



# BRIEFING

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## Federal Crop and Crop Revenue Insurance Program: Determining APH Yields

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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 that provide indemnities for revenue losses caused by either low yields, low prices, or both prices include Group Revenue Insurance Policy (GRIP) 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 GRIP contracts, indemnity payments are triggered by low average revenue for the crop in the country.

Indemnities for losses paid under both the GRIP and GRP contracts are determined in large part by expected county yields and actual county yields in any given crop year. Indemnities for losses paid under MPCI, RA, CRC, and IP contracts for a given planted area in any given crop year are determined in large part by the APH approved yield for the insured area and the actual yield realized on that area in any given crop year. This Briefing describes how county expected yields and APH yields for individual areas are determined.

### County Expected Yields

Group Risk Plan (GRP) contracts provide producers with indemnities when the county average yield for an insured crop in the current crop year is low relative to the long run average county yield for the crop. Group Revenue Insurance Plan (GRIP) contracts provide producers with indemnities when the county revenue for an insured crop in the current crop year is low relative to the long run average county revenue for the crop. In the former case, the county expected yield is used as the measure of the long run county average yield. In the latter case, the expected county yield is a major component of the measure of the long run average county revenue for the insured crop. The county average revenue per acre against which the contract provides insurance is equal to the expected county yield

Objective

Analysis  
for Informed  
Decision Making

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**Table 1: Computing APH Yields When Acceptable Production Records Are Available**

Crop Year	Producer A Proven Yield	Producer B Proven Yield
1991-92	NA <sup>a</sup>	52
1992-93	NA	22
1993-94	NA	8
1994-95	NA	43
1995-96	NA	52
1996-97	NA	30
1997-97	45	44
1998-99	5	6
1999-2000	34	38
2000-01	16	15
<b>APH Approved Yield<sup>b</sup></b>	<b>25</b>	<b>27</b>

<sup>a</sup> NA denotes that acceptable production records are not available for that crop year.

<sup>b</sup> The APH approved yield is the arithmetic average of the actual yields for each of the years for which acceptable records are available.

multiplied by the expected price for the crop in the crop year. Expected county yields are determined using historical county yields reported by USDA’s National Agricultural Statistical Service (NASS), as adjusted by the Federal Crop Insurance Commission. The records of individual producers play no role in the process by which expected county yields are determined. The procedures used to compute expected county yields account for many factors that influence long run yields, including long run trends in yield growth, the impacts of atypical adverse weather events on yields in recent past years, and linkages between yields for different crops.

**Actual Production History Approved Yields**

Under MPCI, CRC, RA, and IP insurance contracts, producers insure either against yield shortfalls (MPCI) or revenue shortfalls (CRC, RA, and IP). Under an IP contract, producers must insure all acres of a crop raised in the same county under one contract; that is, they must insure their entire acreage of a crop as an enterprise unit. Under MPCI, CRC and RA contracts producers may choose to purchase insurance contracts for each optional unit, or each basic unit (which consist of two or more optional units) or the entire enterprise unit (all acres in the county).<sup>1</sup>

Under MPCI, CRC, RA, and IP the producer must establish an Actual Production History or APH approved yield for the unit that is to be insured. If a producer chooses to insure each optional

unit under a separate MPCI, CRC, or RA contract, then separate APH approved yields must be established for each optional unit. Similarly, if the producer chooses to insure each basic unit under a separate contract then separate APH approved yields must be established for each basic unit. Finally, if the enterprise unit is to be insured, then an APH approved yield must be established for the enterprise unit.

A producer’s actual production history or approved yield 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 FCIC. For records to be acceptable, the producer must have records of marketed or stored production from each separate area kept in a manner that enables FCIC to verify production from that area. The second method is used when such records are not available for a sufficient number of years. In this case, county-based transition or T-yields are used to estimate producer yields in those years for which the producer has inadequate records.

**If Acceptable Production Records are Available**

If the producer has acceptable production records for between four and ten consecutive crop years for the area to be insured, beginning with the year previous to the year for the insurance contract, then the producer’s APH approved yield is simply equal to the average yield for those years.

Two examples are presented in Table 1. Producer A only has records for four consecutive crop years prior to the 2001-2002 crop year and producer B has records for ten consecutive crop years prior to the 2001-2002 crop year. Producer A’s APH yield of 25 bushels per acre is therefore the arithmetic

average of his “proven” yields for the past four years. Producer B’s APH yield of 27 bushels per acre is the arithmetic average of his “proven” yields for the ten previous crop years.

**If Acceptable Records are Not Available for Some or All of the Precious Four Years**

If approved actual production history yield data are not available for at least the four most recent crop years, then an FCIC determined transitional yield or T-yield is used to determine the producer’s yield for each missing year. T-yields are then used to complete the four years of records needed to calculate a producer’s APH approved yield. Typically, the T-yield is closely related to the expected county yield computed by FCIC. However, the approved APH yield for producers who elect not to supply records is limited to 65 percent of the applicable T-yield for the first year in which the producer is insured.

Two examples of the use of T-yields are presented in Table 2. Producers C and D are located in the same county where the T-yield for the crop they want to insure is 30 bushels per acre. Producer C provides acceptable production records for the last three of the previous four crop years while producer D provides no acceptable production records. Producer C’s APH approved yield is computed by using the full 30 bushel per acre T-yield as a substitute for the missing 1997-98 crop year production records. Producer D is simply allocated 65 percent of the county T-yield as the APH approved yield of 19.5 bushels per acre for the insurance contract.

<sup>1</sup> Optional, basic, and enterprise are described and discussed in detail in paper 6, *Federal Crop and Crop Revenue Insurance Programs: Optional, Basic, and Enterprise Units*.

## Issues

As APH is for an insurable unit increases, the premium for any specific insurance contract will also increase because the maximum indemnifiable loss (the indemnity payment the producer receives when a total crop loss occurs) will also be higher. However, many producers prefer to have larger APH approved yields because insurance contracts based on higher APH approved yields enable them to receive larger indemnities and more effective risk protection when actual yields or revenues are low.

A crucial issue for many producers in the Northern Great Plains has been the impact of a sequence of poor harvests on their APH approved yields because of a sequence of atypically poor growing conditions. While the use of T-yields is frequently disadvantageous to many producers whose yields are higher than the county average, in some cases they may benefit from the T-yield methodology. It should be noted, that producers with approved APH records may use 60 percent of the county T-yields in place of actual yields in their APH records for years when those actual yields were exceptionally low.

**Table 2. Computing APH Approved Yields with Transition Yields:**

<b>Crop Year</b>	<b>Producer C Proven Yield (bushels)</b>	<b>Producer D Proven Yield (bushels)</b>	<b>County T-Yield (bushels)</b>
1997-1998	NA <sup>a</sup>	NA	30
1998-1999	36	NA	30
1999-00	28	NA	30
2000-01	34	NA	30
	<b>33 <sup>b</sup></b>	<b>20 <sup>c</sup></b>	

<sup>a</sup> NA denotes that acceptable production are not available for that crop

<sup>b</sup> The APH for producer C is computer by substituting the transitional yield of 30 bushels for the missing yield data for 1997-1998 crop year and then computing the four year APH average yield; that is C's APH yield =  $(30 + 36 + 28 + 34)/4 = 32$  bushels per acre

<sup>c</sup> The APH for producer D is simply equal to 65% of the county T-yield; that is D's APH =  $0.65 \times 30 = 19.5$  bushels per acre, which RMA rounds to the nearest bushel.

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