



## Corn Nitrogen Timing Study – 2007

RAINFALL	
April	3.08 in.
May	3.17 in.
June	2.97 in.
July	1.24 in.
August	<u>0.72 in.</u>
Total	11.18 in.

**Planted:** April 20, 2007  
**Harvested:** September 10 / 14, 2007  
**Soil Type:** Uniontown / Ragsdale Silt Loam  
**Population:** 32,000 / 34,000 seeds/A.

**Previous Crop:** Soybean / Corn  
**Tillage:** Chisel / Field Cultivator  
**Herbicide:** Degree Xtra / Atrazine  
 Roundup Original Max  
**Insecticide:** Artic

**Purpose:** Nitrogen fertilizer is necessary to aid crop growth and development. This study is designed to help our growers to 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 four 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 seventh 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 5616CBRR	0 lbs.	119.4	81.0					
BECK 6722CBRR		145.2	94.7					
BECK 7916CBRR		136.3	73.0					
BECK 5444CBRR		<u>133.3</u>	<u>79.4</u>					
AVERAGE		133.5	82.0					
BECK 5616CBRR	50 lbs.	147.1	88.6	203.6	125.0	197.5	133.5	149.2
BECK 6722CBRR		177.0	129.4	212.5	152.7	220.6	153.3	174.3
BECK 7916CBRR		142.9	105.3	199.8	122.5	196.7	113.6	146.8
BECK 5444CBRR		<u>159.5</u>	<u>88.9</u>	<u>219.8</u>	<u>176.3</u>	<u>192.3</u>	<u>127.5</u>	160.7
AVERAGE		156.6	103.0	208.9	144.1	201.8	132.0	
BECK 5616CBRR	100 lbs.	172.0	121.1	228.9	178.0	227.7	178.7	184.4
BECK 6722CBRR		182.5	145.8	242.9	200.5	245.0	217.9	205.8
BECK 7916CBRR		181.6	138.5	191.4	145.3	198.0	180.7	172.6
BECK 5444CBRR		<u>188.5</u>	<u>143.0</u>	<u>243.8</u>	<u>173.2</u>	<u>233.2</u>	<u>143.6</u>	187.6
AVERAGE		181.2	137.1	226.8	174.3	226.0	155.9	
BECK 5616CBRR	150 lbs.	204.8	204.3	231.2	203.6	234.9	210.4	214.9
BECK 6722CBRR		215.1	165.8	247.0	224.3	256.1	236.4	224.1
BECK 7916CBRR		183.9	164.2	218.3	192.7	214.5	195.1	194.8
BECK 5444CBRR		<u>226.8</u>	<u>160.3</u>	<u>255.6</u>	<u>165.3</u>	<u>232.0</u>	<u>213.3</u>	208.9
AVERAGE		207.7	166.3	238.0	196.5	234.4	213.8	
BECK 5616CBRR	200 lbs.	219.6	213.3	233.8	216.4	240.6	226.4	225.0
BECK 6722CBRR		248.2	252.9	257.4	237.8	260.5	227.2	247.3
BECK 7916CBRR		213.1	185.2	206.4	187.9	211.2	200.2	200.7
BECK 5444CBRR		<u>231.3</u>	<u>196.1</u>	<u>253.7</u>	<u>219.4</u>	<u>259.0</u>	<u>206.2</u>	227.6
AVERAGE		228.0	211.9	237.8	215.4	242.8	215.0	

\*Bushels per acre corrected to 15% moisture. Plot weighed by BECK'S Hybrids – Scott Ebelhar.

## Corn Nitrogen Timing Study – Continued

### 2007 Results

Corn Following Soybean Rotation						Continuous Corn Rotation						
Lbs. N	Preplant	Return on Additional 50 lbs. of Nitrogen	V3	Return on Additional 50 lbs. of Nitrogen	V6	Return on Additional 50 lbs. of Nitrogen	Preplant	Return on Additional 50 lbs. of Nitrogen	V3	Return on Additional 50 lbs. of Nitrogen	V6	Return on Additional 50 lbs. of Nitrogen
0	133.5		133.5		133.5		82.0		82.0		82.0	
50	156.6	\$59.89	208.9	\$227.59	201.8	\$203.81	103.0	\$52.85	144.1	\$183.04	132.0	\$142.50
100	181.2	\$64.91	226.8	\$34.97	226.0	\$56.07	137.1	\$96.74	174.3	\$76.17	155.9	\$55.07
150	207.7	\$71.28	238.0	<b>\$12.52</b>	234.4	\$3.14	166.3	\$80.32	196.5	\$49.37	213.8	<b>\$168.97</b>
200	<u>228.0</u>	<b>\$50.51</b>	<u>237.8</u>	-\$25.67	<u>242.8</u>	<b>\$3.14</b>	<u>211.9</u>	<b>\$135.26</b>	<u>215.4</u>	<b>\$38.32</b>	<u>215.0</u>	-\$20.98
Avg.	181.4		209.0		207.7		140.1		162.5		159.7	

### Two Year Average (2006 – 2007)

Corn Following Soybean Rotation						Continuous Corn Rotation						
Lbs. N	Preplant	Return on Additional 50 lbs. of Nitrogen	V3	Return on Additional 50 lbs. of Nitrogen	V6	Return on Additional 50 lbs. of Nitrogen	Preplant	Return on Additional 50 lbs. of Nitrogen	V3	Return on Additional 50 lbs. of Nitrogen	V6	Return on Additional 50 lbs. of Nitrogen
0	135.0		135.0		135.0		119.8		119.8		119.8	
50	157.1	\$56.62	191.0	\$162.44	190.6	\$161.26	144.6	\$65.62	167.5	\$134.64	159.1	\$106.65
100	172.6	\$34.15	205.9	<b>\$24.89</b>	213.3	<b>\$51.02</b>	171.3	\$71.88	183.8	\$29.78	178.3	\$39.28
150	192.2	\$48.37	213.0	-\$1.02	218.8	-\$6.47	190.3	\$45.98	208.2	\$56.66	215.4	<b>\$99.13</b>
200	<u>203.5</u>	<b>\$20.14</b>	<u>216.3</u>	-\$14.03	<u>223.7</u>	-\$8.78	<u>220.0</u>	<b>\$82.04</b>	<u>222.3</u>	<b>\$22.17</b>	<u>219.0</u>	-\$12.67
Avg.	172.1		192.2		196.3		169.2		180.3		178.3	

\*Return on investment (ROI) based on profit made by adding 50 units of N/acre. Nitrogen prices based on \$575/ton NH<sub>3</sub> for preplant and \$280/ton 28% liquid nitrogen for sidedress. Corn price is based on \$3.35/bu. Bold numbers indicate the highest nitrogen rate that gave a positive return.

**Summary:** Just as in 2006, the general yield trend continued to increase as more nitrogen was added per acre, but the return on additional investment shifted under the drier conditions and higher yields that were experienced in 2007. A significant yield advantage was noted for sidedressing nitrogen as opposed to preplanting nitrogen in both replications even though conditions were such that early nitrogen loss should have been minimal this year.

#### Corn Following Soybeans:

In the corn following soybeans replication, yields averaged over 20 bushels higher than in 2006. This led to a higher return on investment for the V3 and V6 applications in 2007; 150 lbs. and 200 lbs. respectively as compared to 100 lbs. in 2006. The two year average for this study shows results similar to 2006 with the 200 lb. rate continuing to provide a positive return on investment for preplant while the 100 lb. rate was the highest rate giving a positive return for the V3 and V6 applications.

#### Continuous Corn:

In 2007, nitrogen applications were made into the same strips where applications were made in 2006 (The strips where the 200 lb. rate was applied in 2006 was followed by an application of 200 lbs. again in 2007). 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. Just as in 2006, both the preplant and V3 sidedress applications continued to show a positive return on investment up to the 200 lb. rate. The V6 sidedress application only showed a positive return up to the 150 lb. rate. The strips receiving the V6 applications were already starting to show visual signs of nitrogen deficiency at the time of application. The two year summary reflects this same trend.

Please remember that return on investment 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 be used 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 to figure ROI for your operation.