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Use of insecticide seed treatments for managing soybean aphids

Abstract

Many new seed treatment technologies and products are now available for use on soybean. Insecticide seed treatments have caught a lot of attention recently because of potential problems with bean leaf beetles and the recent arrival of soybean aphids. However, little information exists on if these products can fit into soybean production practices in Iowa.

Keywords

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Insects and Mites

Use of insecticide seed treatments for managing soybean aphids

by Palle Pedersen, Department of Agronomy, and Brian Lang, Iowa State University Extension

Many new seed treatment technologies and products are now available for use on soybean. Insecticide seed treatments have caught a lot of attention recently because of potential problems with bean leaf beetles and the recent arrival of soybean aphids. However, little information exists on if these products can fit into soybean production practices in Iowa.

Today, we have two insecticide seed treatments labeled for use in soybean. The first one is Cruiser® (active ingredient, thiamethoxam) from Syngenta. Cruiser® is sold as the CruiserMaxx Pak® that also includes ApronMaxx®, a broad spectrum fungicide seed treatment. The other insecticide seed treatment is Gaucho® (active ingredient, imidacloprid) from Bayer Crop Science. Cruiser® and Gaucho® belong to the neonicotinoid insecticide class. Both are systemic, which means they are absorbed into the plant and have a tendency to concentrate in the actively growing areas of the plant (new leaves and root tips). When insects, such as soybean aphids, feed on the plant, they ingest the insecticide, which targets pests through contact and stomach activity.

From 2002 through 2005, research was conducted by Iowa State University Extension on the John Rodecap Farm near Decorah in northeast Iowa to look at the residual effects of insecticide seed treatments on soybean aphid. This farm is unique since its fields are located relatively close to buckthorn (*Rhamnus* spp.), the overwintering host of soybean aphid. For that reason, soybean fields at this site have consistently been among the earliest fields in Iowa to be infested by soybean aphid.

Because aphid populations in 2002 and 2004 were very low, data from those years will not be presented. Significant aphid populations, however, occurred in 2003 and 2005, with the data presented in Tables 1 and 2. The results from all four years were consistent with observations reported by other universities. Testing of these products across the Midwest has shown good performance against soybean aphids in the early vegeta-



An early infestation of soybean aphid in northeast Iowa was documented on July 11, 2003. A check plot (left) with soybean aphid populations over 2,500 per plant is shown next to an insecticide seed treated plot (right) with soybean aphid populations of about 100 per plant. (Palle Pedersen)

tive growth stages. However, both have limited residual activity to protect older, reproductive stage plants. In general, we found that the insecticide seed treatments were able to keep the aphid population in check for about 60 days.

Based on the experiences with insecticide seed treatments in Iowa, it has been concluded that the treatments are very effective on minimizing aphid activity on soybean plants for about 60 days from the date of planting. Since our recommendation to farmers in Iowa is to plant during the last week of April and the first week of May, we know that we have protection until approximately the first week of July. After that time period, the insecticidal effect seemed to wear off sufficiently for aphids to begin colonizing on soybeans. Based on our research data, the first peak of soybean aphids in Iowa, and the potential to reach the threshold of 250 aphids per plant, seems to appear in mid- to late July, even though aphids can be found on plants in early June. If it is an “aphid year” where the aphid populations reach threshold, then a foliar application of insecticide is necessary because soybean aphids begin

showing up in significant numbers in Iowa soybean fields around the third week of July. Despite using the products at a location with high overwintering populations of bean leaf beetles, we feel the best use of these products would be in situations where a June replant or

late plant problem arises, since that would provide good protection from soybean aphids into early August. However, knowledge of the use in a replant or late plant situation in Iowa is minimal; therefore, research will be conducted in 2006 to test this hypothesis.

Table 1. Aphid counts per plant and yield in 2003 near Decorah, IA. The field was planted on May 14.

Treatments	June 16	June 22	June 30	July 6	July 13	July 20	July 27	August 3	Yield (Bu/Acre)
1. Untreated	10	115	341	745	2803	2450	3179	2750	41
2. Gaucho	0	1	9	16	102	420	1749	1532	41
3. Cruiser	0	1	4	26	137	824	1818	1535	40
4. Baythroid*	11	72	295	613	410	570	719	1235	44

LSD (0.05) = NS

*Foliar insecticide was applied on July 12.

Table 2. Aphid counts per plant and yield in 2005 near Decorah, IA. The field was planted on May 4.

Treatments	June 1	June 7	June 15	June 21	June 28	July 5	July 11	July 18	Yield (Bu/Acre)
1. RTU Trilex AL*	0	2	2	6	48	193	911	200	62
2. RTU Trilex AL + Gaucho	0	0	0	0	3	3	66	474	63
3. RTU Trilex AL + Gaucho + Baythroid*	0	0	0	0	1	8	106	105	62
4. CruiserMaxx Pak	0	0	0	0	1	10	154	437	59
5. CruiserMaxx Pak + Warrior*	0	0	0	0	2	9	122	6	62

LSD (0.05) = NS

*Foliar insecticide was applied on July 14.

Palle Pedersen is an assistant professor of agronomy with research and extension responsibilities in soybean production. Brian Lang is an extension field crop specialist in northeast Iowa.

Coming soon . . .

Soybean Aphids in Iowa—2006, an updated version of Iowa State University Extension publication SP 247, contains information and recommendations based on the latest soybean aphid research conducted in the Midwest. Order a copy of this popular reference—check future issues of the *ICM Newsletter* for details.

