

5-2-2008

Field Testing of N-Hibit™ Seed Treatment in Iowa*

Gregory L. Tylka

Iowa State University, gltylka@iastate.edu

Follow this and additional works at: <http://lib.dr.iastate.edu/cropnews>



Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), and the [Plant Pathology Commons](#)

Recommended Citation

Tylka, Gregory L., "Field Testing of N-Hibit™ Seed Treatment in Iowa*" (2008). *Integrated Crop Management News*. 930.
<http://lib.dr.iastate.edu/cropnews/930>

The Iowa State University Digital Repository provides access to Integrated Crop Management News for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current information on integrated crop management from Iowa State University Extension and Outreach, please visit <https://crops.extension.iastate.edu/>.

Field Testing of N-Hibit™ Seed Treatment in Iowa*

Abstract

N-Hibit™ is a seed-treatment that contains harpin protein, a compound that can stimulate plant defense responses. N-Hibit™ is now being sold in the United States for management of the soybean cyst nematode (SCN). Iowa State University evaluated the effects of N-Hibit™ seed treatment on soybean yield and SCN population densities in experiments at nine locations throughout Iowa in 2007.

Keywords

Plant Pathology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

IOWA STATE UNIVERSITY
Extension and Outreach
Crops Knowledgebase



Search

Search

[Home](#)

Mailing Lists

Subscribe to ICM News updates and receive email alerts when new information is posted.

Your Email address *

subscribe

unsubscribe

Field Testing of N-Hibit™ Seed Treatment in Iowa* ICM News

May 2, 2008

By Greg Tylka and Chris Marett, Department of Plant Pathology

N-Hibit™ is a seed-treatment that contains harpin protein, a compound that can stimulate plant defense responses. N-Hibit™ is now being sold in the United States for management of the soybean cyst nematode (SCN). Iowa State University evaluated the effects of N-Hibit™ seed treatment on soybean yield and SCN population densities in experiments at nine locations throughout Iowa in 2007.

Experiments were conducted in Albert City, Mason City and Manchester in northern Iowa, Cambridge, Farnhamville and Urbana in central Iowa, and Council Bluffs, Crawfordsville and Melrose in southern Iowa. The work was supported by the soybean checkoff through funds from the Iowa Soybean Association.



Locations of experiments in 2007 where N-Hibit™ seed treatment was evaluated for effects on soybean yields and SCN population densities in Iowa.

At each experiment, an SCN-susceptible and an SCN-resistant variety were grown. Seeds of each of the two varieties were either untreated or treated with N-Hibit™ at a rate recommended by Plant Health Care Inc., the distributors of the product. Plots were four 17-foot-long rows spaced 30 inches apart and were planted at a rate of 10 seeds per foot. There were four replicate plots per variety-seed treatment combination, and 16 plots total per experiment.

All plots were end trimmed to 14 feet during the first three weeks of September. When plants in all plots at an experiment were mature, the center two rows of each four-row plot were harvested with a plot combine, total seed weight per plot and seed moisture were determined, and total plot seed weights subsequently were converted to bushels per acre.

At the beginning of the growing season, each plot was sampled for the presence of SCN. Ten 1-inch-diameter, 6- to 8-inch-deep soil cores were collected from the center 14 feet of the center two rows immediately after planting. The soil cores comprising each soil sample were mixed thoroughly, SCN cysts were extracted from a 100-cc subsample (a little less than a half cup), and SCN eggs were extracted from the cysts and counted. SCN egg population densities also were determined for each plot at the end of the growing season in an identical manner.

The effect of N-Hibit™ on soybean yields in the nine experiments varied in 2007. There was no significant difference in yield of the SCN-resistant soybean varieties treated with N-Hibit™ or left untreated in any of the experiments. Thus, those data are not presented in this report. Overall, yields of the SCN-resistant varieties were significantly greater than those of the susceptible varieties in eight of the nine experiments.

With the SCN-susceptible varieties, plots treated with N-Hibit™ yielded 3 bushels per acre greater than untreated plots at the Urbana experiment, in central Iowa, and 2.1 bushels per acre greater than untreated plots at the experiment in Melrose, in southern Iowa (see table 1). There was no significant difference in yield of untreated and N-Hibit™-treated, SCN-susceptible soybean varieties in the other seven experiments in 2007.

Table 1. Locations, soybean yields and SCN egg population densities of a SCN-susceptible soybean variety with and without N-Hibit™ seed treatment in nine experiments in Iowa in 2007.

| Location | Initial SCN Egg Density (eggs/100 cc) | Yield (bu/ac) | | Final SCN Egg Density (eggs/100 cc) | |
|------------------------------------|---------------------------------------|---------------|------------------|-------------------------------------|------------------|
| | | Untreated | N-Hibit™ Treated | Untreated | N-Hibit™ Treated |
| ----- northern Iowa district ----- | | | | | |
| Albert City | 2,500 | 51.7 | 52.5 | 15,575 | 22,725 |
| Manchester | 431 | 65.5 | 66.3 | 3,250 | 2,875 |
| Mason City | 5,819 | 39.4 | 36.6 | 2,050 | 1,975 |
| ----- central Iowa district ----- | | | | | |
| Cambridge | 3,869 | 55.6 | 57.6 | 2,650 | 2,650 |
| Farnhamville | 4,925 | 47.9 | 44.7 | 4,675 b | 8,475 a |
| Urbana | 4,338 | 54.7 b | 57.7 a | 3,250 | 4,375 |
| ----- southern Iowa district ----- | | | | | |
| Council Bluffs | 613 | 64.5 | 67.1 | 3,275 | 4,025 |
| Crawfordsville | 681 | 58.3 | 57.1 | 1,300 | 2,150 |
| Melrose | 4,756 | 54.9 b | 57.0 a | 9,100 | 8,275 |

Numbers presented for yield and final SCN egg population density are means of four replicate plots. Numbers followed by different letters within a row (within an experimental location) for yield and final SCN egg population density are significantly different.

There was no significant difference in final SCN egg population densities in plots with untreated seed versus seed treated with N-Hibit™ with SCN-resistant soybean varieties at any of the nine experimental locations in 2007. Similarly, there was no significant difference in final SCN egg population densities between plots established with untreated seed versus seed treated with N-Hibit™ with SCN-susceptible varieties at eight of the nine locations in 2007. But at Farnhamville, the average end-of-season SCN egg population density was significantly greater in plots treated with N-Hibit™ than in untreated plots planted with an SCN-susceptible soybean variety.

The yield data from individual experimental locations also were combined by district (north: Albert City, Manchester and Mason City experiments, central: Cambridge, Farnhamville and Urbana experiments, and south: Council Bluffs, Crawfordsville and

Melrose experiments) for analysis. No significant effects were detected for the SCN-susceptible or the SCN-resistant varieties in the combined data.

Table 2. Soybean yields and SCN egg population densities of a SCN-susceptible soybean variety with and without N-Hibit™ seed treatment from three combined experiments in each of three Iowa districts in 2007.

| District | Initial SCN Egg Density (eggs/100c) | Untreated | N-Hibit™ Treated |
|----------|-------------------------------------|-----------|------------------|
| North | 2,917 | 52.2 | 51.8 |
| Central | 4,386 | 52.7 | 53.3 |
| South | 2,017 | 59.2 | 60.4 |

Numbers presented are means of 12 replicate plots.

It is not known why yields were significantly greater in plots with N-Hibit™ than in untreated plots at the experiments in Urbana and Melrose, Iowa, but not at the other seven experimental locations in 2007. Also, it is interesting that there were no statistical differences in final SCN egg population densities at eight of the nine experiments, including the two in which significant differences in yield of SCN-susceptible varieties were detected in 2007. Additional experiments are planned to obtain more information about the effects of N-Hibit™ on soybean yields and SCN egg population densities in Iowa in 2008.

More Resources

ISU SCN-Resistant Soybean Variety Trials

Greg Tylka is a professor of plant pathology with extension and research responsibilities in management of plant-parasitic nematodes. Chris Marett is an assistant scientist with responsibilities for research on the biology and management of the soybean cyst nematode.

** Editor's Note: **This article** first appeared in the Dec. 10, 2007 issue of the ISU Integrated Crop Management Newsletter. At the time of original publication, much of the SCN data were not yet available, but the article was published to provide growers and agronomists with a preliminary report of the results that were obtained. The above article contains a complete discussion of all facets of the research, including all of the SCN data.*

Category: [Crop Production](#) [Insects and Mites](#)

Crop:
Soybean

Tags: [seed](#) [N-Hibit](#) [soybean cyst nematode](#)

Author:



Greg Tylka *Professor*

[Site Index](#) [Site map](#) [Policies](#)

