultural Economics*, riskier crops and regions have higher premium rates and thus receive more dollars in premium

subsidies.²⁶ Analyses by agricultural economists also have addressed the premium subsidy structure. For example, a 2013 article suggested setting premium subsidies based on a given percentage of the crop value rather than as a percentage of the premiums.²⁷ According to our analysis, in 2013, if the premium subsidies in the higher risk counties had been 4 cents per \$1 of expected crop value rather than 11 cents per \$1, the government's cost would have been reduced by more than \$600 million.

In addition to potential government cost savings, other factors relating to the premium subsidy structure include the following:

- Agricultural economists have questioned whether relatively higher premium subsidies going to higher risk areas affect farmers' crop production decisions (e.g., changes in quantity and allocation of acreage to individual crops). According to a 2012 article in the *American Journal of Agricultural Economics*,²⁸ the fact that significantly higher premium subsidies go to certain regions and crops suggests the potential for distortions of production decisions.
- Reductions in premium subsidies for higher risk areas could result in lower crop insurance participation and lower coverage levels among farmers in those areas. In the past, Congress has authorized ad hoc disaster assistance payments to help farmers whose crops were damaged or destroyed by natural disasters.²⁹ However, such programs are costly and, given the nation's budgetary pressures, there is no guarantee that such programs would be available in the future.

²⁶Keith H. Coble and Barry J. Barnett, "Why Do We Subsidize Crop Insurance?" *American Journal of Agricultural Economics* (November 2012).

²⁷Carl Zulauf and Gary Schnitkey, "Distribution of Crop Insurance Net Farm Payments by Crop and State," in *farmdoc daily*, (Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, February 2013), accessed October 28, 2013, <http://farmdocdaily.illinois.edu/2013/02/distribution-of-crop-insurance.html>.

²⁸Barry Goodwin and Vincent Smith, "What Harm is Done by Subsidizing Crop Insurance?" *American Journal of Agricultural Economics* (December 2012).

²⁹In some instances, farmers had to have crop insurance to be eligible for the ad hoc disaster assistance and, in other instances, this was not required.

- Several farm industry groups have opposed reductions in premium subsidies. For example, in March 2013, over 10 farm industry groups signed a letter that urged Congress to not make any changes in the crop insurance program that would discourage farmer participation.
- Crop production in higher risk areas may have disproportionately large environmental impacts. For example, a 2006 USDA study found that economically marginal land is, on average, more vulnerable to erosion, and generally has higher counts of imperiled species than other cropland.³⁰

USDA's fiscal years 2014 to 2018 strategic plan includes an objective to maximize the return on taxpayer investment in USDA through enhanced stewardship activities of resources and focused program evaluations. Such evaluations could include an analysis of the government's crop insurance costs in higher risk areas. However, RMA does not monitor and report on the government's crop insurance costs in higher risk areas for the purpose of identifying potential cost savings through changes in program design, which would be consistent with USDA's objective. According to an RMA official, RMA does not monitor costs in higher risk areas to identify potential cost savings through changes in program design because RMA has not identified higher risk areas in the way that this report does. Without additional information from RMA on the government's crop insurance costs in higher risk areas, Congress may not have all the information it needs to make future assessments of the crop insurance program's design and costs.

³⁰USDA Economic Research Service, *Environmental Effects of Agricultural Land-Use Change: The Role of Economics and Policy*, Economic Research Report Number 25 (August 2006).

RMA Premium Rate Changes in Areas with Higher Production Risks May Not Cover Expected Losses

RMA implemented changes to premium rates in 2014, decreasing some rates and increasing others, but our analysis of RMA data shows that, for some crops, RMA's higher risk premium rates may not cover expected losses.³¹ RMA made changes to premium rates from 2013 to 2014, but its practice of phasing in changes to premium rates over time could have implications for actuarial soundness. Further, many premium rates in areas with higher production risks were lower than they should have been to cover expected losses and RMA's increases to these premium rates were not as high as they could have been under the law to fully cover expected losses.

RMA Made Changes to Premium Rates in Areas with Higher Crop Production Risks in 2014

We found that RMA adjusted higher risk county base premium rates and county target premium rates from 2013 to 2014 for the five major crops. The revisions in premium rates were in response to a 2010 study of its methodology and its periodic reviews of crop loss history.³² The changes included increases and decreases of higher risk county base premium rates and county target premium rates for each of the five major crops. On average, RMA's various changes to premium rates from 2013 to 2014 resulted in decreases to county base premium rates and county target premium rates for corn and soybeans and increases for grain sorghum.³³ These changes also represented an increase in the percentage of county base premium rates that were aligned with county target premium rates for corn, soybeans, cotton, and grain sorghum, but not for wheat.

³¹In this section, the term "higher risk premium rates" refers to areas with higher production risks. Specifically, we examined county base premium rates and county target premium rates for 2013 and 2014. The county target premium rates are in the highest 20 percent of all county target premium rates for each crop, practice (e.g., irrigated and nonirrigated), and crop type (e.g., winter wheat and spring wheat). For a given crop, a single county can have multiple county target premium rates depending on the number of different practices and crop types insured in the county. We analyzed each practice-crop type combination separately. The total number of county target premium rates in the highest 20 percent, by crop, are: corn (708), soybeans (722), wheat (750), cotton (233), and grain sorghum (226). The practice-crop type combinations are shown in the appendix I table.

³²RMA reported that it made partial revisions to county base premium rates and county target premium rates for corn and soybeans in 2012 in response to a study of its methodology.

³³ On average, RMA's various changes from 2013 to 2014 also resulted in decreases to irrigated wheat and cotton and increases to nonirrigated wheat. For nonirrigated cotton, RMA increased county base premium rates and decreased county target premium rates.

RMA has indicated in agency documents that it phases in new rates, especially those that require an increase, to keep premiums stable and provide farmers with predictable rates.³⁴ For example, in a 2013 document, the agency reported that it planned to slowly phase in changes to county base premium rates to mitigate the impact of a 2012 drought. However, phasing in changes to premium rates can have implications for improving actuarial soundness. For example, USDA's Office of Inspector General (OIG) reported in 2005 that, from crop years 2000 through 2003, when cotton crop losses were high relative to premiums, premium rates for cotton were decreased, unchanged, or increased only moderately³⁵ and, in these same 4 years, premiums were not sufficient to cover losses.³⁶ An RMA official told us that RMA uses judgment when changing county base premium rates, factoring in the agency's goal of maintaining stability for farmers in its decisions.

Many County Base Premium Rates Are Less Than the County Target Premium Rates

When county base premium rates are lower than county target premium rates, RMA is required by statute to limit annual increases in premium rates to 20 percent of what the farmer paid for the same coverage in the previous year.³⁷ However, RMA uses discretion in deciding whether to raise rates by the full 20 percent or by a lesser amount (as indicated by its practice of phasing in rate changes). Based on our analysis, for the higher risk premium rates, half of county base premium rates for corn, cotton, and grain sorghum, and nearly half of county base premium rates for wheat are lower than the county target premium rates.³⁸ In contrast, for the lower risk premium rates, most of the county base premium rates for

³⁴As far back as 1995, RMA expressed concern about raising premium rates citing the possibility that abrupt increases may discourage participation in the federal crop insurance program by farmers.

³⁵U.S. Department of Agriculture Office of the Inspector General, *Cotton Crop Insurance Premium Rates*, No. 05601-7-At (Washington, D.C: Feb. 10, 2005).

³⁶In response to the OIG's 2005 report, RMA said that the agency's reason for delaying the increase in premium rates for cotton was, in part, to maintain stability in the premium rates for farmers.

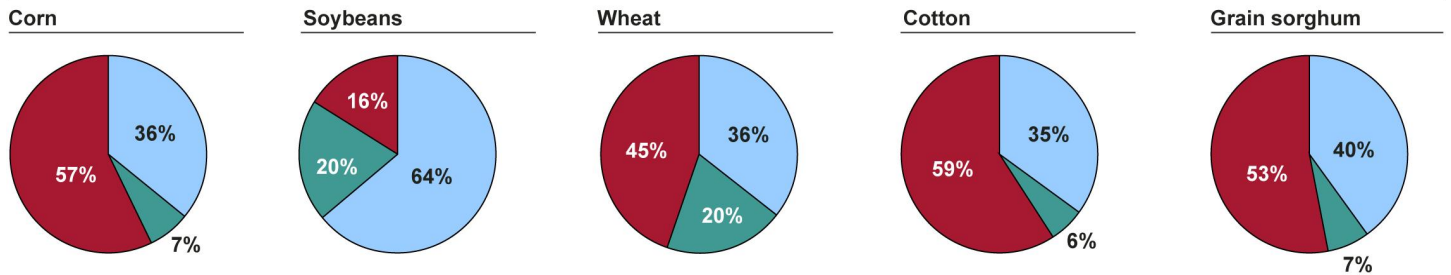
³⁷When county base premium rates are higher than county target premium rates, RMA can exceed 20 percent in adjusting the county base premium rate to reach the county target premium rate.

³⁸County base premium rates in higher risk counties for soybeans largely meet the county target premium rates.

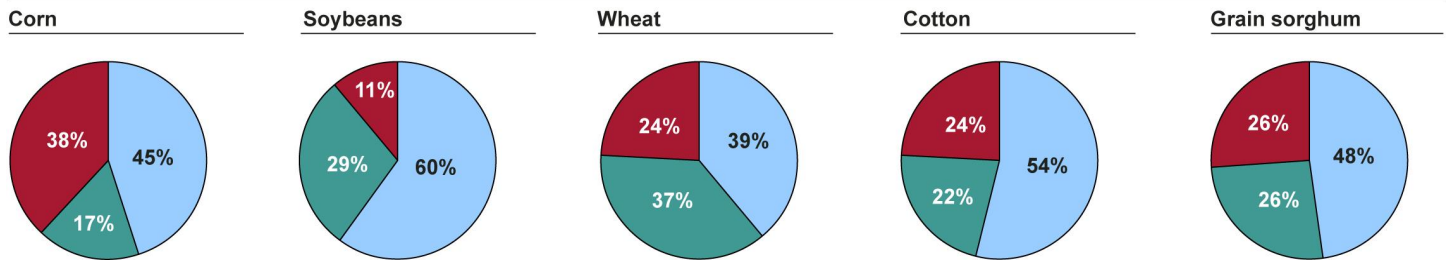
corn, cotton, grain sorghum, and wheat meet or exceed county target premium rates. Figure 7 shows the percentage of county base premium rates that meet, exceed, or are lower than county target premium rates in 2014.

Figure 7: The Percentage of County Base Premium Rates That Meet, Exceed, or Are Lower Than the County Target Premium Rates, 2014

Higher risk premium rates



Lower risk premium rates



■ County base premium rate meets county target premium rate
■ County base premium rate is higher than county target premium rate
■ County base premium rate is lower than county target premium rate

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: The percentages in this figure are based on an analysis of county target premium rates for each major practice (e.g., irrigated and nonirrigated) and major crop type (e.g., winter wheat or spring wheat) combination for each of the five major crops. A single county can have multiple county base premium and county target premium rates, depending on the number of combinations of crops, major practices, and crop types insured in the county. The term "higher risk premium rates" refers to the 2014 county target premium rates that were in the highest 20 percent of all county target premium rates for each crop, practice (e.g., irrigated and nonirrigated), and crop type (e.g., winter wheat and spring wheat). The term "lower risk premium rates" refers to the remaining 80 percent of county target premium rates. To calculate the percentages, we compared the county base premium rate with the county target premium rate for a single practice, and crop type combination and calculated the percentage difference. If the percentage difference between the county base premium rate and the county target premium rate was zero, we considered the county base premium rate as having met the county target premium rate. The percentages in the figure may not total 100 percent due to rounding.

We calculated percentage differences between county base premium rates and county target premium rates.³⁹ This provided a measure of the gap between the premium rate RMA charges a farmer (the county base premium rate) and the premium rate RMA should charge a farmer (the county target premium rate). For example, for nonirrigated cotton, one county had a county base premium rate of 26 percent and a county target premium rate of 32 percent. Thus, the county base premium rate was 6 percentage points less than the county target premium rate; however, the percentage difference was 23 percent.

For most higher risk premium rates where the county base premium rates were lower than the county target premium rates, the higher risk county base premium rates were within 20 percent of the county target premium rates in 2014, meaning RMA could fully align the rates in a single year. As shown in table 2, across the major crops, a larger percentage of county base premium rates are lower than county target premium rates by 20 percent or more for higher risk premium rates as compared to the lower risk premium rates.

³⁹We calculated the percentage difference by subtracting the county base premium rate from the county target premium rate and dividing the result by the county base premium rate. The calculated percentages would be somewhat different if we divided by the county target premium rate instead. By dividing by the county base premium rate, the percentage differences indicate the percentage change in the county base premium rate that would be necessary for it to reach the county target premium rate.

Table 2: Percentage of County Base Premium Rates That Are Lower Than County Target Premium Rates by 20 Percent or More, 2014

Crop	Percentage	
	Higher risk premium rates	Lower risk premium rates
Corn	31	14
Soybeans	2	1
Wheat	15	6
Cotton	20	6
Grain sorghum	24	6

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: The term "higher risk premium rates" refers to the 2014 county target premium rates that were in the highest 20 percent of all county target premium rates for each crop, practice (e.g., irrigated and nonirrigated), and crop type (e.g., winter wheat and spring wheat). The term "lower risk premium rates" refers to the remaining 80 percent of county target premium rates.

Based on our analysis, from 2013 to 2014, RMA changed some county base premium rates by the full 20 percent allowed by the law. However, we also found that from 2013 to 2014, RMA did not raise county base premium rates as high as the law allows for many of the higher risk premium rates. For example, as shown in table 3, RMA made a lesser adjustment in about half of the county base premium rates for corn and cotton, and nearly half for grain sorghum that required a change of 20 percent or more to either meet or move closer to the county target premium rate. Table 3 shows the percentage of premium rates where a change of at least 20 percent was necessary to move the county base premium rate closer to the county target premium rate and where RMA did not use the full 20 percent authorized in statute.

Table 3: Percentage of County Base Premium Rates Where the Risk Management Agency’s Changes Were Less Than Needed to Meet the County Target Premium Rate, 2013 to 2014

Crop	Increase to base rate when base rate was lower than the target rate		Decrease to base rate when base rate was higher than the target rate	
	Percentage		Percentage	
	Higher risk premium rates	Lower risk premium rates	Higher risk premium rates	Lower risk premium rates
Corn	52	38	5	4
Soybeans	14	10	15	5
Wheat	38	22	18	14
Cotton	58	24	3	2
Grain sorghum	43	25	5	10

Source: GAO analysis of USDA’s Risk Management Agency crop insurance data. | GAO-15-215

Note: The percentages in this table are for those county base premium rates that required a change of at least 20 percent to either meet or move closer to the county target premium rate. The term “higher risk premium rates” refers to the 2014 county target premium rates that were in the highest 20 percent of all county target premium rates for each crop, practice (e.g., irrigated and nonirrigated), and crop type (e.g., winter wheat and spring wheat). The term “lower risk premium rates” refers to the remaining 80 percent of county target premium rates.

An RMA official told us that the agency strives for actuarial soundness not only nationwide, but also, at the county and crop level. Without sufficient increases to premium rates, where such increases are necessary, RMA’s premium rates may not cover expected losses and may not be as high as they could be under the law, which may have implications for the actuarial soundness of the program. Among the higher risk premium rates, if the county base premium rates and the county target premium rates were identical, the federal government’s total program costs in these areas would be lower because more premium dollars would be collected. For example, in analyzing data on premium dollars for 2013, our analysis showed that had the county base premium rates been aligned with the county target premium rates in higher risk counties, the federal

government could have potentially collected tens of millions of dollars in additional premiums.⁴⁰

However, the federal government's total program costs would not be reduced by the same amount as the additional premiums. The amount of the premium that the federal government provides on behalf of farmers (premium subsidy), about 62 percent, on average, would increase, but the portion of the premium that farmers pay would also increase. Thus, the additional premiums would reduce the government's costs. Also, when county base premium rates are lower than county target premium rates, farmers' production decisions may not be based on the true cost of their risk of loss due to weather-related events, such as drought; and, the federal government does not have information about the full amount of premium dollars the federal government should collect from farmers. Ensuring that the federal government has information about the full amount of premium dollars it should collect from farmers would be an activity consistent with RMA's core values.⁴¹

Conclusions

Federal crop insurance plays an important role in protecting farmers from losses from natural disasters and price declines, and the federal crop insurance program has become one of the most important programs in the farm safety net. RMA has overall responsibility for administering the program, including controlling costs. With increasing budgetary pressures, it is critical that federal resources are targeted as effectively as possible. One of USDA's strategic objectives is to maximize the return on taxpayer investment in the department through enhanced stewardship activities of resources and focused program evaluations. Such evaluations could include an analysis of the government's crop insurance costs in higher risk areas, where, as our analysis found, government costs are substantially higher than in other areas. However, RMA does

⁴⁰Several factors are important to consider regarding our estimate of additional premiums. First, we only reviewed *yield* premium rates, and the estimated additional premium refers only to those types of premium rates. Second, our estimate does not adjust for the fact that RMA's annual premium rate changes are constrained by the statutory 20 percent limit on such changes. Finally, however, it also does not adjust for the potential effect of base rates being less than target rates on farmers' crop production decisions (e.g., changes in quantity and allocation of acreage to individual crops and changes in coverage levels).

⁴¹RMA's fiscal years 2011 to 2015 strategic plan includes the goal of "making the Agency's management processes more open so that the public can learn how RMA supports Americans every day and in every way."

not monitor and report on the government's crop insurance costs in higher risk areas to identify potential cost savings, which would be consistent with USDA's strategic objective. Without additional information from RMA on the government's crop insurance costs in higher risk areas, Congress may not have all the information it needs to make future assessments of the crop insurance program's design and costs.

In implementing premium rates, RMA seeks to balance its goals for participation and ensuring stability for farmers with maintaining an actuarially sound program. RMA updates its premium rates periodically, but there are continuing gaps between county base premium rates and county target premium rates. RMA has the ability to make changes to more quickly achieve greater actuarial soundness at the county and crop level but is not always doing so for areas with higher production risks. Without sufficient increases to premium rates, where applicable, RMA may not be taking all the actions available to achieve greater actuarial soundness. Additionally, moving to ensure that more county base premium rates meet county target premium rates will provide more information about the full costs to the federal government for insuring farmers in higher risk areas, consistent with the core value in RMA's fiscal years 2011 to 2015 strategic plan, and could also save federal funds.

Recommendations for Executive Action

To better inform Congress in the future about crop insurance program costs, reduce present costs, and ensure greater actuarial soundness, we recommend that the Administrator of the U.S. Department of Agriculture's Risk Management Agency take the following two actions:

- Monitor and report on crop insurance costs in areas that have higher crop production risks.
- As appropriate, increase its adjustments of premium rates in areas with higher crop production risks by as much as the full 20 percent annually that is allowed by law.

Agency Comments and Our Evaluation

We provided USDA with a draft of this report for review and comment. We received written comments from the RMA Administrator. These comments are summarized below and reproduced in appendix III. In these comments, RMA disagreed with our first recommendation and agreed with our second recommendation. RMA stated that, consistent with the second recommendation, it will continue to revise premium rates in an appropriate, prudent, and actuarially sound manner, taking proper

account of current rates and premium rate targets consistent with generally accepted actuarial practices.

In its written comments, RMA disagreed with our first recommendation to monitor and report on crop insurance costs in areas that have higher crop production risks and said it currently provides crop insurance data that have all the information necessary to determine crop insurance costs in all areas. RMA's website provides some information—such as county-level data on premiums, premium subsidies, loss claim payments, and loss ratios—that enables others to do some analysis of crop insurance costs. However, that information is not complete for the purpose of analyzing the government's costs and is not organized in a way that facilitates an understanding of the government's costs in higher risk areas. For example, regarding data on loss ratios (i.e., loss claim payments divided by premiums) that is on RMA's website, a recent article by an agricultural economist from the University of California notes that this loss ratio information for crop insurance (1) is not informative about and misrepresents the actuarial exposure borne by the [crop insurance] program and (2) by excluding administrative expenses, understates the extent of public expenditure on the program.⁴² We agree with this assessment. Furthermore, placing data on a website does not constitute the monitoring of crop insurance costs. We continue to believe RMA can and should do more to monitor and report on crop insurance costs in higher risk areas, where we found government costs to be substantially higher than in other areas. As we said in this report, without additional information from RMA on the government's crop insurance costs in higher risk areas, Congress may not have all the information it needs to make future assessments of the crop insurance program's design and costs.

In addition, RMA commented on our analysis of the government's cost of the crop insurance program in higher risk areas. RMA said it has developed a definition of high-risk land, mapped out these areas, and applied significant premium surcharges. RMA said our definition of what we deem to be "higher risk areas" is much broader. RMA defines "high-risk land" as acreage with identifiable physical limitations, such as floodplains and high sand content soils. Our identification of higher risk areas (i.e., the 20 percent of counties that had the highest weighted average county target premium rates) enabled us to broadly assess crop

⁴²Brian Davern Wright, "Multiple Peril Crop Insurance." *Choices* (3rd Quarter 2014).

insurance costs, and we believe this approach, which we discussed with RMA officials, was consistent with our purpose.

In its comment letter, RMA said our use of crop insurance costs (or benefits to farmers) per dollar of expected crop value “appears to exaggerate the difference in program costs in higher-risk areas versus other areas, or at least masks some important details.” To present another perspective, RMA compared corn premium subsidies per acre for two states that had a large number of higher risk counties with two states that had no higher risk counties and stated that the premium subsidies per acre were similar amounts. We believe our use of a dollar-based measure (i.e., premium subsidies per dollar of expected crop value) is more appropriate than a physical measure (i.e., acres) for comparisons between costs and farmer benefits in higher risk areas and other areas. This is consistent with the methodology of a 2013 article by agricultural economists from The Ohio State University and the University of Illinois that compared net farm insurance payments using a dollar-based measure.⁴³

Moreover, the use of a dollar-based measure is consistent with property insurance methods, which are based on the value of the property being insured. RMA stated that coverage levels were another offsetting effect, noting that growers in higher risk areas tend to choose lower coverage levels than in other areas, because higher premium rates make higher coverage less affordable. RMA appears to be suggesting that our analysis overlooks this difference, which is not true. As explained in our report, one of the reasons that we expressed estimated government costs in relation to expected crop value was to control for variations in farmers’ purchase decisions. Farmers’ decisions in selecting coverage levels vary between higher risk areas and other areas. According to our analysis, in 2013, farmers in higher risk counties chose to insure, on average, 67 percent of their expected crop value, while farmers in the other counties chose to insure, on average, 76 percent of their expected crop value. Thus, we used expected crop value—which is not affected by coverage levels—rather than insured crop value so that our analysis would not be distorted by differences in coverage levels.

⁴³Zulauf and Schnitkey, “Distribution of Crop Insurance Net Farm Payments by Crop and State.”

RMA agreed with our second recommendation that, as appropriate, RMA increase its adjustments of premium rates in areas with higher crop production risks by as much as the full 20 percent annually that is allowed by law, saying it mirrors how premium rate adjustments are currently administered. However, RMA stated it disagreed with our assessment of the extent to which premium rates need to be adjusted to the full amount allowed by statute and that adjusting premium rates fully to changes in premium rate targets would undercut the basic purpose of insurance—to provide financial stability. We continue to believe RMA’s adjustment of premium rates should be consistent with insurance principles and the statutory directive to set premium rates that improve actuarial soundness. Furthermore, in its discussion of premium rates in “higher-risk” areas, RMA states that the report makes certain assumptions about premium rate targets in high risk areas that are not completely accurate and do not necessarily result in improved actuarial soundness. RMA further states that following each random variation to its fullest can subject growers to a roller-coaster ride of ups and downs in their premiums. RMA presented a simulation of yields and losses, showing that adjusting premium rates by less than needed to meet the premium rate target leads to a smaller variation in rates.

RMA’s simulation suggested that the agency’s current method of adjusting premium rates will yield an average premium rate that is actuarially sound at the national level. We agree that RMA’s average premium rate, nationwide, may allow the program to be considered actuarially sound. However, our analysis focused on RMA’s practices in charging premium rates in areas with higher production risks that may be lower or higher than the actuarially sound premium rate. In addition, RMA’s simulation did not account for systematic variation in risk at the county and crop level. As we concluded, RMA could more quickly achieve actuarial soundness at the county and crop level. Moreover, as we stated, charging premium rates that are less than the actuarially sound premium rates could also have implications for total costs to the federal government in areas with higher production risks. Thus, we continue to believe that increasing the adjustments of premiums rates in areas with higher crop production risk by as much as the full 20 percent annually that is allowed by law is prudent and in keeping with sound fiscal practices.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the appropriate congressional committees; the Secretary of Agriculture; the

Administrator of USDA's Risk Management Agency; the Director, Office of Management and Budget; and other interested parties. In addition, this report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or morriss@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix IV.

A handwritten signature in black ink that reads "Steve D. Morris". The signature is written in a cursive, slightly slanted style.

Steve D. Morris
Director, Natural Resources and Environment

Appendix I: Objectives, Scope, and Methodology

Our objectives were to determine, for areas with higher crop production risks, (1) the government's cost of the crop insurance program and (2) the extent to which RMA's premium rates, as implemented, cover expected losses.

To address these objectives, we reviewed relevant provisions of the Food, Conservation, and Energy Act of 2008 (2008 farm bill) and the Agricultural Act of 2014 (2014 farm bill); other statutes; and U.S. Department of Agriculture (USDA), regulations; and we analyzed crop insurance program data from RMA. We interviewed USDA officials, including officials from RMA, and reviewed documents they provided, such as, descriptions of the agency's methodology for calculating premium rates.

To address the first objective, we analyzed RMA crop insurance program data for the crop years 1994 through 2013; that is, those years for which complete data were available at the time we performed our work. We analyzed data for five major crops—corn, soybeans, wheat, cotton, and grain sorghum. These five crops represented 86 percent of the total crop insurance premiums for 2013. To identify areas with higher production risks, we used 2013 county target premium rates—that is, the rates that RMA calculates for each county (and crop, practice, and crop-type, combination) based on the county's loss history.¹ We calculated a weighted average county target premium rate for each county in 2013 combining the county target premium rates for all five crops, all of the crops' practices and crop types, using actual 2013 premium dollars as weights for these county weighted averages.^{2, 3}

We used a weighted-average rather than a simple average because we wanted the average to reflect the relative importance of the different crop,

¹An RMA official knowledgeable about the agency's process for setting county target premium rates told us that these premium rates reflect the best estimates that RMA has regarding the risk associated with insuring a crop in a county.

²We selected 2013 because it was the most recent year for which complete RMA data on program costs was available at the time we performed this analysis.

³We recognize that an area or location may be high risk for one crop or crop type or practice type but not for a different crop. However, by using 2013 premium dollars to weight the average of the different target rates used in a given county, we maintain that such a calculation allows a reasonable average approximation of a location's production risk.

practice, and crop-type combinations RMA used for premium calculations in 2013. Additionally, the use of a weighted-average county target premium rate allowed us to calculate a single measure for each county by which we could examine government costs in specific geographic areas.⁴ We then ranked the counties from the highest to lowest weighted average target rate. We defined those counties ranked in the top 20 percent as “higher risk counties” and the remaining 80 percent of counties as “lower risk counties.”⁵ To calculate total government costs in these higher risk counties, we analyzed RMA data for 2005 through 2013.⁶ We used the expected crop value to compare the costs in areas with higher production risks to the costs in other areas. Expected crop value is equal to the expected crop production multiplied by the expected (or elected) crop price. However, we did not have information on expected crop prices, so we calculated expected crop value by dividing the liability dollars by the coverage rate. Finally, to address the first objective we interviewed RMA officials, reviewed USDA’s and other studies that examined the costs of the crop insurance program and the role of premium subsidies, and consulted documents from other stakeholders, including farm industry groups.

To address the second objective, we analyzed RMA data on production-based (or yield) premium rates for the five major crops (corn, cotton, grain sorghum, soybeans, and wheat) for crop years 2013 and 2014. Production-based premium rates are RMA’s premium rates for production-based policies and are used to determine the premium rates

⁴We selected 2013 because it was the most recent year for which complete RMA data on program costs was available at the time we performed this analysis.

⁵We calculated alternative cutoffs for our high versus low risk definition, including 50th, 70th, 90th and 95th percentiles. The 80th percentile cutoff is a compromise between having the cutoff too high, such as the 95th percentile, which might have too few high risk counties to allow meaningful estimates of the high risk counties’ characteristics; and say, a 50th percentile cutoff, which might be too broad a definition of “higher risk”.

⁶According to RMA, total government costs are equal to loss claim payments to farmers minus premiums and other income received by the government plus premium subsidies provided on behalf of farmers plus administrative and operating expenses paid to insurance companies plus other costs (for example, as RMA’s salaries and expenses for administering the program).

for revenue policies.⁷ RMA provided us with data, for each crop, practice, and crop-type combination, on the county base premium rate and the county target premium rate. We used the same 2013 data on county target premium rates to identify higher risk counties in our first objective. Using the 2013 premium rate data, we ranked the county target premium rates from highest to lowest and identified the highest 20 percent of county target premium rates for each crop, practice, and crop-type combination. For a given crop, a single county may have multiple county target premium rates, depending on the number of combinations of practices (e.g., irrigated and nonirrigated) and crop types (e.g., winter wheat and spring wheat) insured in the county. For example, for wheat, a county may have county target premium rates for two practice and crop-type combinations—nonirrigated winter wheat and nonirrigated spring wheat—in which one or both of the premium rates may fall in the highest 20 percent in 2014. For example, for wheat, County A in state B had county target premium rates for two practice and crop-type combinations—nonirrigated winter wheat and nonirrigated spring wheat—that were in the highest 20 percent in 2014. In total, there were 40 combinations or rankings of crops, practices, and crop types. Thus, if a county target premium rate fell into the top 20 percent in its ranking, that county target premium rate was placed in the “higher risk premium rate” category. The remaining 80 percent were placed in the “lower risk premium rate” category. We compared each county base premium rate with the applicable county target premium rate identified above. In each instance, we compared the county base premium rate with the county target premium rate for a single practice, and crop-type combination, and calculated the percentage difference. We calculated the percentage difference by subtracting the county base premium rate from the county target premium rate and dividing the result by the county base premium rate. If the percentage difference between the county base premium rate and the county target premium rate was zero, we considered the county base premium rate as having met the county target premium rate. If the percentage difference was greater than zero, we placed the county base premium rate in the “lower than” category; and, if the percentage difference was less than zero, we placed the county base rate in the “higher than” category. Table 4 provides details on the crop-type and

⁷Most crop insurance policies are either production-based or revenue policies. For production-based policies, a farmer can receive a payment if there is a production loss relative to the farmer’s historical production per acre. Revenue policies protect against crop revenue loss resulting from declines in production, price, or both.

practice combinations included in this review. Finally, we interviewed RMA officials in headquarters and two field offices regarding the agency’s method for setting and implementing changes to county premium rates. We judgmentally selected the field offices based on the offices having had experience implementing premium rates in areas with higher production risks. We also reviewed studies that examined the agency’s methodology for assigning premium rates and reviewed relevant audits by USDA’s Office of the Inspector General.

Table 4: GAO’s Grouping of the Risk Management Agency’s Practice and Crop-Type Combinations

Practice and crop type	Practice code	Crop-type code
Corn (0041)		
Irrigated - grain	002	016
Nonirrigated - grain	003	016
Soybeans (0081)		
Irrigated - commodity	002	091
Irrigated - no specified type	002	997
Not following another crop (NFAC) irrigated - commodity	094	091
NFAC irrigated - no specified type	094	997
Following another crop (FAC) irrigated - commodity	095	091
FAC irrigated - no specified type	095	997
Nonirrigated - commodity	003	091
Nonirrigated - no specified type	003	997
NFAC nonirrigated - commodity	053	091
NFAC nonirrigated - no specified type	053	997
FAC nonirrigated - commodity	043	091
FAC nonirrigated - no specified type	043	997
Wheat (0011)		
Irrigated - winter	002	011
Irrigated - spring	002	012
Irrigated - no specified type	002	997
Irrigated - durum	002	015
Nonirrigated - winter	003	011
Nonirrigated - spring	003	012
Nonirrigated - no specified type	003	997

Practice and crop type	Practice code	Crop-type code
Nonirrigated - durum	003	015
Continuous cropping - winter	004	011
Continuous cropping - spring	004	012
Continuous cropping - no specified type	004	997
Continuous cropping - durum	004	015
Summerfallow - winter	005	011
Summerfallow - spring	005	012
Summerfallow - no specified type	005	997
Summerfallow - durum	005	015
Waterfallow - spring	006	012
Cotton (0021)		
Irrigated - no specified type	002	997
Nonirrigated - no specified type	003	997
NFAC nonirrigated - no specified type	053	997
FAC nonirrigated - no specified type	043	997
Nonirrigated skip row - no specified type	063	997
Grain sorghum (0051)		
Irrigated - no specified type	002	997
FAC irrigated- no specified type	095	997
NFAC irrigated - no specified type	094	997
Nonirrigated - no specified type	003	997

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Note: According to Risk Management Agency documents, the practice, NFAC, refers to not following another crop and the practice, FAC, refers to following another crop.

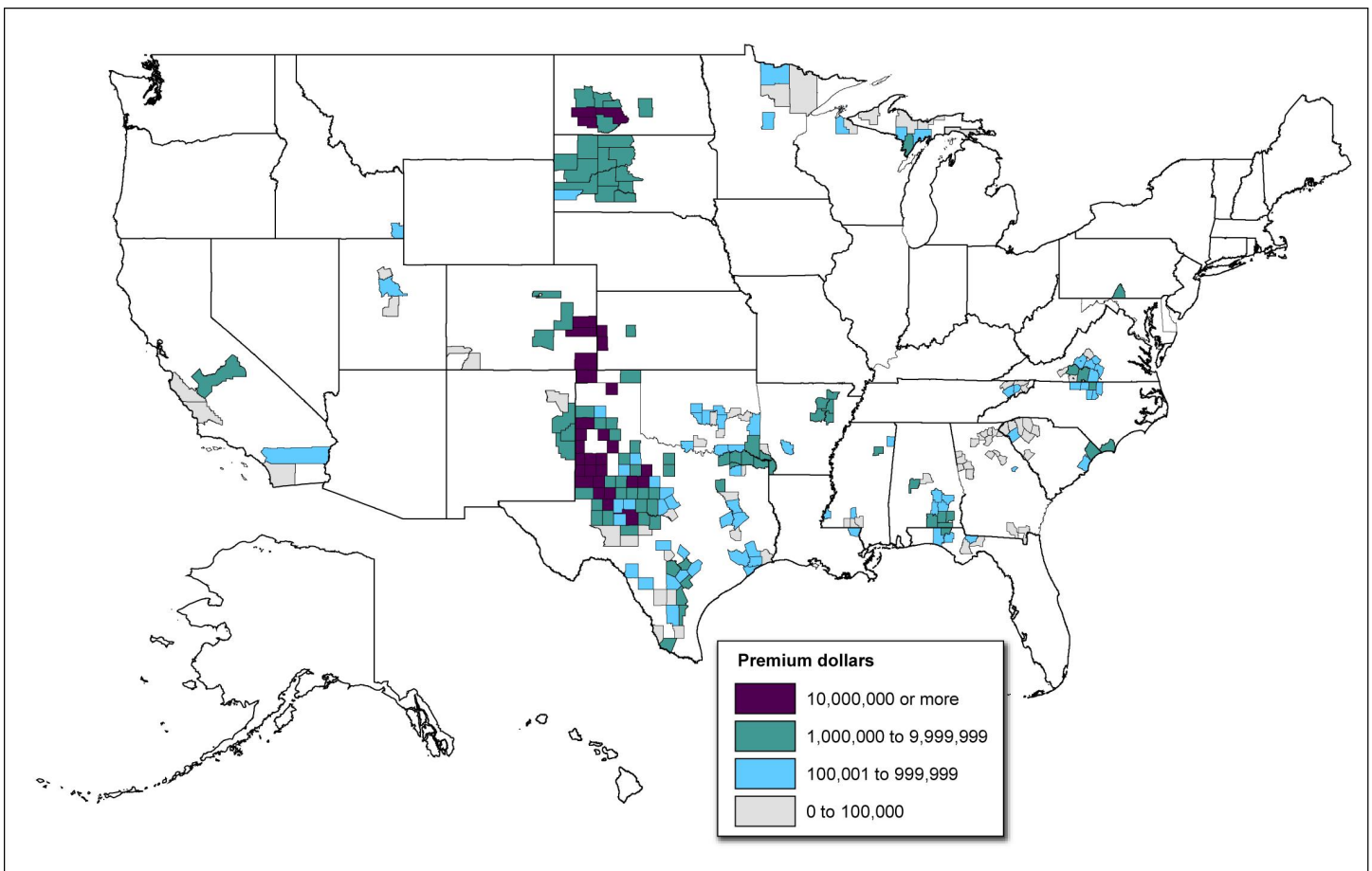
For the various data used in our analyses, as discussed, we generally reviewed related documentation, interviewed knowledgeable officials, and reviewed related internal controls information to evaluate the reliability of these data. In each case, we concluded that the data were sufficiently reliable for the purposes of this report.

We conducted this performance audit from December 2013 to February 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our objectives.

Appendix II: Premiums in the 10 Percent of Counties with the Highest Premium Rates, 2013

Figure 8 shows the 255 counties that were the riskiest 10 percent of counties in terms of average county target premium rates. These counties are shaded on the basis of their 2013 premium dollars to show which risky counties had the most crop insurance.

Figure 8: Premiums in the Higher Risk Counties, 2013



Sources: GAO analysis of USDA's Risk Management Agency crop insurance data; MapInfo (map). | GAO-15-215

Note: To identify areas with higher crop production risks, we determined the average of each county's 2013 county target premium rates for the five major crops—corn, soybeans, wheat, cotton, and grain sorghum. These averages were weighted by crop, crop type, and practice based on county premium dollars. The map shows the 10 percent of U.S. counties—255 counties—that had the highest average target premium rates.

Appendix III: Comments from the U.S. Department of Agriculture



United States Department of Agriculture

Farm and Foreign Agricultural Services
Risk Management Agency

JUN 06 2014

TO: Steve D. Morris
Director, Natural Resources and Environment
U.S. Government Accountability Office

FROM: Brandon Willis
Administrator *Brandon Willis*
Risk Management Agency

SUBJECT: U.S. Department of Agriculture Comments- U.S. Government Accountability Office Draft Report, Crop Insurance: In Areas with Higher Crop Production Risks, Costs Are Higher and Premiums May Not Cover Expected Losses, GAO-15-215 (361542)

This GAO audit report contains two separate parts, and associated recommendations. The first recommendation is to “[m]onitor and report on crop insurance costs in areas that have higher crop production risks.” RMA does not agree with this recommendation as RMA currently provides crop insurance data that has all the information necessary to determine crop insurance costs in all areas. This information can be broken out by crop and by state. RMA does not believe that providing an additional report is a wise use of resources when this information is already available and there is no commonly accepted definition of high risk areas.

The second recommendation is “[a]s appropriate, increase its adjustments of premium rates in areas with higher crop production risks by as much as the full 20 percent annually that is allowed by law.”

RMA agrees with the recommendation since it mirrors how premium rate adjustments are currently administered, but based upon the report likely disagrees regarding the extent that rates need to be adjusted to the full amount allowed by statute. Following each random variation of a premium rate’s target to its fullest can subject growers to a rollercoaster ride of ups and downs in their premium rates, without actually improving long-term actuarial soundness. It also undercuts the basic purpose of insurance – to provide financial stability.



Deputy Administrator for Compliance

1400 Independence Ave., SW • STOP 0806 • Washington, DC 20250-0806

The Risk Management Agency Administers and Oversees
All Programs Authorized Under the Federal Crop Insurance Corporation

USDA is an Equal Opportunity Provider and Employer

**Appendix III: Comments from the
U.S. Department of Agriculture**

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Part 1: Crop Insurance Costs in Higher-Risk Areas

This part of the audit report GAO defines high risk areas and estimates the crop insurance program costs in these areas, advocating a policy position of reducing premium subsidies. RMA has also developed a definition of high risk land, mapped out these areas (i.e. a flood plain), and applied significant premium rate surcharges. The audit report contains a different, and much broader definition of what it deems “higher-risk areas” than RMA’s definition, which was provided to GAO.

The cost of the crop insurance program to taxpayers, or conversely, the benefit of the program to growers is measured as per dollar of expected crop value. This measure appears to exaggerate the difference in program costs in higher-risk areas versus other areas, or at least masks some important details.

For example, the report outlines that growers in high risk areas received 11 cents of premium subsidy per dollar of crop value in 2013, versus 4 cents of premium subsidy per dollar of crop value for other areas. This suggests that growers in high risk areas are receiving nearly three times the benefits versus other growers.

Table 1 presents another perspective. The table shows the 2014 average coverage level, subsidy per acre, and crop value per acre for a couple of states that account for a large share of the counties designated as “higher-risk” in the audit report (Texas and Oklahoma) and for a couple of states that contain no counties designated as “higher-risk” (Illinois and Indiana). Several important points emerge from this table.

STATE	DATA	CORN	COTTON	SORGHUM	SOYBEANS	WHEAT	TOTAL
ILLINOIS	Avg Coverage Level	82%		70%	80%	72%	81%
	Avg. Subs. Per Acre	\$23.43		\$28.31	\$13.65	\$24.46	\$19.24
	Avg Value Per Acre	\$811.34		\$393.06	\$575.32	\$409.51	\$699.21
INDIANA	Avg Coverage Level	81%		70%	81%	74%	81%
	Avg. Subs. Per Acre	\$25.89		\$22.02	\$17.26	\$21.89	\$21.73
	Avg Value Per Acre	\$777.15		\$328.61	\$587.07	\$449.29	\$679.98
OKLAHOMA	Avg Coverage Level	69%	71%	68%	67%	70%	69%
	Avg. Subs. Per Acre	\$28.45	\$55.74	\$26.36	\$28.90	\$20.40	\$23.02
	Avg Value Per Acre	\$664.07	\$585.00	\$183.33	\$252.54	\$210.64	\$250.73
TEXAS	Avg Coverage Level	66%	67%	67%	67%	65%	66%
	Avg. Subs. Per Acre	\$26.03	\$54.71	\$23.80	\$32.88	\$24.60	\$37.34
	Avg Value Per Acre	\$622.64	\$512.45	\$241.68	\$281.57	\$181.61	\$389.03
TOTAL	Avg Coverage Level	80%	67%	67%	80%	68%	77%
	Avg. Subs. Per Acre	\$24.47	\$54.74	\$24.17	\$15.37	\$22.70	\$25.59
	Avg Value Per Acre	\$777.91	\$514.78	\$234.99	\$569.47	\$212.00	\$554.35

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First, the amount of subsidy per acre in higher-risk states is not that different from lower-risk states for corn, wheat, and sorghum. For example, the subsidy per acre for corn is \$26.03 in Texas and \$28.45 in Oklahoma, versus \$25.89 in Indiana and \$23.43 in Illinois. If a 200-acre corn farm in Texas versus a 200-acre corn farm in Indiana is compared, the subsidy benefit is approximately the same. This is because there are offsetting effects – in high risk areas there is less crop value per acre to be insured, which reduces the premium subsidy. In contrast, the average crop value per acre tends to be higher in low-risk areas, which increases the premium subsidy.

Another offsetting effect is coverage level. Growers in higher-risk areas tend to choose lower coverage levels because higher premium rates make higher coverage levels less affordable. For example, Texas has an average coverage level for corn of 66 percent as compared to 83 percent for Illinois.

One crop that stands out is cotton, with an average subsidy per acre that is well above the other crops. Cotton, more than any other crop, contributes to Texas being considered a high-risk area in the report, and accounts for much of the higher premium subsidy cost per acre. Texas accounts for a large share of cotton production in the U.S. This means that the report's proposal to reduce premium subsidy rates in high-risk areas will tend to affect cotton more than any other crop, and also affect Texas more than most other states.

The report recommends that RMA “monitor and report on crop insurance costs in areas that have higher production risks.” However, RMA currently provides the relevant crop insurance data to determine crop insurance costs in all areas on its website.

Part 2: Premium Rates in “Higher-Risk” Areas

The second part of the report makes certain assumptions about premium rate targets in high risk areas that are not completely accurate and do not necessarily result in improved actuarial soundness. The report first identifies instances where RMA increased premium rates by less than the 20 percent limit allowed by law. The report then suggests that premium rates should have been increased by the full 20 percent.

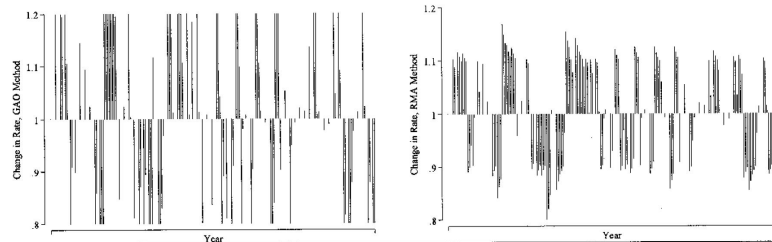
A premium rate target represents a current snapshot of risk based on accumulated loss data. The challenge with premium rate targets is that they are always moving up or down with each update of loss experience, following a random path based on the weather events that occurred since the previous update. In other words, targets are a ‘noisy’ signal. Following each random variation of a premium rate’s target to its fullest, as GAO recommends, can subject growers to a rollercoaster ride of ups and downs in their premium rates, without actually improving long-term actuarial soundness. It also undercuts the basic purpose of insurance – to provide financial stability.

To illustrate this point, a simulation of yields and losses over a 10,000 year period was undertaken. Throughout the simulation, the premium rate targets were updated every few years, like what is currently done for the Federal crop insurance program. The premium rate charged to the producer in this simulation was adjusted in two ways; full adjustment to target (“GAO Suggested Method”) and a

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moderated adjustment to target ('RMA Method') similar to what is done today for the crop insurance program. The results are shown in the graphs and table below, with the GAO Suggested Method on the left and the RMA Method on the right.

The graphs show the annual premium rate changes across the 'years' of the simulation. As expected, the GAO Suggested Method results in greater rate changes (often reaching the 20 percent maximum) than the RMA Method. However, the long-run actuarial performance of the two methods is the same.



	GAO Method	RMA Method	Percent Difference
Variance of Rate Changes	0.0148	0.0081	-45%
Long-Run Average Rate	4.07%	4.07%	0%

The table shows that the long-run average rate for both methods is 4.07 percent – an actuarially sound rate given the parameters of the simulation. However, the RMA Method results in 45 percent less variation rates than the GAO Suggested Method. The simulation demonstrates that movements toward targets can be moderated without compromising long-run actuarial soundness. A rate does not have to go all the way to its target in a single year to be an actuarially sound rate.

This point is also supported by the 2014 premium rates for the counties designated in the report as "higher-risk"¹. Table 2 divides the higher-risk counties into those that had a rate increase, decrease, or no change from 2013 to 2014. The table then compares the average change in rates published by RMA versus what the rate would have been if the GAO suggested approach had been followed.

¹The analysis presented here is based on RMA's best estimate of what GAO considered to be higher-risk based on the description of their methodology provided in the report.

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**Table 2: Comparison of RMA Published Rates Versus GAO Suggested Rates
in "Higher-Risk" Counties, 2014**

	RMA Published Rates		GAO Rates*	
	Average Change from 2013	Average Premium Rate	Average Change from 2013	Average Premium Rate
Counties with a Rate Increase	11.0%	25.1%	13.2%	25.8%
Counties with a Rate Decrease	-12.1%	23.9%	-13.6%	23.2%
Counties with No Change in Rate	0.0%	26.8%	0.0%	23.4%
Average for All Counties		24.7%		24.7%

* GAO Rates: Premium rates based on GAO's recommendation to move rates all the way to their targets, subject to the 20 percent limit for rate increases specified in the Federal Crop Insurance Act.

In 2014, the average premium rate increase was 11.0 percent and the decrease was 12.1 percent. Overall, the resulting average premium rate in the higher-risk counties was 24.7 percent. Similar to what occurred in the simulation, if the GAO suggested approach had been used to determine premium rates, there would have been somewhat larger changes overall – an average increase of 13.2 percent and an average decrease of 13.6 percent. Also similar to the simulation, the GAO suggested approach would have produced the same simple average premium rate for higher-risk counties as the premium rates actually published by RMA – 24.7 percent. The GAO suggested approach produces a larger variability in rates, but results in a similar average rate.

Premium rates will tend to be farthest away from their targets in the year when the targets are revised. Over time, as premium rates adjust, this difference narrows – until the targets are revised again and the process starts over.

Generally, RMA revises premium rate targets for the major crops every 3 years to incorporate newly-accumulated loss data. However, for the crops analyzed in this audit report, RMA did not wait the full three years and revised the premium rate targets ahead of schedule in both 2013 and in 2014. This was done, in part, because of the recent significant loss events that had occurred in the Southern Plains and in the Corn Belt. The recent updates, combined with the loss events, contributed to the report's observation of a disproportionate number of counties below target.

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RMA's early updating of premium rate targets also resulted in larger premium rates increases than would have otherwise been the case, especially in those areas where significant losses occurred. If RMA had elected not to update targets early, premium rates would have been generally closer to their unchanged targets. This would have made the premium rates less subject to the report's criticism, but they would not have been as responsive to losses.

Although premium rate changes are moderated, they still make rapid progress toward their targets. In 2014, a year in which targets were updated, 46 percent of the rates in the higher risk counties moved to their targets that same year. For 2015, 73 percent of rates are at their targets. By 2016, it is expected that around 87 percent will be at their targets. Of those remaining rates that are unlikely to meet their targets in 2016, a significant portion are due to the limit required by the Act that no premium rate may increase by more than 20 percent, and not due to the moderation of annual changes by RMA.

The report makes a recommendation for RMA to, "...as appropriate, increase its adjustments of premium rates in areas with higher crop production risks by as much as the full 20 percent annually that is allowed by law." The recommendation is based on the assumption that faster movement to targets necessarily results in improved actuarial soundness – an assumption that is not completely accurate. Consistent with the recommendation, RMA will continue to revise premium rates in an appropriate, prudent and actuarially sound manner, taking proper account of current rates and premium rate targets consistent with generally accepted actuarial practices.

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Steve D. Morris, (202) 512-3841 or morriss@gao.gov

Staff Acknowledgments

In addition to the individual named above, Thomas M. Cook, Assistant Director; Kevin S. Bray; Mark Braza; Gary Brown; Michael Kendix; Tahra Nichols; Susan Offutt; Ruth Solomon; and Frank Todisco made key contributions to this report. In addition, Cheryl Arvidson, and Kiki Theodoropoulos made important contributions to this report.

Appendix V: Accessible Data

Data Table for Highlights Figure: Estimated Federal Government Crop Insurance Costs per Dollar of Expected Crop Value for 2005 through 2013

Estimated cost (per dollar of expected crop value)

	Higher risk counties	Lower risk counties
"2005"	0.09	0.04
"2006"	0.23	0.04
"2007"	0.06	0.04
"2008"	0.15	0.06
"2009"	0.14	0.05
"2010"	0.09	0.05
"2011"	0.23	0.05
"2012"	0.14	0.09
"2013"	0.17	0.05

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Data Table for Figure 3: Estimated Federal Government Crop Insurance Costs per Dollar of Expected Crop Value for 2005 through 2013

Estimated cost (per dollar of expected crop value)

	Higher risk counties	Lower risk counties
"2005"	0.09	0.04
"2006"	0.23	0.04
"2007"	0.06	0.04
"2008"	0.15	0.06
"2009"	0.14	0.05
"2010"	0.09	0.05
"2011"	0.23	0.05
"2012"	0.14	0.09
"2013"	0.17	0.05

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Data Table for Figure 4: Federal Crop Insurance Program Premium Subsidies Provided on Behalf of Farmers per Dollar of Expected Crop Value, 1994 through 2013

Premium subsidy (per dollar of expected crop value)

	Higher risk counties	Lower risk counties
"1994"	0.03	0.02

	Higher risk counties	Lower risk counties
"1995"	0.05	0.03
"1996"	0.05	0.03
"1997"	0.05	0.03
"1998"	0.05	0.02
"1999"	0.07	0.03
"2000"	0.07	0.03
"2001"	0.08	0.04
"2002"	0.08	0.04
"2003"	0.08	0.04
"2004"	0.08	0.04
"2005"	0.09	0.05
"2006"	0.09	0.05
"2007"	0.09	0.05
"2008"	0.1	0.05
"2009"	0.11	0.06
"2010"	0.1	0.05
"2011"	0.1	0.05
"2012"	0.11	0.05
"2013"	0.12	0.05

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Data Table for Figure 5: Farmers' Net Gains from the Federal Crop Insurance Program per Dollar of Expected Crop Value, 1994 through 2013

Farmer net gain (per dollar of expected crop value)

	Higher risk counties	Lower risk counties
"1994"	0.02	-0.01
"1995"	0.06	0.02
"1996"	0.08	0.02
"1997"	0.02	0
"1998"	0.09	0.01
"1999"	0.1	0.02
"2000"	0.14	0.01
"2001"	0.12	0.03
"2002"	0.17	0.05
"2003"	0.11	0.03
"2004"	0.06	0.01

	Higher risk counties	Lower risk counties
"2005"	0.02	0
"2006"	0.17	0.01
"2007"	0.02	0.01
"2008"	0.09	0.04
"2009"	0.09	0.01
"2010"	0.01	0.01
"2011"	0.22	0.03
"2012"	0.11	0.09
"2013"	0.15	0.04

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Data Table for Figure 6: Farmers' Net Gains from the Federal Crop Insurance Program per Dollar of Premiums Paid by Farmers, 1994 through 2013

Farmer net gain (per dollar of expected crop value)

	Higher risk counties	Lower risk counties
"1994"	0.29	-0.14
"1995"	1.53	1.47
"1996"	2.03	0.97
"1997"	0.44	0.06
"1998"	2.36	0.29
"1999"	2.65	0.98
"2000"	3.18	0.52
"2001"	2.72	1.02
"2002"	3.7	2.19
"2003"	2.39	1.04
"2004"	1.17	0.5
"2005"	0.45	0
"2006"	3.08	0.37
"2007"	0.35	0.19
"2008"	1.58	1.02
"2009"	1.56	0.28
"2010"	0.28	0.51
"2011"	4.47	0.95
"2012"	2.3	3.65
"2013"	2.8	1.59

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Data Table for Figure 7: The Percentage of County Base Premium Rates That Meet, Exceed, or Are Lower Than the County Target Premium Rates, 2014

Pie charts – Higher risk premium rates

	County base premium rate meets county target premium rate	County base premium rate is higher than county target premium rate	County base premium rate is lower than county target premium rate
Corn	36	7	57
Soybeans	64	20	16
Wheat	36	20	45
Cotton	35	6	59
Grain sorghum	40	7	53

Pie charts – Lower risk premium rates

	County base premium rate meets county target premium rate	County base premium rate is higher than county target premium rate	County base premium rate is lower than county target premium rate
Corn	45	17	38
Soybeans	60	29	11
Wheat	39	37	24
Cotton	54	22	24
Grain sorghum	48	26	26

Source: GAO analysis of USDA's Risk Management Agency crop insurance data. | GAO-15-215

Data Table for Appendix III Table 1: Average Coverage Level, Per Acre, and Crop Value Per Acre

State	Data	Corn	Cotton	Sorghum	Soybeans	Wheat	Total
Illinois	Avg. Coverage Level	82%		70%	80%	72%	81%
	Avg. Subs. Per Acre	\$23.43		\$28.31	\$13.65	\$24.46	\$19.24
	Avg. Value Per Acre	\$811.34		\$393.06	\$575.32	\$409.51	\$699.21
Indiana	Avg. Coverage Level	81%		70%	81%	74%	81%
	Avg. Subs. Per Acre	\$25.89		\$22.02	\$17.26	\$21.89	\$21.73
	Avg. Value Per Acre	\$777.15		\$328.61	\$587.07	\$210.64	\$250.73
Oklahoma	Avg. Coverage Level	69%	71%	68%	67%	70%	69%
	Avg. Subs. Per Acre	\$28.45	\$55.74	\$26.36	\$28.9	\$20.40	\$23.02
	Avg. Value Per Acre	\$664.07	\$585.00	\$183.33	\$252.54	\$210.64	\$250.73
Texas	Avg. Coverage Level	66%	67%	67%	67%	65%	66%
	Avg. Subs. Per Acre	\$26.03	\$54.71	\$23.80	\$32.88	\$24.60	\$37.34

Appendix V: Accessible Data

State	Data	Corn	Cotton	Sorghum	Soybeans	Wheat	Total
	Avg. Value Per Acre	\$622.64	\$512.45	\$241.68	\$281.57	\$181.61	\$389.03
	Avg. Coverage Level	80%	67%	67%	80%	68%	77%
Total	Avg. Subs. Per Acre	\$24.47	\$54.74	\$24.17	\$15.37	\$22.70	\$25.59
	Avg. Value Per Acre	\$777.91	\$514.78	\$234.99	\$569.47	\$212.00	\$554.35

Data Table for Appendix III Table for Two Graphs

	GAO Method	RMA Method	Percent Difference
Variance of Rate Changes	0.0148	0.0081	-45%
Long-Run Average Rate	4.07%	4.07%	0%

Data Table for Appendix III Table 2: Comparison of RMA Published Rates Versus GAO Suggested Rates in "Higher-Risk" Counties, 2014

	RMA Published Rates		GAO Rates*	
	Average Change from 2003	Average Premium Rate	Average Change from 2003	Average Premium Rate
Counties with a Rate Increase	11.0%	25.1%	13.2%	25.8%
Counties with a Rate Increase	-12.1%	23.9%	-13.6%	23.2%
Counties with a Rate Increase	0.0%	26.8%	0.0%	23.4%
Average for All Counties		24.7%		24.7%

* GAO Rates: Premium rates based on GAO's recommendation to move rates all the way to their targets, subject to the 20 percent limit for rate increases specified in the Federal Crop Insurance Act.

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