



BRIEFING

Briefing No. 7 (Revised)

November 2002

Federal Crop and Crop Revenue Insurance Programs: Determining APH Yields

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Objective

Analysis

for Informed

Decision Making

Federal crop insurance against individual farm yield losses in the form of multiple peril policies 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 policies, 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 policies 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 policies and Revenue Insurance policies. Not all insurance policies are available for every crop in any given county. In some counties, Risk Management Agency (RMA) approved insurance policies 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 insurance policies include Multiple Peril Crop Insurance (MPCI) and Group Risk Plan (GRP) policies. Under MPCI policies, indemnity payments are triggered by low yields on an individual producer's insured acres. Under GRP policies, indemnity payments are triggered by low county-wide yields.

Revenue insurance policies that provide indemnities for revenue losses caused by either low yields, low prices, or both include Group Revenue Insurance Policy (GRIP) policies, Crop Revenue Coverage Policies (CRC), Revenue Assurance (RA) policies, and Income Protection (IP) policies. Under CRC, RA, and IP revenue insurance policies, indemnities are triggered by

low revenues for an individual producer (caused either by low yields, or low prices, or both). Under GRIP policies, indemnity payments are triggered by low average revenue for the crop in the country.

Indemnities for losses paid under both the GRIP and GRP policies 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 policies 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. This Briefing describes how county expected yields and APH yields for individual areas are determined.

County Expected Yields

Group Risk Plan (GRP) policies 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) policies 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 policy provides insurance is equal to the expected county yield 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

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

Crop Year	Producer A Proven Yield	Producer B Proven Yield
1992	NA ^a	52
1993	NA	22
1994	NA	30
1995	NA	43
1996	NA	52
1997	NA	30
1998	45	44
1999	20	34
2000	30	38
2001	25	15
APH Approved Yield^b	30	34

^a NA denotes that acceptable production records are not available for that crop year.

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

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 years, and linkages between yields for different crops.

Actual Production History Approved Yields

Under MPCI, CRC, RA, and IP insurance policies, producers insure either against yield shortfalls (MPCI) or revenue shortfalls (CRC, RA, and IP). Under an IP policy, producers must insure all acres of a crop raised in the same county under one policy; that is, they must insure their entire acreage of a crop as an enterprise unit. Under MPCI, CRC and RA policies producers may choose to purchase insurance policies 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).¹

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

¹ Optional, basic, and enterprise are described and discussed in detail in Briefing 6 (revised November 2002), *Federal Crop and Crop Revenue Insurance Programs: Optional, Basic, and Enterprise Units*.

unit under a separate MPCI, CRC, or RA policy, then separate APH approved yields must be established for each optional unit. Similarly, if a producer chooses to insure

each basic unit under a separate policy, 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 unit 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, 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 policy) 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 30 bushels per acre is therefore the arithmetic average of his "proven" yields for the past four years. Producer B's APH yield of 34 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 Previous 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, nationwide the T-yield is closely related to the expected county yield computed by FCIC (In Montana, Wyoming, and North and South Dakota, many T-yields are area based; that is, there are multiple T-yields within a county). However, the approved APH yield for producers who are unable to supply records is limited to 65 percent of the applicable T-yield for the first year in which the producer is insured.

If, however, producers have acceptable production records for one, two, or three of the past four years, they may use higher percentages of the applicable T-yield for the missing years. For crops such as wheat, if the producer has one year of acceptable yield records, the APH yields for the three missing years are set equal to 80 percent of the applicable T-yield. If the producer has acceptable yield records for 2 years, then the APH yield for the missing two years is 90 percent of the applicable T-yield. If the producer has acceptable yield records for three years, then the APH yield for the missing year is 100 percent of the T-yield.

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. Thus, the APH approved yield becomes 20 bushels per acre for the insurance policy ($0.65 \times 30 = 19.5$ which is rounded to the nearest bushel).

A new producer provision is available for operations that have not grown the crop for more than two years.

Issues

As the APH yield for an insurable unit increases, the dollar amount of the premium for any specific coverage level 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 policies based on higher APH approved yields enable them to obtain more protection when actual yields or revenues are low.

An important 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 extended drought and prevented plantings. These producers may find it beneficial use a provision that allows one to use 60 percent of the applicable T-yield for years when actual yields are low.

Table 2. Computing APH Approved Yields with Transition Yields

Crop Year	Producer C Proven Yield (bushels)	Producer D Proven Yield (bushels)	Applicable T-Yield (bushels)
1998	NA ^a	NA	30
1999	36	NA	30
2000	28	NA	30
2001	34	NA	30
	32^b	20^c	

An example of this use of T-yields is presented in Table 3. Suppose the applicable T-yield for producer E is 30 bushels per acre and, thus, 60 percent of the applicable T-yield is 18 bushels per acre. Producer E has ten years of acceptable yield records that includes three years of very poor harvests when actual yields were less than 18 bushels per acre. Using the farm's actual yields, producer E's proven yields would be 33 bushels per acre. Substituting 60 percent of the applicable T-yield for the three of the yield years increases producer E's proven yield to 36 bushels per acre. In this example, using 60 percent of the applicable T-yield enables producer E to increase the APH yield by 3 bushels per acre (a 9 percent increase).

Table 3: Computing APH Approved Yields When Actual Yields are Poor in Same Years

Crop Year	Producer E Proven Yield (bushels)	Applicable T-yield (bushels)	60% of Applicable T-yield (bushels)	Producer E Proven Yield Using 60% T-yield provision
1992	50	30	18	50
1993	20	30	18	20
1994	32	30	18	32
1995	8	30	18	18 ^a
1996	43	30	18	43
1997	67	30	18	47
1998	10	30	18	18 ^a
1999	63	30	18	63
2000	7	30	18	18 ^a
2001	<u>50</u>	30	18	<u>50</u>
	33			36 ^b

^a These are years in which it is advantageous for producer E to use 60% of the applicable yield instead of the actual yields obtained in the form.

^b The computed APH is rounded to the nearest whole bushel.

^a NA denotes that acceptable production are not available for that crop

^b 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

^c 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.

Support for the preparation and delivery of materials in this publication was provided by the Montana Agricultural Experiment Station, the MSU Extension Service, the Federal Crop Insurance Corporation through the Risk Management Agency, and the Cooperative State Research, Education and Extension Service of the United States Department of Agriculture.



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