Trend-Adjusted Yield Option Introduced for Crop Insurance

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A farmer's total trend adjustment depends on the number of years of yield history used to calculate the APH. To receive 100 percent of the trend adjustment, a producer will need to have at least 4 or more years of a yield history in the last 12 years.

Overview

Actual Production History (APH) is a 4- to 10-year yield average used to calculate each producer's production guarantee. Producers with 10 years of yield history are penalized under APH because yields have increased over time, and APH yields can lag behind their most recent yields. Therefore producers with only 4 years of yield history can actually have higher average yields.

Maryland corn, soybean, and wheat producers can select a Trend-Adjusted (TA) yield endorsement. Using this endorsement, a producer can adjust the APH yields to account for better genetics or farming techniques. These yield adjustments are based on historical county-level yield data from USDA's National Agricultural Statistic Service.

The adjustments also include trend controls for weather and spatial considerations. Coverage for qualifying producers who select the TA option will add the county-level trend to their individual APH. The Midwest has been utilizing TA yields since 2012.

Eligibility

Using TA yields, a corn, soybean, or wheat producer needs to farm in an eligible county. Currently all Maryland counties have a TA yield for corn, and all counties but Allegany and Garrett have a TA yield for soybeans. For wheat, Baltimore, Caroline, Carroll, and Cecil, Dorchester, Frederick, Harford, Howard, Kent, Montgomery, Queen Anne's, Somerset, Talbot, Washington, and Worcester counties currently

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Corn, soybean, and wheat producers in eligible Maryland counties must have an actual yield in one of the last four years, and choose the TA yield endorsement for their insurance policy before March 15 for corn and soybeans and September 30 for wheat.

have approved TA yields. An eligible corn, soybean, or wheat producer must have an actual corn, soybean, or wheat yield in one of the last four years, and choose the TA yield endorsement for their existing or new insurance policy before March 15 for corn and soybeans and September 30 for wheat -- the sales closing dates for these crops.

Organic corn, soybean, and wheat are ineligible for the TA endorsement. Corn produced for silage with a tonnage guarantee is also ineligible. The TA endorsement will not be available for Catastrophic Risk Protection (CAT), Group Risk Plan (GRP), and Group Risk Income Protection (GRIP) policies.

Calculating the TA APH

USDA's Risk Management Agency will publish a TA yield for each county. Each insured unit within a county will use the same TA yield adjustment factor. Appendix 1 lays out each TA yield adjustment for Maryland's counties.

To calculate the impact of electing a TA yield adjustment, a farmer must determine the TA for each crop year. The examples show the approach for irrigated corn (table 1), soybeans (table 2), and wheat (table 3) grown in Queen Anne's county with 10 years of yield history. Looking at table 1, our farmer would plug in their average per acre corn yields for 2004 to 2013. The farmer would be looking at a TA yield adjustment of .99 for non-irrigated corn and 1.04 for irrigated corn. To calculate the TA for each of the 10 years, our farmer would use the following formula:

$$(2014 - \text{Year}) \times \text{TA rate} = \text{TA}$$

To calculate the trend adjustment for 2004, our farmer would take:

$$(2014 - 2004) \times 1.04 = 10 \times 1.04 = 10.40$$

For 2005, the TA would equal 9.36 or:

$$(2014 - 2005) \times 1.04 = 9 \times 1.04 = 9.36$$

Table 1	Trend Adjusted Yield Example, Irrigated Corn in Queen Anne's County, 2014		
Year	Actual Yield	Trend Adjustment	Trend Adjusted Yield
2004	128.50	10.40	138.90
2005	164.40	9.36	173.76
2006	149.20	8.32	157.52
2007	155.00	7.28	162.28
2008	120.20	6.24	126.44
2009	125.00	5.20	130.20
2010	146.00	4.16	150.16
2011	128.30	3.12	131.42
2012	101.20	2.08	103.28
2013	120.00	1.04	121.04
	APH = 133.80	TA = 1.04	TA APH = 139.50

In addition, the farmer must calculate the yield cap. The TA would be capped at the year with the highest average yield plus the annual TA. Table 1 shows the highest average yield (164.4) for corn would be in 2005. The TA APH would be capped at (164.4 + 1.04) = 165.44. Table 2 shows the highest average yield (42.8) for soybeans would be in 2005. The TA APH would be capped at (42.8 + 0.30) = 43.10. Table 3 shows the highest average yield (70.0) for wheat would be in 2010. The TA APH would be capped at (70.0 + 0.67) = 70.67. The TA APH could not exceed these caps. So the highest our farmer could expect their APH to trend upward is to 165.44 for irrigated corn, 43.1 for soybeans, and 70.67 for wheat. Table 1 reveals that our hypothetical farmer could increase their APH yield by close to 6 bushels per acre by electing to use the TA option. A soybean farmer could increase APH yield by 1.65 bushels per acre from electing to use the TA option (table 2). A wheat producer could increase APH yield by 3.69 bushels per acre from electing to use the TA option (table 3).

The TA APH yield endorsement does not cost the producer anything to elect but will change the amount of coverage through the APH, which may change the cost of the premium.

Years of Yield History

A farmer's total trend adjustment depends on the number of years of yield history used to calculate the APH. To receive 100 percent of the trend adjustment, a producer will need to have at least 4 or more years of a yield history in the last 12 years. Producers with yields for 3 out of the last 12 years will be able to receive 75 percent of the trend adjustment; those with a yield history for 2 out of the last 12 years will only receive 50 percent of the trend adjustment; and those with yields for 1 out of the past 12 years will only receive 25 percent of the trend adjustment.

Table 2	Trend Adjusted Yield Example, Soybeans in Queen Anne's County, 2014		
Year	Actual Yield	Trend Adjustment	Trend Adjusted Yield
2004	29.40	3.00	32.40
2005	42.80	2.70	45.50
2006	33.30	2.40	35.70
2007	32.50	2.10	34.60
2008	26.80	1.80	28.60
2009	29.00	1.50	30.50
2010	42.50	1.20	43.70
2011	40.10	0.90	41.00
2012	40.40	0.60	41.00
2013	41.50	0.30	41.80
APH = 35.80	TA = 0.30	TA APH = 37.48	

Table 3	Trend Adjusted Yield Example, Wheat in Queen Anne's County, 2015		
Year	Actual Yield	Trend Adjustment	Trend Adjusted Yield
2005	60.00	6.03	66.03
2006	63.50	5.36	68.86
2007	64.20	4.69	68.89
2008	51.20	4.02	55.22
2009	55.60	3.35	58.95
2010	70.00	2.68	72.68
2011	68.30	2.01	70.31
2012	62.30	1.34	63.64
2013	56.30	0.67	56.97
2014	66.70	0.00	66.70
APH = 61.80	TA = 0.67	TA APH = 64.83	

Table 4	Comparison of per Acre Guarantee Based on Coverage Level With and Without TA	
Coverage Level	Bushel Guarantee APH = 135 (No TA)	Bushel Guarantee TA-APH = 143 (with TA)
50%	67.50	71.50
55%	74.25	78.65
60%	81.00	85.80
65%	87.75	92.95
70%	94.50	100.10
75%	101.25	107.25
80%	108.00	114.40
85%	114.75	121.55

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The real benefit of electing the TA option is that it could allow a producer to buy a lower level of coverage, but because of the trend adjustment still receive the higher coverage.

Premiums

The TA APH yield endorsement does not cost the producer anything to elect but will change the amount of coverage through the APH, which may change the cost of the premium. The same amount of coverage available from using the TA election always costs less or the same as it would cost to purchase the increased protection by increasing the level of coverage without TA. The real benefit of electing the TA option is that it could allow a producer to buy a lower level of coverage, but because of the trend adjustment still receive the higher coverage. Consider a producer with an APH of 135 who typically buys coverage at the 75-percent level at 101.25 bushels per acre coverage (table 4). By electing to use the TA endorsement, the producer could potentially gain the same level of coverage at the 70-percent level (table 4). A producer could experience premium savings by being able to buy down coverage levels. ■

Appendix 1	2014 Irrigated and Non-Irrigated Corn, 2014 Soybean, 2015 Wheat Trend Adjustment Rates in Maryland		
County	Corn	Soybean	Wheat
Allegany	0.51	-	0.00
Anne Arundel	1.13	0.37	0.00
Baltimore	1.13	0.37	0.63
Calvert	0.99	0.22	0.00
Caroline	Non-Irrigated =1.03; Irrigated = 1.22	0.24	0.62
Carroll	1.10	0.36	0.76
Cecil	1.00	0.39	0.58
Charles	0.97	0.17	0.00
Dorchester	Non-Irrigated =1.09; Irrigated = 1.24	0.23	0.69
Frederick	0.99	0.36	0.76
Garrett	1.27	-	0.00
Harford	1.06	0.41	0.68
Howard	1.14	0.33	0.76
Kent	Non-Irrigated = 0.89; Irrigated = 0.90	0.33	0.76
Montgomery	1.14	0.36	0.76
Prince George's	1.07	0.35	0.00
Queen Anne's	Non-Irrigated = 0.99; Irrigated = 1.04	0.30	0.67
St Mary's	0.98	0.17	0.00
Somerset	1.05	0.29	0.76
Talbot	Non-Irrigated = 0.97; Irrigated = 1.02	0.22	0.57
Washington	0.50	0.42	0.68
Wicomico	Non-Irrigated = 1.03; Irrigated = 1.09	0.25	0.00
Worcester	Non-Irrigated = 1.05; Irrigated = 1.08	0.28	0.51

Note: *Unless otherwise stated, TAs for irrigated and non-irrigated are the same.
Source: USDA-Risk Management Agency

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