

IPM and Seed Trials

Gary and Nancy Guthrie, Nevada, raise vegetables for their own CSA (community supported agriculture), Growing Harmony Farm. As the son of a corn entomologist, Gary keeps a particular eye on challenges from the insect world. In their organic operation, the Guthries look for cultural and biological solutions to these problems, so when Gary read about an biological remedy for corn earworm, an on-farm trial was born. Gary writes:

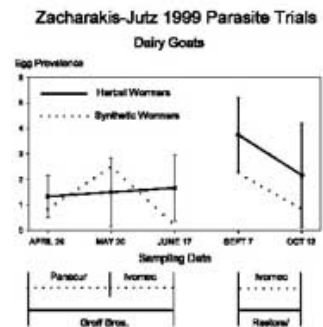
Gary at a 2002 Field Day



In 1998 I treated two varieties, Bodacious and Incredible using a mixture of vegetable oil and Btk (three teaspoons/quart oil). I discovered then that applying a small squirt of the treatment at full brush stage of the silk just as the silk was turning brown could be effective in controlling corn ear worm damage. In Bodacious the treatment dropped damage from 47% to 15%, but there was virtually no corn ear worm infestation in Incredible.

In 1999, I wanted to follow up last year's experiment with a broader experiment treating four varieties. On May 1st, Seneca Daybreak (65 days), Bodacious (75), Incredible (85), and Tender Treat (95) were planted at a population of 25,000 plants/acre.

Figure 3. Growing Harmony Farm 1999 earworm trials.



[Table 8, click to view](#), and Figure 3 show the

yield of undamaged ears (on a per-acre basis) for treated and untreated corn of the four varieties. By the way, Gary suspects that his Bt wasn't the freshest at the first treatment date. Besides the effectiveness of the oil-Bt treatment, weather, the natural cycle of the insect, and the physiology of the varieties all play a part in earworm infestations. Although every year is different, experience will show which varieties and which silking times are most likely to reward treatment. Gary writes: *I wonder if it might be worthwhile to treat the first several varieties and not the last one or even two, depending upon what one's tolerance level is for infestation.* Of course, beyond the arithmetic, there is the intangible benefit of being able to present the customer an ear of sweetcorn that hasn't already been a worm's breakfast.

The **Neely-Kinyon Research Farm** in Greenfield has responded to a number of concerns expressed by farmers who grow - or are considering growing - organically. One of the current issues in organic agriculture is seed treatment. Some certifying organizations prohibit seed treatment, others merely discourage it. Some evidence suggests that corn yields can be severely limited without seed treatment (see below). In 1999, the Neely-Kinyon Farm planted treated and untreated corn seed at 28,000 per acre on May 27. As [Table 8](#) shows, there was considerable variability in the field, with a 13-bushel LSD that exceeded the 10.3 bushel advantage to the untreated seed.

Ron and Maria Rosmann, Harlan, repeated their seed treatment trial of 1998. In that year, a severe storm shortly after crop emergence reduced the population of corn in the untreated strips, leading to a 43-bushel yield loss. After planting on May 14, Ron carefully evaluated the crop stand over the course of 1999, looking for treatment effects. The treated seed did lead to a population advantage that varied from one to three thousand plants per acre over the growing season. However, there was no difference in yield between the two treatments ([Table 8](#)). Seed treatment does provide some "insurance," but these trials suggest that in many instances untreated seed can perform satisfactorily.

| Table 8. IPM and Seed Trials | | | | | | IPM and Variety 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 | SENECA DAYBREAK, SWEETCORN | OIL/Bt TREATED EARS | 7,650 | \$798.84 | NOT TREATED | 2,550 | \$0.00 | 5,100 | 8,250 | NS | (\$798.84) | \$476 Bt BENEFIT IF YIELD DIFF WERE SIGNIFICANT |
| GUTHRIE | BODACEOUS, SWEETCORN | OIL/Bt TREATED EARS | 13,996 | \$798.84 | NOT TREATED | 6,037 | \$0.00 | 7,959 | 3,641 | * | \$1,190.94 | YIELDS IN UNDAMAGED EARS PER ACRE. ECONOMICS BASED ON UNDAMAGED EARS. |
| GUTHRIE | INCREDIBLE, SWEETCORN | OIL/Bt TREATED EARS | 16,800 | \$798.84 | NOT TREATED | 12,450 | \$0.00 | 4,350 | 2,019 | * | \$288.66 | |
| GUTHRIE | TENDER TREAT, SWEETCORN | OIL/Bt TREATED EARS | 17,400 | \$798.84 | NOT TREATED | 17,550 | \$0.00 | (150) | 1,104 | NS | (\$836.34) | |
| | | | | | | | | | | | | |
| NEELY-KINYON | CORN | TREATED SEED | 117.0 | \$69.61 | UNTREATED SEED | 127.3 | \$61.75 | -10.3 | 13.1 | NS | (\$7.86) | \$ DIFFERENCE FROM 2.7% MOISTURE DIFFERENCE |
| ROSMANN | CORN | TREATED SEED | 99.7 | \$39.94 | UNTREATED SEED | 103.1 | \$39.94 | -3.4 | 9.0 | NS | \$0.00 | 1-3,000 HIGHER POP W. TREATED, PLANTED 5/14 |
| SPECHT | CORN | OP-NOKOMIS GOLD | 98.2 | | FONTANELLE 1493 | 160.7 | | -62.5 | 7.2 | * | | PLANTED 6/3 AT 27,800. WEEDY |