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An Introduction to Federal Crop Insurance Products for New and Beginning Wyoming Farmers and Ranchers

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Introduction

Federal crop insurance products have been available to farmers in the United States for 80 years. Beginning in the early 1990s, the range of products offered by the USDA Risk Management Agency expanded, and today farmers have access to federal crop insurance for most of the crops they grow. Currently, nationally farmers can obtain insurance for over 140 crops and forages. Over the past several years, coverage has become widely available for crops produced under organic practices at price elections based on prices that reflect organic premiums.

Expansion of the federal crop insurance program over the past three decades has involved both the range of agricultural commodities for which insurance is available, and the range of different products that farmers can use to obtain protection from losses associated with an individual crop like wheat. Products have been introduced and continue to be modified, and now one crop insurance product allows producers to cover whole farm revenue for most agricultural enterprises under a single insurance contract.

Many agricultural commodities can now be covered by federal crop insurance and there has been a proliferation of types of crop insurance policies. As a result, the federally-subsidized crop insurance product landscape has become increasingly complex. Nevertheless, the basic features of the federal crop insurance program have remained relatively stable. Wyoming farmers, especially new and beginning farmers, need to understand these features and the information they will need to obtain federal crop insurance coverage.

Insurance Products

Most agricultural producers purchase federal crop insurance products that cover losses associated with an individual crop. In 2017 over 99 % of all crop insurance coverage across the United States, as measured by insurance liability and numbers of policies purchased, was for individual crops. Crop insurance products available for individual crops fall into two broad categories:

- Actual Production History (APH) products provide insurance based on a farm's production of a crop. These products use the farm's production history for a crop to establish the amount of coverage available for that crop in the current year, and the farm's actual production of a crop in the current year in determining whether an insurable loss has occurred and, if so, the size of the indemnity the farmer will receive to compensate for the loss.

- Group Risk Products (GRP) provide insurance based on average yields for a crop in an area in which multiple farms are located and the same product is available to a group of farms. In most cases, group products use county yields as the basis for the GRP insurance product.

For crops that have well-established futures markets, or whose market prices are closely linked to the prices of crops with such futures markets (for example, corn and feed barley), two general categories of APH and GRP products are available. Those categories are yield insurance and revenue insurance. Revenue insurance is not available for many crops (such as dry beans, dry peas, and sugar beets in Wyoming) because viable futures markets do not exist for those commodities.

Yield insurance policies for a crop provide indemnities to farmers when crop yields in the current year fall sufficiently below their expected levels. Expected yields and payments for losses for a crop insured under an APH yield insurance product are based on the farm's actual production history for the crop. Expected yields and payments for losses for a crop insured under a GRP yield insurance product are based on the county's production history for the crop.

Revenue insurance policies for a crop provide indemnities to farmers when crop revenues in the current year fall sufficiently below their expected levels. Expected revenues and payments for losses for a crop insured under an APH yield insurance product rely on the farm's actual production history for the crop and the price expected at planting time as estimated by

RMA using the futures contract for the crop that expires at harvest time.

Expected revenues and payments for losses for a crop insured under a GRP yield insurance product rely on the county's production history for the crop and, using the same information as for APH revenue insurance, the price expected at planting time as estimated by RMA using the futures contract for the crop that expires at harvest time.

More detailed descriptions of APH yield and revenue products are presented in later sections of this policy paper because these types of insurance products account for over 95% of all insurance coverage purchased by farmers nationally and in Wyoming.

Nationally, and in Wyoming, yield insurance is available for almost all crops covered by federal crop insurance products. Nationally, APH and GRP revenue insurance products are also available for the following commodities: barley, canola, corn, cotton, grain sorghum, peanuts, popcorn, rice, soybeans, sunflowers and wheat.

In 2017, some Wyoming farmers purchased APH revenue insurance coverage for barley, corn, sunflowers, and wheat. (Source: USDA RMA Federal Crop Insurance Corporation Commodity Year Statistics for 2017, available at: www3.rma.usda.gov/apps/sob/current_week/stcrop2017.pdf).

Many Wyoming livestock producers also purchased a product called Pasture Range Forage (PRF) insurance, an index insurance product that pays ranchers indemnities when the rainfall (precipitation) index in the area in which their forage production is located is sufficiently below the expected average rainfall index for the area. The areas on which PRF insurance products are based consist of unique "grids".

A Wyoming farmer seeking to insure a crop under APH yield or revenue insurance products has to provide the insurer with information on the areas, often described as units, to be insured under separate contracts, or under a single farm- wide contract. For each area insured under a separate contract, the producer has to supply information about the actual crop production history on that area. New and beginning farmers may opt to use country level data if they have no or limited experience with a crop on the area they wish to insure. The farmer also has to decide whether to insure a crop, which insurance product they want to use, and what level of protection against losses they want to obtain.

This policy paper is organized as follows. First, an overview of which types of crop insurance are currently being purchased by Wyoming farmers is presented. The next section considers the decision criteria that farmers may want to use in making their decisions about crop insurance. The following section examines the "units" issues a farmer must address in determining whether or not to insure crops on the farm under a single APH contract or multiple contracts. The process of establishing actual production histories on each insured unit is then described. Next, yield and revenue insurance options are described in more detail, with examples of how a producer's premium costs, premium subsidies and indemnities may differ under yield and revenue insurance. Other insurance options for crops, including GRP and whole farm insurance products, are then briefly described. Options that a producer may be available to manage risk for crops not covered in their county by federal crop insurance are then discussed. Finally, insurance options applicable to livestock producers available through RMA are briefly described, including the Pasture, Rangeland Forage (PRF) index product.

Crop Insurance Products Used by Wyoming Farmers in 2017

Nationally, federal crop insurance is available for over 130 different crops. Wyoming farmers and ranchers insure a relatively limited number of crops---but most of the crops produced in the state are insurable, including in the 2017 crop year alfalfa seed, barley, corn, dry beans, forage production and forage seed, millet, oats, potatoes, soybeans, sugar beets, sunflowers and wheat (Table 1 and Table 2).

Many Wyoming ranchers also purchase coverage against loss grazing feed through the Pasture, Rangeland, and Forage (PRF) rainfall index product. PRF

insurance is widely used throughout the state and in 2017 ranchers insured nearly 2.1 million acres of grazing land using the PRF insurance product. In terms of area insured in Wyoming under any federal crop insurance product, PRF accounted for 84 % of the total area. However, in terms of liability (the value of crop insured), premiums and subsidies for premiums paid by the federal government, PRF accounted for much smaller shares of the total amount of federal crop insurance purchased in Wyoming, ranging from 22.1% of total liability to 29.1% of total premium.

Wyoming farmers purchased a small amount dollar insurance. The dollar insurance product is designed for forage seeding and was used on 0.2% of all insured acres in 2017 (Table 2), and a small amount of whole farm insurance (0.2% of total liability). Overwhelmingly, Wyoming produces insured annual crops such as barley, corn, sunflowers, and wheat using COMBO policy APH yield and revenue products. In 2017, revenue insurance APH products were used to insure barley, corn, sunflowers, and wheat, and together on a state-wide basis accounted for 21.7% of total insured liability, 26.5% of total premiums paid and 28% of total premium subsidies.

APH yield insurance was widely used in 2017. APH policies that are not necessarily based on the price discovery mechanisms of the COMBO policy also provide yield insurance. Those APH products were used by Wyoming producers to insure dry beans, forage production, millet, oats, potatoes, and sugar beets. Overall, APH yield insurance accounted for 53.6% of total insured liability, 43.2% of total premiums paid and 44.2 % of total premium subsidies in 2017 (Table 2).

Therefore, this paper's main focus is on APH yield products and APH yield and revenue products offered under the COMBO policy, the most widely used crop insurance products in Wyoming.

Table 1. Federal Agricultural Insurance Coverage Purchased by Wyoming Farmers and Ranchers in 2017

Crop	Insurance Plan	Acres Insured	Liabilities ($)	Total Premium ($)	Subsidy ($)
Alfalfa Seed	Yield	6,410	6,005,690	994,511	576,845
Barley	Revenue	1,905	456,179	68,050	37,674
Barley	Yield	41,497	12,012,757	839,434	456,908
Corn	Revenue	42,381	15,473,894	2,208,397	1,331,042
Corn	Yield	20,215	6,998,053	661,331	396,402
Dry Beans	Yield	32,829	15,273,762	1,801,357	1,020,128
Forage Production	Yield	89,213	6,255,965	1,300,897	865,616
Forage Seeding	Dollar	1,879	236,224	35,604	22,252
Millet	Yield	2,573	93,475	33,440	21,008
Oats	Yield	3,958	387,464	74,035	42,561
Pasture, Rangeland, Forage	PRF Rainfall	2,081,288	29,037,572	5,001,182	2,597,715
Potatoes	Yield	590	1,098,638	112,253	66,229
Soybeans	Yield	78	$24,324	4,453	2,449
Sugar Beets	Yield	25,724	18,745,036	1,025,264	587,261
Sunflowers	Revenue	4,802	542,855	143,159	100,447
Sunflowers	Yield	3,142	545,470	101,195	62,837
Wheat	Revenue	87,675	11,988,799	2,133,522	1,304,277
Wheat	Yield	24,409	2,821,186	477,881	282,107
Whole Farm Revenue Protection	NA*	NA*	3,209,542	172,172	129,719
TOTAL	**NA***	**2,470,568**	**131,206885**	**17,188,137**	**9,903,477**

*NA: Not applicable

Table 2. Federal Agricultural Insurance Coverage Purchased by Wyoming Farmers and Ranchers in 2017 by Share of Product Used

Crop	Insurance Plan	Acres Insured (%)	Liabilities (%)	Total Premium (%)	Subsidy (%)
Alfalfa Seed	Yield	0.3	4.6	5.8	5.8
Barley	Revenue	0.1	0.3	0.4	0.4
Barley	Yield	1.7	9.2	4.9	4.6
Corn	Revenue	1.7	11.8	12.8	13.4
Corn	Yield	0.8	5.3	3.8	4.0
Dry Beans	Yield	1.3	11.6	10.5	10.3
Forage Production	Yield	3.6	4.8	7.6	8.7
Forage Seeding	Dollar	0.1	0.2	0.2	0.2
Millet	Yield	0.1	0.1	0.2	0.2
Oats	Yield	0.2	0.3	0.4	0.4
Pasture, Rangeland, Forage	PRF Rainfall	84.2	22.1	29.1	26.2
Potatoes	Yield	0.0	0.8	0.7	0.7
Soybeans	Yield	0.0	0.0	0.0	0.0
Sugar Beets	Yield	1.0	14.3	6.0	5.9
Sunflowers	Revenue	0.2	0.4	0.8	1.0
Sunflowers	Yield	0.1	0.4	0.6	0.6
Wheat	Revenue	3.5	9.1	12.4	13.2
Wheat	Yield	1.0	2.2	2.8	2.8
Whole Farm Revenue Protection	NA*	NA*	2.4	1.0	1.3

*NA: Not applicable

Decision Criteria for Selecting Federal Crop Insurance Coverage

Federal crop insurance products serve two functions for farmers: they are ***risk management*** tools and, over the longer term, tools that ***increase farm incomes***.

Risk management involves using strategies that reduce the impact of adverse events such as drought, floods, and shifts in global markets that result in unexpected low yields and/or low prices, and low farm revenues for a crop. Farmers use pesticides, herbicides, fertilizers and other strategies to achieve profit maximizing yields and to avoid low yields. For some crops, producers can directly protect against low prices by using commercial futures and options markets; and for certain crops they can forward contract for price and delivery with a buyer to manage price and market risk. Many farmers now also utilize federal crop insurance products to establish a floor on the amount of revenue they will obtain from planting a crop by ensuring they will receive indemnities for revenue losses when their yields and/or crop prices are relatively or very low.

Income increasing impacts also occur over the longer term for most farms that participate in the federal crop insurance program. Income increasing impacts occur

because producers purchase federal crop insurance at a premium that is less than the ***actuarially fair premium***.

The USDA Risk management Agency (RMA) establishes premiums for federal crop insurance products with the objective of providing sufficient revenues to cover indemnity payments. Such premiums are called ***actuarially fair premiums***. For example, if over the long run (perhaps a period of 15 years) an insurance policy is expected to pay the insured individual an average of $20,000 a year, the ***actuarially fair premium*** for the insurance is also $20,000 per year. Premiums for commercial insurance policies also include a charge for the companies' expenses in selling and servicing the products, often called administrative and operations (A&O) expenses.

For federal crop insurance, the federal government pays the difference between ***actuarially fair premium*** and the producer-paid premium to the crop insurance companies that offer the insurance coverage. This difference is called the ***premium subsidy***. The federal government also makes payments to insurance companies to cover their A&O expenses associated with providing federal crop insurance products.

Depending on ***coverage levels***, the federal government pays a substantial percentage of the ***total premium*** for APH yield and revenue insurance (Table 3). On average, over the past decade, the federal government has paid 62% of the **total premium** and producers have paid 38% of the **total premium**. At higher levels of coverage, the share of the total premium paid by the government is smaller. For example, when a producer covers 80% of the expected value of a crop under an APH contract, the government pays 48% of the **total premium**.

Consider an example where a producer purchases an APH yield product with an actuarially fair premium of $20,000 that is subsidized at a rate of 55% (the producer elects to cover 70% of the expected yield or revenue for the crop as shown in Table 3). The producer would then pay 45% of the total premium, $9,000 and on average receive an indemnity payment for losses of $20,000. Of course, producers would not collect $20,000 in indemnity payments every year. In some years a producer would have average or above average yields/ revenues and receive no payments for losses. In those years the producer would pay a crop insurance premium of $9,000 from his operating budget, rather than the ***actuarially fair premium*** of $20,000. In other years - for example, a major drought year, there could be a total loss of crop, the insured crop losses would be substantial, and the indemnity large, perhaps $85,000. In such a year the producer's net proceeds from purchasing the insurance policy, the difference between the indemnity and the producer paid premium, would be $76,000 ($85,000 - $9,000). Without the premium subsidy, and assuming the farmer would have purchased the coverage, the proceeds above the indemnity would have been $65,000 ($85,000 - $20,000). In a year where no losses are indemnified, the producer's income would be $9,000 lower than if no insurance coverage had been purchased, because the farmer would have to pay their share of the total premium.

In the drought year example, had no loss in production occurred, the producer would have expected to obtain revenue from production, at the expected yield and price, in the amount of $121,500 (which is equal to the liability divided by the coverage level ($85,000/70%).

Because of the complete crop loss, however, after paying their share of the premium equal to $9,000, the producer receives $76,000). Crop insurance products are not designed to make producers as well off as if no crop loss had been incurred, but to provide indemnities that cover some of costs that have been incurred in the purchase of planting and production inputs.

One attractive feature of the federal crop insurance program for farmers is that, for the most part, a producer does not have to pay the producer's share of the premium until the crop has been harvest. When an indemnity payment is received, the producer's premium payment is deducted from the indemnity and the producer does not use operating capital at planting time to cover the insurance cost. In years when a producer does not incur a loss the producer payment is due at harvest time.

Choices have to be made when a producer uses federal crop insurance programs for risk management and income enhancement purposes. The ***first decision*** is ***whether or not to obtain any coverage***. For example, if

yields for a crop vary little from year to year (as is the case for some producers raising crops under irrigation) and only yield insurance is available (as for irrigated alfalfa), then crop insurance may provide little protection against revenue shortfalls. However, if yields are variable, such as wheat production under a crop/fallow practice, and prices volatile, federal crop insurance coverage is likely to be a useful risk management tool that also increases producer income over the longer term.

The ***second decision*** concerns product choice. Overwhelmingly, farmers in Wyoming choose to purchase either APH yield insurance for crops such as dry beans and sugar beets and APH yield and revenue insurance products available under the COMBO policy for barley, corn, sunflowers, and wheat.

For producers using an APH product, the ***third decision*** concerns the areas of the crop to be insured. A producer's options are to insure crops under a contract that permits different yields on each section on which a subject crop is planted (optional units), basic units than consist of more than one (but not all) optional units, or as an enterprise unit (all acres planted to the subject crop on the farm). Details on units are provided in the next section of this policy paper.

Producers receive a substantial premium discount if they purchase insurance coverage at the enterprise unit level as compared to the basic and optional unit levels because they are less likely to incur losses and receive indemnity payments less frequently, and in smaller total amounts, when insuring at the enterprise level.

The ***fourth decision*** is to determine how much insurance coverage should be purchased for an insured crop. If a producer chooses to purchase an APH yield policy, then the coverage decision has two components. The producer has to decide on the price at which they will be reimbursed for any yield shortfalls. The producer can elect to value a crop loss at some percent of the price for the crop that RMA determines is likely to exist at harvest time. Unless they choose to purchase minimal "catastrophic coverage" (described in more detail below), most producers select 100% of the expected harvest time price. The farmer also has to decide on how much of the APH expected yield for the crop will be covered. Coverage options range from 50 to 75% of the APH yield or 50 to 85% of the APH yield, depending on the county in which the farm is located and the farming practice in use. The maximum coverage level is typically 75% for crops raised under dryland conditions in semi-arid regions and 85% for crops raised under an irrigation practice.

Consider an example where a producer is raising corn under an irrigation practice and has an APH yield of 200 bushels an acre. If this producer selects a 70% coverage level, the yield in the current year has to fall below 140 bushels per acre before the producer will receive an indemnity for an insurable loss. If the average yield were 120 bushels per acre, then, as discussed in more detail below, the producer would receive an indemnity for a loss of 20 bushels on each planted acre (the difference between the yield of 140 bushels that triggers a loss and the actual yield of 120 bushels), multiplied by the price selected by the farmer. Selecting a higher coverage level would result in a larger indemnity but also would result in a higher premium.

Some producers choose coverage levels to guarantee they receive enough combined revenues from the sales of their crops and insurance indemnities to cover operating costs. Other producers may have different objectives. Some operators may simply seek a low level of coverage in case of catastrophic losses while other producers may want the highest levels of coverage available. Each producer has to carefully evaluate the financial situation and risk management objectives of his business. Choices vary substantially among producers because of differences in the financial and risk management objectives of their operations.

Optional, Basic and Enterprise Units

A farmer can choose to insure a crop using optional, basic, or enterprise units.

- Optional units consist of each section in which the crop is planted. A different APH expected yield can be established based on the farm's history of production on each of those sections. For example, a farm may plant 640 acres to a crop on four separate sections and insure each section under an APH yield contract. The APH

expected yields for the four sections, called A, B, C, and D, are respectively 40 bushels, 30 bushels, 50 bushels and 60 bushels. The farm may have an average yield on three of the four sections, but a well below average yield on the other section. By insuring at the optional unit level, the farmer would not receive indemnities for losses on three of the four sections, but would receive an indemnity for the loss on the fourth section.

- Basic units consist of multiple optional units that are managed under the same arrangements. For example, a farmer may plant the crop on two optional units (A and B) that are owned by the farm and two optional units (C and D) leased under the same crop share arrangement with a land owner. Optional units A and B can be combined into one basic unit and optional units C and D into a second basic unit. The APH yield for each basic unit is the average APH yield for that basic unit. For example, suppose our farmer combine optional units A and B into one basic unit and sections C and D into a second basic unit. As the optional units each consist of one section (640 acres), the APH expected yield for the first basic unit (A and B) would be 35 bushels per acre (the average of the 40 and 30 bushel yields for sections A and B). Similarly, the APH expected yield for the second basic unit (C and D) would be 55 bushels (the average of the 50 and 60 bushel yields for sections C and D).
- An enterprise unit consists of all acres on the farm planted to the insured crop in the same county. The APH expected yield for the enterprise unit is the average APH yield for all sections on the farm planted to the crop. In the example, the APH yield for the enterprise unit would be 45 bushels (the average of the 40, 30, 60 and 50 bushel APH yields for sections A, B C, and D).

In deciding whether to insure optional units, basic units or at the enterprise unit level, a farmer has to decide whether more frequent and on average higher indemnities are more important than lower out-of-pocket premiums. At the same coverage level, the premiums paid by farmers for basic units are lower than for optional unit insurance policies, and the premiums paid by farmers for enterprise unit policies are much lower, because the subsidy rate for enterprise unit insurance is much higher (Table 3). However, indemnities for losses generally occur more frequently at the optional unit level than at the basic unit level, and at the basic unit level more frequently than at the enterprise unit level. Hence there are trade-offs between more frequent indemnities and lower farmer paid premiums.

Table 3. Premium Subsidy Rates by Coverage Level for Optional and Enterprise Units

APH Coverage level %	APH Average Premium Subsidy Rate	
	Optional Units %	Enterprise Units %
50	67	80
50	64	80
60	59	80
65	59	80
70	55	80
75	55	77
80	48	68
85	38	53

Determining APH Yields

Federal crop insurance that addresses individual farm yield losses in the form of multiple peril policies has been available for some crops produced in Wyoming for a long time. Over time the number of crops covered by actual production history crop insurance products has expanded in Wyoming so that currently most crops produced in the state have such crop insurance available.

Wyoming producers can now use a wide array of crop insurance policies including APH-yield and APH-revenue insurance policies. Under APH-yield policies indemnity payments are triggered by low yields on an individual producer's insured acres. Under APH-revenue policies indemnity payments are triggered by low revenues on an individual producer's insured acres due to low yields, low prices, or both.

An ***actual production history*** (APH) is required for each crop in each unit to be insured by producers who wish to employ either APH-yield or APH-revenue crop insurance. Attention is turned to how an APH is determined.

Actual Production History (APH) Determinations for Existing Producers

A minimum of four years of yields are required in each APH database for each insured unit to calculate approved APH yields. When four or more years of actual yields are available in an APH database, approved APH yields can be calculated using those producer-provided actual yields.[1]

A producer's ***actual production history***, APH, may be established through two general methods. The first relies on the availability of production records for the planted area to be insured that are acceptable to the Risk Management Agency (RMA), the United States Department of Agriculture (USDA) agency charged with rule making for the administration of crop insurance products. For records to be acceptable, a producer must have records of marketed or stored production from each separate unit to be insured that have been kept in a manner that enables RMA to verify production for the unit. The second method is used when such records are not available for a sufficient number of years. In this case, ***transitional yields*** or "T-yields" are used to establish yields for those years that producer does not have verifiable records.

If a producer has verifiable production records for between four and ten consecutive crop years for the unit to be insured (beginning with the year previous to the year of the insurance policy), then a producer's APH is equal to the arithmetic average of the yields for those years. Two examples are presented (Table 4).

Producer A has produced the subject crop in the county for several years but has not previously used crop insurance. The producer has verifiable production records for four consecutive crop years prior to the 2018 crop year. His neighbor, producer B, is also a long-time producer of the crop, and has records for ten consecutive crop years prior to the 2018 crop year.

Producer A's APH of 30 bushels per acre is the arithmetic average of his verifiable yields for the yields for the four previous crop years. Producer B's APH of 34 bushels per acre is the arithmetic average of his verifiable yields for the yields for the ten previous crop years.

Table 4: Determination of APHs When Verifiable Production Records Are Available

Crop Year/APH	Producer A Verifiable Yields (bushels/acre)	Producer B Verifiable Yields (bushels/acre)
2008	NA	52
2009	NA	22
2010	NA	30
2011	NA	43
2012	NA	52
2013	NA	30
2014	45	44
2015	20	34
2016	30	38
2017	25	15
2018/**APH**	**30**	**34**

The APH is the arithmetic average of the actual yields for each of the years for which verifiable records are available.
NA denotes that acceptable production records are not available for that crop year.

APH yield determination methods provide flexibility the initial year of insurance for producers that do not have or do not furnish records. For the producer who provides less than four years of actual yields, variable ***transitional yields*** or "T-yields" are used to complete the four-year APH database.[2]

When actual production data are not available for at least the four most recent crop years, RMA-approved ***transitional yields*** or "T-yields" are used to establish the farm's yield record for each missing year in order to establish the four years of records needed to calculate the producer's APH.

T-yields are often closely related to the expected county yield computed by RMA. However, T-yields may be based on areas within a county if there is pronounced yield variability within a county.

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[1] For a comprehensive discussion of APH procedures see the **2017 CROP INSURANCE HANDBOOK**, FCIC 18018 (06-2016), Federal Crop Insurance Corporation and the Risk Management Agency, United States Department of Agriculture.

[2] **2017 CROP INSURANCE HANDBOOK**, FCIC 18018 (06-2016), Federal Crop Insurance Corporation and the Risk Management Agency, United States Department of Agriculture.

The APH for a producer who is unable to furnish any actual production records is limited to 65% of the applicable T-yield for the first year that the producer insures the subject crop.

Producers who have acceptable production records for one, two, or three of the past four years may use higher percentages of the applicable T-yield for the years in which yields are missing. If a producer has one year of acceptable yield records, then the yields for the three missing years are set equal to 80% of the applicable T-yield. If a producer has acceptable yield records for 2 years, then the yields for the missing two years are set at 90% of the applicable T-yield. If a producer has acceptable yield records for three years, then the yield for the missing year is set at 100% of the T-yield.

Producers C and D are located in the same area of a county where the T-yield for the crop they want to insure is 30 bushels per acre. Producer C provides verifiable production records for the last three of the previous four crop years. Producer D has no production records for his previous crop production. Their production data for prior years are presented (Table 5).

Table 5: Production Records Available for the Determination of APHs

Crop Year	Producer C Verifiable Yields (bushels/acre)	Producer D Verifiable Yields (bushels/acre)	Applicable T-Yield (bushels/acre)
2014	NA	NA	30
2015	36	NA	30
2016	28	NA	30
2017	34	NA	30

* NA denotes that verifiable production records are not available for that crop.

The APH yields for producers C and D, computed using the applicable T-yields for each operator, are presented (Table 6). Producer C's APH is computed by using the full 30 bushel per acre T-yield as a substitute for the missing 2014 crop year production records, (**30** + 36 + 28 + 34 = 128/4 = 32) for an APH of 32 bushels per acre.

Producer D had no acceptable production records for the 2014, 2015, 2016 and 2017 years of crop production. Therefore, for each year with no acceptable production record the assigned yield is 65% of the area T-yield of 30 bushels per acre. Producer D's assigned APH yield is therefore 20 bushels per acre, (0.65 x 30 = 19.5 per bushel that is rounded up to the nearest bushel of 20 bushels per acre using RMA's convention). The APH is calculated as (**20** + **20** +**20** +**20** = 80/4 = 20) for an APH of 20 bushels per acre.

Table 6: APHs for the 2018 Crop Year Determined through the use of Transition Yields

Crop Year/APH	Producer C Yields (bushels/acre)	Producer D Yields (bushels/acre)
2014	30	20
2015	36	20
2016	28	20
2017	34	20
2018/**APH**	**32**	**20**

Actual production History (APH) Determinations for New Producers

Specific procedures have also been established by RMA to determine APH yields for new producers of an insurable crop. New producer determinations are made on a crop/county basis, and include all types and practices (including certified organic and transitional practices) for a crop.

The RMA definition of a new producer is as follows: "a ***new producer*** is person who has not been actively engaged in farming for a share of the production of the insured crop (producing the crop) in the county for more than two APH years." Farmers who have produced a crop for more than two APH years in other county(ies) qualify as a new producer of the insured crop if they have not produced the insured crop in the county for more than two years." [3]

[3] For a comprehensive discussion of new producers refer to the **2017 Crop Insurance Handbook**, FCIC 18018 (06-2016), published by the Federal Crop Insurance Corporation and the Risk Management Agency, the United States Department of Agriculture], available at www.ampc.montana.edu/documents/policypaper/policy52.pdf.

New producers will have less than four years of verifiable yields to include in their data base. For a producer to be insured as a new producer under the above definition, an APH for a crop in the subject county may be determined using one of two methods. The two methods are: (1) no production records required; and (2) production records required.

If a producer has not produced the subject crop in the county, then ***production records are not available and not required.***

Consider a situation where a producer (insured) started farming in the current 2018 crop year and records are not available from another producer on that land. Specifications for determining APHs are presented (Table 7).

To illustrate, a numerical is presented (Table 8). The T-yield for the subject crop is 1,000 pounds per acre, and per acre production is 1,400 pounds in 2018, 1,300 pounds in 2019, and 1,260 pounds in 2020.

In crop year 2018, the first year the new producer is covered by crop insurance, the APH is 1,000 pounds, calculated as: 1,000 + 1,000 + 1,000 + 1,000 = 4,000/4= 1,000. The actual yield the new producer realized in 2018 was 1,400 pounds per acre. This actual production yield is the reported in the 2018 Production Year column in order to calculate the APH values for 2019, 2020 and 2021. In subsequent years, the insured unit's actual production yields will continue to replace T values in calculating the unit's APHs, as illustrated (Table 8).

Table 7: Specifications for Determination of APHs for a New Producer without Production History

Insurance Year	Production Year 2018	Production Year 2019	Production Year 2020	Production Year 2021	Total Production	APH
2018	100% T Value	100% T Value	100% T Value	100% T Value	Sum of T values	**Sum/4**
2019	2018 actual yield	100% T Value	100% T Value	100% T Value	Sum of values	**Sum/4**
2020	2018 actual yield	2019 actual yield	100% T Value	100% T Value	Sum of values	**Sum/4**
2021	2018 actual yield	2019 actual yield	2020 actual yield	100% T Value	Sum of values	**Sum/4**

Table 8: Determination of APHs for a New Producer without Production History prior to 2018

Insurance Year	Production Year 2018 (lbs./acre)	Production Year 2019 (lbs./acre)	Production Year 2020 (lbs./acre)	Production Year 2021 (lbs./acre)	Total Production (lbs./acre)	APH (lbs./acre)
2018	1,000	1,000	1,000	1,000	4,000	**1,000**
2019	1,400	1,000	1,000	1,000	4,400	**1,100**
2020	1,400	1,300	1,000	1,000	4,700	**1,175**
2021	1,400	1,300	1,260	1,000	4,960	**1,240**

There are exceptions to this general procedure. If a new producer is sharing in the insured crop for the current year with another person such as with a landlord on a crop share lease, the new producer may file acceptable production records obtained from the landlord as a basis for APH determination. A new producer may choose to use this approach to obtain a higher approved yield. When a new producer pursues this alternative, APH rules for existing producers apply.

Production reports ***are required*** of new producers who have produced the crop to be insured in the county for one or two of the previous crop years. If a producer has produced the crop one or two crop years, then production records are required. When verifiable production records are provided for the previous years that the crop to be insured was produced, a new producer is qualified for 100% of the applicable T-yield. The APH for the initial year of crop insurance is calculated by dividing the sum of the actual yields and 100% of the T-yields by 4.

When production records are filed by a new producer, a combination of actual yields and 100% of an applicable T-yield is used to calculate an APH until four years of actual or assigned yields are available. Consider the basic framework for calculating approved yields using a case where a producer planted and harvested the subject crop in 2017 and provided the actual production records (Table 9).

The applicable T-yield in the county for this crop is 1,000 pounds per acre. Although the producer had **operated in this county for two years he only produced the subject crop to be insured in 2018 in the immediate prior year, 2017**. In 2017 he realized a harvest of 1,200 pounds per acre. He assumes that his production of this crop in coming years may provide yields of: 1,400 pounds per acre in 2018; 1,300 pounds in 2019; and 1,260 pounds in 2020. He considers these potential yields when he determines preliminary APH values for the coming production years (Table 10).

Table 9: Specifications for Determination of APHs for a New Producer with Production History

Production Year	2018 Insurance Year	2019 Insurance Year	2020 Insurance Year	2021 Insurance Year
2016	No production	No production	No production	No production
2017	2017 production	2017 production	2017 production	2017 production
2018	100% T	2018 production	2018 production	2018 production
2019	100% T	100% T	2019 production	2019 production
2020	100% T	100% T	100% T	2020 production
Total	Total	Total	Total	Total
APH	**Total/4**	**Total/4**	**Total/4**	**Total/4**

Table 10: Determination of APHs for a New Producer with Production History

Production Year	2018 Insurance Year (lbs/acre)	2019 Insurance Year (lbs/acre)	2020 Insurance Year (lbs/acre)	2021 Insurance Year (lbs/acre)
2016	No production	No production	No production	No production
2017	1,200	1,200	1,200	1,200
2018	1,000	1,400	1,400	1,400
2019	1,000	1,000	1,300	1,300
2020	1,000	1,000	1,000	1,260
Total	4,200	4,600	4,900	5,160
APH	**1,050**	**1,150**	**1,225**	**1,290**

If acceptable production reports for APH purposes are not filed by a new producer in the initial year the APH is established, then an APH is calculated using one of the following two procedures:

(a) one actual yield and three 80% T-yields if only the most recent year's production records are provided and the producer (insured) had produced the crop in the county for the two years prior to the year the crop was to be insured; or,
(b) 65% of the T-yield if not production records were provided and the crop had been produced in the county by the new producer.

Adjustments to APHs

As the APH for an insurable crop in a unit increases, the dollar amount of premium for any specific coverage level will also increase because the indemnity payment that a producer would receive in event of a loss will also increase. Many producers prefer to have a higher approved APH yield because insurance policies based on higher APHs provide them more risk protection when actual yields or revenues are low.

An important issue for Wyoming producers, especially those with dry land crops, is the impact of a sequence of poor harvests on their APHs because of the extended droughts. Some of these producers may find it beneficial to use a provision that allows them to substitute a yield value of 60% of the applicable T-yield for low actual yields that are less than 60% of the applicable T-yield in the 10-year series of yields used to calculate a unit's APH.

Cups and **yield floors** are yield limitations designed to mitigate the effect of catastrophic years on approved APH yields. These mechanisms can be applied to APH databases.

"The **cup** prevents the approved APH yield from decreasing more than 10 % compared to the prior year's approved yield for carryover insureds (insured producers) only." [4]

"**Yield floors** are applicable to additional coverage policies for new and carryover insureds. When applicable the approved APH yield will not fall below the **yield floor**. The **yield floor** is a percentage of the applicable T-yield based on the number of years of records the insured has provided for the crop and the county..." [5]

For instance, an insured who has **5** or more years of production records who exercised the 90% maximum **yield floor** could assure an APH floor of 90% of the applicable T-yield. Procedures are outlined about how to apply the **cup** and **floor** provisions to achieve a higher approved APH.

However, such adjustments to approved APH yields come with costs to producers seeking higher APH values. Premium rates are determined differently when approved APH yields are based on cupped yields or floor yields. For an approved APH yield using the **Cup procedure**, the premium rate is determined using the ***Cupped yield*** but then a 5% surcharge is applied. For an approved yield determined by use of a ***Yield floor,*** the premium rate is determined using the average yield; however yield guarantees are based on the yield floor.

The Common Crop (COMBO) Policy

The Common Crop Policy, often described as the COMBO Policy, has a set of basic provisions that supports each of the following APH yield plans of insurance for crops for which a commodity exchange futures market price discovery mechanism is used:

1. *Yield Protection Plan*: This is an APH policy in which the producer selects a yield ***coverage level*** for a crop, which establishes a ***payment yield*** (the ***coverage level*** multiplied by the producer's APH yield). The Yield Protection Plan provides protection against yield shortfalls. The producer receives an indemnity when the yield for the insured crop falls below the ***payment yield***. The price used to value the yield shortfall for indemnity purposes is the ***projected harvest price***, the same price (based on price discovery through futures

[4] 2017 CROP INSURANCE HANDBOOK, FCIC 18018 (06-2016), Federal Crop Insurance Corporation and the Risk Management Agency, the United States Department of Agriculture.

[5] See the *2017 CROP INSURANCE HANDBOOK, FCIC 18018 (06-2016)*, Federal Crop Insurance Corporation and the Risk Management Agency, the United States Department of Agriculture.

commodity exchange) used in the revenue protection plans to establish the expected revenue per acre at the time when the producer signs up for coverage.

2. *Revenue Protection with the Harvest Price Exclusion***:** In this revenue insurance plan, insurance coverage is not increased if the harvest time futures contract price for the crop rises between the time the insurance coverage is purchased and harvest time (as defined in the policy). Producers have to opt out of having their insurance increased when the ***harvest time price*** exceeds the ***projected harvest price****.* The producer receives an indemnity when the realized revenue for the crop falls below the insured revenue level.
3. *Revenue Protection Plan***:** In this revenue insurance plan, if commodity exchange prices (for the relevant futures contract) increase over the period between when the policy is purchased and harvest time (as defined in the policy), the amount of insurance coverage is also increased. The Revenue Protection Plan includes the Harvest Price Endorsement. Under the Revenue Protection plan, the producer receives protection against either yield losses or price declines, or combinations of yield and price changes that cause per acre revenues to decline sufficiently to trigger indemnity payments. The producer receives an indemnity when the realized revenue for the crop falls below the insured revenue level.

Nationally, the Common Crop Policy is available for the following commodities: barley, canola/rapeseed, corn, cotton, grain sorghum, malting barley, rice, soybeans, sunflowers, and wheat**.** In Wyoming the Common Crop Policy is available for barley, corn, sunflower, spring wheat are insurable under separate contracts.

Price Discovery in the COMBO Policy

The COMBO Policy yield and revenue protection plans use Commodity Exchange Price Provisions. ***Price discovery*** is required and in most cases is based on futures market contracts for the subject commodity (such as corn and wheat). For a commodity such as feed barley that does not have a U.S. futures contract, price discovery is based on the futures market contracts for a commodity whose price is sufficiently closely linked to the price of the crop of interest. For example, corn futures contracts form the basis for price discovery for feed barley.

A regional commodity exchange futures contract is used to determine the ***projected harvest price*** for each crop at the time the policy purchased by the producer comes into effect (usually prior to planting time for a crop). The result is that all yield and revenue insurance coverage offered through a COMBO Policy for a specific crop will use the same ***projected harvest price***. Yield and revenue protection plans are consistent with respect to the amount of insurance protection at the time the policy is purchased by a producer.

For each crop, the ***projected harvest price*** is used to establish the ***insurance guarantee*** at the time the insurance is purchased by the farmer and the premium for the crop insurance protection the farmer obtains. The ***harvest time price*** is used to value the ***revenue-to-count*** under the revenue plans in determining whether or not an indemnity will be paid and the size of the indemnity. For the 2018 crop year, the ***projected harvest prices*** applicable in Wyoming for barley, corn, spring wheat and winter wheat are shown (Table 11).

Table 11: 2018 *Projected Harvest Prices* for Wyoming Producers

Crop	Exchange	Contract Month	Discovery Period start date	Discovery Period end date	Projected Harvest Price
Barley	CBOT	Sept.(corn)	Feb. 1	Feb. 28	$3.28
Corn	CBOT	Dec.	Feb. 1	Feb. 28	$3.96
Sunflowers, confectionary	CBOT	Dec. (soybean oil	Feb. 1	Feb. 28	$0.237
Sunflowers, oil	CBOT	Dec. (soybean oil)	Feb. 1	Feb. 28	$0.175
Spring Wheat	MGE	Sept.	Feb. 14	Feb. 28	$6.31
Winter Wheat	KCBT	Sept.	Aug. 15	Sept. 14	$5.08

*CBOT is Chicago Board of Trade; MGE is Minneapolis Grain Exchange; and KCBT is Kansas City Board of Trade

As discussed above, these prices are determined by RMA using a clearly defined formula that is available to the public.

To illustrate how the price discovery process works, the process is outlined for winter wheat. Price discovery for the other Wyoming crops covered under the COMBO policy are similar.[6] The September futures contract for hard red winter (HRW) wheat offered on the Kansas City Board of Trade (KCBT) for the year the producer will harvest his winter wheat crop is used discover the ***projected harvest price*** and the ***harvest time price*** for winter wheat.

For COMBO Policy plans used to insure winter wheat planted in Wyoming in the fall of ***2017*** that is to be harvested in ***2018***, the contract used for price discovery is the futures contract for September ***2018*** delivery of HRW wheat.

The *projected harvest price* for winter wheat to be harvested in Wyoming in 2018 is the *average daily settlement price* (rounded to the nearest cent) for the contract over the period August 15, 2017 – September 14, 2017. This was the 30 day period two weeks prior to the final sign up date for coverage of the Wyoming winter wheat under COMBO Policy plans, which was September 30, 2017.

The ***harvest time price*** for winter wheat in Wyoming will be the *average daily settlement price* (rounded to the nearest cent) for the KCBT September 2018 winter wheat contract over the period August 1, 2018 – August 31, 2018.

Details on the contract, contact month, exchange, and ***harvest time price*** discovery period for Wyoming crops covered under COMBO Policy Plans are shown (Table 12).

How the Common Crop Policy Plans Work

The yield protection, revenue protection with harvest price exclusion, and revenue protection crop insurance policies are illustrated using a Wyoming winter wheat example.

The winter wheat producer has 600 acres of winter wheat produced under a crop/fallow practice on a farm in Laramie County, Wyoming. The winter wheat APH yield for the farm is 40 bushels per acre. The producer has to make two important crop insurance decisions. One is to select a ***coverage level***, the percentage of the farm's APH yield that will covered against losses. Coverage choices generally range from 55% to 75% for crops produced under a dry land practice, in 5% increments, but can range up to 85% for some crops produced under irrigation. The producer's ***Payment Yield*** = ***APH for the crop*** x ***coverage level***.

Table 12: Sources of *Harvest Time Prices* for Wyoming Producers

Crop	Exchange	Contract Month	Discovery Period start date	Discovery Period end date
Barley	CBOT	Sept.(corn)	Aug. 1	Aug. 31
Corn	CBOT	Dec.	Oct. 1	Oct. 31
Sunflowers, confectionary	CBOT	Dec. (soybean oil)	Oct. 1	Oct. 31
Sunflowers, oil	CBOT	Dec. (soybean oil)	Oct. 1	Oct. 31
Spring Wheat	MGE	Sept.	Aug. 1	Aug. 31
Winter Wheat	KCBT	Sept.	Aug. 1	Aug. 31

*CBOT is Chicago Board of Trade; MGE is Minneapolis Grain Exchange; and KCBT is Kansas City Board of Trade

[6] A more detailed discussion is provided in ***The Common Crop (COMBO) Policy***, Agricultural Marketing Policy Center Policy Issues Paper # 37, Montana State University, August, 2012.

The second decision is to choose what proportion of the projected harvest price at which losses will be valued. P***rice election*** ranges are available over a large range of percentages, but producer usually selects 100%. These choices determine the producer's *insurance guarantee* on a per acre basis. A producer's ***insurance guarantee*** = ***payment yield x price election***.

Suppose a Laramie County winter wheat producer selects a 70% ***coverage level*** and a 100% ***price election*** for the 2018 winter wheat crop. The ***projected harvest price*** for 2018 is $5.08 per bushel.

Given these choices, the producer's ***payment yield*** = 40 bushels/acre x 0.70 = 28 bushels/acre. The choice of a 100% price election results in an ***insurance guarantee*** = [(28 bushels/acre) x ($5.08/bushel)] = $142.24/ acre. Under a revenue insurance plan, when the ***harvest time price*** exceeds the ***projected harvest price***, this guarantee will change.

To assess the differences in benefits and costs from the three plans, two actual yield outcomes are considered. The first is an actual yield of 24 bushels per acre. The second is an actual yield 28 bushels per acre.

What happens in each of the three COMBO insurance plans if the ***harvest time price*** is lower than the ***projected harvest price***? Suppose the ***harvest time price*** is $4.50 per bushel, lower than the ***projected harvest price*** of $5.08 per bushel and the actual yield is 24 bushels per acre.

The Yield Protection Plan: Under this plan the producer receives an indemnity when the yield falls below 28 bushels per acre, (40 bushels per acre APH x 0.70 ***coverage level***) and the price at which any losses are valued is locked in at the ***projected harvest price*** of $5.08 per bushel.

The ***revenue-to-count*** per acre = actual yield x ***projected harvest price.*** In this example, the ***revenue-to-count*** per acre = 24 bushels per acre x $5.08/ per bushel = $121.92.

The producer's indemnity is calculated as the difference between the farm's ***insurance guarantee*** on each planted acre and its ***revenue-to-count*** on each acre, multiplied by the insured acres planted to the crop.

The farm's per acre indemnity = $142.24/acre - $121.92/acre = $20.32/acre.

The farm's total indemnity = [(600 acres) x ($20.32/acre)] = $12,192.

Note that under the Yield Protection Plan that the ***projected harvest price*** is used to calculate both the ***insurance guarantee*** and the ***revenue-to-count***.

Revenue Protection with Harvest Price Exclusion Plan: Under this plan, the RMA ***projected harvest price*** to determine the ***insurance guarantee*** in exactly the same way as the *Yield Protection Plan*.

The ***insurance guarantee*** is again $142.24 = [(28 bushels/acre) x ($5.08/bushel)].

Under the *Harvest Price Exclusion* plan, the producer receives an indemnity when the ***revenue-to-count***, the farm's actual yield multiplied by the RMA ***harvest time price***, is less than the ***insurance guarantee.***

Under this plan the ***insurance guarantee*** is established using the projected harvest price. But under this plan, the ***harvest time price*** is always used to value the ***revenue-to-count***.

The cause of a revenue shortfall could be relatively low yields, a RMA ***harvest time price*** that is lower than the RMA ***projected harvest price***, or any other combination of price changes and realized yields that results in per acre ***revenues-to-count*** that are lower than the farm's ***insurance guarantee***.

Consider this plan when the *insurance guarantee* = [(28 bushels/acre) x ($5.08/bushel)] = $142.24/ acre The actual yield is 24 bushels per acre. The harvest time price is $4.50 per bushel. The per acre ***revenue-to-count*** is: (24 bushels per acre x $4.50 per bushel) = $108.00. The producer therefore receives a per acre indemnity of $34.24 = [$142.24/acre - $108/acre]. The farm's total indemnity =$34.24/acre x 600 acre =$20,544.

Revenue Protection: This plan also uses ***projected harvest price*** to determine the initial ***insurance guarantee***. But if the ***harvest time price*** is *higher* than the ***projected harvest price*** for a crop, then subject to a ***cap***, the ***insurance guarantee*** will be increased. The producer's ***payment yield*** for the crop will be valued at the ***harvest time price***. The ***cap*** is set at 200% of the ***projected harvest price*.**

In this example, the initial ***insurance guarantee*** is $142.24= [(40 bushels per acre x 0.70) x ($ 5.08 per bushel)]. This is the ***minimum revenue guarantee***. The ***maximum revenue guarantee*** is capped at 200 % of the ***projected harvest price,*** or $ 284.48 = [(40 bushels per acre x 0.70) x ($5.08 per bushel x 2)].

Under the *Revenue Protection Plan*, the ***insurance (revenue) guarantee*** will increase if the ***harvest time price*** is higher than the ***projected harvest price.***

The insured producer will receive an indemnity when the actual yield multiplied by the RMA ***harvest time price*** is less than the ***insurance guarantee***. *Note that the* ***harvest time price*** *is always used to value* the ***revenue-to-count*** under this plan.

In this example, the ***harvest time price*** is less than the ***projected harvest price***. So there is no adjustment to the ***insurance guarantee***. So the per acre and total indemnity are the identical to those for the *Revenue Protection Plan* with the ***harvest price exclusion****.*

A Comparison of the Three COMBO Plans:

The outcomes of the three plans available under the Common Crop COMBO Policy are considered for three scenarios.

The first is the scenario for which outcomes under the three plans have been described above in detail. In that scenario the example farm realizes an actual winter wheat yield of 24 bushels per acre and the ***harvest time price*** for winter wheat is $4.50 per bushel. Indemnity payments in this scenario under the Yield, Revenue with Harvest Price Exclusion, and Revenue Insurance plans are summarized (Table 13).

In the second scenario, the ***harvest time price*** is again $4.50 per bushel but the farm realizes an actual yield is 28 bushels per acre. Indemnity payments under each of the three plans in this scenario are presented (Table 14).

In the third scenario, the farm realizes an actual yield of 28 bushels per acre, but the ***harvest time price*** is $7.00 per bushel, substantially higher than the ***projected harvest price*** when the producer secured the crop insurance coverage. Indemnity payments under each of the three plans under this scenario are presented (Table 15).

To illustrate how the crop insurance plans differ with respect to the costs of coverage to the producer, premiums for each of the three plans were calculated using the RMA cost calculator that is publicly available on the RMA website. Crop insurance premiums were calculated on the basis of the example farm's assumed APH of 40 bushels per acre for winter wheat produced under a crop/fallow practice, a 70% ***coverage level,*** a 100% ***price election***, and the RMA-reported ***projected harvest price*** of $5.08 per bushel for winter wheat in Laramie County.

Premiums are reported along with net impacts of the three Common Crop Policy plans on the revenues received by the example farm under each plan, in each scenario (Table 16). Those net impacts on farm revenues are calculated as the difference between total indemnities received by the producer and the premiums paid by the producer out of their operating capital. The $30 insurance contract fee that is applied to most contracts is **not** reflected in these calculations.

The three scenarios presented are illustrative and not exhaustive. However, it is likely that the Revenue Protection Plan will pay a net indemnity to the producer most often. Other things being equal, the producer premium for this producer is slightly higher than for the other plans, but the dollar amount of premium subsidy is also higher (Table 16).

Table 13: Net Impacts of the Application of the Common Crop Plans to a Laramie County Winter Wheat Producer with an Actual Yield of 24 Bushels per Acre

Item	Yield Protection	Revenue Protection With Harvest Price Exclusion	Revenue Protection
APH, in bushels/acre	40	40	40
Coverage Level	70%	70%	70%
Payment Yield/acre	28	28	28
Projected Harvest Price/bushel	$5.08	$5.08	$5.08
Price Election	100%	100%	100%
Initial ***Insurance Guarantee***/ acre	$142.24	$142.24	$142.24
Total Liability/producer	$85,344	$85,344	$85,344
Actual Yield, in bushels/acre	24	24	24
Harvest Time Price/bushel	Not Applicable	$4.50	$4.50
Final ***Insurance Guarantee***/acre	Final = Initial	Final=Initial	$142.24
Revenue-to-Count/acre	$121.92	$108.00	$108.00
Indemnity/acre	$20.32	$34.24	$34.24
Acres insured	600	600	600
Total Indemnity	$12,192	$20,544	$20,544

Table 14: Net Impacts of the Application of the Common Crop Plans to a Laramie County Winter Wheat Producer with an Actual Yield of 28 Bushels per Acre

Item	Yield Protection	Revenue Protection With Harvest Price Exclusion	Revenue Protection
APH, in bushels/acre	40	40	40
Coverage Level	70%	70%	70%
Payment Yield/acre	28	28	28
Projected Harvest Price/bushel	$5.08	$5.08	$5.08
Price Election	100%	100%	100%
Initial ***Insurance Guarantee***/acre	$142.24	$142.24	$142.24
Total Liability/producer	$85,344	$85,344	$85,344
Actual Yield, in bushels/acre	28	28	28
Harvest Time Price/bushel	Not Applicable	$4.50	$4.50
Final ***Insurance Guarantee***/acre	Final=Initial	Final=Initial	$142.24
Revenue-to-Count/acre	$142.24	$ 126.00	$ 126.00
Indemnity/acre	$ 0.00	$ 16.24	$ 16.24
Acres insured	600	600	600
Total Indemnity	$ 0.00	$9,744	$9,744

Table 15: Net Impacts of the Application of the Common Crop Plans to a Laramie County Winter Wheat Producer with an Actual Yield of 24 Bushels per Acre and a $7.00 per Bushel *Harvest Time Price*

Item	Yield Protection	Revenue Protection With Harvest Price Exclusion	Revenue Protection
APH, in bushels/acre	40	40	40
Coverage Level	70%	70%	70%
Payment Yield/acre	28	28	28
Projected Harvest Price/ bushel	$5.08	$5.08	$5.08
Price Election	100%	100%	100%
Initial ***Insurance Guarantee***/ acre	$142.24	$142.24	$142.24
Total Liability/producer	$85,344	$85,344	$85,344
Actual Yield, in bushels/acre	24	24	24
Harvest Time Price/bushel	Not Applicable	$7.00	$7.00
Final ***Insurance Guarantee***/ acre	Final = Initial	Final = Initial	$196.00
Revenue-to-Count/acre	$142.24	$168.00	$ 168.00
Indemnity/acre	$ 0.00	$ 0.00	$ 28.00
Acres insured	600	600	600
Total Indemnity	$ 0.00	$ 0.00	$16,800.00

Table 16: Total Insurance Liabilities, Premiums and Net Indemnities for the 600 Acres of Winter Wheat in Laramie County, 2018 Crop Year

Item	Yield Protection ($)	Revenue Protection With Harvest Price Exclusion ($)	Revenue Protection ($)
Insurance Liability	85,344	85,344	85,344
Total Premium	17,742	17,865	19,799
Premium subsidy	10,468	10,540	11,688
Producer premium	7,274	7,325	8,111
24 bushel/actual $4.50 ***harvest time price***			
Indemnity	12,192	20,544	20,544
Producer premium	7,274	7,325	8,111
Net indemnity	4,910	13,219	12,433
28 bushel actual $4.50 ***harvest time price***			
Indemnity	0	9,744	9,744
Producer Premium	7,274	7,325	8,111
Net indemnity	(7,274)	2,419	1,633
24 bushel/actual $7.00 ***harvest time price***			
Indemnity	0	0	16,800
Producer premium	7,274	7,325	8,111
Net indemnity	(7,274)	(7,325)	8,689

Note that farmers interested in modest levels of insurance coverage for a crop are able to obtain Catastrophic Coverage through a CAT endorsement for crops covered by a COMBO Policy plan (a 50% yield coverage level with losses valued at 55% of the projected price available for a fixed fee of $300 per crop each year).

Other Crop Insurance Policies

Actual Production History (***APH***) is an APH yield-based insurance policy available for most of the Wyoming crops not covered by the COMBO policy plans. For instance, in many Wyoming counties producers have APH yield-based crop insurance available to them to address production risks associated with sugar beet and dry bean production. Small grain crops such as oats, flax and rye are generally covered under APH policies. The APH plan of crop insurance addresses losses in yield due to nearly all natural disasters.

Like the ***Yield Protection*** plan offered under the COMBO policy, the ***APH plan*** of insurance guarantees a yield based on the individual producer's actual production history. Unlike the ***Yield Protection*** plan the ***price elections*** for an APH plan are based on an ***established price*** (or possibly some subsequent price addendum) specified by RMA. There are no price discovery mechanisms based on specified futures contracts for the APH plans of insurance. Instead RMA undertakes a price determination process to identify an ***established price.*** RMA uses a variety of reliable public sources such as prices obtained from the Agricultural Marketing Service and the National Agricultural Statistics Service in its price determination processes. For certain crops, verifiable contract prices can be used to specify the ***established price.*** Additionally, for some crops, a different price is specified when the crop is produced under certified-organic practices to reflect price premiums for the crop when it is produced using those practices.

Coverage choices, price elections, and premium calculations for these APH yield-based products are very similar to those described for the COMBO ***Yield Protection*** insurance. Producers specify a price election over a wide percentage range for crops insured under an APH yield-based insurance plan. Produces often select a ***price election*** of 100% of the ***established price***.

Under APH insurance plans an indemnity is due when the actual production valued at the ***price election***, is less than the ***insurance guarantee***.

Dollar Plans of crop insurance are available for certain crops. In Wyoming such plans are available to cover losses in the new seeding of alfalfa and for nursery crops. These insurance plans provide protection against declining value due to damage that causes a production shortfall. The amount of insurance available is based on the cost of growing a crop in a specific area. The maximum dollar amount of insurance is specified in the actuarial document for the subject crop. For instance, a producer might insure a certain percentage of the cost of establishing a new stand of alfalfa, perhaps 85% of a $269 per acre maximum. A loss occurs when the percentage of the stand established falls below the dollar amount insured, in this example below $229 per acre.

For many crops, there are also plans of insurance based on county yields, rather than the APH yields established by an individual producer.

One set of area-based insurance plans parallel the three individual producer plans previously described and illustrated for the COMBO policy. These are the ***Area Yield Protection***, ***Area Revenue Protection with Harvest Price Exclusion*** and the ***Area Revenue Protection*** plans.

Another set of area-based insurance plans parallel the APH yield-based plans that value production and losses based on ***established prices.***

A producer electing an area-based insurance plan has protection against county production and/or revenue losses rather an individual loss at the farm level. Such area-based insurance provides protection against widespread loss of crop production/crop revenue in a county. Individual producer yields/revenues are not considered so it is possible for an individual producer to experience a reduced yield/revenue and receive no indemnity. The premiums for these area-based crop insurance plans, at the same coverage level and price

elections as APH-based insurance, are lower because of the lower likelihood of being indemnified for a loss.

These area-based plans are designed as risk management tools to insure against widespread losses. The area-based yield protection plans would be of more interest to the producer who has crop yields that follow county yields relatively closely.

The mechanisms for determining coverage, premiums and indemnities for the area- based insurance plans are similar to those based on an individual producer's situation.

Some Wyoming producers that may find it more useful to secure insurance that addresses the production and revenue risks associated with their entire farm or ranching operation rather than to address the production and revenue risks crop by crop.

Whole-Farm Revenue Protection (***WFRP***) is a federally-subsided whole farm revenue protection plan. Crop and livestock can be covered under ***WFRP***. This plan covers revenue losses from farm-raised crop commodities, animal commodities and unprocessed (unaltered) animal products such as milk and wool. ***WFRP*** is currently available to producers, including certified organic producers, in all Wyoming counties.

A ***WFRP*** plan provides protection against losses of revenue that the insured producer expects to earn or will obtain from agricultural commodities produced on the farm or purchased for resale during the insurance period, either a calendar or fiscal year. As with other RMA products, a ***WRFP*** contract provides protection against loss of a farm's expected revenue resulting from unavoidable natural causes that occur during the insurance period. In addition, declines in local market prices are presumed to be unavoidable unless a man-made cause is identified that results in a measurable change in price.

The *Whole-Farm Revenue Protection Pilot Policy (section 21-c)*[7] also describes causes of loss that are not insurable. Many uninsurable causes of loss are associated with producer mismanagement such as the failure to follow good farming practices, or actions by other producers such as spray drift damage from a neighboring farm on to a certified organic producer's crops.

A ***WFRP*** policy provides farm-specific revenue insurance that covers revenue generated by sales of most products produced on a farm operation. Some producers may choose to use a WRFP contract as stand-alone coverage. A ***WRFP*** contract can also be used as umbrella coverage when a farm operator chooses to insure one or more of the commodities planted on the farm under crop specific APH federally-subsidized yield and revenuers insurance products, group plans, and livestock insurance plans that address price risk. When used in conjunction with other insurance plans the premiums for a ***WFRP*** contract are reduced.

Essentially, a ***WFRP*** contract covers the revenue from all commodities produced on a farm including animals and animal products, commodities purchased for resale (up to a value of 50% of a farm's total revenues), and certain crop replanting costs.

Some commodity related farm revenues are ***excluded from coverage***; these include revenue derived from timber, forest, forest products and animals for sport, show or pets.

An operation's whole farm revenue history and ***WRFP*** insurance coverage are based on the individual farm's yields, product quality and marketing history. A ***WFRP*** contract provides revenue protection based on a producer's own yield, quality, expense and price histories. Revenue calculations are based on local market prices that may be different and either higher or lower than national average prices. For example, a certified organic commodity may be sold at a premium relative to the average market price for the commodity.

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[7] The *Whole-Farm Revenue Protection Pilot Policy* is available on the RMA website at www.rma.usda.gov/policies/wfrp/2016/16-0076.pdf.

A ***WFRP*** contract may be well suited for farm managers concerned with ensuring a minimum level of total revenue from the farm's production activities. As previously noted, all farm revenue is insured. Individual commodity losses are not considered on a stand-alone basis. It is the farm's revenue from all commodities covered under a ***WFRP*** contract that determine whether a loss has occurred and the amount of any indemnity.

There are some restrictions on the dollar value of the losses that can be covered under a ***WRFP*** contract, and the composition of those revenue losses. The maximum allowable loss under a contract is $8,500,000. Thus, the amount of whole farm revenue that can be insured depends on the coverage level. For example, the maximum farm revenue that could be considered at an **85% coverage level** is $10,000,000 as the maximum loss would be $8,500,000. At the **50% coverage level** the maximum farm revenue that could be covered would be $17,000,000 because, again, the maximum loss would be $8,500,000. Other restrictions also apply.

To insure farm revenues under a ***WFRP*** contract, a farm operator must provide basic historical information using federal tax forms that must be provided by the farm or ranch manager who files federal income taxes. A comprehensive explanation of ***WFRP*** insurance is available in a companion policy issues paper with a Wyoming farm example.

Risk Management Opportunities for Crops with No Insurance Actuarial Tables in a County

Two avenues for managing crop production risk are provided by USDA when standard federally-subsidized crop insurance products are not available to a producer for a crop: these are ***written agreements*** that may be accessed through RMA and the ***Noninsured Crop Disaster Assistance Program (NAP)*** managed by FSA.

RMA Written Agreements: In Wyoming many farm operators make use of crop insurance to ameliorate production and revenue risks for crops that occupy majority of the cropland acres they farm to generate most of their gross farm. Some farm operators also produce other crops for which no crop insurance actuarial tables exist in their counties.

Under certain circumstances crop producers can pursue ***Written Agreements*** for a crop for which no USDA RMA crop insurance actuarial table exists in the county where the crop is grown. As stated in a Risk Management Agency Fact Sheet entitled *Requesting Insurance Not Available in Your County*, United States Department of Agriculture, Revised August 2014, ***"If you would like to request insurance on a crop that is not insurable in your county, but insurable in other counties, you may complete and submit a Request for Actuarial Change through a crop insurance agent."***

A crop producer seeking a ***Written Agreement*** initiates the process by filing a ***Request for Actuarial Change*** with his crop insurance agent. Before this process is started, a crop producer should have some idea of the expected outcome.

A successful ***Request for Actuarial Change*** results in a ***Written Agreement***. A ***Written Agreement***, if accepted by the producer, is an individualized agreement to insure the specific crop in the specified county in that crop year.

The producer and the crop insurance agent complete a ***Request for Actuarial Change*** form. This form requires the following information: the crop producer's name and address, social security number, etc.; the crop, type, and practice; the location of the proposed production on which crop insurance is being sought; and the actual production history form with the crop production history for the crop to be insured. There must be actual production history for at least the last three years in which the crop was seeded, FSA aerial photography for the proposed production location for the crop for which insurance is being sought, and evidence of the adaptability of the subject crop.

Details of this process need to be understood by the crop producer and the crop insurance agent. First, they need to designate the crop, type and practice. Consider a dry pea example where the crop is to be produced on dryland. The producer and insurance agent would report the following:

- Crop: dry peas
- Type: spring smooth green
- Practice: non-irrigated

Second, the location of the proposed crop production requires a legal description supported by FSA aerial photography of the proposed production location. Such photography is available in local FSA offices along with soils information for the crop fields under consideration.

Third, the production history for the subject crop must be provided. Much of this information may be available from annual crop acreage reports the crop producer makes to FSA. This history must include acres, yield and production for the most recent three years the crop was seeded/planted.

Fourth, evidence of the adaptability of the crop must be provided. Production of the crop either in the area or similar areas should be cited. The most convincing data would be prior successful production at economically viable levels on the crop producer's own farm. Production in the same county under similar soil and climatic conditions would be helpful.

Other information may be needed to complete the request form or to fulfill the needs of reviewers. Such information may be: dates the producer and other growers plant and harvest the subject crop; for an irrigated crop, identification of the water source, method of irrigation, and amount of water needed for the irrigated practice to be used; and the name, location and approximate distance to where the crop will be sold or used by the producer.

Once the ***Request for Actuarial Change*** form is completed, a producer's crop insurance agent sends the form to one of the private companies with which the agent works for research and review. Subsequent to the insurance company's review for accuracy of the information, the request is forwarded to the regional office of the USDA Risk Management Agency for consideration. Requests from Wyoming producers are considered by personnel in the Billings Risk Management Agency Regional Office.

RMA personnel consider the adaptability of the subject crop. If there is a positive determination on the crop for the specified Wyoming location, the request process will proceed.

RMA also determines whether or not crop insurance policies are being written for the subject crop somewhere in the United States. If the determination is that no policies are being written, insurance coverage will not be made available. In effect, there must be a regular multiple peril policy available for the subject crop somewhere in the United States for the process to proceed.

Once a positive determination about the adaptability of the crop has been made and that the crop is covered somewhere in the United States under a multiple peril crop insurance policy, the Risk Management Agency then specifies a reference county. RMA personnel are charged with finding a county where a multiple peril crop insurance policy exists for the subject specialty crop that has similar production conditions to the county from which the request originated.

Consider a dry pea example. A producer in Wyoming's Platte County is seeking a ***Written Agreement*** for dry peas. An actuarial table for dry peas exists in Laramie County. RMA personnel might specify Laramie County as the reference county as there exists an actuarial table for crop insurance for dry peas and cropland in northern Laramie County has been rated for dry pea crop insurance. RMA personnel would then determine if growing conditions for dry peas in Platte County are sufficiently similar to those in Laramie County to consider Laramie County as the reference county. If that is not the case, RMA personnel would search elsewhere for a reference county.

When adaptability and reference county determinations are successfully completed, RMA personnel review the information on the request to determine the producer's production history for the crop of concern. Then the RMA prepares a ***Written Agreement*** with the approved yield, insurable price, and the premium rate specified. It is the producer's prerogative to decide to accept or reject the Written Agreement.

Concurrent with producers filing a ***Request for Actuarial Change*** with the collaboration of their insurance agents, producers might also confer with personnel at their local Farm Service Agency (FSA) offices to determine if it would be possible to use the ***Noninsured Crop Disaster Assistance Program (NAP)*** to address crop production risks when crop insurance is not available in their counties for crops of concern.

Noninsured Crop Disaster Assistance Program (NAP): ***NAP*** is a Farm Service Agency (FSA) program that is generally available to farm and ranch managers where RMA does not offer the catastrophic coverage level (CAT coverage) crop insurance for a subject crop. More specifically, ***NAP*** is not available for crops for which CAT coverage under section 508 (b) or additional coverage under sections 508 (c) or 508 (h) of the Federal Crop Insurance Act are available. If either CAT coverage or additional coverage (excluding pilot policies or plans of insurance) is available for a crop, NAP is unavailable.

NAP provides financial assistance to producers of non-insurable crops to protect against natural disasters that result in lower yields or crop losses due to prevented planting of a crop. Natural disasters include: (1) damaging weather that includes drought, excessive moisture, and/or a hurricane; (2) adverse natural occurrences including events such as floods and hurricanes; and (3) related conditions including events such as excessive heat or insect infestations associated with damaging weather or adverse natural occurrences.[8]

Any commercial agricultural crop or commodity grown for food, crops planted and grown for livestock consumption, and crops grown for fiber (except trees) are eligible for ***NAP*** coverage***. NAP*** does not cover livestock or livestock products but may be used by livestock operations to cover certain crops planted and grown by those operations for livestock feed. Forage vegetation eligible for ***NAP*** coverage consists of annual, biennial, and perennial grasses, legumes and small grains, etc. produced in a commercial operation for animal consumption or for seed for the propagation of forage for animal feed.

Historically ***NAP*** covered losses in excess of 50% of the producer or manager's expected production of the crop. The ***NAP*** payment rate was 55% of the average market price (established by the Farm Service Agency). Essentially the program provided for coverage at 27.5% of the expected value of production. This level of coverage continues to be available for all eligible crops. *It is the only NAP coverage available for crops and grasses intended for grazing.*

NAP has offered buy-up coverage for crops in the 2015, 2016, 2017 and 2018 production years. Buy-up coverage is available at the 50, 55, 60, and 65% of a crop's expected production, all at 100% of the expected average market price.

To remain eligible for ***NAP*** financial assistance a producer must report crop or forage losses within 15 days of the date the disaster that caused the loss and request payment under ***NAP*** within 60 days of the last day of coverage for a crop in a crop year. Local FSA personnel can assist producers and managers with eligibility requirements and any required evidence of loss.

Eligible producers must file for initial ***NAP*** coverage of eligible crops by the application closing dates. This is a continuous coverage agreement and will remain in effect for each following crop year when service fees are paid by the pertinent closing dates. In Wyoming April 1st is the applicable closing date for all eligible crops and forages; December 1 is the applicable closing date for honey.

Eligible producers must pay the lesser of the following fees to participate in NAP, plus any premiums associated with ***NAP*** buy-up policies:

1. A service fee of $250 per crop (or forage) service fee to be covered by ***NAP*** not to be exceed $750 per producer per administrative county or,
2. $1,875 for a producer with eligible crops in multiple counties.

Beginning, limited resource, and targeted underserved farmers and ranchers are eligible for a waiver of the service fee. They may also be eligible for a 50% premium reduction.

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[8] Detailed explanations of most facets of NAP are available in: NONINSURED CROP DISASSTER ASSISTANCE: 2016 and Subsequent Years, Basic Provisions. Commodity Credit Corporation, U. S. Department of Agriculture. CCC-471 NAP BP. (8-15-15).

Other Wyoming farmers and ranchers seeking ***NAP*** coverage will incur these service fees and will pay the full 5.25% premium rate.

The only cost for a producer or manager seeking the CAT level of ***NAP*** coverage (27.5%) is the service fee. Producers seeking buy-up ***NAP*** coverage are subject to the applicable service fee and a NAP premium.

Premium calculations are as follows.

Total ***NAP*** Liability = (Producer Share x Approved Yield x Coverage Level x Eligible Crop Acreage x Applicable Price);

Total ***NAP*** Premium = (Total ***NAP*** Liability x 5.25% Premium Rate).

When a natural disaster results in losses for the covered crop the level of financial assistance is calculated by crop for each unit. A unit is all eligible acreage of the eligible crop in the administrative county in which either (1) the producer has a 100% crop share or (2) the eligible land is owned by one person and the producer operates the land on a crop share basis.

Calculations for ***NAP*** financial assistance are as follows:

Net Production for Payment = (Eligible Acres x Producer Share x Approved Yield x Yield Coverage Level) - (Production to Count).

Calculated ***NAP*** Payment = (Net Production for Payment x Applicable Price x Price Percentage x Payment Factor) - (Salvage Value).

For grazing there is a specific ***NAP*** payment procedure for determining losses based on Animal Unit Days. The procedure is outlined in Agricultural Marketing Policy Issues Paper No. 49, Montana State University, July 2015 available at www.ampc.montana.edu/documents/policypaper/policy49.pdf.

The maximum ***NAP*** financial assistance available to a producer in any crop year is $125,000.

Livestock Insurance Options

Livestock Risk Protection and Livestock Gross Margin: Several federally subsidized insurance policies are available for livestock producers.

Livestock Risk Protection (***LRP***) products provide producers with protection against unexpected declines in the prices for their livestock. ***LRP*** policies are available in Wyoming for feeder cattle, lambs and hogs. The LRP policies use futures contracts to establish the prices ranchers can expect to receive at the likely time of sale and the prices received at time of sale (not the price the farmer was paid, but the price established in the relevant futures contract at sale time). These products are not widely used in Wyoming but are available. More detailed descriptions of LRP products available in Wyoming and examples of their use can be found in Montana State University Agricultural Marketing Policy Briefing papers 27, 81, 82 and 83, available at www.ampc.montana.edu/briefing.html.

Livestock Gross Margin (***LGM***) insurance products are also available to Wyoming livestock producers. There are plans available for cattle and swine. In these plans, futures market contracts are used to establish the expected prices of the livestock at the time when the livestock are expected to be sold and the feed costs likely to be incurred over the period between the date of purchase of the insurance and the expected time at which the livestock will be sold. The feed cost estimates are based on a feed formula determined by RMA and the futures contract prices for corn and any other feed included in the formula.

A livestock producer insures against unexpected declines in the expected difference between the price of the livestock and the expected feed costs, with the difference called the **gross margin**. ***LGM*** products also are not currently used extensively by Wyoming producers but may also be of interest to managers of feedlots. More detailed descriptions of ***LGM*** products available in Wyoming and an example of their use can be found in Montana State University Agricultural Marketing Policy Briefing paper 27, available at www.ampc.montana.edu/briefing.html.

Pasture Rangeland Forage (PRF) rainfall index insurance is the most widely used RMA insurance product by Wyoming farmers and ranchers, accounting for over 22% of all premiums and liability (Tables 1 and 2). ***PRF*** is an area or group product based on a rainfall index. Individual indexes are established for area "grids" that are approximately 4.8 miles by 4.8 miles in size using historical data on rainfall collected by the National Oceanographic and Atmospheric Administration since 1948. A ranch may use ***PRF*** to insure against forage loss associated with lack of precipitation in the grid (or grids) in which the insured area is located. In Wyoming, many ranchers use the ***PRF*** policy to address forage production risks for forage that is harvested mechanically and for forage that is grazed.

A ***rainfall index*** serves as the indicator variable for pasture, range, and forage production. The index is calculated using satellite data on the amount of precipitation available from the U.S. National Oceanographic and Atmospheric Administration (NOAA).

Operationally, a rancher selects a ***point of reference*** identified by longitude and latitude that represents the location of the forage acreage to be insured. This reference point determines the ***GRID ID*** for the grid whose ***rainfall index*** value forms the basis for the insurance. ***PRF*** is applicable are to crops defined as pasture, rangeland or forage. Two crop types are identified: ***grazingland*** and ***hayland***. The ***PRF*** program can be used to insure against reductions in grazingland or forage production. If the ***rainfall index*** for the grid associated with a ranch's location is sufficiently low relative to its average (or normal) value, then a rancher will receive an indemnity.

As discussed below, within any given year, grazing and forage production periods differ depending on the location of pasture or grazing lands and, where leased land is involved (for example, on national forest lands), the period during which the ranch has access to the leased area for grazing. Thus, a rancher can insure against the value of the ***rainfall index*** for specific ***index intervals***, each of which is two months in length.

The normal value for the ***rainfall index*** in any index interval for any grid is 100. Payments for losses occur when the value of the ***rainfall index*** falls below the ***coverage level*** selected by the ranch manager. The maximum ***coverage leve***l is 90% of the grid's normal value. If a 90% coverage level is chosen, the ranch will receive an indemnity if the value of the ***rainfall index*** falls below 90. If an 80% coverage level is selected, the index value would have to fall below 80 for an indemnity payment for loss of forage to be triggered.

Historical data on the values of the ***rainfall index*** are available to ranchers and their insurance agents for each three month period, ***index intervals,*** from 1948 to the current year.

In Wyoming the ***index intervals*** offered for hayland and grazing land are identical and currently consist of eleven two month intervals (January February, February March, march April, etc).

A rancher can choose to insure hayland or grazingland and in one or more of the ***index intervals***. At least 10% of the eligible acres in any forage type to be insured must be in the interval. Furthermore, the selected intervals cannot overlap; that is, no month can be included in more than one interval in each ***PRF*** insurance contract. Nor can two periods be consecutive (if a rancher insures against loss in the April May interval, the next insurable two month period would be July August, not June July).

In a ***PRF contract***, insurance is based on the ***county base value*** for the crop, which is determined by RMA, and the ***coverage level*** and a ***production factor*** selected by the rancher. The ***coverage level*** is the percentage of the county base value selected by a producer for insurance coverage. A rancher can choose a ***coverage level*** of 70, 75, 80, 85, or 90% of the county base value for the crop to be covered. The ***production factor*** is a value between 60 and 150% that a rancher selects to reflect the forage productivity of the grazing land or pasture that is being insured. Ranchers may choose to select ***coverage levels*** and ***production factors*** so that the product of these two variables multiplied by the county base value approximates the production value of the acreage they insure but ranchers can select any values within the specified ranges for those two variables. The choice of values for these two variables and the county base value of per acre forage production

determine the ***liability*** or amount of ***dollar protection*** per acre obtained by the ranch under the insurance contract.

An example is used to demonstrate the application of the **PRF** insurance plan. Suppose a ranch wants to insure 1,000 acres of grazing land in a specific grid, called the ***insured unit***. Also RMA has determined that in a normal year, within the county the ranch's grazing land is located, on average grazing land generates forage valued at $30 an acre. The ranch manager estimates that the grazing land being used by the ranch is substantially more productive than grazing land within the county. So the manager selects a ***production factor*** of 150%. From inspecting the historical information for the ***rainfall index*** in the grid, the manager knows that the grazing land is located in an area where drought is frequent and so forage production varies considerably from one year to the next. Thus, the manager wants to be sure that resources are available to buy supplementary forage if forage production conditions are poor. Therefore, the manager also selects a 90% ***coverage level***.

On a per acre of grazing land basis, therefore, the manager establishes a ***dollar amount of protection*** of ***$40.50 per acre***, equal to the county base value x selected coverage level x selected production factor ($30 x 90% x 150%). The rancher is insuring all 1,000 acres in the same grid. So the total dollar amount of protection for the insured unit of 1,000 acre is $40,500 (the ***dollar amount of protection per acre*** x the number of acres insured in the grid).

An indemnity will be paid to the rancher when the final rainfall grid index for the interval for which forage is insured falls below the ***trigger grid index*** established by the rancher. The ***trigger grid index*** = ***expected grid index*** x ***coverage level***. If the ranch manager elects a 90% ***coverage level,*** the trigger grid index = (100 x 90%)= 90.

Indemnity per unit = ***Policy protection per unit*** x ***payment calculation factor***.

The ***payment calculation factor*** is estimated under the assumption that when the ***rainfall index*** falls below a certain level, called the ***total loss*** **factor**, all forage on the unit has been lost. Unless otherwise specified, the total loss factor assumed to be ***0.30*** (implying all forage is lost for values of the ***rainfall index*** lower than 30). Thus the ***payment calculation factor*** is defined as:

Payment calculation factor = (trigger grid index –final grid index) / [(trigger grid index) – (expected grid index x total loss factor)].

For example, suppose in 2018 the **final grid rainfall index** value for the example ranch is 50 and the ***trigger grid index*** is 90. Then for 2018 the ranch's ***payment calculation factor*** will be:

2018 payment calculation factor = (90 – 50) / [90– (90 x 0.30)] = 40/63 = 0.635

Thus the ranch's indemnity for lost forage on its insured unit will be:

Indemnity per unit = ***Policy protection per unit*** x ***payment calculation factor*** = **$40,500 x 0.635 = $25,718**

Premiums are subsidized by the RMA for ***PRF*** products (Table 17). As with APH yield and revenue crop insurance policies, premium subsidy rates are higher at lower coverage levels. But ***PRF*** subsidy rates all exceed 50% of the total premium.

Table 17: Pasture Range Forage Insurance Subsidy Rates

Coverage Level (%)	Premium Subsidy Rate
70	0.59
75	0.59
80	0.55
85	0.55
90	0.51

Summary

Multiple peril crop insurance products available to Wyoming crop and livestock producers have expanded substantially in recent years. Wyoming farmers and ranchers insure a limited number of crops, but they consist of most of the crops produced in the state, including alfalfa seed, barley, corn, dry beans, forage production and forage seeding, millet, oats, potatoes, soybeans, sugar beets, sunflowers and wheat. Wyoming farmers use the COMBO policy, APH yield and revenue products to insure against losses for corn, sunflowers, winter and spring wheat, and barley crops. Many of the other crops are insured under APH plan of insurance, the yield-based insurance plan. Among the crops covered by the plan are sugar beets, dry beans, and oats.

Many ranch operators insure against grazing and hay losses using the Pasture Range Forage rainfall index product available for such protection in Wyoming. Other subsidized risk management products supported by the USDA Risk Management Agency are also available. These include a Whole Farm Revenue Protection product, a dollar insurance product for a limited number of crops, and Livestock Risk Protection and Livestock Gross Margin Products for livestock operations. Further, if RMA does not offer coverage for a crop in a specific county, but does offer such coverage elsewhere in the United States, producers in that county can apply for a Written Agreement through which, if approved by RMA, coverage for the crop may become available. In addition, the USDA Farm Service Agency offers Non-Insured Crop protection (NAP) for commodities for which RMA supported insurance products are not available.

In this introduction to the federal crop insurance program for Wyoming producers, each of the above products has been discussed. Extensive attention has been given to APH yield and revenue products and the information farmer need to provide to obtain insurance because of their widespread use. Similarly, considerable attention has been given to the Pasture Range Forage rainfall index product that is also extensively used as a risk management tool by Wyoming ranchers. Less detailed attention has been given to other products that are not widely used by Wyoming producers but, for most of these other products, a guide to where more detailed information can be obtained has been provided for interested producers.