

Determining Net Returns

One of the most frequently asked questions involves how BMP CHALLENGE determines their corn price and calculates a farmer's contribution or payment. Below is a step-by-step look at those calculations.

Corn Price Setting

The corn price is determined off the USDA Risk Management Agency's price elections, which are used for all of the USDA crop insurance programs. Price elections do not regulate or determine the actual corn price, which may fluctuate by the fall harvest. However, this price often has reflected general corn prices and remains a good measure of comparison for loss or gain.

In 2006, the price shifted from \$2.20 in January to \$3.20 at the end of the season. With such dramatic changes, farmers are sure to increase nutrient applications to increase their likelihood of bumper crops. In such situations, losses are made more extreme by larger variations in yields. Though some losses were quite dramatic, net returns averaged at \$0.76 per acre due to fertilizer cost savings.

The 2007 corn price has been set at \$3.50 per bushel for corn grown for grain, and \$25.00 per ton for corn grown for silage (price for Iowa, Minnesota and Wisconsin only).

Explanation of Calculations

To calculate the net return for a field, BMP CHALLENGE uses the following equation:

$$\text{Net Return} = ((\text{Check-Strip Yield} - \text{BMP-Strip Yield}) \times \text{Corn Price}) - \text{Fertilizer/Tillage Savings}$$

Yield Difference

BMP CHALLENGE uses a one-pass check-strip, determined as a representative portion of the field with help from the crop advisor prior to applications or tillage. The check-strip receives the conventional rate of nutrients or tillage practice. Adjacent BMP strips, which receive BMP rates, are compared to the check-strip at harvest.

Yields can be measured in bushels or tons per acre, for corn grown for grain or silage, respectively.

Fertilizer/Tillage Savings

Cost savings are determined by comparing the cost of applications or tillage for the check-strip versus the BMP-strips.

Nutrient BMP CHALLENGE

For Nutrient BMP CHALLENGE the cost savings can be determined by subtracting the conventional and BMP application rates, per acre, and multiplying that number by the cost per pound, see below.

Fertilizer Savings = (Conventional Rate – BMP Rate) x Fertilizer Cost

Example

$$= (180 \text{ lbs/acre} - 150 \text{ lbs/acre}) \times \$0.40/\text{lbs N} = \$12.00/\text{acre Savings}$$

Reduced Tillage BMP CHALLENGE

In the Reduced Tillage BMP CHALLENGE, tillage rates are determined by using a Purdue developed program (WinMax), which is updated annually. Outside custom rates can be used if previously given permission and all rates are kept consistent with the new source. Calculations are determined by comparing the two custom rates, see below.

Tillage Savings = (Conventional Tillage Cost – Conservation Tillage Cost)

Example

$$\begin{array}{l} \text{Chisel Plow – Ridge-Till} \\ = (\$11.09/\text{acre} - \$10.01/\text{acre}) = \$1.08/\text{acre Savings} \end{array}$$

Tillage costs may have to factor in multiple passes, as with a fall till, or additional field management, as in weed management. The Reduced Tillage BMP CHALLENGE works on the principle of tillage reduction and, hence, a reduction in tillage cost for any success. Past experience has shown that not all conservation tillage practices offer cost reductions with their use. These operations should be avoided or dealt with to manage the inherent negative net returns.

Case Examples

Reduced Tillage BMP CHALLENGE – Minnesota *

Acres: 5.3 acres

Check-strip: Field Cultivator \$13.23/acre 158 bu/acre

and No-Till Rental

BMP-strip: No-Till Rental \$ 5.00/acre 83.2 bu/acre

Yield Difference: Check-strip – BMP-strip = 158 – 83.2 = 74.8 bu/acre

Yield Loss Value: Yield Difference x Corn Cost = 74.8 bu/acre x \$3.50/bu = -\$261.80/acre

Tillage Cost Savings: Field Cultivator – No-Till = \$12.00 - \$0.00 = \$12.00/acre

Net Return: Yield Value – Tillage Cost Savings = -\$261.80 + \$12.00 = -\$248.20/acre

Performance Guaranty Payment: Net Return x Acres = \$248.20 x 5.3 = \$1,315.46

Nutrient BMP CHALLENGE – Ohio*

Acres: 75 acres Commercial Nitrogen Cost: \$0.26/lbs

Check-strip: 185 lbs/acre \$48.10/acre 165.3 bu/acre

BMP-strip: 146 lbs/acre \$37.96/acre 163.7 bu/acre

Yield Difference: Check-strip – BMP-strip = 165.3 – 163.7 = 1.6 bu/acre

Yield Loss Value: Yield Difference x Corn Cost = 1.6 bu/acre x \$3.50/bu = -\$5.60/acre

Nutrient Cost Savings: \$48.10 - \$37.96 = \$10.14/acre

Net Return: Yield Value – Nutrient Cost Savings = -\$5.60 + \$10.14 = \$4.54/acre

Total Net Return: Net Return x Acres = \$4.54 x 75 = \$340.50

Contribution Value: Net Return x 1/3 = \$4.54 x 1/3 = \$1.51/acre

Contribution Payment: Contribution Value x Acres = \$1.51 x 75 = \$113.25

Savings: Total Net Return – Contribution Payment = \$340.50 - \$113.25 = \$227.25

* Example uses tillage costs, yield and acreage values. Yield Value based on 2007 USDA-RMA corn price.