# Insecticide Evaluation of Beet Armyworms in Sugarbeets

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## Summary

Five insecticides were evaluated for their effectiveness on beet armyworms in seedling sugarbeets. Cymbush, a synthetic pyrethroid, and Kryocide, a synthetic mineral, compared favorably with the standard, Methomyl. Furadan, Pay-off and ZR 3210 did not give adequate control to larval populations.

## Methods and Materials

Small plot techniques were used to evaluate the efficacy of five insecticides on the control of beet armyworms at the Mesa Experiment Farm during 1980. Each insecticide was compared with the standard control, Methomyl at 0.45 lbs/A, and an untreated check.

The first application was applied when populations were relatively low. Populations were then allowed to build to higher levels before the second application was applied. A third application was used in an attempt to reduce larval numbers to a minimum.

## Results and Discussion

When applied to low levels of beet armyworms all treatments significantly reduced population numbers below that of the untreated check as shown in Table 1. Furadan, although lower than the check, was not as effective as the remaining treatments.

Table 1 also indicates that at increased larval numbers, Cymbush at both rates and Kryocide were comparable to the standard. No appreciable difference occurred between either of the two Cymbush rates indicating the lower was as effective as the higher rate. Furadan, Pay-off and ZR 3210 did not compare favorably with the standard insecticide at the higher infestation.

Table 2 shows the percent of plants infested at the same sampling date. Results are identical to those of Table 1 emphasising the effectiveness of Cymbush and Kryocide in controlling larval populations and in reducing plant infestations.

Table 1. Mean Larvae per Treatment[1]

| Treatments | Rate Lbs/A | Date 10/6* | 10/9 | 10/20* | 10/23* | 10/27 |
|---|---|---|---|---|---|---|
| Check | -- | 6.5 | 15.8 a | 38.5 | 45.5 a | 42.5 a |
| Methomyl | 0.45 | 4.5 | 3.0 c | 24.0 | 4.0 c | 1.3 c |
| Cymbush | 0.06 | 5.0 | 0.05 c | 22.0 | 3.0 c | 0.05 c |
| Cymbush | 0.12 | 4.8 | 0.75 c | 21.3 | 2.3 c | 0.05 c |
| Kryocide | 8.00 | 4.0 | 2.0 c | 21.5 | 6.8 c | 3.5 c |
| Furadan | 1.00 | 4.5 | 7.3 b | 30.8 | 21.5 b | 13.5 b |
| Pay-off | 0.08 | 4.0 | 1.8 c | 23.0 | 15.5 b | 9.5 b |
| ZR 3210 | 0.10 | 3.8 | 2.3 c | 26.3 | 30.0 b | 19.3 b |

[1]Based on 20 plants per sample.

*Pre-treatment

Treated: 10/7, 10/21 and 10/24.

Means followed by the same letter are not significantly different at the 5 percent level.

Table 2. Percent Infested Plants (Mean/Treatment)

| Treatments | Rate Lbs/A | Date 10/6* | 10/9 | 10/20* | 10/23* | 10/27 |
|---|---|---|---|---|---|---|
| Check | -- | 21.3 | 42.5 a | 78.8 | 85.0 a | 82.5 a |
| Methomyl | 0.45 | 17.5 | 11.3 c | 60.0 | 13.8 c | 5.0 c |
| Cymbush | 0.06 | 18.8 | 2.5 c | 56.3 | 12.5 c | 0.3 c |
| Cymbush | 0.12 | 17.5 | 1.3 c | 56.3 | 11.3 c | 0.3 c |
| Kryocide | 8.00 | 13.8 | 8.8 c | 67.5 | 25.0 c | 11.3 c |
| Furadan | 1.00 | 17.5 | 22.5 b | 70.0 | 58.8 b | 35.0 b |
| Pay-off | 0.08 | 15.0 | 6.3 c | 58.8 | 47.5 b | 25.0 b |
| ZR 3210 | 0.10 | 16.3 | 8.8 c | 65.0 | 66.3 b | 38.8 b |

*Pre-treatment

Treated: 10/7, 10/21 and 10/24.

Means followed by the same letter are not significantly different at the 5 percent level.

## Effects of Beet Armyworm Feeding on Sugarbeet Root Yields

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### Summary

The effects of foliar feeding by larvae of the beet armyworm in relationship to root yields were studied for the second consecutive year. In a comparison test of treated and non-treated plots, data indicated that foliar feeding damage, where plant stands are not affected, does not significantly reduce root yields.

### Methods and Materials

In 1980-81, a continuing effort to determine the effects of beet armyworm feeding on root yields was conducted at the Mesa Experiment Farm. Two treatments were again utilized; untreated treatments and a treatment where an insecticide was used to keep beet armyworms to a minimum. Eight applications were necessary in treated plots to maintain low levels of infestation.

In previous studies, yields initiated in December and continued at monthly intervals did not show significant root yield reductions. To determine if weight differences actually occurred at the peak of beet armyworm feeding, yields were initiated on October 14 and continued at periodic intervals. Plant stand counts were also taken to measure plant mortality as a result of foliar damage.

### Results and Discussion

The mean number of larvae per plant is shown in Table 1. It indicates a consistent difference in population levels between treated and untreated plots. Population peaks in both treatments occurred on October 21 when 2.63 larvae per plant infested the untreated plants and only 0.28 larvae on treated plants. Significant population differences first occurred on October 13 and continued until the natural population decline in November.

Table 2 shows the percent of plants infested by 1 or more larvae during the primary period of beet armyworm infestation. It also demonstrates the magnitude of population differences between treated and untreated plants. These population differences resulted in obvious visual differences between treated and untreated plots. Most of the plants in the untreated plots were either partially defoliated or completely defoliated. When populations declined in November, new leaves were produced and the damaged plants began to develop normally.