

DEEP BANDING OF N & P - AN UPDATE

G. E. Hultgreen & R. E. Morgan
Farm Service Division
Saskatchewan Wheat Pool

INTRODUCTION

The interest in deep banding of "dry" fertilizers has been rapidly growing since the introduction of the pneumatic applicator. Pneumatic applicators were designed primarily as seeding units however it soon became evident that the machines were well suited to the deep banding of "dry" fertilizers. In the fall of 1979 the Product Development Branch obtained three makes of air seeders, and working with farmer co-operators, deep banded over 2000 ha of stubble using Urea fertilizer. This demonstrated that the machines were capable of banding fertilizers on a large scale. Following this test, a three year project was set up to compare deep banded N and double shot N & P with traditional fertilizer practices such as broadcasting N and placing P with the seed. Full size farm equipment was used for the banding and seeding operations.

METHODOLOGY

The study includes the Watrous test site plus six off-stations within a 100 km radius of Watrous. Two off-stations were not used due to variations with the plots.

Equipment used for this test included a Prasco 75/55 air seeder on a 9.2m C.I. heavy duty cultivator equipped with Ace knives and a 3.0 m Morris M-10 double disc press drill.

All test sites were seeded to wheat on stubble. Strip plots (non-replicated) 9.2m wide and from 50-170 m long were used on all sites except for some 3m wide check strips. Length of the plots varied depending on the topography of the site.

All broadcast and banded treatments were fall applied using Urea as the nitrogen source. Banded applications were placed at a depth of 10 cm. Nitrogen treatments were applied between October 16, and October 30, 1981.

Yields were taken by harvesting from 15-30 m² per strip, depending on the length of the plot.

Soil sampling was done on the same day as the banding.

TREATMENTS

The following table outlines the treatments at each test site.

Table 1 - Fertilizer Treatments

	<u>Fall</u>	<u>Spring</u>
1.	Banded N (75% rate)	Seed Placed P
2.	Banded N	Seed Placed P
3.	Banded N + 100% P	<u>No</u> P with Seed
4.	Broadcast + Incorp. N	Seed Placed P
5.	Banded N + 75% P	25% P with Seed
6.	Check <u>No</u> N	Seed Placed P

P from 11-51-0 @ 93 kg/ha (product) except at Dafoe and Watrous where the rate was 56 kg/ha.
 N rate 56 kg/ha (actual N) except at Dafoe where 78 kg/ha was used.

RESULTS & DISCUSSION

Tables 2 and 3 outline the yields from the five sites used in the test.

Table 2 - Treatments & Yields by Site

Site	1. Banded N (75% rate)	2. Banded N	3. Banded N +100% P	4. Broadcast & Incorp. N	5. Banded N + 75% P	6. Check Seed Placed P
Dafoe	2238 kg/ha	2386 kg/ha	2466 kg/ha	2318 kg/ha	2090 kg/ha	1868 kg/ha
Drake	1982	2103	1875	2339	2003	1747
Raymore	2379	2244	2191	2210	2130	1579
Davidson	1539	1357	1512	1042	1425	968
Watrous	940	954	968	833	792	712

Table 3 - Average Yield - Five Sites

<u>Treatment</u>		<u>Yield</u>	<u>Increase Over check</u>
1. Banded N (75% rate)	Seed Placed P	1814 kg/ha	31.7%
2. Banded N	Seed Placed P	1808	31.2%
3. Banded N + 100% P	<u>No</u> P with Seed	1801	30.7%
4. Broadcast + Incorp. N	Seed Placed P	1747	26.8%
5. Banded N + 75% P	25% P with Seed	1687	22.4%
6. Check <u>No</u> N	Seed Placed P	1378	0%

Dafoe, Drake and Raymore received excellent rainfall during the growing season while Davidson was extremely dry. Watrous received good rainfall however, hail reduced the yields. Crop damage was even over the Watrous plots so the data was used.

Soil tests indicated 6-12 lb. of available P at all sites and N levels from 40-108 lb/acre. Data from Young was not used due to high levels of available N.

CONCLUSIONS

Average yields from five sites showed only small differences between Banded N, Banded N (75%), Banded N + 100% P and broadcast N. However, banded N outyielded broadcast and incorporated N in four out of five locations. This may indicate that banding gives more consistent results than broadcasting.

Banded N + 75% P (25% P with seed) yielded lower than all other treatments except the check in three of five locations and lower than banded N and banded N + P in four out of five locations. The poor performance of this treatment, particularly in soils low in P came as a surprise as it was expected that the "starter" effect of having P with the seed should give at least equal results to banded N + 100% P (double shot).

It must be emphasized that the results presented in this paper are based on one year's data and on a limited number of sites. Further data must be collected to see if this year's results are representative.