



## Weekly Farm Economics: Trend-Adjusted APH Yield Endorsement

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### **New Trend-Adjusted Yield Endorsement for Federally Sponsored Crop Insurance Products**

Beginning with the 2012 crop year, farmers purchasing crop insurance for corn and soybeans in fourteen Midwestern states will have the option to use the Trend-Adjusted Actual Production History (TA-APH) Yield Endorsement. The TA-APH yield endorsement allows farmers to increase yields used in calculating crop insurance guarantees. The product concept submission to RMA was sponsored by the Illinois Corn Marketing Board, and developed in conjunction with faculty from the University of Illinois.

#### **Rationale**

Actual Production History (APH) yields are used in the calculation of yield and revenue guarantees in the COMBO product. In the simplest case, the APH yield is based on a history of yields from the insured unit. To be based totally on historical yields, at least four years of yields must be provided. Up to ten years of yields are used in the APH yield. When more than ten yields exist from a farm, the most recent ten are used in calculating the APH yield.

In crops with increasing yields over time, the APH yield lags the true "expected", or most likely yield, for the coming insurance year. For example, consider a trend increase of 2 bushel per year for corn, which has been the general rate increase of corn yields over much of Illinois. In other words, corn yields are increasing by a rate of 2 bushels per year on average. If a farm has ten years of continuous yields, the average of those ten years will lag the expected yield by 11 bushels ( $(10 \text{ years of continuous yields} / 2 + .5) \times 2 \text{ bushel trend}$ ).

Because APH yields lag expected yields, guarantees will also lag. The TA-APH endorsement corrects this issue by allowing a trend adjustment to be added to the APH yield. The resulting TA-APH yield then is used in calculating guarantees.

#### **Approach**

Each county and crop has a TA-APH trend rate. This rate is estimated using National Agricultural Statistical Service (NASS) county yields, with controls include for weather and spatial considerations.

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These TA-APH rates are county specific and are published by the Risk Management Agency (RMA). Each insured unit in a county will use the same TA-APH rate. The table in the appendix shows corn and soybean TA-APH rates for Illinois.

**Table 1. Trend Adjusted Yield Example for 2012.**

Number	Actual Yields		Trend	Trend
	Year	Yield	Adjustment <sup>1</sup>	Adjusted Yield <sup>2</sup>
1	2002	158.0	20.60	178.60
2	2003	144.0	18.54	162.54
3	2004	182.0	16.48	198.48
4	2005	185.0	14.42	199.42
5	2006	161.0	12.36	173.36
6	2007	182.0	10.30	192.30
7	2008	196.0	8.24	204.24
8	2009	190.0	6.18	196.18
9	2010	186.0	4.12	190.12
10	2011	170.0	2.06	172.06
Average		175.4 APH <sup>3</sup>	11.33 TA	186.73 TA-APH <sup>4</sup>

<sup>1</sup> The Trend Adjustment rate is 2.06. Each year's yield adjustment equal (2012 - year of actual yield) x 2.06 TA rate.

<sup>2</sup> Equals actual yield plus trend adjustment.

<sup>3</sup> Average of actual yields (Can be more complex if less than four actual yields)

Table 1 shows an example of the 2012 TA-APH yield calculation for a McLean County farm having ten consecutive yields from 2002 through 2011. The 2002 yield is 158 bushels per acre, the 2003 yield is 144 bushels, the 2004 yield is 182 bushels per acre, and so on. This APH yield for this yield history is 175.4 bushels per acre.

Corn in McLean County has yield trend of 2.06 bushels/year. Under the Trend-Adjusted APH, each yield will be adjusted by 2.06 bushel times the number of years from the current insurance year. The further the year is from the 2012 current year, the higher is the trend adjustment. For the 2011 yield, the trend adjustment is 2.06. In 2011, the actual yield is 170 bushel per acre, and the TA-APH yield is 172.1 bushels per acre (172.06 = 170 bushels plus 2.06 trend adjustment). The trend adjustment for the 2010 yield is 4.12 bushel, or the 2.06 trend times two years from 2012. The actual yield in 2010 is 186 bushels and the TA-APH yield is 190.1 bushels (186 bushels plus 4.01 trend adjustment). The above process is continued for each year in the past, and then the adjusted yields averaged to arrive at the Trend-Adjusted APH.

In the example shown in Table 1, the TA APH yield is 186.73 bushels, 11.33 bushels above the 175.4 bushel APH yield.

## Eligibility

To be eligible for the APH yield, a farmer must:

1. Be located in a county where the TA-APH endorsement is offered, and
2. Have at least one actual yield in the last four years.

An actual yield is based on yields from a farm, not simply transitional yield (T-yield) which is a plugged value when actual yields do not exist, or other changes occur in the insured unit.

## Other details

Other details include:

- The decision to use the TA-APH endorsement must be made by the sales closing date of March 15.
- The TA-APH yield endorsement will be made on a crop/county basis. A farmer could choose to insure corn with the TA-APH yield endorsement and not use it for soybeans.
- The TA-APH endorsement is a continuous policy. The TA-APH yield will continue as long as the farmer does not change the election or RMA does not end the endorsement. If a farmer switches companies, the endorsement will have to be re-elected.
- There must be four yields in the last twelve years for the full trend adjustment to be received. The percent of trend adjustment by actual yields are:
  - 100% adjustment for 4 or more yields in last twelve years,
  - 75% adjustment for 3 years in last twelve years,
  - 50% adjustments for 2 years in last twelve years,
  - 25% adjustment for 1 year in last twelve years.
- Total premiums (the farmer-paid portion and risk subsidy) will be the same for the same guarantee level for policies with and without the TA-APH yield. Take a 160 bushel APH yield and a 170 bushel TA-APH yield, and a projected price of \$6.00 per bushel. An 85% Revenue Protection (RP) policy without the TA-APH will have a guarantee of \$816 per acre (160 APH yield x \$6.00 projected price x 85 percent coverage level) and an 80% RP with the TA endorsement will also have an \$816 guarantee (170 bushel TA-APH yield x \$6.00 projected price x 80 percent coverage level). Because these two policies have the same guarantee, the two policies will have the same total premium. The farmer would pay less for the TA-APH policy because subsidy levels are higher for lower coverage levels.
- In general, non-actual yields are not eligible for a trend adjustment. You will need to discuss details with your crop insurance agents to identify cases eligible for the Trend Adjustment.

## Summary

The vast majority of corn and soybean farmers will find the TA-APH yield endorsement an attractive option. The TA endorsement causes the yield used in guarantee calculation to more accurately reflect actual production. In addition, the TA-APH yield endorsement eliminates penalties for long yield histories, as yields in the past are updated to reflect current yields.

## Appendices

