# Soybean Yield Response to Late Soybean Aphid Treatment

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## Introduction

Soybean aphids have emerged as a major pest in soybean production in the last four years. This pest was first widely observed in Northwest Iowa in 2002, and in 2003 this pest caused widespread yield loss. In Northwest Iowa the pest reached peak populations later than many models indicated would be likely. Research is needed to better understand what impact late season insecticide applications have on soybean yields when aphid populations are high.

## Materials and Methods

Insecticide treatments were applied to three 16-row strips, leaving check strips between each treatment and a sixteen-row border along all edges. Asana insecticide was applied at 8 ounces/acre with a ground sprayer on August 21. Carrier volume was 20 gallons/acre. Plots were monitored for aphid population levels and stage of growth before treating, again on August 27, and for a final time on September 3 (Tables 1 and 2). Two different fields at the Northwest Research Farm were selected for this experiment. The east field was planted to Kruger 223RR on May 22. The west field was planted to Kruger 099RR on June 9. The Kruger 223RR plot was combined and weighed on October 2, and the Kruger 099RR plot was harvested and weighed on September 25. Reported plot yields are listed in Table 3.

## Results and Discussion

Suggested soybean aphid treatment threshold levels from Midwest Extension Specialists during August of 2003 ranged from 200/plant up to 2000/plant. Some recommendations noted that this threshold should be increased later in August. These plots had populations above all of those recommended levels.

The yield results in Table 3 show that insecticide applications to plots with heavy aphid populations late in the season can increase yields. The largest yield increase came from the variety that reached maturity later.

These data would indicate that varieties with heavy aphid pressure late in the growing season, if in early R-5 stages of growth, would give a positive yield response when treated with an insecticide. More research on different varieties, environments, aphid population levels, and treatment timings is still needed.

**Table 1. Aphid counts and growth stage observations on Kruger 223RR aphid plot.**

| Date of observation | Aphids/plants, treated | Aphids/plants, untreated | Stage of growth |
|---|---|---|---|
| August 21 | -- | 2000 | R-5 |
| August 27 | <250 | 1250 | R-5 |
| September 3 | <250 | 1250 | R-6 |

**Table 2. Aphid counts and growth stage observations on Kruger 099RR aphid plot.**

| Date of observation | Aphids/plants, treated | Aphids/plants, untreated | Stage of growth |
|---|---|---|---|
| August 21 | -- | 3000+ | R-5 |
| August 27 | <250 | 1500 | R-6 |
| September 3 | 0 | 0 | R-6.5 |

**Table 3. Effect of insecticide treatments for soybean aphids on two different soybean varieties.**

| Variety | Yield, bushels/acre, treated | Yield, bushels/acre, untreated | LSD (P=0.05) |
|---|---|---|---|
| Kruger 223RR | 41.1 | 35.9 | 4.6 |
| Kruger 099RR | 25.2 | 24.8 | NS* |

*Differences in yield means are not statistically significant.