

Deep Banding

Many agronomists believe that fertilizer placement can be important in reduced tillage systems like no-till and ridge-till. Some ridge-tillers are placing fertilizer bands 5-6 inches deep, attempting to "take the fertility to the plant." In each of the following four trials, deep banding had a significant yield effect, but in only two did the practice pay for itself.

Ted and

Donna Bauer,

Audubon, compared a fall deep band of 0+55+50 to a fall broadcast treatment at the same rate ([Table 2](#)). The soil in this

western Iowa field tests high in potassium and low in phosphorus. The soybeans in the zero-fertilizer check treatment yielded as well as those receiving the broadcast, but the deep band treatment yielded significantly better. However, that yield benefit was not sufficient to outweigh the additional cost, and the check turned out to be the most profitable treatment.

Don and Sharon Davidson, Grundy Center, also evaluated a fall deep band in the row in relation to a zero-rate check ([Table 2](#)). They used the bander belonging to PFI members Harlan and Sharon Grau, from Newell. The experiment also included a starter fertilizer treatment and a fall knife-only treatment. The knife-only treatment was the same as the deep band but without the fertilizer. It was included to see if there was a mechanical effect separate from the fertilizer effect of deep banding. The soil generally tests high in both potassium and phosphorus. The knife-only treatment did not affect corn yield. The spring starter had a yield somewhat greater than the check, but not significantly so. Because of the costs involved, it was the least profitable treatment. The deep band did increase corn yield significantly in this experiment, but because of the cost it was only about two dollars per acre more profitable than the check treatment with no fertilizer.

Dean and Deborah

Ekstrand, of

Pocahontas, also tried a fall deep band (32+80+70) ahead of corn, comparing that to a broadcast of the same rate and a zero-fertilizer check ([Table 2](#)). The field tests very

high in both potassium and phosphorus, and it received manure in the spring of 1994. No additional N was applied to the crop. Leaf tissue samples at silking indicated no nutrient shortages, including nitrogen. But the broadcast fertilizer yielded significantly more than the check (13 bushels). And the deep band treatment yielded 24 bushels more than the check, making it the most profitable practice. The field overall yielded about 50 bushels less than nearby fields. If the treatment response was just to the 32 pounds of N in the fall-applied fertilizer, the crop must have run very short of nitrogen late in the season.

Richard and Sharon Thompson, Boone, included a deep band treatment in a trial with spring-applied manure and manure-plus-starter fertilizer ([Table 3](#), Field 4D). The deep band significantly increased corn yield compared to the zero-rate check treatment, but the cost of the band outweighed the yield benefit.

PFI cooperators have been working with ISU agronomist Antonio Mallarino, who is also carrying out his own extensive trials of fertilizer placement. Mallarino reports some corn yield responses to deep banded potassium in 1995. More of his results will appear in the next PFI newsletter.

Ted and Donna Bauer looking for picture of some deep banding



In luck! A deep bander in what passed for color in 1995



Table 2. MULTIPLE-TREATMENT FERTILITY TRIALS

MULTIPLE-TREATMENT FERTILITY TRIALS

MULTIPLE-TREATMENT TRIALS

COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFICANCE	TREATMENT "A"					TREATMENT "B"					TREATMENT "C"					OVERALL COMMENTS	
				DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT		
BAUER	SOYBEANS	CORN	*	DEEP BAND 0+55+50	50.2	a	\$23.24	(\$23.24)		BROADCAST 0+55+50	48.3	b	\$21.30	(\$21.30)	ZERO CHECK	49.1	ab	\$0.00	\$0.00	
DAVIDSON	CORN	SOYBEANS	*	FALL DEEP DRY BAND 8+20+40	127.8	a	\$18.49	\$1.85		SPRING STARTER	126.0	ab	\$14.37	(\$14.37)						STARTER FERTILIZER: 4+13+26
										KNIFE ONLY	121.1	b	\$7.16	(\$7.16)	ZERO CHECK	120.2	b	\$0.00	\$0.00	
EKSTRAND	CORN	SOYBEANS	*	FALL DEEP BAND 32+80+70	125.4	a	\$40.75	\$27.17		FALL BROADCAST 32+80+70	114.4	b	\$38.83	(\$2.26)	ZERO CHECK	101.6	c	\$0.00	\$0.00	P AND K SOIL TEST: VERY HIGH. MANURED IN SPRING 1994. LEAF N 2.6-2.7%
FRANTZEN	CORN	SOYBEANS	N.S.	225 LBS "SUSTANE"/ACRE	147.2	a	\$29.25	(\$29.25)		375 LBS SUSTANE	143.7	a	\$48.75	(\$48.75)						SOIL TEST P: VERY HIGH, K: HIGH. LEAF TISSUE K SIGNIF. HIGHER WITH 3+8+50, LEAF N SIGNIF. HIGHER WITH 375 LBS SUSTANE.
										CHEMICAL 3+8+50	149.5	a	\$8.77	(\$8.77)	ZERO CHECK	143.0	a	\$0.00	\$0.00	
NEELY - KINYON	CORN	CORN	N.S.	ACA+STARTER	84.1	a	\$22.42	(\$22.42)		STARTER	86.9	a	\$18.30	(\$18.30)	ZERO CHECK	88.1	a	\$0.00	\$0.00	

Table 3. MULTIPLE-TREATMENT MANURE TRIALS

MULTIPLE-TREATMENT MANURE TRIALS

MULTIPLE-TREATMENT TRIALS

COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIF- CANCE	TREATMENT "A"					TREATMENT "B"					TREATMENT "C"					OVERALL COMMENTS
				DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT	
THOMPSON (FIELD 4C)	CORN	SOYBEANS	*	PLANTER ROW FERTILIZER	158.0	bc	\$24.79	(\$24.79)	SPRING MANURE	162.2	b	\$7.07	\$12.66						PLANTER ROW FERTILIZER: 8+23+46 MANURE: 168+85+116
				CROP OVER COST: \$425.64					CROP OVER COST: \$455.26										
	(\$ BENEFIT DEPENDS ON CAMPARISON TREATMENT)								BOTH MANURE & ROW FERTILIZER	167.9	a	\$31.87	\$4.13	CHECK (NOTHING)	155.3	c	\$0.00	\$0.00	
									CROP OVER COST: \$446.73					CROP OVER COST: \$442.60					
THOMPSON (FIELD 5)	SOYBEANS	CORN	*	PLANTER ROW FERTILIZER	61.6	a	\$24.79	(\$4.50)	NO MANURE	156.7	b	\$0.00	\$0.00	ZERO CHECK	58.9	b	\$0.00	\$0.00	
				(\$ BENEFIT DEPENDS ON COMPARISON TRT)			CROP OVER COST: \$360.16					CROP OVER COST: \$354.25					CROP OVER COST: \$367.99		
THOMPSON (FIELD 4D)	CORN	SOYBEANS	*	FALL DEEP BAND 0+30+60	159.5	a	\$20.48	(\$3.76)	SPRING MANURE	157.5	ab	\$7.07	(\$7.07)						
				CROP OVER COST: \$434.22					CROP OVER COST: \$441.84										
	(\$ BENEFIT DEPENDS ON COMPARISON TRT)								MANURE & PLANTER ROW FERT	156.7	ab	\$31.87	(\$31.87)	ZERO CHECK	153.7	b	\$0.00	\$0.00	
									CROP OVER COST: \$414.63					CROP OVER COST: \$437.99					