

Preplant vs. Sidedressed Liquid (28%) and Anhydrous Ammonia Fertilizer - Corn

Dan Watermeier

Private Industry Cooperator: Charlie Hartwell

OBJECTIVE: To determine and document the profitability of two liquid nitrogen application rates at planting and two sidedress anhydrous ammonia rates.

HIGH RATE

Treatment:

Field Cultivate

Plant: 1994 - May 11
1995 - Early June
1996 - May 11

Fertilize: 1994 - 100 pounds nitrogen per acre.
liquid nitrogen (28%) banded 3"
from seed with planter versus
sidedress anhydrous ammonia in 72"
knife spacings (June 11)

1995 - 100 pounds nitrogen per acre.
liquid nitrogen (28%) banded 3"
from seed with planter versus
sidedress anhydrous ammonia in 72"
knife spacings (early July)

1996 - 100 pounds nitrogen per acre.
liquid nitrogen (28%) banded 3"
from seed with planter versus
sidedress anhydrous ammonia in 72"
knife spacings (June 15)

LOW RATE

Treatment:

Field Cultivate

Plant: 1994 - May 11
1995 - Early June
1996 - May 15

Fertilize: 1994 - 40 pounds nitrogen per acre.
liquid nitrogen (28%) banded 3"
from seed with planter versus
sidedress anhydrous ammonia in 72"
knife spacings (June 11)

1995 - 40 pounds nitrogen per acre.
liquid nitrogen (28%) banded 3"
from seed with planter versus
sidedress anhydrous ammonia in 72"
knife spacings (early July)

1996 - 40 pounds nitrogen per acre.
liquid nitrogen (28%) banded 3"
from seed with planter versus
sidedress anhydrous ammonia in 72"
knife spacings (June 15)

Preplant vs. Sidedressed Liquid (28%) and Anhydrous Ammonia Fertilizer

• Corn, Dan Watermeier

Page 2

Comparative cost (per acre)			Comparative cost (per acre)		
<u>1994</u>			<u>1994</u>		
	<u>Liquid</u>	<u>Anhydrous Ammonia</u>		<u>Liquid</u>	<u>Anhydrous Ammonia</u>
Fertilizer	\$19.64	\$12.20	Fertilizer	\$ 7.87	\$ 4.88
Anhydrous Rig	\$ 0.00	\$ 6.00	Anhydrous Rig	\$ 0.00	\$ 6.00
Planter Fertilizer Attachment	\$ 1.23	\$ 0.00	Planter Fertilizer Attachment	\$ 1.23	\$ 0.00
Total	\$20.87	\$18.20	Total	\$ 9.10	\$10.88

<u>1995</u>			<u>1995</u>		
	<u>Liquid</u>	<u>Anhydrous Ammonia</u>		<u>Liquid</u>	<u>Anhydrous Ammonia</u>
Fertilizer	\$28.55	\$18.25	Fertilizer	\$11.42	\$ 7.30
Anhydrous Rig	\$ 0.00	\$ 6.67	Anhydrous Rig	\$ 0.00	\$ 6.67
Planter Fertilizer Attachment	\$ 1.23	\$ 0.00	Planter Fertilizer Attachment	\$ 1.23	\$ 0.00
Total	\$29.78	\$24.92	Total	\$12.65	\$13.97

<u>1996</u>			<u>1996</u>		
	<u>Liquid</u>	<u>Anhydrous Ammonia</u>		<u>Liquid</u>	<u>Anhydrous Ammonia</u>
Fertilizer	\$19.64	\$12.20	Fertilizer	\$ 7.87	\$ 4.88
Anhydrous Rig	\$ 0.00	\$ 6.00	Anhydrous Rig	\$ 0.00	\$ 6.00
Planter Fertilizer Attachment	\$ 1.23	\$ 0.00	Planter Fertilizer Attachment	\$ 1.23	\$ 0.00
Total	\$20.87	\$18.20	Total	\$ 9.10	\$10.88

**Preplant vs. Sidedressed Liquid (28%) and Anhydrous Ammonia Fertilizer
- Corn, Dan Watermeier
Page 3**

VARIABLE	1994 CORN	1995 CORN	1996 CORN
Moisture (%)			
High Liquid (28%) at planting	15.0	16.4	17.7
High Anhydrous sidedress	15.0	16.4	17.9
Low Liquid (28%) at planting	14.9	15.7	18.6
Low Anhydrous sidedress	15.0	16.1	17.9
Means for Liquid	15.0	16.0	18.2
Means for Anhydrous	15.0	16.3	17.9
Means for High Rate	15.0	15.9**/2	17.8*
Means for Low Rate	15.0	16.4	18.3
Test Weight (pounds/bushel)			
High Liquid (28%) at planting	59.8	54.5	56.0
High Anhydrous sidedress	60.2	53.8	55.4
Low Liquid (28%) at planting	59.7	55.2	55.1
Low Anhydrous sidedress	60.1	54.5	55.4
Means for Liquid	59.8**/1	54.8**/1	55.6
Means for Anhydrous	60.1	54.2	55.4
Means for High Rate	60.0	54.2 **/2	55.7
Means for Low Rate	59.9	54.8	55.3

* rate significant at 90% confidence level

****/1** source **significant** at 95% confidence level

****/2** rate significantly different at 95% confidence level

Preplant vs. Sidedressed Liquid (28%) and Anhydrous Ammonia Fertilizer
- Corn, Dan Watermeier
Page 4

VARIABLE	1994 CORN	1995 CORN	1996 CORN
Yield (bushels/acre @ 15.5%)			
High Liquid (28%) at planting	134	93 *	120
High Anhydrous sidedress	138	85	121
Low Liquid (28%) at planting	123 *** /3	86	109
Low Anhydrous sidedress	134	88	110
Means for Liquid	129 *** /1	89	115
Means for Anhydrous	136	86	115
Means for High Rate	136 *** /2	89	120 *** /2
Means for Low Rate	128	87	110

* rate by source interaction at 90% confidence level

*******/1 source significant at 99% confidence level

*******/2 rate significant at 99% confidence level

*******/3 rate by source interaction significant at 99% confidence level

Summary: In 1994, anhydrous ammonia sidedress fertilized corn yield was significantly higher than liquid (28%) nitrogen treatment. High rate treatments of both anhydrous ammonia and liquid (28%) nitrogen yielded significantly higher than low treatment rates. The interaction among fertilizer sources and rates was also significant to yields. The low rate of liquid (28%) yielded poorly.

In 1995, yields were increased by higher rates of liquid nitrogen, but not by anhydrous ammonia. Nitrogen loss was observed during the high rate application of anhydrous ammonia. In 1996, yields were increased by higher rates of nitrogen. There was no difference between liquid and anhydrous ammonia.