Objective: Evaluate alternatives for soybean aphid management in organic systems: adapting “speed scouting” for aphid treatment decisions in organic soybeans; continue to evaluate Pyganic® (natural pyrethrum) performance at a lower action threshold; look at planting date and maturity group interaction; and, look at insecticidal soap as an aphid population suppressant.

Soybean Aphid management with Pyganic® (natural pyrethrum) was not evaluated in 2012. Aphid populations remained well below the target threshold planned for triggering applications in all 18 fields monitored for infestations (Figure 1).

However, due to two spotted spider mite (TSSM) infestations in the region, a control study was established in Kragnes, MN. The study was not in organic soybeans, so conventional insecticides/miticides were evaluated (chlorpyrifos, lambda cyhalothrin, befenthrin, and zeta-cypermethrin), plus insecticidal soap for an organic option. A summary of the trial is provided in the On-Farm Cropping Trials report included in this document. Insecticidal soap did not provide any control of TSSM. Fortunately, none of the organic fields actually had TSSM problems and did not require treatment. If they had, soap is not a candidate for application.

Modified “Speed Scouting” for SBA decisions in organic soybean: The field monitoring continued to utilize the modified scouting procedure followed since 2011. It continues to provide a good look at weekly aphid populations. The “speed scouting” method, combined with estimating plant populations and assigning to a category allowed us to see when per plant infestations were increasing based on the number of plants moving to the higher categories (Figure 2). Our target for treating is when the majority of plants shift into the “61-100” and “100-200” category. All fields monitored were similar to the “Olsgaard #1” field depicted in figure 2. Under these low level conditions, there was no justification for treatments of any kind in 2012.

Figure 1. Locations of 18 organic soybean fields monitored for soybean aphid infestations during 2012 near Comstock, MN.

Figure 2. Soybean aphid infestations summarized by the number of plants infested and grouped by the estimated range of aphids present on the plant.
Soybean aphid in an organic system (continued)

A summary of the soybean aphid management project, a project that had its roots in 2006, was presented as a poster at the 2012 Entomological Society of America Annual Meeting held in Knoxville, TN, November 11-14. An image of the poster is provided in this report. The size hinders the ability to read the details, but an electronic version can be made available if requested.

2008 - Effect of Foliar Applied Compost Tea and Fish Emulsion on Organically Grown Soybeans

This study was established to evaluate the effect of applying liquid nutrients, compost tea and fish emulsion, on soybean for yield and quality. It quickly highlighted a major production problem.

How do you manage an aphid outbreak in organic systems?

Neem (azadirachtin) was applied 7/14 and 7/20, but the Organic Materials Review Institute (OMRI) approved insecticidal failed to control the populations, reaching numbers of 1900+ aphids/plant from mid July to early August. Yield losses exceeded 40% compared to historical averages for the local organic farms (Table 1). Neem performed poorly at recognized Action Threshold (AT) level. Would a similar pattern of lower populations? What other OMRI options might we have? Should organic thresholds be lower? Products were evaluated at plant infestation levels of 50, 100, and 150 aphids per plant and compared to an untreated check and no aphids.

没有人对这些选项进行控制或抑制，导致植物群体增长的卵叶短翅蚜虫。吡虫啉的使用被认为是有效控制的。然而，没有一项试验证明了在抑制植物群体方面取得了任何显著效果。产量和生物量在受控条件下得到了改善。

2007 - Organic Aphid Insecticides and Thresholds

Neem performed poorly at recognized Action Threshold (AT) level. What other OMRI options might we have? Should organic thresholds be lower? Products were evaluated at plant infestation levels of 50, 100, and 150 aphids per plant and compared to an untreated check and no aphids.

2008 - Organic Insecticide Efficacy for Soybean Aphid

Outbreaks by mid-July prompted small plot, replicated trials to expand 2007 efforts, with emphasis on pyrithrin. Aphid counts at 3-DAF had increased; poor aphid control in the canopy was responsible. Treatments reapplied with a reconfigured sprayer with drop nozzles. Population growth slowed and bought some time.

Yields by treatment did not produce significantly different results. Pyrithrin’s efflux, better on aphids than the mixture. Improvement related to plant coverage and canopy penetration.

2009 - Air Assisted Sprayer with Organic Insecticides

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2009 - Air Assisted Sprayer with Organic Insecticides

Insecticide applications were applied with an air assist sprayer to assess if improved coverage enhanced performance of organic insecticides, particularly pyrithrin.

Outcomes were similar. Pyrithrin applications suppressed aphid populations up to 80% based on repeated-measures of whole plant counts on randomly selected plants. Populations did not decrease after neem application.

Counts on 90% of the pyrethrin treated plants declined by an average of 130 aphids (95%); counts on 27% of untreated plants also declined, but by only 22 aphids (p<0.01).

Counts declined on treated plants, but when numbers were greater than 250 aphids/plant, treatments were less likely to lower counts below the AT.

2010 - Pyrithrin/Air Assisted Sprayer put to the Test

An organic field with a significant aphid population was reported from Crookston, MN. The field was assessed using “Speed Scouting” plus additional infestation classification (see below). The field exceeded the conventional ET of 250 aphids/plant. Pyrithrin (Pygaic @ 0.35 lb/A) was applied with the air assist sprayer. Assessments were made separately for the field and a smaller, RCB-design, plot layout.

In general, treatments were applied later than desired, exceeding a target AT of 100 aphids/plant. Aphid populations declined by just under 60% for the pyrethrin treatment; they increased by 58% on untreated plants. Yield differences from replicated blocks were not significant, though they favored the pyrethrin treatment. The 56% suppression became the common theme for pyrithrin.

2010 - Pyrithrin/Air Assisted Sprayer put to the Test

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