



# BRIEFING

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## Federal Crop and Crop Revenue Insurance Programs: Optional, Basic, and Enterprise Units

Vincent H. Smith

Agricultural Marketing Policy  
Center  
Linfield Hall  
P.O. Box 172920  
Montana State University  
Bozeman, MT 59717-2920  
Tel: (406) 994-3511  
Fax: (406) 994-4838  
email: [ampc@montana.edu](mailto:ampc@montana.edu)  
website: [www.ampc.montana.edu](http://www.ampc.montana.edu)

Federal crop insurance against individual farm yield losses in the form of multiple peril contracts has been available for some crops since 1938. Following the 1980 Federal Crop Insurance Act, the number of crops and the geographic coverage of the federal crop yield loss insurance program was greatly expanded. Beginning in the late 1980s, in addition to traditional multiple peril contracts, new policies were developed based on yield losses at the county level and offered for a limited number of crops in a limited number of counties.

Following the 1994 Crop Insurance Reform Act, a wider range of federally subsidized insurance contracts were introduced that provided protection against revenue losses and catastrophic losses.

Today, producers face a wide array of crop insurance alternatives including yield based Actual Production History (APH) insurance contracts and Revenue Insurance contracts. Not all insurance contracts are available for every crop in any given county. In some counties, Risk Management Agency (RMA) approved insurance contracts are not available for some crops. In these circumstances, producers can either utilize the Noninsured Disaster Assistance Program (NAP) or make a request for actuarial change.

Yield based APH insurance contracts include Multiple Peril Crop Insurance (MPCI) and Group Risk Plan (GRP) contracts. Under MPCI contracts, indemnity payments are triggered by low yields on an individual producer's insured acres. Under GRP contracts, indemnity payments are triggered by low county-wide yields.

Revenue insurance contracts include Group Revenue Insurance Policy (GRIP) contracts, Adjusted Gross Revenue (AGR) contracts, Crop Revenue Coverage Contracts (CRC), Revenue Assurance (RA) contracts, and Income

Protection (IP) contracts. Under CRC, RA, and IP revenue insurance contracts, indemnities are triggered by low revenues for an individual producer (caused either by low yields, or low prices, or both). Under AGR contracts, indemnities are triggered by low revenues for an entire farm's operations, based on the producer's Schedule F federal tax forms. Under GRIP contracts, indemnity payments are triggered by low county-wide crop revenues.

Several of these alternatives (MPCI, CRC, and RA) allow producers the option of insuring separate areas of land either under separate insurance contracts or under the same insurance contract. Each of these alternative contracts requires that producers establish an approved APH yield for the crop to be insured. This Briefing describes these alternatives and discusses issues producers should consider when making choices about alternative crop insurance products.

### Insurable Units

A producer may establish an APH yield for a given crop for any of the following units:

- **Basic units:** A basic unit consists of all acreage farmed in a county in which a producer has a 100 percent crop share or is owned by one person and farmed by a producer, on a crop share basis. Any producer may, therefore, have more than one basic unit in a county. For example, the producer may have a 100 percent share in 200 acres of the crop – one basic unit -- and a 50 percent share in 100 acres of the crop – a second basic unit.

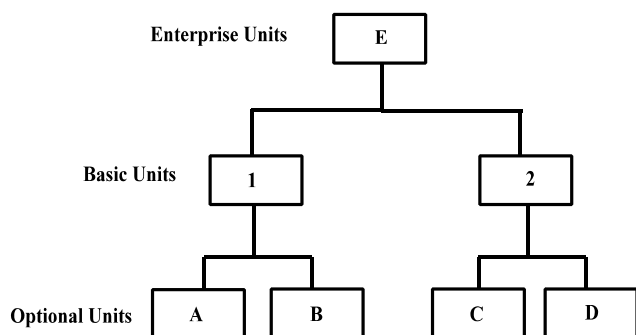
Objective

Analysis

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Decision Making

Figure 1: The Units Pyramid



- **Optional units:** A basic unit can be partitioned into optional units for some crops by type. Typically, optional units can be established if each optional unit is located in separate sections. Optional units may also be permitted by RMA if land parcels are legally identified by other methods of measure such as Spanish grants or, in the absence of sections, by separate Farm Service Agency serial numbers. Finally, optional units may also be based on irrigated and non-irrigated acreage.
- **Enterprise units:** An enterprise unit consists of all insurable acreage for a crop in a county in which the producer has a share. To qualify as an enterprise unit, the acreage must qualify for two or more basic units or two or more optional units established by either (i) separate sections or (ii) separate legal equivalents of farm sections or (iii) separate FSA farm serial numbers.

Figure 1 shows that optional units, basic units, and enterprise units can be viewed as a pyramid. In Figure 1 a producer is assumed to have four optional units on which a crop is grown (A, B, C, and D). The producer has 100 percent shares in optional units A and B and 50 percent shares in optional units C and D. Thus the producer has two basic units, 1 (consisting of A and B) and 2 (consisting of C and D). These two basic units can be combined into one enterprise unit, E.

Producers who choose to insure basic units rather than optional units pay lower premiums for MPC, CRC, and RA contracts. They pay even lower premiums when they insure enterprise units rather than basic units.

Table 1: Optional Unit and Basic Unit Coverage Under 65 Percent MPC Contracts

Contract Data	Optional Unit 1	Optional Unit 2	Basic Unit
Unit Size	100 acres	100 acres	200 acres
APH Yield	40 bushels	40 bushels	bushels
Coverage Option	65% APH	65% APH	65% APH
Trigger Yield	26 bushels	26 bushels	26 bushels
Elected Price	\$4/bushel	\$4/bushel	\$4/bushel

### Why Basic and Enterprise Units Receive Premium Discounts

The reasons for premium discounts for basic and enterprise units are straightforward. Typically yields on optional units do not move in perfect phase; that is, if yields are 50 percent below average on one optional unit they are typically not 50 percent below average on another optional unit. As a result, indemnity payments are less frequent and, on average, total indemnities are smaller when basic units are insured than when optional units are insured. Similarly, indemnity payments are less frequent and, on average, total indemnities are smaller when enterprise units are insured than when optional units are insured.

The example in Table 1 illustrates why this is the case. In the example, a producer owns 100 percent shares in two optional units of equal size (100 acres), each with the same APH yield of 40 bushels per acre. The APH yield for the basic unit is therefore also 40 bushels per acre. For purposes of illustration, the producer is assumed to insure his crops under an MPC contract.

As is discussed in Briefing No. #8, the producer receives an indemnity when actual yields fall below a trigger yield. Many producers choose to purchase MPC yield insurance that provides indemnities only when actual yields fall below 65 percent of their APH yields. In this example, the trigger yield would be 26 bushels (65 percent of the APH of 40 bushels per acre) for both optional units and for the basic unit. The dollar indemnity is equal to the difference between the trigger yield and the actual yield multiplied by a predetermined election price.

In the example production year the producer's actual yields are 50 percent of the

APH yield on optional unit 1 (20 bushels per acre) and 80 percent of the APH yield on optional unit 2 (32 bushels per acre). As is shown in Table 2, this means that total production on the basic unit (the sum of the two optional units) is 5,200 bushels and that the actual yield per acre for the basic unit is 26 bushels per acre (5,200 bushels/200 acres). For the basic unit the trigger and actual yields are identical.

As is shown in Table 2, if the producer insured each optional unit separately at the 65 percent level and the actual yield on optional unit 1 is 20 bushels per acre, then the producer would receive an indemnity payment for the insurance contract on that optional unit of 6 bushels per acre (the trigger yield less the actual yield) multiplied by the elected price (assumed to be \$4 per bushel). The producer would receive no indemnity on the contract for optional unit 2 because the actual yield for optional unit 2 of 32 bushels per acre exceeds the trigger yield for that unit. The total indemnity payments for crop losses on the separately insured optional units would therefore be \$2,400 (600 bushels x \$4 per bushel). In contrast, as is also shown in Table 2, the producer receives no indemnity payments if the two optional units are insured under one basic unit contract with a trigger yield of 65 percent of the APH yield. In the example, the producer's actual average yield for the basic unit is 26 bushels per acre. This is the same as the trigger yield under the 65 percent coverage option. Therefore, no indemnity payments would be paid.

### Producer Decisions with Respect to Optional, Basic, and Enterprise Units

The example illustrates that insuring basic units rather than optional units reduces the likelihood that a farm will receive indemnities because yields on optional units

do not generally move in perfect phase. Therefore, per acre premiums for contracts on basic units are lower than for contracts on optional units. For precisely the same reasons, per acre premiums for contracts on enterprise units are lower than for contracts on basic units.

Producers who have the choice of insuring optional units or a basic unit should evaluate whether the benefits from reduced premium rates for basic unit contracts outweigh the costs of less frequent and, on average, lower indemnity payments.

Factors that producers should take into account when making this decision include:

- The size of the premium rate discount for basic units. The bigger the premium discount, the greater are the benefits from selecting a basic unit contract.
- The extent to which yields on different optional units move in phase (in statistical terms, the degree to which yields are highly and positively correlated across optional

units). If yields on different optional units always move in phase (that is, if they are 40 percent below average on one optional unit then they are also about 40 percent below average on other optional units), then there will be little or no reduction in indemnity payments if basic units are insured. In contrast, if yields on different optional units do not move in phase (that is, they are not highly and positively correlated), reductions in indemnity payments may be quite large if the producer insures basic units instead of optional units.

Similarly, producers who have the choice of insuring enterprise units rather than basic units should evaluate whether the benefits from reduced premium rates for enterprise unit contracts outweigh the costs of less frequent and, on average, lower indemnity payments.

Factors that producers should take into account when making this decision include:

- The size of the premium rate discount for enterprise units. The

bigger is the premium discount, the greater are the benefits from selecting the enterprise unit contract.

- The extent to which yields on different basic units move in phase (in statistical terms, the degree to which yields are highly and positively correlated across units). If yields on different basic units always move in phase, then there will be little or no reduction in indemnity payments if enterprise units are insured. In contrast, if yields on different basic units do not move in phase (that is, they are not highly and positively correlated), reductions in indemnity payments may be quite large if the producer insures the enterprise unit instead of basic units.

**Table 2: Optional Unit and Basic Unit Coverage Under 65 Percent Contracts**

<b>Yield and Coverage Data</b>	<b>Optional Unit 1</b>	<b>Optional Unit 2</b>	<b>Basic Unit</b>
Trigger Yields	26 bushels	26 bushels	26 bushels
Actual Yields	20 bushels	32 bushels	26 bushels
Bushel Indemnity	6 bushels	0 bushels	0 bushels
Elected Price	\$4/bushel	\$4/bushel	\$4/bushel
Unit Size	100 acres	100 acres	200 acres
Total Indemnity	\$2,400	\$0	\$0

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