Summary of Soybean Aphid Efficacy Evaluation for 2017

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Abstract
Spring planting conditions throughout Iowa were cold and wet, and most soybean fields were planted later to accommodate corn planting. June turned exceptionally dry, particularly in southern Iowa. Soybean aphids arrived on soybean in mid-June, as they normally do in northeastern Iowa. Hot and dry conditions in June favored twospotted spider mite colonization, particularly in southern counties. But as moisture stress subsided throughout Iowa, spider mite populations faded and soybean aphid colonization expanded. Some commercial fields experienced exponential growth of soybean aphid after bloom, especially in northern Iowa. In August, some fields in northwestern and northcentral counties had soybean aphid exceed the economic threshold. Some populations persisted until after seed set (R5–R6), but aphids quick crashed in most fields by mid-September. When insecticides were applied at full rates and had sufficient coverage, efficacy was good (i.e., >95% knockdown within three days after application) throughout most of Iowa. In some research trials near Sutherland, Iowa, poor knockdown with lambda-cyhalothrin was noted.

Disciplines
Agricultural Science | Agriculture
Integrated Crop Management

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December 18, 2017

2017 Statewide Summary

Spring planting conditions throughout Iowa were cold and wet, and most soybean fields were planted later to accommodate corn planting. June turned exceptionally dry, particularly in southern Iowa. Soybean aphids arrived on soybean in mid-June, as they normally do in northeastern Iowa. Hot and dry conditions in June favored two-spotted spider mite colonization, particularly in southern counties. But as moisture stress subsided throughout Iowa, spider mite populations faded and soybean aphid colonization expanded. Some commercial fields experienced exponential growth of soybean aphid after bloom, especially in northern Iowa. In August, some fields in northwestern and northcentral counties had soybean aphid exceed the economic threshold. Some populations persisted until after seed set (R5–R6), but aphids quick crashed in most fields by mid-September. When insecticides were applied at full rates and had sufficient coverage, efficacy was good (i.e., >95% knockdown within three days after application) throughout most of Iowa. In some research trials near Sutherland, Iowa, poor knockdown with lambda-cyhalothrin was noted.

Project Description

Plots were established at two locations in 2017. Syngenta NK S24-K2 brand soybean was used at both locations. Seed did not have a pesticidal seed treatment unless specifically stated. At both locations, soybean aphid arrived in mid-June and populations peaked in early September. In the untreated control, aphid populations reached 132 per plant ± 39 (± SEM) at the ISU Northeast Research Farm on 12 September (Figure 1A), and reached 650 per plant ± 129 at the ISU Northwest Research Farm on 9 September (Figure 1B). The Northeast Research Farm did not reach the economic threshold, but the
Northwest Research Farm did in mid-August. Plots were sprayed at both locations on 18 August.

Summary

The cumulative aphid days for susceptible soybean treatments ranged from 648 to 14,004, and there were some significant differences among treatments (Figure 1A). The untreated control had significantly more CAD compared to all other treatments. Yield ranged from 55-62 bushels per acre with little significant difference among treatments (Figure 1B). Most of the CAD was accumulated in late August and early September, and did not affect yield among treatments.

![Figure 1A. Mean separation of cumulative aphid days + standard error of the mean treatments at the Northeast Research Farm in 2017. Means with a unique letter are significantly different at alpha = 0.10 (P<0.0001; F = 6.87; df = 18, 3).]
Figure 1B. Mean separation of yield + standard error the mean for treatments at the Northeast Research Farm in 2017. Means with a unique letter are significantly different at alpha = 0.10 (P=0.1950; F = 1.34; df = 18, 3).

Management Recommendations

Population fluctuations between locations and years is typical soybean aphid dynamics for Iowa. My recommendation for soybean aphid management in Iowa is to:

- Strongly consider using host plant resistance if soybean aphid populations are persistent and the seed agronomic traits are appropriate for the area. The use of a pyramided gene will result in lower CAD and reduce the need for foliar insecticides.
- Plant early if the field is in an area with persistent soybean aphid populations.
- Scout for soybean aphid, especially during R1–R5, and use a foliar insecticide if aphids exceed the economic threshold of 250 per plant.
- Use a product labeled for soybean aphid; most well-timed applications of foliar insecticides will provide yield protection if applied at the economic threshold and coverage is sufficient.
• Evaluate foliar insecticide efficacy three days after application to ensure soybean aphid populations were sufficiently reduced.
• Understand that late-season accumulation of CAD (i.e., after R5) may not impact yield like it does in early reproductive growth; a foliar insecticide applied after seed set may not be an economically profitable choice.

Download the full summary of the 2017 efficacy evaluation for soybean aphid, through the ISU Extension Store.

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Crop:  Soybean

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