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Evaluation of Organic Soybean Rust Treatments for Organic Production - Neely-Kinyon Trial, 2005

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Abstract
Asian soybean rust, which arrived in the United States in 2004, has the potential to be the single most important impediment to economical organic soybean production in the United States. The economic impact of ASR in organic systems could range from $30 to $120 million in yield loss, upon its arrival in organic soybean areas. The fungus (*Phakopsora pachyrhizi*) survives year-round in warm areas, such as the southern United States. During a growing season, the pathogen is disseminated by northward seasonal wind.

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Introduction

Asian soybean rust, which arrived in the United States in 2004, has the potential to be the single most important impediment to economical organic soybean production in the United States. The economic impact of ASR in organic systems could range from $30 to $120 million in yield loss, upon its arrival in organic soybean areas. The fungus (*Phakopsora pachyrhizi*) survives year-round in warm areas, such as the southern United States. During a growing season, the pathogen is disseminated by northward seasonal wind.

Dry conditions across the United States in 2005 confined soybean rust to southern climates again, but concern has been expressed about future movement from overwintering sites in Florida. Iowa State University has been awarded a grant from USDA to conduct a study, "Strategies for Management of Asian Soybean Rust in Organic Systems," which includes treatments allowable under certified organic conditions. Trials to examine the effect of these treatments were established in 2005 in an area of Florida where rust is present. Concurrently, trials have been established in Iowa, Pennsylvania, and Michigan to examine yield effects of these treatments under nonrust conditions.

Materials and Methods

In the soybean rust treatment trial, Schillinger XP30Y soybeans were planted at the Neely-Kinyon Farm on May 27, 2005, at 200,000 seeds/acre. Plots measuring 5 ft × 15 ft with a one-row border on both sides and a 3-ft border at each end were laid out in a randomized complete block design. There were three replications of the following treatments: MicroAF™ (TerraMax, Inc., Cottage Grove, MN) at 1 gallon/acre, Sonata® (AgraQuest, Inc., Davis, CA) at 1 gallon/acre, and AgriCoat Natural II ™ (Agricoat LLC, Soledad, CA) at 20 lb/acre. All treatments were compared with a control. Treatments were applied on July 15, 2005, at the R-1 stage. Soybeans were harvested on October 11.

Results and Discussion

Soybean rust was not observed in the trial plots in 2005. The treatments had no significant effects on yield or grain quality (Table 1). In 2006 we will continue to test products and monitor treatment effects on other soybean diseases, in the event of no rust appearing.

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Table 1. Yield and grain quality in soybean rust treatment trial, Neely-Kinyon, 2005.

Treatment	Yield (bu/acre)	Protein (%)	Oil (%)	Fiber (%)	Carbohydrates (%)	Moisture (%)
AgriCoat Natural II ™	44.88	37.27	18.43	4.60	21.70	10.60
MicroAF™	45.98	37.17	18.23	4.60	22.00	10.27
Sonata®	46.21	37.23	18.23	4.60	21.97	10.27
Control	46.72	37.23	18.30	4.60	21.90	10.23
LSD 0.05	NS	NS	NS	NS	NS	NS