2014 - 2016 Intensive Management Trial

Purpose: Soybean producers are trying to improve soybean yields and many are willing to manage the crop more intensively to achieve this goal. University researchers have collaborated to conduct intensive management or "kitchen sink" trials in recent years. These trials are designed to determine which products and management practices contribute to higher soybean yields. Nearly all of the research has been done in small plots. The purpose of this trial was to determine the effect of an intensive management treatment (seed treatment followed by a foliar three-way tank mixture application) on soybean yields in 2014, 2015 and 2016.
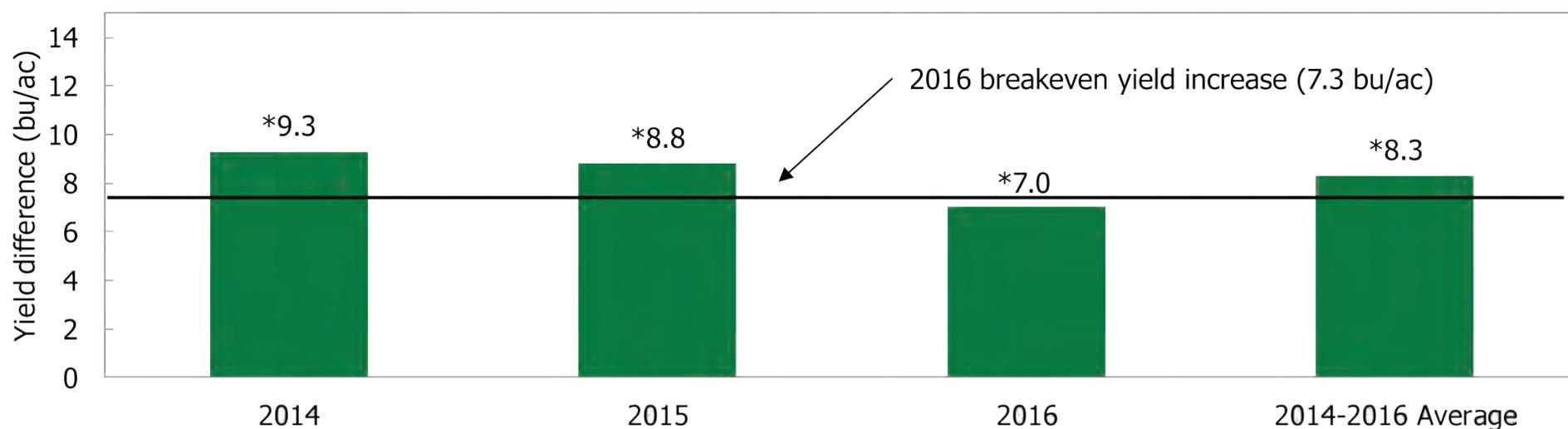
Procedure: An intensive management treatment (seed treatment followed by a foliar three-way tank mixture application) was compared to an untreated control treatment (no seed treatment and no foliar tank-mix application) by the same producer at one location in 2014, 2015, and 2016. The seed treatment was Poncho®/VOTiVO® and Acceleron® in 2014 and 2015 and Clariva™ Complete plus Acceleron in 2016. The Acceleron was a combination of three fungicides (pyraclostrobin, metalaxyl, fluxapytoxad). The same foliar tank mixture was applied each year of the project and included Priaxor™ (fungicide) from BASF, Fastac™ (insecticide) from BASF and PhosFix™ 7-4-9 (fertilizer) from the Andersons Inc. Priaxor was applied at 4 ounces per acre, Fastac was applied at 3.8 ounces per acre and PhosFix was applied at 1 quart per acre. The foliar applications were made at R3 and the sprayer was driven through the untreated control treatments to prevent tire tracks from being a factor.

Table 1. Intensive soybean management effects on soybean yields and income in Sanilac County in 2014 through 2016

Treatment	2014	2015	2016	2014 - 2016 Average	*2014 - 2016 Average income
	------------------ Yield (bu/ac) ------------------				------- $/ac ------
Untreated control	53.0 b	65.8 b	66.3 b	61.7 b	$568
Intensive management	62.3 a	74.5 a	73.3 a	70.0 a	$577
LSD$_{0.10}$	2.6	1.1	2.5	1.2	

*Using 2016 soybean prices, product costs and application costs
Acceleron and Clariva Complete seed treatment cost = $26.00 per acre
Priaxor fungicide cost = $18.60 per acre
Fastac insecticide cost = $4.10 per acre
PhosFix (7-4-9) cost = $10.50 per acre
Foliar application cost = $7.50 per acre

Figure 1. Yield difference due to intensive management practices
(seed treatment followed by a foliar tank mixture)

* The yield difference was statistically significant in these years.

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Results: The intensive management treatment increased soybean yields by 9.3 bushels per acre in 2014, by 8.8 bushels per acre in 2015 and by 7 bushels per acre in 2016 at one location in Sanilac County (figure 1). The seed treatments used in the intensive management program also increased plant stands by nearly 31,000 plants per acre in 2014, by more than 19,000 plants per acre in 2015 and by nearly 10,000 plants per acre in 2016 (table 2). The higher plant stands were probably not responsible for the yield increase as plant stands in the untreated control were adequate to maximize yield. The intensive management treatment generated $26.00 per acre more income than the untreated control treatment in 2014, $12.00 per acre more than the untreated control treatment in 2015, but was less profitable than the untreated control in 2016.

We want to thank BASF and the Andersons Inc. for providing and delivering the products and Martin Nagelkirk for coordinating this trial.

2014 through 2016 intensive management trial locations

2014 ★
2015 ☆
2016 ★

Table 2. Intensive soybean management effects on plant stands at harvest in Sanilac County in 2014 through 2016

Treatment	2014	2015	2016	2014 - 2016 Average
	-------------- Plant stand at harvest (plants/ac) --------------			
Untreated control	142,900 b	147,300 b	145,800 b	145,400 b
Intensive management	173,700 a	166,500 a	155,400 a	165,100 a
$LSD_{0.10}$	18,000	1,004	4,359	7,755

Drone image of the 2016 intensive management trial