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Does Banding Fertilizer Close To Soybean Seeds Improve Production?

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Banding of fertilizer close to the corn seed at planting is gaining in popularity for corn producers. As a result, there are now questions about the use of this practice for soybean production. There are concerns about the impact on germination, emergence, and subsequent yield.

To get an answer to some of these questions, a trial was conducted during the 2005 growing season to measure the impact of fertilizer placed close to the seed on soybean production. A site in Goodhue County was selected. Soil samples (0 to 6 inches) were collected before planting. The pH was 6.9, and the soil test values for P and K were 58 ppm and 352 ppm respectively. With these very high values, a response to fertilization was not expected. Therefore, any differences in yield that might be measured would be due to differences in germination and emergence.

For this trial, three fluid fertilizers (10-34-0, 4-10-10, 3-18-18) were applied in bands close to the seed. Three placements were used. The fluid fertilizer was applied in contact with the seed, below the seed, or above the seed. When placed below the seed or above the seed, the fertilizer and seed were separated by about ½ inch of soil. The 10-34-0 and 4-10-10 were applied at rates of 3 and 6 gallons per acre. The 3-18-18 was applied at rates of 2 and 4 gallons per acre so that the amount of K_2O applied in a band would be nearly equal for these fluids.

Stand counts were taken at about 3 weeks after emergence. Emergence from the various treatments was compared to emergence from the control where no fertilizer was applied in a band. The impact of treatment on emergence is summarized in **Table 1**. At the high rate of application (6 gallons per acre), there was a substantial reduction in emergence when the 10-34-0 was placed either in contact with or on top of the seed. The largest reduction occurred when there was direct contact between seed and fertilizer.

Table 1. Soybean emergence as affected by fluid material, rate, and placement when grown on a silt loam soil. 2005.

	Placement and Rate					
	with seed		top of seed		below seed	
material	high	low	high	low	high	low
	- - - - - - - - % of control - - - - - - - -					
10-34-0	63.3	93.0	70.3	97.7	91.5	97.4
4-10-10	89.4	101.8	97.7	107.5	100.3	102.1
3-18-18	74.4	96.6	76.5	95.1	99.5	97.4

control (no fluid fertilizer) = 168,577 plants/acre

When 10-34-0 was used at the lower rate, there was a noticeable reduction in emergence when the material was placed in contact with the seed. This reduction was small when there was soil between seed and fertilizer.

Evaluating the application of 4-10-10, there was a reduction in emergence only when the high rate was applied in contact with the seed. With the use of 3-18-18, a reduction in emergence occurred when this fluid fertilizer was placed either in contact with the seed or on top of the seed. When used at the low rate, neither 4-10-10 nor 3-18-18 had a negative effect on emergence.

Although there were substantial differences in emergence, the use of fertilizer placed close to the seed had no negative effect on yield (**Table 2**). Yields were excellent indicating good environmental conditions for growing soybeans. With these growing conditions, soybeans in a reduced stand probably branched more with more pods per branch.

Table 2. Soybean yield as affected by fluid material, rate, and placement.

	Placement and Rate					
	with seed		top of seed		below seed	
material	high	low	high	low	high	low
	- - - - - - - - bu./acre - - - - - - - -					
10-34-0	61.9	65.0	63.3	64.5	62.3	64.2
4-10-10	65.3	65.1	63.4	64.9	65.6	62.5
3-18-18	62.7	68.1	66.7	64.4	63.4	64.2

control (no fluid fertilizer) = 63.1 bu./acre

The results from the trial conducted in 2005 were consistent with results from other fertilizer trials. Placement of fertilizer very close to the soybean seed has not improved production. When conditions were dry at planting, a reduction in emerged stand resulted in a reduction in yield. When growing conditions are good, a reduction in emerged stand does not necessarily correspond with a reduction in yield. Placement of fertilizer in a band close to the soybean seed at planting is an unnecessary risk.