



Optimum Nitrogen Rate Study – 2008

Planted: April 25, 2008
Harvested: October 15, 2008
Soil Type: Uniontown / Ragsdale Silt Loam
Population: 34,000 seeds/A.
Previous Crop: Soybeans

Tillage: Disc / Chisel
 Field Cultivator
Herbicide: 3 qts. Degree Xtra
 1 qt. Atrazine
 24 oz. Durango
Insecticide: 6 oz. Artic

RAINFALL	
April	4.64 in.
May	6.36 in.
June	3.12 in.
July	8.90 in.
August	<u>0.80 in.</u>
Total	23.82 in.

Purpose: Nitrogen fertilizer is necessary to aid crop growth and development. This study is designed to help our growers' better pinpoint the maximum return on investment for the amount of nitrogen they apply to their corn. These rates can change depending on a field's current rotation, the timing of application, and the method by which nitrogen is applied. By closely following the format used by the major midwest land grant universities, we have tested two hybrids at five different rates of nitrogen along with using three different application times to provide the most data possible to our growers. The continuous corn replication is in its eighth year of continuous corn. In contrast to the university format, applications were made in the same strips as the previous year in our continuous corn replication.

Brand	Nitrogen Rate	Preplant NH3		Sidedress 28% Liquid N (V3)		Sidedress 28% Liquid N (V6)		Bu./A. Avg.
		Corn Following Soybeans	Corn Following Corn	Corn Following Soybeans	Corn Following Corn	Corn Following Soybeans	Corn Following Corn	
BECK 5616VT3	0 lbs.	84.5	80.2					
BECK 6733HXR™**		<u>88.2</u>	<u>80.7</u>					
AVERAGE		86.4	80.5					
BECK 5616VT3	50 lbs.	107.0	99.5	134.6	108.1	121.2	104.0	112.4
BECK 6733HXR™**		<u>116.3</u>	<u>104.1</u>	<u>145.1</u>	<u>103.0</u>	<u>116.0</u>	<u>107.3</u>	115.3
AVERAGE		111.7	101.8	139.9	105.6	118.6	105.7	
BECK 5616VT3	100 lbs.	142.3	136.0	170.3	137.8	162.9	158.8	151.4
BECK 6733HXR™**		<u>149.3</u>	<u>118.1</u>	<u>192.3</u>	<u>131.8</u>	<u>165.9</u>	<u>151.5</u>	151.5
AVERAGE		145.8	127.1	181.3	134.8	164.4	155.2	
BECK 5616VT3	150 lbs.	199.1	175.2	212.3	182.4	173.0	190.5	188.8
BECK 6733HXR™**		<u>186.5</u>	<u>168.1</u>	<u>235.6</u>	<u>187.5</u>	<u>192.1</u>	<u>202.5</u>	195.4
AVERAGE		192.8	171.7	224.0	185.0	182.6	196.5	
BECK 5616VT3	200 lbs.	215.1	227.7	226.3	216.6	202.1	213.2	216.8
BECK 6733HXR™**		<u>247.8</u>	<u>148.2</u>	<u>219.1</u>	<u>216.5</u>	<u>219.9</u>	<u>219.2</u>	211.8
AVERAGE		231.5	188.0	222.7	216.6	211.0	216.2	

*Bushels per acre corrected to 15% moisture. **XL Brand distributed by Beck's Hybrids, Inc.

"Our whole family loves coming to Becknology Days each year, including grandchildren, farm worker, basket team, and friends. Every Beck's employee is so friendly and had smiles on their faces giving off a feeling to their guests that "I love my job"... You observe by the actions of the Beck family and employees that caring for their customers are #1 on their list. You know that your happiness and success really count. This is our 10th year plus to be associated with one of the most unique family owned companies in Indiana. Thank you Beck's for this life experience and some great crops."

Jean Rinehart and Family
 Burlington, IN





Optimum Nitrogen Rate Study – Continued

2008 Results – Bu./A. or \$ Net Return												
Corn Following Soybean Rotation (CAB)							Continuous Corn Rotation					
Lbs. N	Preplant	Net [^] Return	V3	Net [^] Return	V6	Net [^] Return	Preplant	Net [^] Return	V3	Net [^] Return	V6	Net [^] Return
0	86.4		86.4		86.4		80.5		80.5		80.5	
50	111.7	\$534.55	139.9	\$670.05	118.6	\$563.55	101.8	\$485.05	105.6	\$498.55	105.7	\$499.05
100	145.8	\$681.10	181.3	\$847.60	164.4	\$763.10	127.1	\$587.60	134.8	\$615.10	155.2	\$717.10
150	192.8	\$892.15	224.0	\$1,031.65	182.6	\$824.65	171.7	\$786.65	185.0	\$836.65	196.5	\$894.15
200	<u>231.5</u>	\$1,061.70	<u>222.7</u>	\$995.70	<u>211.0</u>	\$937.20	<u>188.0</u>	\$844.20	<u>216.6</u>	\$965.20	<u>216.2</u>	\$963.20
Avg	153.6		170.9		152.6		133.8		144.5		150.8	
Overall Corn After Soybean Average = 159.0 Bu./A.							Overall Continuous Corn Average = 143.0 Bu./A.					

Three Year Average (2006 – 2008) – Bu./A. or \$ Net Return												
Corn Following Soybean Rotation (CAB)							Continuous Corn Rotation					
Lbs. N	Preplant	Net [^] Return	V3	Net [^] Return	V6	Net [^] Return	Preplant	Net [^] Return	V3	Net [^] Return	V6	Net [^] Return
0	118.8		118.0		118.0		106.7		106.7		106.7	
50	144.3	\$697.38	173.9	\$840.30	166.6	\$803.63	130.4	\$627.80	146.8	\$704.78	141.3	\$677.09
100	167.4	\$789.32	197.7	\$929.49	197.0	\$926.15	156.6	\$734.96	167.5	\$778.50	170.6	\$794.10
150	194.6	\$900.91	216.3	\$993.40	206.8	\$945.47	184.1	\$848.51	200.5	\$913.97	209.1	\$956.99
200	<u>212.8</u>	\$968.25	<u>218.4</u>	\$974.36	<u>219.5</u>	\$979.49	<u>209.3</u>	\$950.77	<u>220.4</u>	\$984.12	<u>218.1</u>	\$972.65
Avg	167.6		184.9		181.6		157.4		168.4		169.2	
Overall Corn After Soybean Average = 178.0 Bu./A.							Overall Continuous Corn Average = 165.0 Bu./A.					

[^]Net Return based gross income minus cost of nitrogen. Nitrogen prices based on \$785/ton NH₃ for preplant and \$330/ton 28% liquid nitrogen for sidedress. Corn price is based on \$5.00/Bu. Bold numbers indicate the highest net return for each application timing.

Summary: Just as in the previous two years, the general yield trend continued to increase as more nitrogen was added per acre, but net return did not always correlate with higher yields. A significant yield advantage was noted for sidedressing nitrogen at V3 as opposed to preplanting nitrogen in corn after soybean rotation. This is most likely due to heavy nitrogen loss during the spring. The V6 side-dress application in the corn after corn rotation still showed a distinct advantage over pre-planting but no benefit was seen in the corn/soybean rotation.

Corn Following Soybeans:

The overall average yield for corn following soybeans replication was 16.0 Bu./A. higher than the corn after corn rotation in 2008. The three year summary shows a 13.0 Bu./A. advantage. The optimum nitrogen rate for the pre-plant application both in 2008 and the three year summary was 200 lbs. per acre whereas 150 lbs. per acre is the optimum rate for the V3 side-dress application. Both the 2008 data and three-year summary show that 200 lbs. per acre is the optimum rate for a V6 side-dress application.

Continuous Corn

In 2008, nitrogen applications were made into the same strips where applications were made in 2006 and 2007. (The strips where the 200 lb. rate was applied in 2006 was followed by an application of 200 lbs. again in 2007 and in 2008). This was done in order to show both the affect on yield and return on investment over the long term use of these nitrogen rates. The 2008 results show that both the pre-plant and side-dress applications provided their highest net returns at the 200 lb. rate. The three year summary reflects this same trend. Comparing these results to other studies that are in a corn after corn rotation, it appears that increased net returns would be expected at rates at least as high as 225 lbs. per acre.

Please remember that net return is greatly affected by both the price of nitrogen and the price of corn. As nitrogen prices decrease and/or corn prices increase, return on investment will increase. These figures are simply meant to show trends over time and as a guideline for determining return on investment for added nitrogen fertilizer. It is important to recalculate using your nitrogen purchase price and expected average corn price as well as to conduct some on-farm testing to determine the optimum nitrogen rate for your operation.