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## Use of YA, YE, and TA in Determining Yield for Crop Insurance

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Farmers and other insureds often have alternatives for determining yields used in crop insurance guarantee and premium calculation resulting from Yield Adjustment (YA), Yield Endorsement (YE), and Trend-Adjustment Yield Endorsement (TA). The *APH Yield Calculator* has been added to the [2016 Crop Insurance Decision Tool](#) to aid in evaluating these alternatives. As a general rule, farmers should pick the alternative resulting the highest Actual Production History (APH) yield. Often, this results from 1) using TA, 2) using YE in years where it is available and excluding the yield increases the Actual Production History (APH) yield, and 3) using YA is the actual yield is below the YA substitute yield and YE is not available.

### YA, YE, and TA

When more than four years of yields exist, yields used in determining guarantees and premiums for crop insurance typically are based on the insurable unit's actual yields. In certain cases, APH yields can be adjusted using Yield Adjustment (YA), Yield Endorsement (YE), and Trend Adjustment Endorsement (TA).

**Yield Adjustment (YA):** YA allows 60% of the T-yield to replace the actual yield, where the T-yield – or transitional yield – is specified by the Risk Management Agency (RMA). Use of YA may be advantageous when the actual yield is below 65% of the T-yield. Take a T-yield of 125 bushels per acre as an example. In this case, YA allows substitution of 75 bushels per acre ( $.60 \times 125$  T-yield) for any yield below 75. A YA substitution is not automatic. It must be requested by the insured.

**Yield Endorsement (YE):** The 2012 Farm Bill instituted YE. YE allows eligible years to be excluded from APH yield calculation. For a year to be excludable, the county or its contiguous counties had to have a yield below 50% of the average of the previous 10-years of county yields. RMA makes YE determinations. Generally YE is advantageous to take when taking YE results in a higher APH yield (see [farmdoc daily January 13, 2015](#) for more detail on YE).

**Trend-Adjustment Yield Endorsement (TA):** TA allows farmers to add a specified trend factor to the actual yield. TA factors are published by RMA for counties where TA is available. Take a county with a 1.58 factor. The 1.58 factor represents the average increase in yields over time. The 1.58 will be multiplied by the number of years in the past and added to the actual yield. In this case, using TA allows 1.58 bushels to

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be added to one year in the past, 3.16 bushels to a yield two years in the past ( $3.16 = 1.58 \times 2$ ), 4.74 bushels to a yield three years in the past ( $4.74 = 1.58 \times 3$ ), and so on. Taking TA almost always results in a higher guarantee yield (click [here](#) for more information).

### YA, YE, and TA Decisions and the 2016 Crop Insurance Decision Tool

Impacts of YA, YE, and TA decisions can be evaluated in the *APH Yield Calculator* contained within the *2016 Crop Insurance Decision Tool* (available for download [here](#)). Figure 1 shows an example of the calculator for corn grown in Saline County, Illinois. This example uses county yields as the actual yields: 139 bushels per acre for 2006, 126 for 2007, 153 for 2008, 163 for 2009, 133 for 2010, 132 for 2011, 50 for 2012, 171 for 2013, 188 for 2014, and 187 for 2015 (see Figure 1).

**Figure 1. APH Yield Calculator in the 2016 Crop Insurance Decision Tool**

Year of Calculations: 2016		<a href="#">Link to Premium Calculator</a>		<b>Trend Adjustment Data</b>	
State:	Illinois	County Trend:	1.58	County Trend:	100%
County:	Saline	Yearly Adjustment:	1.58		
Crop:	Corn				
Type:	Grain				
Practice:	Non-irrigated	2016 T-yield	132		
No of yields:	10	APH yield floor <sup>1</sup>	106		

This spreadsheet calculates yields for premium generation under the following options:  
**Yield Adjustment (YA)** -- 60% of applicable T-yield can be substituted for an actual yield  
**Yield Exclusion (YE)** -- if allowed, the yield can be excluded from APH calculation.  
**Trend Adjustment (TA)** -- if available and actual yields exist, a producer can elect to add a trend to yields for APH calculation.  
This sheet works only for actual and transition yields. Calculations may not be correct for other yield types.

Last year's APH without YE / TA <sup>2</sup> :		Eligible for Trend-Adjustment <sup>3</sup> :		yes
Use yield floors and cups <sup>5</sup> :		Use TA <sup>4</sup> :		yes
		Highest possible TA yield <sup>6</sup> :		190

Year	Substitute Yield <sup>7</sup>	Availability		Actual Yield Available	Actual Yield	Use YA/YE <sup>10</sup>	Use T-yield	Rate Yield	Adjusted Yield	Yield TA/YE
		YA <sup>8</sup>	YE <sup>9</sup>							
2006	60	no	no	yes	150	none	no	150	150	166
2007	67	no	no	yes	126	none	no	126	126	140
2008	67	no	no	yes	153	none	no	153	153	166
2009	67	no	no	yes	163	none	no	163	163	174
2010	75	no	no	yes	133	none	no	133	133	142
2011	75	no	no	yes	132	none	no	132	132	140
2012	75	yes	yes	yes	50	no	no	50	50	56
2013	79	no	no	yes	171	none	no	171	171	176
2014	79	no	no	yes	188	none	no	188	188	191
2015	79	no	no	yes	187	none	no	187	187	189

Rate Yield <sup>11</sup> 145

Adjusted Yield (or APH without YE and TA) <sup>12</sup> 145

Approved Yield for TA/YE (or APH with YE and TA) <sup>13</sup> 154

Use Yields and Return to Premium Calculator

**fdd**

The calculator reports the following information for a county – crop selection:

- The TA factor. The factor is 1.58 bushels per acre for corn in Saline County (See Figure 1)
- The 2016 T-yield. The 2016 T-yield for corn in Saline County is 132 bushels per acre (See Figure 1)
- YA substitute yields. YA substitute yields equal 65% of the respective year's T-yield. For Saline County, the substitute yields range from 60 bushels per acre in 2006 up to 79 bushels per acre in 2015.

- Eligibility for YE. Years in which YE are indicated by a “use” in the YE eligibility column. For Saline County, the actual corn yield in 2012 can be excluded.

The calculator reports the three yields needed to quote premiums:


- Rate yield usually is the average of all actual yields. In the example, the rate yield is 144 bushels per acre.
- Adjusted yield (or APH without YE and TA) includes the effects of YA substitutions.
- Approved yield (or APH with YE and TA). This yield includes TA adjustments and eliminates years where YE is selected. In the example, the approved yield is 153 bushels per acre. If TA and YE are not used, the approved yield equals the adjusted yield.

The farmer in this Saline County case has three decisions:

1. Use or not use TA. Figure 1 shows the case using TA, resulting in an approved yield of 154 bushels per acre. Without TA, the approved yield is 144 bushels per acre, the same as the rate yield in this case.
2. Use of not use YA in 2012. The actual yield of 50 bushels per acre is below the substitute yield of 75 bushels per acre. Figure 2 shows the selection of YA, as indicated by the “YA” in the 2012 row. YA selection, along with the selection of TA, results in an adjusted yield of 147 bushels per acre and an approved yield of 157 bushels per acre
3. Use or not use YE in 2012. The 2012 yield also can be excluded because of YE. If YE is selected, 2012 is not included in the calculation of the approved yield (see Figure 3). The approved yield in this case become 164 bushels per acre (see Figure 3).

For this Saline County case, both YA and YE are available for 2012; however, both YA and YE cannot be used in 2012. A choice needs to be made between using YA, YE, or the actual yield.

In most cases, it will be to the farmers benefit to choose the alternative resulting in the highest APH yield. In the above Saline County case, this will be 1) to use TA and 2) to exclude 2012 using YE. Doing so results in an approved yield of 164 bushels per acre.



### Figure 2. APH Yield Calculator with YA Selected

Last year's APH without YE / TA <sup>2</sup> : <input type="text" value=""/>				Eligible for Trend-Adjustment <sup>3</sup> : <input type="text" value="yes"/>		Use TA <sup>4</sup> : <input type="text" value="yes"/>				
Use yield floors and cups <sup>5</sup> : <input type="text" value="yes"/>				Highest possible TA yield <sup>6</sup> : <input type="text" value="190"/>						
Year	Substitute Yield <sup>7</sup>	Availability YA <sup>8</sup> YE <sup>9</sup>		Actual Yield Available	Actual Yield	Use YA/YE <sup>10</sup>	Use T-yield	Rate Yield	Adjusted Yield	Approved Yield TA/YE
2006	60	no	no	yes	150	none	no	150	150	166
2007	67	no	no	yes	126	none	no	126	126	140
2008	67	no	no	yes	153	none	no	153	153	166
2009	67	no	no	yes	163	none	no	163	163	174
2010	75	no	no	yes	133	none	no	133	133	142
2011	75	no	no	yes	132	none	no	132	132	140
2012	75	yes	yes	yes	50	YA	no	50	75	81
2013	79	no	no	yes	171	none	no	171	171	176
2014	79	no	no	yes	188	none	no	188	188	191
2015	79	no	no	yes	187	none	no	187	187	189

Use Yields and Return to Premium Calculator

Rate Yield <sup>11</sup>   
 Adjusted Yield (or APH without YE and TA) <sup>12</sup>   
 Approved Yield for TA/YE (or APH with YE and TA) <sup>13</sup>

**Figure 3. APH Yield Calculator with YE Selected**

Last year's APH without YE / TA <sup>2</sup> :		Eligible for Trend-Adjustment <sup>3</sup> :		yes	
Use yield floors and cups <sup>5</sup> :		Use TA <sup>4</sup> :		yes	
		Highest possible TA yield <sup>6</sup> :		190	

Year	Substitute Yield <sup>7</sup>	Availability		Actual Yield Available	Actual Yield	Use YA/YE <sup>10</sup>	Use T-yield	Rate Yield	Adjusted Yield	Approved Yield TA/YE
		YA <sup>8</sup>	YE <sup>9</sup>							
2006	60	no	no	yes	150	none	no	150	150	166
2007	67	no	no	yes	126	none	no	126	126	140
2008	67	no	no	yes	153	none	no	153	153	166
2009	67	no	no	yes	163	none	no	163	163	174
2010	75	no	no	yes	133	none	no	133	133	142
2011	75	no	no	yes	132	none	no	132	132	140
2012	75	yes	yes	yes	50	YE	no	50	50	
2013	79	no	no	yes	171	none	no	171	171	176
2014	79	no	no	yes	188	none	no	188	188	191
2015	79	no	no	yes	187	none	no	187	187	189

Use Yields and Return to Premium Calculator	Rate Yield <sup>11</sup>	145
	Adjusted Yield (or APH without YE and TA) <sup>12</sup>	145
	Approved Yield for TA/YE (or APH with YE and TA) <sup>13</sup>	165

## Caveats

The above example is relatively straightforward as there are ten actual yields on which to base the rate, adjusted, and approved yields. Situations become more complicated when four or less actual yields are available. In these case, T-yields enter into the calculation of APH yields.

There also are yield floors on APH yield (106 bushels per acre in the example in Figure 1). And the APH yield cannot go down more than 10% from last year's APH in certain situations. Eligibility to use yield floors and caps is intertwined with use of YA, YE, and TA.

## Summary

Most farmers will find it to their advantage to have the highest yield in determining the insurance guarantee. If sufficient yield data exists, the following choices usually result in the highest APH yield:

- Use of TA,
- Use of YE when using the actual yield results in a lower approved yield than with using YE, and
- Use of YA when the actual yield is below the substitute yield and YE is not available.

There are exceptions to the above guidelines.

## References

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