

IPM and Planting Trials

Gary and Nancy Guthrie, Nevada, joined the ranks of PFI cooperators in 1998, carrying out a trial that relates to sweetcorn production. The corn earworm typically plagues growers, especially those who do not use insecticides. It crawls into the growing ear where the silks emerge and helps itself to a portion of the kernels before being discovered by the person husking the ear for dinner. Gary writes, "If a grower could reduce the infestation of corn earworms significantly, she or he would be able to set a higher price for their corn and establish a reputation for having clean ears."

Gary had heard that the old technique of treating the silks with oil could be made more effective by adding the bacterial insecticide Bt (*Bacillus thuringiensis*, Kurstaki). He tested the effectiveness of

Gary and Nancy Guthrie dishing ice cream at a field day



the method on two varieties, one a 75-day variety and the other an 85-day variety, both planted April 28. Results on the 75-day corn were impressive. By treating silks with the oil-Bt mixture two days after "full brush," Gary reduced the percentage of ears damaged from 48 to 15 percent, with a nonsignificant reduction in the length of tunneling (shown in centimeters in [Table 7](#)).

The other surprise came with the 85-day corn. Based on his experience with the variety, Gary expected considerable damage from earworm. However, the winds and the rain cooperated to reduce earworm pressure to almost nothing for that planting ([Table 7](#)). The extra cost of treatment was for nothing, but in Guthrie's experience this was an unusual occurrence.

The major cost of the treatment is labor. Gary plans to reduce labor next year by planting sweetcorn at 16,000 plants per acre. The 26,000 population his neighbor planted for him in 1998 meant more ears to treat, and many of those did not set seed anyway. At the lower planting population and with a similar 33 percent reduction in damage, the practice would be worth an estimated \$1,000+ per acre.

Gary and Nancy do not ordinarily sell their sweetcorn on the open market, but as part of the subscription to the CSA (community-supported agriculture) project they manage. They feel the value of satisfied CSA customers goes beyond even the considerable increase in the market value of the crop.

The Neely-Kinyon Farm, near Greenfield, repeated a comparison between 15-inch rows and 30-inch rows for corn. In 1997, overall yields were low due to drought, but corn in 15-inch rows significantly outyielded the 30-inch-row corn. In 1998, corn yields were more than double the '97 yields, but there was no difference in yield between treatments. The cost differential shown in [Table 7](#) stems from the second planter pass used to create 15-inch rows with a 30-inch planter. Some Iowa producers are customizing planters for narrow rows. The topic of narrow-row corn remains controversial.

Ron and Maria Rosmann and sons, Harlan, farm organically. Ron has served on a committee of the Organic Crop Improvement Association that considers questions of practices approved as consistent with organic production. One of the issues that arises is the use of treated seed. Most corn in the U.S. comes from seed treated with a synthetic fungicide to discourage seed rot and seedling diseases, but the practice is controversial among organic producers, and many synthetic fungicides are capable of causing cancer. Ron obtained Captan-treated and untreated corn seed (same hybrid, same price) and planted them in side-by-side strips on May 9.



Eight days after the devastating hailstorm of May 21, it was evident that there were differences in the stands of the two experimental treatments. The corn from untreated seed was about 16,670 plants per acre, while the corn from treated seed stood at around 24,250 plants per acre. The treated seed ended up yielding more than 40 bushels per acre more than the corn from untreated seed ([Table 7](#)). Ron was surprised at the outcome. He has spoken with a number of other organic farmers who report little difference between treated and untreated seed. The hailstorm may have hit the crop at a vulnerable moment, a stage in which the fungicide suppressed the rots and wilts the crop was vulnerable to because of mechanical damage from the hail.

Table 7. "A/B" IPM and Planting Trials						"A/B" IPM and Planting 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"	
GUTHRIE	BODACEOUS 75 DAY SWEET CORN	OIL-Bt ON SILKS	15% DAMAGE	\$798.84	NO TREATMENT	48% DAMAGE	\$0.00	-33%	16%	*	\$501	\$1,035 HYPOTHETICAL NET AT 16,000 PLANTS/ACRE POPULATION. EARS CAN BE SOLD AT \$3 PER SOZEN
				MATL. & LABOR								
				\$2,601								
		PARTIAL NET										
		1.9 CM FEEDING				2.6 CM FEEDING		-0.7 CM	1.9 CM	NS		
GUTHRIE	INCREDIBLE 85 DAY SWEETCORN	OIL-Bt		\$798.84	NO TREATMENT		\$0.00	-3%	4%	NS	-\$798.84	UNUSUALLY LIGHT CORN EARWORM PRESSURE
			2% DAMAGE				5% DAMAGE					
		1.1 CM FEEDING				1.7 CM FEEDING		-0.6 CM	2.1 CM	NS		
NEELEY KINYON	CORN	30" ROWS	154.0	\$41.60	15" ROWS	153.1	\$48.20	0.9	12.8	NS	\$6.60	COST DIFFERENCE IS DUE TO EXTRA PASS WITH PLANTER FOR 15" ROWS
ROSMANN	CORN	TREATED SEED	135.9	\$32.18	UNTREATED SEED	93.2	\$30.90	42.7	9.5	*	\$86.75	STAND (24,250 VS 16,670) AND VIGOR DIFFERENCES APPEARED AFTER MAY 21 HAILSTORM