

Varieties and Planting Trials

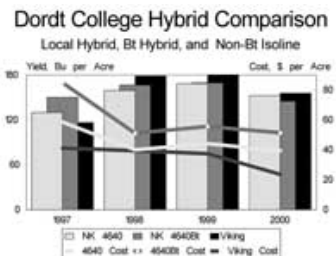
Economics plays a part of most Dordt experiments. Here the topic is management intensive grazing of milkers.



What is the value of the Bt gene when it is used in the corn plant to resist corn borer? That is one of the questions in the minds of Dordt College Agricultural Stewardship Center staff who have conducted the same variety comparison for the last four years. This trial uses a standard hybrid, NK-4640, it's Bt cousin NK-4640Bt, and a hybrid from Viking, a local seed company. [Table 6](#) shows 2000 results of this trial, and [Figure 5](#) illustrates yields and seed costs over four years. All three hybrids were planted at the same population rate.

For the past three years, the Viking hybrid has been the cheapest seed and has yielded most, averaging \$28.48 per acre more profitable. But what about 1997, the last year that the state saw significant corn borer pressure? If you assume the Bt hybrid's apparent yield advantage was real, it would have been \$23.70 more profitable than the Viking number that year. So, how many years will be like 1997? If you knew that, you would know how much to pay for the Bt technology.

Figure 5. Four years of the three-hybrid comparison by the Dordt College Agriculture Stewardship Center.



Here's a taboo topic for the coffee shop - open-pollinated corn. Bring it up and be prepared for your neighbor's lecture on how "some people" want to go back to plowing with horses. Yes, but look at those technology fees on the new varieties and hybrids. And the way the input industry is integrating gives rise to concerns that crop production may be going to a contracting scenario in which producers only "use" seeds, whose ownership is retained by the company. As usual, PFI forges into the gray area between paranoia and lethargy to investigate alternatives. Hence the trials of open-pollinated seed. In this effort, cooperators are aided by Walter Goldstein, of the Michael Fields Agriculture Institute, and Kendall Lamkey, an ARS-USDA corn breeder stationed at Ames.

David Burns, of Gold Country Seed, in Lawler, compared a number of hybrids to two open-pollinated varieties - Nokomis Gold from Walter Goldstein, and IA-S11 from Kendall Lamkey. As [Table 6](#) shows, the yields of two hybrids were well above those of the two "OP's," with IA-S11 yielding better than Nokomis. Lodging was a big factor; David reported 20 percent downed corn for S11 and 40 percent for Nokomis. On the other hand, oil content of the open pollinated varieties was higher than that of the hybrids.

At the Neely-Kinyon field day, USDA-ARS corn breeder Kendall Lamkey discussed ISU inbred lines of corn, which have potential use as "synthetic" open-pollinated varieties.



In contrast, **Dan Specht**, McGregor, found Nokomis yield to be intermediate between that of S11 and an NC+ high-protein hybrid. Dan observed no lodging, but his stands were reduced by soil crusting in the spring. Specht hand-harvested the plots, which were mostly only two rows wide. As a result, yields of IA-S11, which is a shorter plant than the others, were probably reduced by shading from neighboring varieties.

Of course, the big advantage of open-pollinated corn is that you can save and replant the seed. But for how long? Dan Specht compared seed grown in 1999 to seed from the 1997 season. The untreated seed had been stored in a grain wagon covered by a tarp. Dan points out that stands were poor in both treatments of the trial due to spring conditions and planter settings. The stand variability probably contributed to the high LSD of 13.2 bushels per acre. Compared to that, the 7.7 bushel yield difference was not statistically significant. More years and trial locations will be needed to answer the storage question, but these results are encouraging.

The Neely Kinyon Research Farm, Greenfield, also carried out a trial with open pollinated corn, comparing three populations of IA-S11 ([Table 6](#)). They calculated the seed cost as the market price for corn plus cleaning and handling expenses. With cheap seed corn, there is no reason to hold back on the seed. Or is there? At 26,000 seeds per acre, the open-pollinated variety yielded significantly better than both corn at 18,000 seeds and corn at 34,000 seeds per acre.

The issue of treated seed is one that many organic producers confront. For example, in 1998, cooperators **Ron and Maria Rosmann**, Harlan, found that treated corn came out of rough weather with a much greater stand and 43-bushel greater yield than did corn from untreated seed. In 2000, in Adair County, the Neely Kinyon Farm compared treated and untreated hybrid corn planted May 5 at 30,200 seeds per acre ([Table 7](#)). In the 2000 trial, no significant yield difference resulted.

To drill or not to drill. That is the question that won't stay answered. Dave and Lisa Lubben, Monticello, asked it in 2000, comparing drilled soybeans in 7½-inch rows to 30-inch rows. Both treatments were no-till ([Table 7](#)). No difference in yields resulted. The planter is a bit cheaper to run than the drill. David would also appreciate the convenience of less equipment. Does one year's data answer the question? Doubtful.

Table 6. Multiple-Treatment Variety and Planting Trials

				TREATMENT "A"				
COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFICANCE	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT
BURNS	CORN		*	MC103-1 HYBRID	107.1	b		
SPECHT	CORN	HAY	*	NC+2839 HIGH PROTEIN	164.1	a		
DORDT COLLEGE	CORN	OATS	*	NK-4640	152.5	b	\$39.33	\$12.00
NEELY KINYON	OP CORN	SOYBEANS	*	18,000 SEEDS/ACRE	77.2	b	\$1.13	(\$12.12)

Multiple Treatment Variety and Planting Trials										
TREATMENT "B"					TREATMENT "C"					OVERALL COMMENTS
DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT	DESCRIPTION	YIELD (bu. or T)	STAT.	TRT COSTS	\$ BENEFIT	
NOKOMIS OP	53.8	d			IA-S11 OP	66.5	c			LODGING WAS 20% FOR IA-S11, 40% FOR NOKOMIS GOLD
					9894 HYBRID	119.8	a			ALSO HIGHER OIL, LOWER STARCH THAN HYBRIDS
NOKOMIS OP	131.6	b			IA-S11 OP	107.1	c			PLANTING DATE? LODGING?
NK-4640Bt	145.0	b	\$51.33	\$0.00	Viking-4921	155.5	a	\$23.58	\$36.81	GREATER PROFIT FOR LOCAL HYBRID DESPITE 2% GREATER MOISTURE
26,000 SEEDS/ACRE	85.1	a	\$1.63	\$12.62	34,000 SEEDS/ACRE	73.7	b	\$2.13	-\$13.12	ISU VARIETY PRICED AT CLEANING+CORN MARKET PRICE. LODGING INCREASED W. POPULATION

Table 7. Seeding and Weeding Trials

Seeding and Weeding Trials

COOPERATOR	CROP	TREATMENT "A"			TREATMENT "B"	TRT "B"		DIFFERENCE				COMMENT
		DESCRIPTION	YIELD (bu.)	TREATMENT COST	DESCRIPTION	YIELD (bu.)	TREATMENT COST	YIELD DIFF.	YLD LSD (bu.)	YLD SIG.	\$ BENEFIT OF TRT "A"	
ABBAS	CORN	FLAMED ONLY BEFORE 1ST CULTIVATION	131.3	\$4.85	FLAMED BEFORE 1ST AND 2ND CULTIVATION	127.0	\$9.70	4.3	3.4	*	\$4.85	SECOND FLAMING SIGNIF. REDUCED GRASS AND BROADLEAFS, BUT LOW OVERALL WEED PRESSURE
DORDT COLLEGE	OATS	OATS+RED CLOVER	113.2	\$17.19	OATS ALONE	111.9	\$7.05	1.3	3.3	N.S.	-\$10.14	MORE FALL GROUND COVER, NO REDUCTION IN OAT YIELD FROM CLOVER
GUTHRIE	CARROT 4/1	FLAMED PRE-EMERGENCE	25.8	(STAND PER BED)	CONTROL, NO FLAME	22.0	(STAND / BED)	3.8	10.9	N.S.		FLAMED 4/17. NO EFFECT ON BROADLEAVES OR GRASSES
GUTHRIE	CARROT 6/3	FLAMED PRE-EMERGENCE	57.7	(STAND PER BED)	CONTROL, NO FLAME	51.2	(STAND / BED)	6.5	10.3	N.S.	SAVINGS ON LABOR AND MATERIALS ABOUT \$1.30 PER 100' BED	FLAMED ON 6/9. BROADLEAVES REDUCED FR. 39 TO 5/BED, GRASSES REDUCED FR. 61 TO 6/BED.
LUBBEN	SOYBEANS	NO-TILL DRILLED	43.8	\$38.80	NO-TILL 30" ROWS	44.1	\$30.23	-0.3	0.5	N.S.	-\$8.58	BOTH TREATMENTS WERE NO-TILL
NEELY KINYON	CORN	TREATED SEED	126.8	\$43.41	UNTREATED SEED	123.0	\$43.41	3.9	10.4	N.S.	\$0.00	HYBRID WAS WILSON 1664
SPECHT	OP CORN (NOKOMIS)	1999 SEED	112.3		1997 SEED	104.6		7.7	13.2	N.S.		LOW STANDS IN BOTH TREATMENTS