Seed and foliar insecticide treatment of soybean for control of bean leaf beetles in 2003

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**Methods & Procedures**

Plots of Asgrow Ag3703 ("roundup ready") soybeans were planted on the University of Kentucky, Research and Education Center on 30, May 2003 using a John Deere MaxEmerge 2, no-till planter, calibrated to deliver nine seeds per row foot. Plots were 4, 30" rows by 25' long. The study was planted as a randomized complete block design (Steel and Tory 1960) with seven treatments and five replications. Treatments were randomly assigned using SAS "Proc Plan" (SAS 2000).

In plots that received "seed treatments", the two center rows were planted with treated seeds and the two outer rows were untreated. Gustafson applied all seed treatments[1]. In plots that received a "foliar treatment" the insecticide was applied using a $CO_2$ powered, back-pack sprayer, calibrated to deliver twenty gallons per acre at 45 PSI pressure and four miles per hour, through four 8004 nozzles on 18" centers. Four untreated rows were planted around the complete circumference of the test. The foliar comparison ("Unifoliate") treatment for the seed treatments was applied on 13 June 03 at the VC stage as the unifoliate leaf was expanding but not completely unrolled.

The treatments are as follows:

| | |
|---|---|
| Untreated | |
| Poncho FS | 62.5 G A/100 KG (1oz. A/CTW) |
| Poncho FS | 125 G A/100 KG (2 oz. A.CTW) |
| Gaucho | 62.5 G A/100 KG (1oz.A/CTW) |
| Gaucho | 125 G A/100 KG (1oz. A/CTW) |
| Cruiser | 62.5 G A/100 KG (1oz.A.CTW) |
| Warrior | 3.84 fl. oz./Ac. (Foliar, applied at "Unifoliate", VC-V1) |

Stand Counts and "seed leaf" damage was evaluated on 20, June, 03 during the "completely unrolled unifoliate" (VC -V1) stage (Fehr and Caviness 1977). Averaging four sub-samples, two from each of the two center rows, made each plot estimate. The location of the sub-samples was established in the central 2/3 (lengthwise) of the plots by selecting a set of four random numbers representing the distance from the end of the plot to the sub-sample location. Each plot was then sampled using the same locations. Plant stand was estimated by counting plants in one-row foot sub-samples. Seed leaf damage was estimated by counting the number of damaged cotyledons on sub-samples of ten consecutive plants.

At harvest time plots were trimmed to a length of twenty feet. On 03, October 03, the two center rows of each plot were harvested using a Hege 125c "small plot" combine. Plot yields were

1 Gustafson R & D Center, McKinney, TX

standardized to bushels per acre at 60 pounds per bushel and 13 percent moisture.

**Results & Discussion**

Results of the stand count, seed leaf damage, yield and test weight analyses are show in Table 1. It is perhaps obvious that there are no significant differences among the data for each of these measures by treatment. However, to insure correctness, the data were subject to analysis of variance. In addition, the "Dunnett's" test was used to compare the mean of each insecticide treatment individually with the mean of the untreated. Both tests were run using SAS "Proc GLM" (SAS 2000).

Table 1. Mean ± Standard Error of Stand Counts, Damaged Cotyledons, Yields and Test Weights of soybean plots treated with various seed or foliar applied insecticides. (P=0.05).

| Treatment | Mean Plants / row-foot ± S.E. | Mean Damaged Cotyledons ± S.E. | Yield ± S.E. (Bu / Acre) | Test Weight ± S.E. |
|---|---|---|---|---|
| | | | | |
| Untreated | 7.8 ± 0.3 | 2.4 ± 0.4 | 35.3 ± 1.2 | 56.0 ± 0.4 |
| Poncho FS 62.5 G A/100 | 7.3 ± 1.0 | 1.6 ± 0.4 | 35.9 ± 2.9 | 56.8 ± 0.2 |
| Poncho FS 125 G A/100 KG | 5.8 ± 0.5 | 2.8 ± 0.7 | 38.2 ± 2.7 | 56.5 ± 0.1 |
| Gaucho 62.5 G A/100 KG | 7.0 ± 0.1 | 1.7 ± 0.3 | 38.8 ± 2.9 | 56.5 ± 0.1 |
| Gaucho 125 G A/100 KG | 6.4 ± 0.6 | 1.1 ± 0.2 | 37.1 ± 2.2 | 56.2 ± 0.2 |
| Cruiser 62.5 G A/100 KG | 7.7 ± 0.6 | 1.7 ± 0.6 | 35.0 ± 1.3 | 56.4 ± 0.1 |
| Warrior 3.84 fl. oz. | 7.7 ± 0.6 | 1.7 ± 0.3 | 35.7 ± 1.8 | 56.4 ± 0.1 |
| | | | | |
| F (10, 22) Value | 1.7 | 0.98 | 1.29 | 1.35 |
| Pr > F | 0.15 | 0.49 | 0.29 | 0.26 |

As expected, the ANOVA found no difference in any measure due to treatment or replication. Further, Dunnett's test did not find any insecticide treatment mean significantly different from the mean of the "untreated" treatment.

Unfortunately, there was very little insect activity in these plots. Part of the reason for the lack of bean leaf beetle damage was the delay in planting that was a result of excessive rain. During the remainder of the growing season Japanese beetles, green cloverworms and green stink bugs were active. However, very few were present in the plots. At no time did defoliation of the soybeans ever exceed 10%. Adjacent tests of insecticides for control of foliar insect pests also failed to produce differences among treatments.

## References

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