

2005 Preliminary Insecticide Evaluations:

Matt O'Neal, Assistant Professor Soybean Entomology

Kevin Johnson, Graduate Student , Department of Entomology

Wayne Ohnesorg, Graduate Student , Department of Entomology

The Soybean Entomology laboratory at Iowa State University has just completed its first round of insecticide evaluations against soybean aphids. We present data from this evaluation as a reminder of two issues that growers may be facing right now; product selection and pre-harvest intervals. This data is considered preliminary as we are returning to these plots later in the summer to measure residual activity of these products.

We conducted two efficacy trials, one at the Northeast research farm near Nashua in Floyd County and the other at the Northwest research farm near Sutherland in O'Brien County. The products and rates tested are listed in Table 1 and 2. At Nashua all products are replicated 4 times, with treatments 1,2,4-7 replicated 6 times. Untreated plots were monitored and when soybean aphid populations reached threshold (250 / plant), foliar insecticides were applied (1 August). We counted aphids on 5 plants per plot at 3 and 10 days after treatment. We will continue to scout these fields at roughly 17 and 24 days after treatment. At Sutherland treatments were replicated 4 times. Plots were treated on the 29 July with populations well below 250 aphids/plant. Aphids were scouted 4 and 9 days after insecticides were applied. These plots will also be scouted at roughly 17 and 24 days after treatment.

A couple things are noticeable in the results (Figure 1a and 1b). First, foliar-applied, broad spectrum insecticides (organophosphates and pyrethroids) provided the biggest impact on soybean aphid populations. It is interesting to note that soybean aphids are beginning to return to treated plots at the Sutherland plot (Figure 1b). Whether these will increase to a substantial degree is not clear. In relation to all insects, broad-spectrum insecticides are weapons of mass destruction killing both herbivores like the soybean aphid and beneficial insects like the predators that feed on aphids. We will continue to scout these plots for at least 20 days to determine if adequate residual activity occurs for these products. With this in mind, a set of interesting products to watch in the future are insecticides like Trimax and Fulfill. These are considered 'reduced-risk' insecticides that may have a limited impact on insect predators. Although not currently labeled for use in soybeans, they may be useful tools in the future for managing aphids in a manner that does increase the risk for later soybean aphid outbreaks.

A second noticeable result is the efficacy of the pyrethroids (Baythroid, Warrior, Decis and Proaxis) compared to an organophosphate applied alone (Lorsban) and in combination with a pyrethroid (Baythroid). This tactic is thought to combine the longer residual activity of a pyrethroid with the faster immediate kill of an organophosphate. Our data suggests that these products work well alone and a combination is not necessary. This will be an issue later in the season as the longer preharvest intervals of certain pyrethroids (Warrior and Baythroid, both 45 days) may prevent the use of these products. Combining these products may also be a concern in the longer term as

exposure to both active ingredients could select for a soybean aphid population that is resistant to both active ingredients.

Table 1. List of insecticides tested in efficacy trials at the Nashua research farm in Northwest Iowa

Product name	Class	Rate
1) Check (untreated)	N/A	N/A
2) Gaucho (seed treatment)	Nicotinoid (NIC)	65g/100kg
3) Cruiser (seed treatment)	NIC	50g/100kg
4) Cruiser (seed treatment)	NIC	100 g/100kg
5) Trimax	NIC –foliar based	1.5 oz/acre
6) Fulfill	Pymetrazione	2.3 oz/acre
7) Warrior	Pyrethroid (PY)	3.2 oz/acre
8) Decis	PY	1.9 oz/acre
9) Lorsban 4E	Organophosphate (OP)	16 oz/acre
10) Lorsban 4E +Baythroid	PY + OP	4 oz/acre + 2oz/acre
11) Baythroid	PY	2.8 oz/acre
12) ProAxis	PY	3.2 oz/acre

Table 2. List of insecticides tested in efficacy trials at the Sutherland research farm in Northeast Iowa

Product name	Class	Rate
1) Check (untreated)	NA	NA
2) ProAxis	PY	3.2 oz/acre
3) Decis	PY	1.9 oz/acre
4) Lorsban 75WG	OP	½ lb/acre
5) Lorsban 4E +Baythroid	PY, OP	4 oz/acre + 2 oz/acre
6) Warrior	PY	3.2 oz/acre
7) Baythroid	PY	2.8 oz/acre
8) Orthene 97S	OP	12 oz/acre

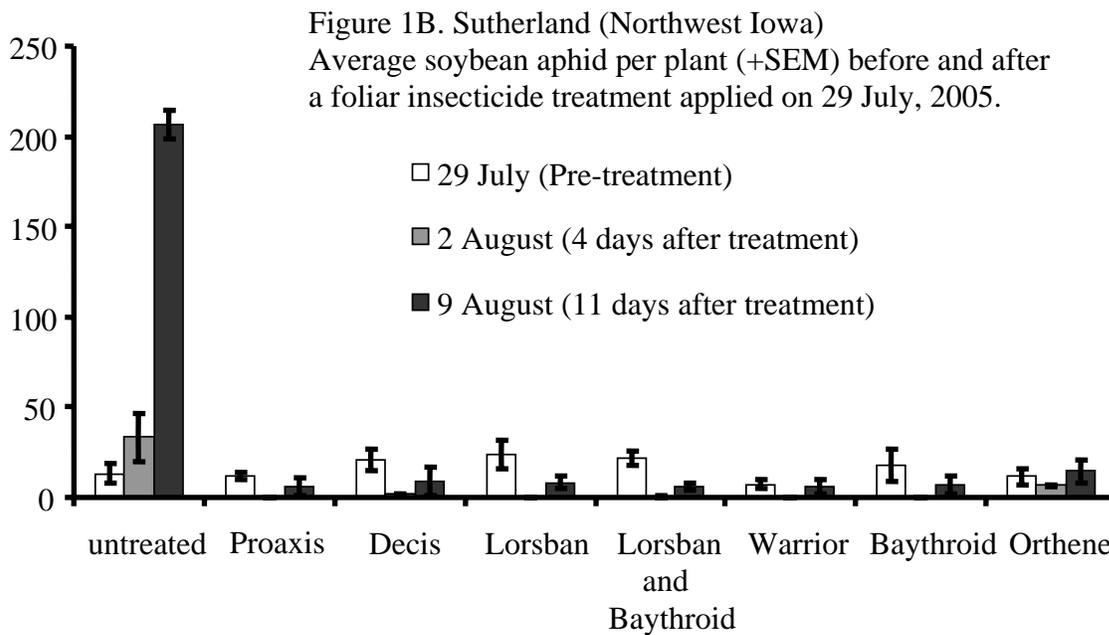
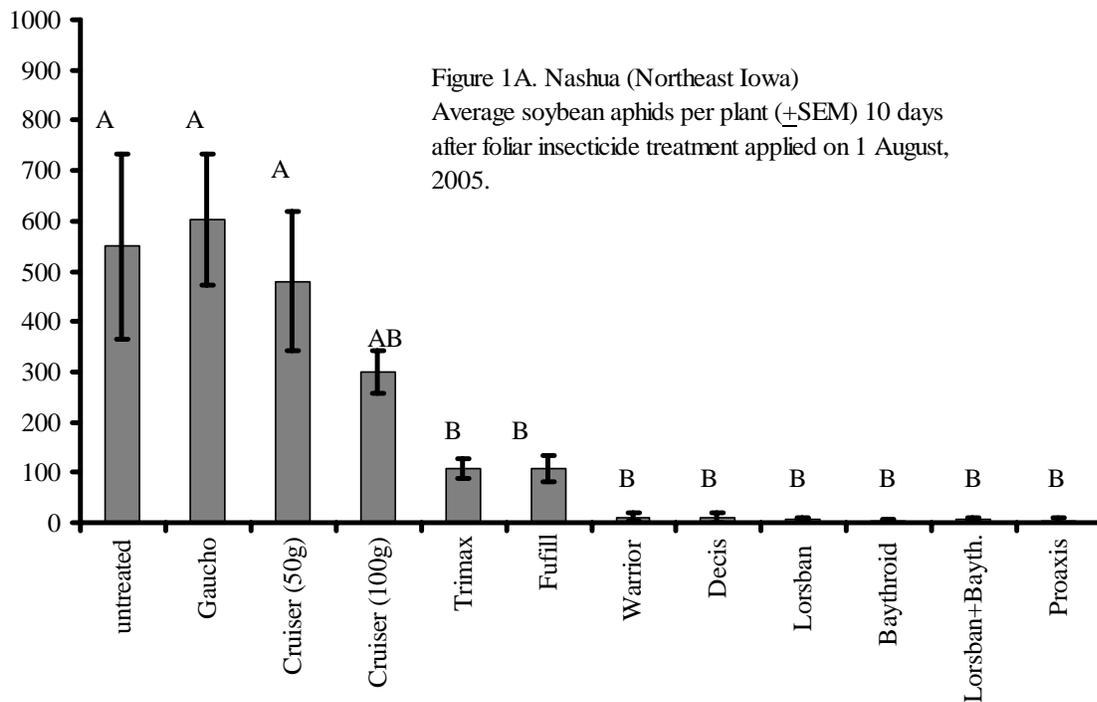


Figure 1. Average (\pm SEM) soybean aphid populations within efficacy trials of various seed treatments (A) and foliar insecticides (B). The class of insecticides and rates are listed in Table 1 and 2. Soybean fields were planted on 10 May at Nashua and 20 May at Sutherland. Foliar insecticides were applied on 1 August at Nashua and 29 July at Sutherland. For Figure 1a, columns labeled with a unique letter are significantly different ($P = 0.05$).