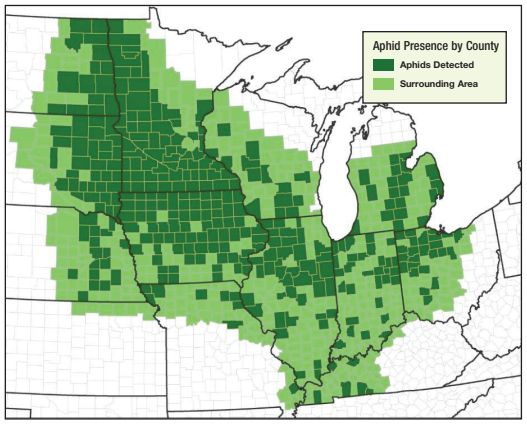
Soybean Aphid Management System

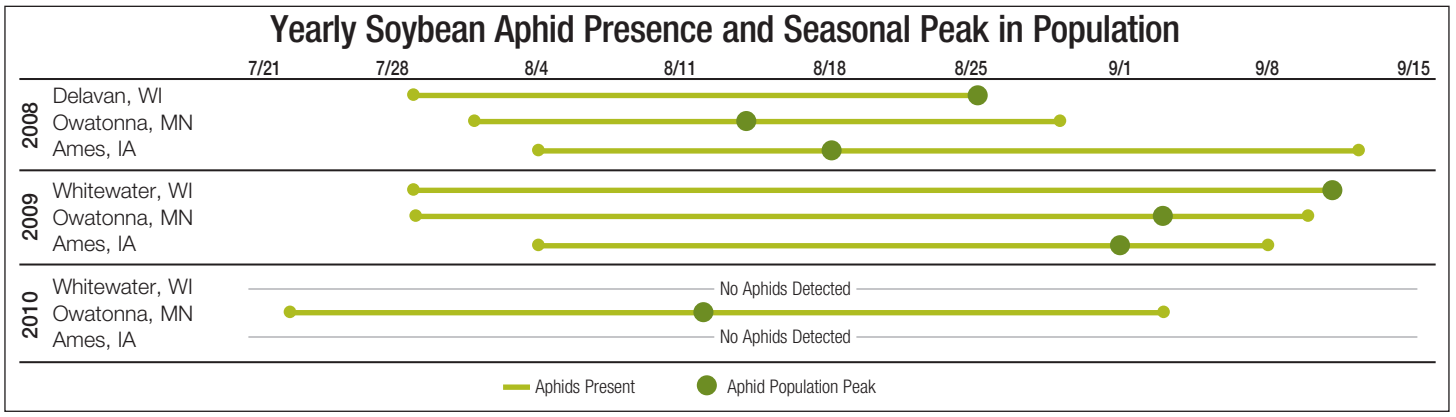
2011



Expanding its area of infestation yearly, the soybean aphid colonizes soybean fields rapidly and often inflicts injury before detection. Soybeans with genetic resistance to aphids, plus CruiserMaxx® Beans insecticide/fungicide seed treatment and beneficial insects comprises the Syngenta Aphid Management System™ (AMS). By utilizing multiple modes of action and integrated pest management practices, AMS is designed to maximize soybean yields while providing season-long aphid control. AMS simplifies and improves management of this pest to the benefit of soybean producers.

An Unpredictable Pest

Aphid outbreaks are becoming more widespread and unpredictable. Where and when they occur in any given year is related to temperature, humidity, wind, and other factors. The following graph illustrates the seasonal variability of when aphids have occurred and peaked in populations at three Syngenta Agronomy Research locations. Future aphid infestations are difficult to predict, making this one of the most challenging soybean pests.



Scouting for Soybean Aphids

- Aphids are light greenish yellow in appearance and roughly the size of a pinhead.
- Aphids typically start appearing in fields around mid-late July, but have been observed earlier in the growing season in some geographies.
- Visual indicators of aphid presence include:
  - Sappy, moldy appearance on leaves.
  - Beneficial insects such as Asian lady beetle present.
  - Stunted plants (see picture at right).

Untreated Variety without Aphid Resistance | **Syngenta Aphid Management System (AMS)**

Economic Thresholds

- The most commonly accepted aphid threshold is >250 per plant.
- R1 (beginning flower) to R4 (full pod) soybean stages are critical times to monitor and protect against aphid populations.
- Aphids can have sporadic distributions, resulting in a need to scout thoroughly and base management decisions on field averages.
- Yield response from insecticide application depends on several variables:
  - Application timing.
  - Soybean development stage at time of application.
  - Number of aphids present.
  - Weather conditions.

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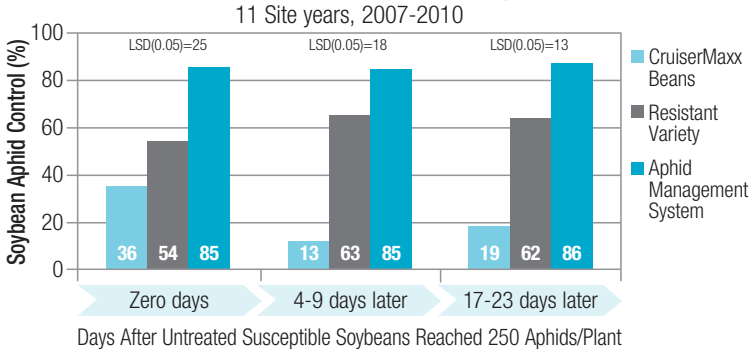
Syngenta Aphid Management System Components

1 Genetic Resistance

- NK® Brand aphid resistant soybeans alone can significantly reduce aphid populations up to 63% (see Aphid Control graph).
- Control was maintained 23 days after varieties without resistance reached threshold levels.
- Aphid resistant varieties increased yields by 4.4 Bu/A on average under severe infestations (see Yield graph).

Aphid Management System Control Relative to Untreated Susceptible Variety

11 Site years, 2007-2010



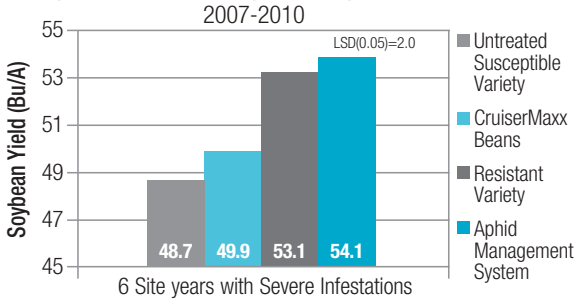
Days After Untreated Susceptible Soybeans Reached 250 Aphids/Plant

2 CruiserMaxx Beans Seed Treatment

- CruiserMaxx Beans insecticide/fungicide seed treatment provides substantial early-season aphid suppression (see Aphid Control graph).
- CruiserMaxx Beans seed treatment also provides additional yield enhancing benefits:
  - Protects seeds and seedlings from disease.
  - Protects against damage from other seed and foliar-feeding insects such as bean leaf beetle.
  - Improves plant stands, early season vigor and growth.
  - Increases speed to canopy which may help improve weed control.

Soybean Aphid Management System Yields

2007-2010



6 Site years with Severe Infestations

3 Genetic Resistance + CruiserMaxx Beans Seed Treatment

- Combination of aphid resistant soybeans plus CruiserMaxx Beans seed treatment increased the percent control to at least 85% and extended protection for a longer time span than either method alone (see Aphid Control graph above).
- Syngenta Aphid Management System increased yields by 5.4 Bu/A in trials with severe aphid infestations (see Yield graph above).
- Syngenta Aphid Management System manages the risk of a severe aphid infestation.

The Syngenta Aphid Management System Offer

- Maximum profit potential with new thresholds of yield protection.
- An environment where beneficial insects can provide aphid control as well as an additional mode of action.
- Optimized performance and yield through integrated pest management practices.
- Peace of mind with managed risk and convenient season-long aphid control.

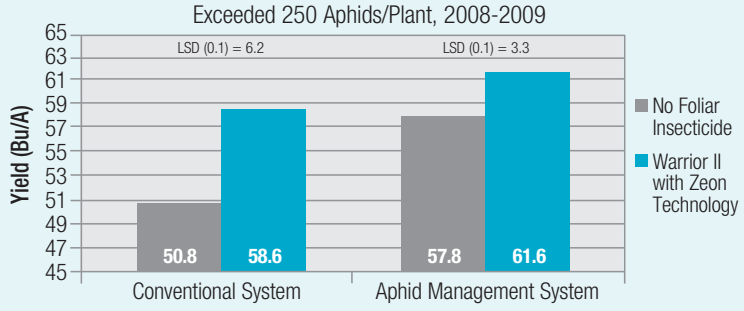
Asian lady beetle larvae can consume up to 50 aphids per day.

Lacewing (Aphidlion) can consume up to 600 aphids per day.

Photos used with permission of Jack Campbell, University of Nebraska

Management Systems Response to Warrior II with Zeon Technology

4 Site Years when Aphid Management System Exceeded 250 Aphids/Plant, 2008-2009



- Warrior II with Zeon Technology® or Endigo® ZC insecticide treatment can be used if aphid thresholds are exceeded, providing even more yield protection without additional input costs*.
- Foliar applications of Warrior II with Zeon Technology improved yields by an additional 3.8 Bu/A when used with the Syngenta Aphid Management System in trials where thresholds were exceeded.

** Warrior II with Zeon Technology or Endigo ZC insecticides provided for application (if economic threshold is exceeded) by AMS Assurance offer.*

More information about NK brand soybeans with the Aphid Management System is available at www.aphidmanagementsystem.com.

This bulletin was developed by **Syngenta Agronomy Research**. Syngenta Agronomy Research studies and evaluates environmental and cultural practices that impact yield in both corn and soybean production to provide answers to the critical issues facing growers. In 2010, 27 research trials were conducted at 10 Syngenta Agronomy Research locations.