



Supplemental Revenue Assistance Payments Program (SURE): Wyoming

Agricultural Marketing Policy Center
Linfield Hall
P.O. Box 172920
Montana State University
Bozeman, MT 59717-2920
Tel: (406) 994-3511
Fax: (406) 994-4838
Email: ampc@montana.edu
Web site: www.ampc.montana.edu

Vincent H. Smith
Professor
Montana State University
Director
Agricultural Marketing Policy Center

James B. Johnson
Emeritus Professor
Montana State University

John P. Hewlett
Senior Extension Educator
University of Wyoming

This publication was developed with financial support from the Risk Management Agency USDA and the University of Wyoming.



Agricultural Marketing Policy Paper No. 35
February 2010

Introduction

The new Supplemental Revenue Assistance Payments Program (SURE), created by Section 12033 of the 2008 Farm Bill as an amendment to the 1994 Federal Crop Insurance Act, is a permanent disaster aid program for farms producing crops. The program is one of five different permanent disaster programs authorized by the 2008 Farm Bill that are intended to replace ad hoc disaster relief programs. The other four standing disaster programs are the Livestock Indemnity Payments program (LIP), Livestock Forage Disaster program (LFP), Emergency Assistance for Livestock, Honey Bees and Farm Raised Fish program (ELAP), and the Orchard and Nursery Tree Assistance Program (TAP).

Historically, ad hoc disaster programs have been authorized by Congress when agricultural producers in a specific region of the country have experienced substantial losses because of a single catastrophic event (most often in the form of severe weather events such as extreme droughts and hurricanes). Congress's objective in creating the new suite of disaster aid programs is to remove the need for future ad hoc disaster legislation.

The purpose of the SURE program is to provide crop producers with automatic disaster payments when the region in which they farm experiences catastrophic natural weather events or when an individual farm experiences severe crop losses due to highly localized adverse weather conditions. For the purposes of the SURE program, a producer's **farm** includes all the acres she or he crops in all counties in the United States and Puerto Rico.

This SURE program applies to all eligible farms in counties in a geographic area covered by a qualifying natural disaster declaration and in counties bordering those disaster area counties [Section 531 (a) 5 B(i) of the 2008 Food, Conservation and Energy Act]. To receive a SURE payment, farms must also experience at least a 10 percent production loss. The will also applies to any farm that experiences "a total loss of production of the farm relating to weather (that) is greater than 50 percent of the normal production of the farm" [Section 531 (a) 5 B(ii) of the 2008 Food, Conservation and Energy Act], regardless of where the county is located.

The SURE Program: Basic Concepts

To be eligible for the SURE program, a farmer *must* purchase federal crop insurance coverage under an insurance product approved by the USDA Risk Management Agency or, for crops for which federal crop insurance products are not available, coverage under the

Non-Insured Crop Disaster Assistance Program (NAP) managed the USDA Farm Service Agency. Coverage under one of these two programs must be obtained for all **economically significant** crops.

A crop is **economically significant** if it is expected to contribute five percent or more of the farmer's total revenues from market sales of all crops grown on the farm. Crops expected to contribute less than five percent of total market revenues do not have to be insured, enabling farmers, for example, to plant small areas of their land to experimental crops, horticultural crops intended for sales in local farmers' markets or on farm use, or for other reasons, without being concerned about the availability and cost of crop insurance (or NAP coverage) for those crops.

For example, suppose a farmer, Mr. Jones, has one operation in Washakie County, Wyoming, on which he plants 2,000 acres of wheat and 1,000 acres of barley, but he has also inherited a farm in Iowa on which he plants 400 acres of corn and 300 acres of soybeans. Further, all four crops are expected to account for more than 5 percent of Mr. Jones's total revenues from crop market sales. To be eligible for the SURE program, Mr. Jones has to purchase crop insurance coverage for all of his wheat and barley acres in Wyoming and for all of his corn and soybean acres in Iowa. If Mr. Jones also planted one acre to pumpkins on his Wyoming farm to sell in a local farmers' market, the acre of pumpkins would not have to be insured, because it would not be expected to make an economically significant contribution to the farm's market revenues.

The SURE program has two other major components. Each eligible farmer must establish a **SURE revenue guarantee**, also called a **SURE guarantee**, which is determined by the farm's crop insurance purchase decisions at the sign up time for the insurance. After harvest, the farm's **total farm revenue** is then determined. Both the farm's **SURE guarantee** and **total farm revenue** are based on all acres planted by the farm in the United States and Puerto Rico. For example, Mr. Jones's **SURE guarantee** would be determined by his insurance decisions with respect to the wheat and barley acres he plants in Wyoming and the corn and soybean acres he plants in Iowa.

To receive a SURE payment, the farm must first qualify by being in a county in a disaster area, or in a county adjacent to a disaster area, or by experiencing more than a 50 percent loss of expected crop revenue. If the farm's **SURE guarantee** is larger than its **total farm revenue**; the farm receives a SURE payment equal to 60 percent of the

difference between the **SURE guarantee** and the **total farm revenue**. For example, if a farm's **SURE guarantee** is \$150,000 and its revenue to count is \$120,000, then the farm will receive a SURE disaster payment of \$18,000 ($= [0.60 \times (\$150,000 - \$120,000)] = 0.60 \times \$30,000$).

Payment Limitations under the SURE Program

Payment limitations apply to the SURE program. An eligible person cannot receive more than a combined total of \$100,000 in any given year from the disaster programs authorized by the 2008 Farm Bill (SURE, LIP, LFP, and ELAP). For example, if Mr. Jones received \$12,000 from the LIP in 2009, the most he could receive under the SURE program and the other two disaster programs would be \$88,000 ($\$100,000 - \$12,000$). Note that the eligible person rules established in the 2008 Farm Bill apply to this limitation.

The SURE guarantee

A farm's SURE guarantee is determined by the producer's crop insurance decisions for all the crops that must be insured. In effect, when a farmer purchases federally subsidized crop insurance (or NAP) for a crop, say wheat, she makes decisions that determine the liability for that crop. The liability is the maximum indemnity she would receive if a total loss occurred (that is, the crop yield turned out to be zero). In many cases, a farm's **SURE guarantee** will be the sum of the farm's liabilities for each insured crop multiplied by 115 percent. However, if that amount exceeds **90 percent** of the farm's **expected revenue** from crop sales (defined as the insured price multiplied by the farm's direct payment yield or APH yield and planted acres for each crop), then the farm's **SURE guarantee** will be capped at **90 percent of its expected revenue**. Farms that insure crop yields at 75 percent or lower yield coverage levels will not be subject to this limitation as, on a crop by crop basis, their direct revenue guarantee will be no more than 86.25 percent of their expected revenues. Some farms that select coverage levels of 80 percent or higher for some crops, usually crops produced under irrigation, may be subject to this limitation.

The liability for a crop is determined in different ways under different crop insurance products. In a traditional multiple peril or APH contract, a farmer chooses a **yield coverage level** and a **price election** for the insured crop. These choices determine the farm's liability for that crop.

Suppose, Farmer Davis has a proven or APH yield for wheat of 40 bushels an acre and the maximum price at which insurable crop losses can be valued is \$6 per bushel

(determined by RMA)¹. The farmer selects a coverage level of 75 percent (the maximum coverage level allowed by RMA in his county) and a price election of 100 percent.

The coverage level determines the **trigger yield** for indemnity payments and the **trigger yield** equals the farm's APH yield multiplied by the coverage level. In this example, the **trigger yield** for Farmer Davis's wheat is **30 bushels** an acre $= (0.75 \times 40 \text{ bushels})$.

A farmer receives a crop insurance indemnity when the farm's per acre yield falls below the trigger yield. On a per acre basis, the indemnity is the difference between the trigger yield and the actual yield multiplied by the farm's elected price. The elected price is the maximum price at which losses can be valued multiplied by the farmer's price election. In the example, farmer Davis selected a **100 percent price election** and so his elected price is **\$6 per bushel** $= (1.00 \times \$6)$.

The per acre liability or maximum indemnity, the amount paid to the farm if its yield is zero, is therefore the farm's trigger yield multiplied by the farm's elected price. The farm-wide liability for the crop is the per acre liability multiplied by the total number of acres planted to the crop. In the example, Farmer Davis's per acre liability for wheat is \$180 (the farm's trigger yield of 30 bushels the farm's elected price of \$6) and his farm wide liability for wheat is therefore **\$360,000** $= (\$180 \text{ per acre} \times 2,000 \text{ planted acres})$.

If Farmer Davis only planted wheat, then his **SURE guarantee** would be 115 percent of his farm-wide insurance liability for wheat, or **\$414,000** $= (1.15 \times \$360,000)$.

There is one circumstance in which Farmer Davis could obtain a higher SURE guarantee. The 2008 Farm Bill provisions allow a farmer to use the **larger** of either their Commodity Credit Corporation counter-cyclical payment yield or their crop insurance APH yield for the crop in establishing their SURE guarantee. For example, if

¹ A farm's APH for crop insurance program may be based on some "plug" yields, which replace the farm's actual yields in years when these actual yields are relatively low. SURE program APHs are calculated using the farm's actual yields in these years, not the plug yields. Note also that a farm's SURE APH for a crop is its average yield on all land planted to the crop, regardless of production practice (e.g., irrigated and dryland wheat yields would be averaged, based on the amount of land used in each practice).

Farmer Davis had a 44 bushel per acre CCC counter-cyclical payment yield, his SURE guarantee would be computed using that yield instead of his APH yield of 40 bushels an acre. Most CCC counter-cyclical payment yields were established using yield data from the early to mid 1980s when yields for most crops were considerably lower than current yields. Therefore, it is likely that most farms that have participated in federal crop insurance programs are likely to have higher APH proven yields than CCC counter-cyclical payment yields.

Coverage Levels, Price Elections and the SURE guarantee

A farm’s SURE guarantee is determined by its crop insurance coverage and price election choices. Lower coverage levels and lower price elections result in lower SURE guarantees. Farmer Davis’s SURE guarantee changes as his coverage level declines from 75 percent to 50 percent in five percentage point increments, assuming he continues to choose a 100 percent price election (Figure 1). As this farmer reduces his coverage level on the 2,000 acres of wheat he planted with a 40 bushel APH, his SURE guarantee falls substantially. For example, at the highest (75 percent) coverage level, the SURE guarantee is \$414,000; at the most frequently selected coverage level (65 percent) the guarantee declines to \$358,800 (a 13.5 percent reduction), and at the lowest coverage level (50 percent) it falls to \$276,000 (33 percent lower than at the highest coverage level).

Figure 1: Price Elections and their Effects on a Farm’s Disaster Revenue Guarantee*

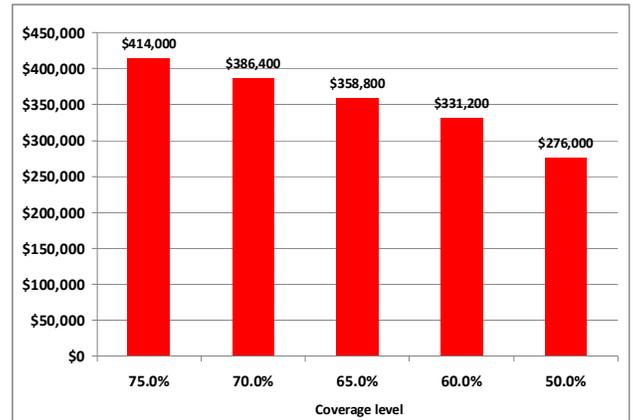


* The farm is assumed to choose a 100% price election at each coverage level.

The effects of reductions in price elections are illustrated (Figure 2). Farmer Davis selects a 75 percent coverage level but reduces his price election from 100 percent to 50 percent in five ten percent increments. At the highest price

election (100 percent), the farm’s SURE guarantee is \$414,000; at the lowest price election (50 percent), the guarantee is \$207,000, half of the amount at the highest price election (because the SURE guarantee declines at the same rate as the elected price).

Figure 2: Coverage Levels and their Effects on a Farm's Disaster Revenue Guarantee*



* The farm is assumed to choose a 75% coverage level for each price election.

Catastrophic coverage, often called CAT coverage, is the minimum level of crop insurance that can be purchased using a traditional APH yield product. Some farmers find CAT coverage appealing for a crop because their only cost is a \$300 administrative fee. Under CAT coverage, the farmer obtains a 50 percent coverage level and a 55 percent price election. If Farmer Davis opted for CAT coverage, his SURE guarantee would be \$151,800, only 37 percent of the guarantee he would obtain had he selected a 75 percent coverage level and a 100 percent price election.

The SURE guarantee and Alternative Crop Insurance Products

Farmers have a wide range of crop insurance options. Corn, barley, wheat, sugar beet, alfalfa and oats producers in Wyoming can use a traditional multiple peril APH yield product. Many corn and wheat producers can use Crop Revenue Coverage (CRC), a multiple peril APH revenue product. They can also insure against crop losses with a whole farm insurance plan such as Adjusted Gross Revenue Lite (AGR-Lite). All of these products can be used to comply with the requirement that farmers insure all of their economically significant crops to be eligible for the SURE program and to establish a SURE guarantee for their farm. Area yield (GRP) and Area Revenue (GRIP) plans are available for many crops in many counties in other states but are not currently available in most Wyoming counties. Where GRP and GRIP products

are available, they can also be used to establish a farm's SURE guarantee.

APH Revenue Products

SURE guarantees are established using individual farm APH based revenue products in a somewhat similar way to the SURE guarantees established using APH yield insurance products. Crop Revenue Coverage, an APH based revenue insurance product in Wyoming available for corn and wheat, considers two prices for an insured crop. Prior to the production of a crop and prior to the sales closing date for CRC coverage, a **CRC Base Price** is announced. The **CRC Base Price** is specified as a specific average futures contract settlement price for delivery at harvest time for a crop over a period just prior to the closing date for the **CRC** contract (typically at or just before the crop is planted). Using the **CRC Base Price**, a producer establishes an initial per acre **CRC Liability** for the insurance by selecting a coverage level and multiplying the CRC base price by the farm's APH yield and the coverage level; that is,

CRC Liability per acre = CRC Base Price x Coverage Level x APH.

Note that the coverage levels (50 percent to 85 percent in five percent increments) are similar to those available under an APH yield insurance product.

If the producer does not choose what is called the **Harvest Price Option**, then the **CRC liability per acre** forms the basis for the crop's contribution to the farm's SURE revenue guarantee. The crop's contribution to farm's **SURE guarantee** is therefore:

CRC Base Price x Coverage Level x APH x Total Planted Acres x 115 percent.

Under the CRC product provisions (and the Revenue Assurance product which is also available for some crops in 2010), a farmer can choose an option that increases the **CRC Liability per acre** if a crop's **Harvest Price** exceeds its **CRC Base Price**, where the **Harvest Price** is defined as a specific average futures contract settlement price at harvest time. If a farmer chooses this CRC option, and the **Harvest Price** does exceed the **CRC Base Price**, then the crop's contribution to the SURE guarantee will be based on the harvest price; that is, the crop's contribution to farm's **SURE guarantee** is therefore:

CRC Harvest Price x Coverage Level x APH x Total Planted Acres x 115 percent.

As in the case of the traditional APH yield insurance product, a producer can increase their SURE guarantee by using their CCC direct payment yields if those yields exceed their federal crop insurance APH for the crop. APH based revenue insurance is not available for many crops and so many producers insure one or more crops under traditional APH yield contracts and other crops under APH revenue contracts. Their **SURE guarantee** will then be 115 percent the sum of the liabilities under each type of contract.

Whole Farm Income Protection Products (AGR and AGR-Lite)

Farmers can purchase whole farm income protection against losses from the sum of all of their crop and livestock enterprises through Adjusted Gross Revenue (AGR) and AGR-Lite insurance products. The AGR products are complex and specific details of all key elements of the AGR-Lite product are presented in Agricultural Marketing Policy Center Policy Issues Paper #30, *Risk Management Options for Wyoming Farms*, available on the web at www.ampc.Wyoming.edu/policypaper/policy28.pdf. In the AGR-Lite product (the most commonly used whole farm insurance product), for each crop and insurance year, producers work with their insurance agent to report the acres to be planted, the expected price per unit of production and the expected yield. In addition, producers have to provide sufficient information to establish their expected allowable expenses.

From such information Approved Adjusted Gross Income (AGR) is established. Farms then select a coverage level (65 percent, 75 percent or 80 percent) that determines the AGR level for the insurance that would trigger an indemnity payment. Farms also select a payment rate (75 percent or 90 percent) that determines the indemnity they receive when their AGR is less than its trigger level. The indemnity equals the difference between the farm's AGR trigger level and its actual AGR multiplied by the selected payment rate.

The farm **SURE guarantee** will equal 115 percent of the sum of the farm's expected AGR revenue from crops multiplied by the farm's selected AGR coverage level, as long as that amount not more than 90 percent of the farm's expected revenues from those crops.

SURE Total farm Revenue

Under SURE, a farm's **total farm revenue** consists of the sum of the following five elements:

1. Estimated market revenues for each crop = actual yield harvested per planted acre x estimated regional market price x planted acres. The regional price is estimated by the USDA National Agricultural Statistical Service (NASS).
2. 15 percent of the farm's direct payments.
3. All countercyclical program payments or ACRE program payments.
4. All payments received under the Loan Rate/Loan Deficiency Payment/Marketing Loan Gain programs.
5. All crop insurance indemnity payments (and NAP payments).

Table 1: Example Farm, Washakie County

Crop	Acres Planted	Planted Acre Yields
Feed Barley	250	120 bushels
Alfalfa	100	3.5 tons
Corn	200	125 bushels
Sugar Beets	250	20 tons
Total	800	NA*

* NA denotes not applicable

Expected Revenues

In 2009, in Washakie County, farmers could insure corn under and APH based yield product and an APH based revenue product. However, APH yield insurance was the only APH insurance product available for feed barley, corn and sugar beets, while alfalfa could be insured under an APH yield product. No group risk product was available for any commodity. The example farm is assumed only to use APH products. The APH insurance products available for each crop in Washakie County and the RMA estimated expected harvest prices associated with each of those products are identified (Table 2). The farm's estimated expected revenues from market sales for each crop under each plan, given the farm's planting decisions and APH yields are estimated (Table 3).

SURE Payment

As discussed above, the SURE payment is equal to **60 percent** of the difference between a farm's **SURE guarantee** and its **total revenue**.

An Example Farm

Many farms in Wyoming raise feed barley, alfalfa, corn, and sugar beets under irrigation. Wyoming farmers also raise other crops such as wheat. The example farm has 800 acres of irrigated cropland and is representative of full-time farming operations in the Wyoming county of Washakie. The farm plants 250 acres of feed barley, 100 acres of alfalfa, 200 acres of corn and 250 acres of sugar beets. Expected planted acre (farm APH) yields are 120 bushels for feed barley, 3.5 tons for alfalfa, 125 bushels for corn, and 20 tons for sugar beets (Table 1).

Table 2: Insurance Products Available in Washakie County by Crop and RMA 2010 Estimated Expected Harvest Price

APH Insurance Product	Feed Barley	Alfalfa	Corn	Sugarbeets
Yield Insurance (APH)	Yes, \$2.60 per bushel	Yes, \$108 per to	Yes, \$3.90 per bushel	Yes, \$41 per ton
Revenue Insurance (CRC)	Not Available	Not Available	Yes, \$3.98 per bushel	Not Available

Table 3: Expected Market Revenues by Insurance Products for Each Crop

	Feed Barley	Alfalfa	Corn	Sugar Beets
Yield Insurance (MPCI APH)	\$78,000.00	\$37,800.00	\$97,500.00	\$205,000.00
Revenue Insurance (APH)	NA ^A	NA	\$95,000	NA

^A NA denotes not applicable.

Expected market revenues vary by plan because the farm's expected price for a crop varies among the plans. In 2010, for example, farms could value their corn crop at up to \$3.90 a bushel under a traditional APH yield product but, given the futures market for corn, at only \$3.80 a bushel under the CRC revenue insurance plan. As a result, the farm's estimated expected revenues from corn under the traditional APH yield plan are \$63,375 but somewhat lower at \$61,750 under the APH revenue insurance plan.

The SURE Guarantee

The farm's SURE guarantee is determined by the types of insurance product it chooses and the coverage level it selects within those products. To illustrate the effects of different insurance product choices, we consider four scenarios. In Scenario 1, the farm purchases traditional APH products for each crop and selects a 65 percent coverage level and a 100 percent price election (Table 4).

In Scenario 2, the farm uses traditional APH products and a 100 percent price election, but for each crop, the farm selects a 75 percent coverage level. In Scenario 3, the farm purchase APH revenue insurance for corn, APH yield insurance for the other crops, and selects a 65 percent coverage level. Scenario 4 is identical to Scenario 3 with one exception; the farm selects a 75 percent coverage level for each crop.

SURE revenue guarantees for the farm under the four scenarios are presented (Table 4). The methods by which these guarantees are calculated are presented in the Appendix Table A1. Purchasing insurance coverage involves premium payments. The farmer's premium payments under each scenario are also presented (Table 4). These premium payments are obtained using the USDA RMA premium calculators provided on the RMA home page.

Revenue to Count

As discussed above, in determining a farm's eligibility for a SURE payment and the size of that payment, five types of revenue are included: (1) estimated market revenues for each crop (actual yield per planted acre x planted acres x estimated regional market price), (2) 15 percent of the farm's total direct payments, (3) all countercyclical program payments or ACRE program payments (4) all Loan Rate/Loan Deficiency Payment/Marketing Loan Gain payments, and (5) all crop insurance indemnity payments (and NAP financial assistance received)

The example farm is assumed to participate in the direct payment/countercyclical payment (DCP) program. However, national average crop prices are assumed to be

too high to trigger countercyclical payments or marketing loan gains and loan deficiency payments. So the farm has only three potential sources of revenue to count: estimated market revenues, crop insurance indemnities, and 15 percent of the farm's direct payments. In 2009, the farm's direct payments for the two crops for which they are available – wheat and corn – equal its production acres for the crop multiplied by (a) the farm's direct payment crop yield, (b) the crop payment rate and (c) 83.3 percent.

The farm's direct payment yields², payment acres (determined by historical production decisions), payment rates (determined by the provisions of the 2008 farm bill), and direct payments for each crop are as follows:

Crop	Payment Acres	Payment Yields (per acre)	Payment Rate	Total Direct Payment
Barley	250	90 bushels	24 cents per bushel	\$4498
Corn	200	100 bushels	28 cents per bushel	\$4665
TOTAL	2,800	NA*	NA*	\$9,163

* NA denotes Not Applicable

The farm's total direct payment for all crops is therefore \$9,163 of which 15 percent, or \$1,375, is included in the farm's revenue to count against its SURE guarantee.

The farm's estimated actual market revenues for a crop equal its actual yield multiplied by the regional average harvest price (as reported by USDA). The farm's insurance indemnities for a crop are determined by the farm's actual yield, its selected coverage level and price election, and, in the case of revenue insurance, the national average harvest price (as reported by USDA).

To examine what happens when the example farm is eligible for a SURE payment under each of the four insurance scenarios, three crop production outcomes are considered and, for each production outcome, two price outcomes are considered. In a given production outcome, the farm is assumed to experience the same proportional loss in production for each crop. The three production outcomes are as follows:

Production Outcome I (moderate loss): The farm obtains 70 percent of its expected crop yields (the APH yields).

Production Outcome II (substantial loss): The farm obtains 50 percent of its expected crop yields.

² The farm's direct payment yields for feed barley and corn are assumed to be substantially lower than its APH yields because they were determined by the yields the farm achieved in the early and mid-1980s).

Table 4: Expected Revenues, Disaster Guarantees and Producer Premium Costs under Alternative Insurance Coverage Scenarios

	Total Expected Crop Revenues^A	SURE Revenue Guarantee (total expected crop revenues x coverage level x 1.15)	Producer Premium Payments^C
Scenario 1: APH Yield, 65 percent coverage	\$418,300	\$312,680	\$7,801
Scenario 2: APH Yield, 75 percent coverage	\$418,300	\$360,784	\$13,641
Scenario 3: APH Revenue for Corn 65 percent coverage ^B	\$415,800	\$310,810	\$9,188
Scenario 4: APH Revenue for Corn 75 percent coverage ^B	\$415,800	\$358,627	\$16,109

^A In scenarios 1 and 2, the farm's total expected crop revenue is the sum of the expected market revenues for each crop when the farmer selects an APH yield product for all four crops with a 100 percent price election, as shown in Table 3.

^B In scenarios 3 and 4, the farm's total expected crop revenue is the sum of the expected market revenues for each crop when the farmer selects an APH yield product for feed barley, alfalfa and sugar beets, and an APH revenue product with a 100 percent price election for corn.

^C Producer premium payments are the out-of-pocket payments that must be paid for the insurance coverage the farm purchases. They are computed using the RMA premium calculator available on the RMA home page, assuming that the CRC product is used to obtain revenue insurance corn but does not include the harvest price option. The payments reported in Table 3 include a \$30 administrative fee for each crop contract, which is generally waived for socially disadvantaged and limited resource farmers, and are based on the assumption that the farm insures basic units (rather than optional units or enterprise units). Note that producer premium payments are not due until harvest time and, if an indemnity is due, are typically deducted from the indemnity payment.

^D In each scenario, the SURE guarantee estimate based on multiplying total expected revenue by the coverage level and 1.15 percent is less than 90% of total expected crop revenues and therefore is the SURE guarantee.

Production Outcome III (catastrophic loss): The farm obtains 30 percent of its expected crop yields.

The two price outcomes are as follows:

Price Outcome 1 (expected price outcome):

Each crop's actual national (and regional) average price equals the harvest price estimated by RMA to be expected in the fall under the APH yield contract (\$2.60 per bushel for barley, \$3.90 per bushel for corn, \$108 per ton for alfalfa, and \$41 per ton for sugar beets).

Price Outcome 2 (low price outcome):

Each crop's actual national (and regional) average price is 20 percent lower than the harvest price estimated by RMA under the APH yield contract. (\$2.08 per bushel for barley, \$3.12 per bushel for corn, \$86.40 per ton for alfalfa, and \$32.80 per ton for sugar beets)

Thus, for each of the four insurance scenarios, there are six possible combinations of production and price outcomes: moderate loss, expected price; moderate loss, low price; substantial loss, expected price; substantial loss, low price; catastrophic loss, expected price; and, catastrophic loss, low price.

Simulation Results

Outcomes for market revenues, insurance indemnities, total farm revenues, SURE payments and the farm's total revenues from all crop production related sources of income are presented for all six production/price outcomes for each of the four insurance scenarios (Tables 5 through 8).

The results for Scenario 1 (each crop insured under a 65 percent coverage APH yield contract) are presented (Table 5). They show that when yields are 70 percent of the APH yield and the farm has selected a coverage level of 65 percent, the farm receives no insurance indemnities because the actual yield exceeds the trigger yield for each crop. When the price of each crop is equal to its expected price and yields are 70 percent of the farm's APH, a \$39,238 SURE payment is available under the 65 percent APH coverage option.

When actual yields are 70 percent of the farm's APH yield larger and prices are 20 percent below their expected levels, the SURE payment becomes larger. Low market prices, combined with an absence of crop insurance indemnities, drive revenues from market sales down and cause the

farm's revenue to count to fall farther below the SURE guarantee.

When yields decline to 50 percent or 30 percent of the farm's APH yields and crop prices achieve their expected levels, then the farm receives crop insurance indemnities and SURE payments that stabilize the farm's total revenues at \$325,056. When market prices are 20 percent lower than expected the farm again receives a SURE payment, but that payment declines as the farm's yield decreases from 50 to 30 percent because crop insurance indemnities increase more rapidly than market revenues decrease. This is because the prices at which the farm is able to sell each crop in the marketplace are now lower than the prices at which yield losses are insured.

The results for Scenario 2 (each crop insured under a 75 percent coverage APH yield contract) are presented (Table 6). In Scenario 2, a moderate 30 percent yield loss results in indemnity payments because the farm has selected a 75 percent coverage level in its APH yield contracts.

Moreover, because the farm's coverage level is higher than in Scenario 1, the farm's SURE guarantee is higher resulting in a higher SURE payment even when market prices achieve their expected levels. As yields decline (but prices remain at their expected levels), crop insurance indemnities increase, but the SURE payment remains constant because the crop insurance indemnities increase at the same rate at which market revenues decline. The reason for this outcome is that, for each crop, the price at which lost yield is valued for indemnity purposes is the same as the price in the marketplace. When the market price decreases to 80 percent of its expected level, at each of the three yield levels considered, the SURE payment increases substantially to compensate for the loss of market revenues associated with the lower price.

The results for Scenario 3 (corn is insured under a 65 percent APH revenue contract and the other three commodities are insured under a 65 percent APH yield contract) are presented (Table 7). In this scenario, the SURE revenue guarantee is lower than in the 65 percent APH yield contract scenario (Scenario 1). The reason is that the expected price available for insurance purposes under the revenue contract is lower than the expected price available for insurance purposes under the yield contract for corn (Table 2).

In this scenario, when yield losses are moderate (yields are 70 percent of their APH), and market prices are as expected, crop insurance indemnities are not paid on any of the crops. In addition, because the SURE guarantee is relatively low, only a small SURE payment is available when yield losses are moderate and prices are as expected.

Table 5: SURE Payments and Farm Incomes in Insurance Scenario 1 (all crops are insured using a 65 percent coverage APH yield contract)

	Moderate Yield Loss (70% of APH)		Substantial Yield Loss (50% of APH)		Catastrophic Yield Loss (30% of APH)	
	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected
Market Revenues + 15% of Direct Payment	\$294,184	\$235,622	\$210,524	\$168,694	\$126,864	\$101,766
Crop Insurance Indemnities:						
Barley	0	0	\$11,700	\$11,700	\$27,300	\$27,300
Alfalfa	0	0	\$5,670	\$5,670	\$13,230	\$13,230
Corn	0	0	\$14,625	\$14,625	\$34,125	\$34,125
Sugar Beets	0	0	\$30,750	\$30,750	\$71,750	\$71,750
Total Farm Revenue (TFC)	\$294,184	\$235,622	\$273,269	\$231,439	\$273,269	\$248,171
SURE Guarantee (SG)	\$359,581	\$359,581	\$359,581	\$359,581	\$359,581	\$359,581
SURE Payment (60% x (SG - TFR))	\$39,238	\$74,375	\$51,787	\$76,885	\$51,787	\$38,705
Farm's Total Income	\$333,422	\$309,998	\$325,056	\$308,324	\$325,056	\$286,876

Table 6: SURE Payments and Farm Incomes in Insurance Scenario 2 (all crops are insured using a 75 percent coverage APH yield contract)

	Moderate Yield Loss (70% of APH)		Substantial Yield Loss (50% of APH)		Catastrophic Yield Loss (30% of APH)	
	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected
Market Revenues + 15% of Direct Payment	\$348,804	\$279,680	\$250,056	\$200,681	\$151,307	\$121,682
Crop Insurance Indemnities:						
Barley	\$3,900	\$3,900	\$19,500	\$19,500	\$35,100	\$35,100
Alfalfa	\$1,890	\$1,890	\$9,450	\$9,450	\$17,010	\$17,010
Corn	\$4,875	\$4,875	\$24,375	\$24,375	\$43,875	\$43,875
Sugar Beets	\$10,250	\$10,250	\$51,250	\$51,250	\$92,250	\$92,250
Total Farm Revenue (TFC)	\$315,099	\$256,537	\$315,099	\$273,269	\$315,099	\$290,001
SURE Guarantee (SG)	\$414,901	\$414,901	\$414,901	\$414,901	\$414,901	\$414,901
SURE Payment (60% x (SG - TFR))	\$59,880.93	\$95,018.13	\$59,880.93	\$84,978.93	\$59,880.93	\$74,939.73
Farm's Total Income	\$374,980.38	\$351,555.58	\$374,980.38	\$358,248.38	\$374,980.38	\$364,941.18

**Table 7: SURE Payments and Farm Revenues in Insurance Scenario 3
(wheat and barley are insured using a 65 percent coverage APH revenue contract)**

	Moderate Yield Loss (70% of APH)		Substantial Yield Loss (50% of APH)		Catastrophic Yield Loss (30% of APH)	
	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected
Market Revenues + 15% of Direct Payment	\$348,804	\$279,680	\$250,056	\$200,681	\$151,307	\$121,682
Crop Insurance Indemnities						
Barley	0	0	\$11700	\$11700	\$27300	\$27300
Alfalfa	0	0	\$5670	\$5670	\$13230	\$13230
Corn	0	\$7150	\$14250	\$23750	\$33250	\$23750
Sugar Beets	0	0	\$30750	\$30750	\$71750	\$71750
Total Farm Revenue (TFC)	\$348,804	\$286,830	\$312,426	\$272,551	\$296,837	\$257,712
SURE Guarantee (SG)	\$357,432	\$357,432	\$357,432	\$357,432	\$357,432	\$357,432
SURE Payment (60% x (SG - TFR))	\$5,176.80	\$42,361.20	\$27,003.60	\$50,928.60	\$36,357.00	\$59,832.00
Farm's Total Income	\$353,981	\$329,191	\$339,430	\$323,480	\$333,194	\$317,544

**Table 8: SURE Payments and Farm Revenues in Insurance Scenario 4
(wheat and barley are insured using a 75 percent coverage APH revenue contract)**

	Moderate Yield Loss (70% of APH)		Substantial Yield Loss (50% of APH)		Catastrophic Yield Loss (30% of APH)	
	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected	Prices are as expected	Prices are 20% lower than expected
Market Revenues + 15% of Direct Payment	\$348,804	\$279,680	\$250,056	\$200,681	\$151,307	\$121,682
Crop Insurance Indemnities						
Barley	\$3,900	\$3,900	\$19,500	\$19,500	\$35,100	\$35,100
Alfalfa	\$1,890	\$1,890	\$9,450	\$9,450	\$17,010	\$17,010
Corn	\$4,750	\$18,050	\$23,750	\$33,250	\$42,750	\$48,450
Sugar Beets	\$10,250	\$10,250	\$51,250	\$51,250	\$92,250	\$92,250
Total Farm Revenue (TFC)	\$369,594	\$313,770	\$354,006	\$314,131	\$338,417	\$314,492
SURE Guarantee (SG)	\$412,421	\$412,421	\$412,421	\$412,421	\$412,421	\$412,421
SURE Payment (60% x (SG - TFR))	\$25,696	\$59,191	\$35,049	\$58,974	\$44,402	\$58,757
Farm's Total Income	\$395,290	\$372,961	\$389,055	\$373,105	\$382,819	\$373,249

When yields are 70 percent of their APH and commodity prices are only 80 percent of their expected levels, the farmer receives a modest crop insurance indemnity for corn under the revenue contract but the SURE payment increases because low prices have caused market revenues to diminish. When crop yields decline to 50 percent or 30 percent of the farm's APH yields, the farm receives substantial crop insurance indemnities and those indemnities increase modestly when crop prices decline. The farm also receives a SURE payment in those environments, but the SURE payment is not much different than when yields are 70 percent of APH and prices are relatively low.

The results for Scenario 4 (corn is insured under a 75 percent APH revenue contract and the other crops are insured under a 75 percent APH yield contract) are presented (Table 8). In this scenario, insurance indemnities are modest when yield losses are moderate (70 percent of the farm's APH yields).

However the higher coverage level causes a substantial increase in the farm's SURE guarantee and that increase is sufficient to insure that a relatively large SURE payment will be made both when crop prices are at their expected levels and when they are 20 percent below those levels. As yields decline (to 50 percent and then 30 percent of the farm's APH yields), crop insurance indemnities increase, and SURE payments continue to be made. SURE payments actually decrease a little as yields decline from 50 percent to 30 percent of the farm's APH yield because prices at which yield losses are valued for indemnity purposes are higher than market prices. The result is that market revenues decline more slowly than indemnity payments increase, and so, as yields decline, the farm's revenue to count again to its SURE guarantee actually increases.

Summary

The example farm simulations show that, as crop insurance yield **coverage levels** increase, the **SURE guarantee** also increases quite substantially and results in larger disaster payments. In addition, the simulations demonstrate that the SURE program provides larger benefits when market prices are relatively low. This means that, to some extent, the SURE program protects farmers against both low yield outcomes and low price outcomes. Although higher coverage levels result in higher SURE disaster payments, it's important to remember that those higher SURE disaster payments come at some cost. To obtain higher coverage levels the example farm has to pay higher out-of-pocket premiums, as shown (Table 4). While the higher coverage levels also result in higher insurance indemnities, the increases in premium payments are substantial. For example, the example farm's total producer premium payments for APH yield contracts increase from \$7,801 to \$13,641 as the coverage level is increased from 65 percent to 75 percent. A similar increase in producer premium payments occurs when the farm increases its APH revenue coverage level from 65 percent to 75 percent. Finally, the simulations clearly demonstrate that the linkages between a farmer's choice of insurance contracts coverage levels and disaster payments are complex. Farmers need to assess what will work best for their own operations as they ensure that they are eligible for the new SURE Crop Disaster program.

Appendix: Table A1
SURE Guarantee Computations for Representative Farm
Under Insurance Scenarios 1-4

	APH Yield Expected Gross Revenues	Scenario 1 (65% coverage)	Scenario 2 (75% coverage)	APH Revenue for corn	Scenario 3 (65% coverage)	Scenario 4 (75% coverage)
Barley	250 acres x 120 bushels x \$2.60/bushel = \$78,000	\$50,700	\$58,500	250 acres x 120 bushels x \$2.60/bushel = \$78,000	\$50,700	\$58,500
Alfalfa	100 acres x 3.5 tons x \$108/ton = \$37,800	\$24,570	\$28,350	100 acres x 3.5 tons x \$108/ton = \$37,800	\$24,570	\$28,350
Corn	200 acres x 125 bushels x \$3.90 = \$97,500	\$63,375	\$73,125	200 acres x 125 bushels x \$3.80 = \$95,000	\$61,750	\$71,250
Sugar Beets	250 acres x 20 tons x \$41 per ton =\$205,000	\$133,250	\$153,750	250 acres x 20 tons x \$41 per ton =\$205,000	\$133,250	\$153,750
Total (Wheat, Barley and Canola)	\$418,300	\$312,679	\$360,783	\$415,800	\$310,810	\$358,627
Total x 1.15 (SURE guarantee)	NA	\$359,581	\$414,901	NA	\$357,432	\$412,421

*The authors gratefully acknowledge the cooperation of
the program staff of the USDA Farm Service Agency's Wyoming
State Office and University of Wyoming
for providing handbook materials and reviews
of this publication.*



Copyright 2010 All rights reserved.

The programs of MSU Extension are available to all people regardless of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Douglas Steele, Vice Provost and Director, Extension Service, Montana State University, Bozeman, MT 59717