BECK'S Soybean Fertilizer Placement Study - 2012

Planted: May 23, 2012
Harvested: November 3, 2012
Population: 140,000 seeds/A.
Rows: Eight 30" rows
Replications: Three (averaged)

Previous Crop: Corn
Tillage: Chisel / Reel Disk
Herbicide: 5 oz. Verdict & 24 oz. Durango
Product Tested: BECK 322NR™*

RAINFALL	
April	3.64 in.
May	2.20 in.
June	0.90 in.
July	1.15 in.
August	5.10 in.
Total	12.99 in.

Purpose: This soybean study was designed to evaluate foliar and in-row applications of liquid fertilizers 7-22-5, 0-0-14 and PMAX Plus™. 7-22-5 is a liquid poly phosphate starter fertilizer. 0-0-14 is liquid muriate of potash. PMAX Plus is a combination of PMAX and 7-20-3 ammonium polyphosphate liquid fertilizer and micronutrients: copper, zinc, iron and manganese. These products were evaluated in three different application methods including a foliar spray, YDrop™ precision placement and knife injection. The goal of this study was to evaluate any yield effects of placing liquid fertilizer 2 - 3" from the soybean row, down the center of a 30" row or as a foliar spray, all at the R3 growth stage.

YDrop is a versatile system that can be installed on almost any spray machine and has the ability to precision place any liquid product within 2 - 3" of a crop row. Its unique design allows liquid products to be applied within the row at anytime throughout the season. We installed the YDrop on a New Holland SP275F high clearance sprayer (Figure 1 & 2). The New Holland was also used to make foliar PMAX Plus spray applications over the top of the soybeans.

A Hagie STS10 (Figure 3, page 201) was also used in this study to place fertilizer product by way of a front mount liquid toolbar with knife injection (Figure 4, page 201). Fertilizer placement was at 4 - 5" depths in the center of a 30" row.

Treatment	Percent Moisture	Bushels† Per Acre	Bu./A. Difference	Net^ Return	Net Advantage
Control	12.9	33.3	----	$439.56	----
5 gal. 7-22-5 + 10 gal. 0-0-14 Hagie Knife	12.9	36.0	2.7	$439.70	+$0.14
5 gal. 7-22-5 + 10 gal. 0-0-14 YDrop™	12.8	38.7	5.4	$475.34	+$35.78
2 gal. PMAX Plus @ R3 Hagie Knife	12.9	33.9	0.6	$418.36	-$21.20
2 gal. PMAX Plus @ R3 Foliar	12.7	37.3	4.0	$463.24	+$23.68
2 gal. PMAX Plus @ R3 YDrop	12.8	35.9	2.6	$444.76	+$5.20
AVERAGE	12.8	35.9		$446.80	

†Bushels per acre corrected to 13% moisture.
*XL® brand seed is distributed by Beck's Superior Hybrids, Inc. XL® is a registered trademark of DuPont Pioneer.
^Net return based on $13.20/Bu. soybeans. PMAX Plus $11.56/gal. 7-22-5 $3.00/gal. 0-0-14 $1.45/gal. Application cost of $6.00/A.
PMAX Plus is a trademark of Midtech R&D, Inc. YDrop is a trademark of Ag Alternatives, Inc.

Figure 1. YDrop™ in 30" soybean rows.

Figure 2. New Holland equipped with YDrop™.

BECK'S Soybean Fertilizer Placement Study - Continued

Summary: YDrop™ applications of 7-22-5 and 0-0-14 offered average yield gains of 5.4 Bu./A. with returns near $36.00/A. The YDrop's ability to precision place fertilizer at the base of the soybean plant allowed for fast and easy uptake of nutrients. Even though the drought of 2012 limited rainfall, the YDrop was able to place fertilizer in the "wet zone", or the area just near the base of the plant that is typically shaded in a 30" row. This allowed for higher amounts of soil moisture to aid in fertilizer uptake.

Hagie applications of 7-22-5 and 0-0-14 offered yield advantages of 2.7 Bu./A. This lower yield response was most likely due to the fertilizer placement being too far away from the soybean row. It was difficult for soybean plants to utilize the fertilizer product in dry hot soils this season. PMAX Plus applications through the Hagie showed a similar response. When applied in the middle of the row, yield increases were only 0.6 Bu./A. However when YDrop applications placed the PMAX Plus, yields increased to 2.6 Bu/A. and, more importantly, had positive net returns of over $5.00/A.

The New Holland was also used to make foliar applications of PMAX Plus. These treatments performed excellent with yield gains of 4.0 Bu./A. and net returns of $23.68/A. 0-0-14 and 7-22-5 were not used as foliar treatments in this study.

The drought of 2012 played in large role in the outcome of this study. More research needs to be done to analyze these fertilizer treatments and how they are placed and applied.

Figure 3. Hagie equipped with front mount liquid toolbar.

Figure 4. Coulter/Knife injection in 30" rows.

Figure 5. Hagie and YDrop™ side by side.