

BECK'S Nitrogen Timing Study on Continuous Corn - 2013

PLANTED: May 7, 2013
HARVESTED: September 23, 2013
POPULATION: 35,000 seeds/A.
ROWS: Six 30" rows
REPLICATIONS: Two (averaged)

PREVIOUS CROP: Corn
TILLAGE: Chisel / Reel Disk
HERBICIDE: Pre: 8 oz. Verdict™
 Post: 24 oz. Durango®
INSECTICIDE: Escalate®
PRODUCT TESTED: BECK 5475AMX™

RAINFALL	
April	8.80 in.
May	4.15 in.
June	4.30 in.
July	2.60 in.
August	0.40 in.
Total	20.25 in.

PURPOSE:

To evaluate various nitrogen timings in a corn after corn rotation. Application timings consisted of preplant incorporated, 2x2 starter at planting and various sidedress programs using liquid UAN 28% and dry urea. This study is designed to evaluate timing efficiencies, nitrogen loss and yield. The control in this study is the 100% preplant treatment which is 75 gallons of 28% applied in the spring and incorporated. All treatments received a total of 225 lbs. of nitrogen.

Treatment	Percent Moisture	Bushels [†] Per Acre	Bu./A. Difference	Net [^] Return
25 gal. Preplant f/b 25 gal. @ V6 f/b 25 gal. Sidedress @ V14	19.6	179.9	+7.50	\$953.46
38 gal. Preplant f/b 37 gal. Sidedress @ V10	19.4	187.3	+14.90	\$1002.42
30 gal. Preplant f/b 10 gal. 2x2 f/b 35 gal. Sidedress @ V4	20.2	184.2	+11.80	\$985.68
38 gal. Preplant f/b 37 gal. Sidedress @ V4	20.0	184.8	+12.40	\$988.92
40 gal. Preplant f/b 35 gal. YDrop™ Sidedress @ V10	20.1	183.4	+11.00	\$981.36
75 gal. Preplant (Control)	19.8	172.4	---	\$930.96
75 gal. Sidedress @ V3	20.1	166.5	-5.90	\$890.10
75 gal. Sidedress @ V6	19.9	154.9	-17.50	\$827.46
10 gal. 2x2 f/b 65 gal. Sidedress @ V3	19.5	172.2	-0.20	\$920.88
40 gal. Preplant f/b 228 lbs. Urea Broadcast @ V7	19.9	150.2	-16.30	\$806.08
AVERAGE	19.9	176.7		

[†]Bushels per acre and test weight corrected to 15% moisture.

[^]Net return is based on \$5.40 corn, \$5.00/A. urea application cost, \$9.00/A. sidedress application cost and \$0.65/lb nitrogen.

*XL® brand seed is distributed by Beck's Superior Hybrids, Inc. XL® is a registered trademark of DuPont Pioneer.

Verdict is a trademark of BASF. Durango is a registered trademark of Dow AgroSciences LLC. YDrop is a trademark of Ag Alternatives, Inc.

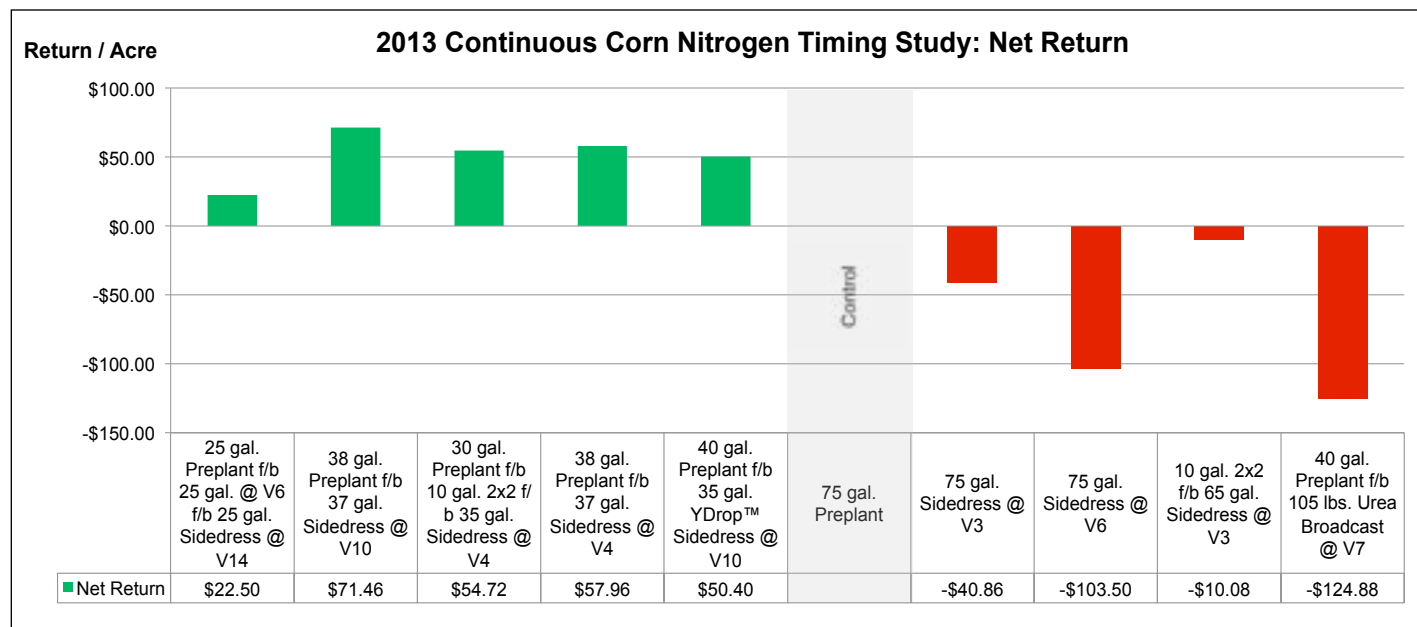


Figure 1.

BECK'S Nitrogen Timing Study on Continuous Corn - Continued

SUMMARY:

Figure 1 illustrates that liquid split applications of nitrogen offered 9.6 Bu./A. yield increases with an average return on investment of \$41.16/A. over the 100% preplant control. By implementing a split nitrogen application program, nitrogen losses can be limited along with the added benefit of allowing for later sidedressing with a larger window of time for applications to be completed.

This year we continued our research of later nitrogen applications by way of high-clearance tractors and nitrogen tool bars from Hagie Manufacturing, New Holland and Miller St. Nazianz. These high-clearance units are able to apply nitrogen to corn up to pre-tassel heights, which gives a much larger window of application for sidedressing. Our 2013 results of these V10 and later applications proved to increase yields by an average of 11.1 Bu./A. over the 100% preplant control and equated to higher returns of \$48.12/A. In addition, later sidedressing increased yields by 3.1 Bu./A. over standard V4 split application sidedressing. This yield increase would equate to higher returns of \$13.92/A. and suggests a possible advantage for sidedressing when corn is an active user of nitrogen.

YDrop™ applications were also made this year as an alternative approach to over the top sidedressing. 2013 was our second year of testing the YDrop system in our nitrogen management program. YDrop is a new drop system that can be installed on almost any spray machine and has the ability to precision place any liquid product within 2 - 3 inches of a crop row. Its unique design allows the ability to apply liquid products within the row at anytime throughout the season. We used the YDrop to place 28% UAN near the base of the plant for efficient nitrogen uptake. This year's results indicated the YDrop's yield was 11 bushels higher than that of the control and performed very similar to other sidedress type liquid applications. Photos 1 and 2 are of YDrop applications at the CILPFR nitrogen timing study.

The nitrogen applications that offered the lowest yields in this study were those that consisted of non-split applications, lower upfront nitrogen amounts, or dry urea sidedress nitrogen. Application timing of 100% sidedressing was typical of past results at the CILPFR. By applying 100% of our nitrogen at a V3 or V6 sidedress without a foundation program, yields suffered by 5.9 - 17.5 Bu./A. respectively compared to the control. Just extending the 100% sidedress from V3 to a later V6 sidedress, caused yield losses of 11.6 Bu./A. Corn after corn rotations suffer through a carbon penalty due to heavy amounts of residue from the previous corn crop. This high carbon load can immobilize nitrogen, deny uptake and compete with young corn plant's ability to access nitrogen. If we can split-apply our nitrogen as a foundation program followed by a sidedress application, we can help offset the carbon penalty and maintain adequate amounts of nitrogen throughout the entire season. Split- applications of nitrogen might offer a greater ability to "finish" nitrogen programs, increase yield potential and be more efficient with nitrogen applications. More research needs to be done to fully analyze all of the benefits, as well as disadvantages of this nitrogen program.

The dry urea sidedress program garnered some of the lowest yields of the study with 16.3 Bu./A. losses, due to limited amounts of rainfall soon after the urea was applied. This was also consistent with the corn after soybean nitrogen timing study on page 160.



Photo 1. YDrop™ precision sidedress placement.



Photo 2. New Holland SP275F with YDrop™ attachments installed.