Insect Days and Their Relationship to Soybean Yields

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Methods

Insect populations on soybeans were sampled using 25 sweeps of a 15-inch sweep net during the 2004 and 2005 growing seasons. All plots were within 10 miles of Stoneville, MS. Two separate tests were sampled weekly or twice weekly.

Using linear extrapolation, sample data per 100 sweeps were calculated for those days when plots were not sampled. Thus the sum of the insects per 100 sweeps for any interval during the growing season could be calculated. This sum is referred to as insect days.

When the plots were ready to harvest, plots were harvested with a small plot combine and beans were weighed. These weights were corrected for moisture and converted to bushels per acre. Weight of a known volume of soybeans were used to calculate the test weight (pounds of soybeans per bushel).

In 2005, one test was sampled twice weekly. Contents of the sweep net were knocked down using ether and placed into a paper bag. This bag was placed into a bucket with a container of ethyl acetate used to kill the insects. The paper bags were returned to the laboratory and counted. Yield and test weights obtained were similar to data collected in 2004.

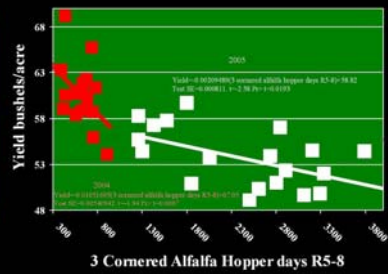
Three Cornered Alfalfa Hopper Discussion

Three cornered alfalfa hoppers (TCAH) were collected with a sweep net and counted in the field in 2004 and in the laboratory in 2005.

The regression of yield on TCAH days in 2004 showed a mean loss of 10 bushels of soybeans per acre for every 1000 TCAH days with a standard error of 5 bushels per acre.

This same regression in 2005 showed a 2-bushel yield reduction with a standard error of 0.8 bushels for every 1000 TCAH days.

Utilizing the more conservative estimate of 2-bushel yield reduction and our present threshold of one TCAH/sweep a soybean crop would loose one bushel/acre in 5 days.



Stink Bug Discussion

Soybean plots sampled by Dr. Andrews in 2004 were marked in a production field planted early and was ready to harvest in early August.

Stink bug populations were manipulated by insecticide use.

Soybean plots sampled by Drs. Gore and Robbins were small plots planted to group 5 beans and were not harvested until late September.

The variation in stinkbug numbers was natural variation.

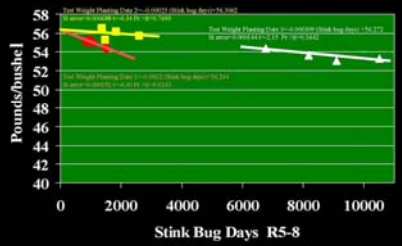
All data sets tend to show a negative relationship between stinkbug populations and test weight.

Planting dates seem to affect test weights.

All three data sets with stinkbug populations less than 1000 stinkbug days indicate that stinkbugs cause a loss of 0.5 to 1.2 pounds per bushel per 1000 stinkbug days.

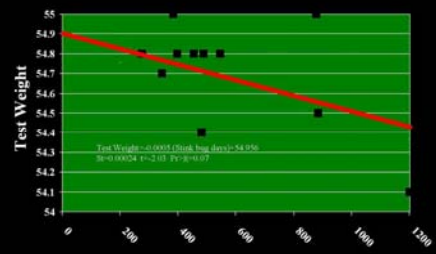
On a 60-bushel bean crop this would mean a 30 to 72 pound per acre yield loss.

GORE'S DATA



Planting Date 1 ■ Planting date 2 ■ Planting date 3

ROBBINS' DATA



ANDREWS' DATA