

# Partnership Matters

ISU Research and Extension

PARTNER  
IOWA STATE UNIVERSITY  
CORN AND SOYBEAN  
INITIATIVE

December 2006

## RESEARCH BRIEF —

### Does soybean seed treatment pay?

**What's new.** All it takes is 100,000 uniformly distributed soybean plants per acre at harvest to maximize yield. One goal for soybean growers is to choose planting populations that maximize both yield and profitability. In most cases, any plants above 100,000 per acre will serve as insurance that increases seed costs without producing corresponding yield increases. Previously, soybean seed was relatively inexpensive and the cost of planting extra seed helped ensure not only good emergence and stand establishment but also served as a tool for weed management for relatively low cost. However, with higher cost seed beans today, paring the seeding rate to a lower one that still yields the same is a good starting place to lower input costs, therefore enhancing economic yield.

In addition to increased seed costs, costs of tillage, especially from fuel prices, have increased. With improved planters with row cleaners now available, many farmers are now debating shifting into systems with more conservation tillage practices.



Soybean planting to emergence—a fragile time.

Currently, there is uncertainty about the direction it will take, but with only 30 percent of Iowa's soybean acres in no-tillage systems, it can only move forward. Since soils under conservation tillage systems often are wetter and cooler, conditions that favor many seedling diseases, stand loss resulting from damping-off pathogens may increase based on research from neighboring states. One answer to this is to use a seed treatment, reduce seeding rate and also shift into a no-tillage system to minimize the risk of yield losses from a low stand.

Despite this, there has been little or no yield response to fungicide seed treatment reported in the literature. Soybean plants have a great ability to adjust to conditions and yield well at various plant densities. Thus, it all comes down to economics—either be willing to seed at a higher rate without a seed treatment or use a seed treatment and reduce your seeding rate even more than previously.

**ISU research.** Since 2005, ISU Extension soybean agronomist Palle Pedersen has conducted more than a dozen experiments funded with checkoff dollars from the Iowa Soybean Association as well as

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## RESEARCH BRIEF —

### Slow-release nitrogen shows promise in corn

**What's new.** The search is ongoing for nitrogen fertilizers that help increase the efficiency of nitrogen use in corn. Several years ago, a new slow-release nitrogen product was introduced. In this product, urea is coated with a polymer that slows the release of nitrogen over several weeks. The coating slows the release of urea into the soil, reducing the amount of nitrogen in the soil at any given time. With lower nitrogen levels, it follows that there may be less biological conversion of nitrogen to forms that can be lost. Therefore, less nitrogen from the root zone should be lost, leading to increased nitrogen use by the growing crop. The net benefits include having nitrogen fertilizer available to the plant in usable amounts while reducing the proportion of nitrogen that moves out of the root zone.

**ISU research.** For the past three years, Randy Killorn, Marianela Gonzalez and Jeff Moore in the Department of Agronomy have conducted experiments to evaluate the slow-release nitrogen product for corn production. The study was conducted in corn-following-soybean crop rotations at Iowa State University's Northern Iowa Research and Demonstration Farm near Kanawha and the Northwest Iowa Research and Demonstration Farm near Sutherland. Treatments were different rates of slow-release nitrogen compared with uncoated urea in both fall and spring applications.

**Results.** Yields were significantly higher in the slow-release nitrogen treatments in four of the six spring-applied studies. (One of the studies was not harvested because of hail damage.) Corn yield was significantly



Nitrogen on corn—a key to yield.

higher in the slow-release nitrogen treatments in one of the three fall-applied treatments. There has been no evidence of a negative response to the slow-release nitrogen material.

**What's next.** Researchers are beginning new studies comparing the crop performance using slow-release nitrogen product with that using anhydrous ammonia in both fall and spring applications. With increases in Iowa corn acreage possible, coupled with ever-increasing costs of fertilizers, crop use efficiency of applied fertilizer materials show some promise as a tool in managing input costs.

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**Does soybean seed treatment pay?** *continued*—

funds from Syngenta Crop Protection to investigate the value of using a seed treatment at different plant populations. Research has been conducted all over the state during the last two years and the data are very consistent. From the fungicide seed treatment, there have been 5,000 to 8,000 more plants per acre at harvest compared with control plots. A combination product with both a fungicide and an insecticide seed treatment increased the final stand with an average of 14,000 more plants per acre compared with the control. On average, yield has been comparable except in environments where moderate to high bean leaf beetle numbers have been observed. At those locations, insecticide seed treatments have in some cases increased yield but not consistently. Pedersen's study will continue across the state in 2007.

**What's next.** In 2007, a large research project will be initiated with the help of the checkoff and the Iowa Soybean Association to look at the no-tillage production system. Research will be conducted at six locations across the state from 2007 to 2009 to develop management recommendations for farmers using no-tillage practices. Plant populations and seed treatments will be evaluated among other things. The locations will be Lynn Grove, Humboldt, Hudson, Nevada, Lenox and Oskaloosa.

**Learn more.** For more information from Iowa State University Extension on agronomic issues related to soybean production, go to [www.soybeanmanagement.info](http://www.soybeanmanagement.info).



**ISU BY THE NUMBERS —**

**Integrated Pest Management (IPM) Program**

Number of pests monitored in 2006 under a pheromone trap network.....	3
Cost of a single black cutworm pheromone trap site (season) .....	\$10.50
Cost of a single western bean cutworm pheromone trap site (season) .....	\$4.50
Total pheromone traps reporting in the ISU networks .....	685
ISU Extension staff directly involved	
with row crop pest management programming.....	52
Current ISU Extension publications that directly reference IPM .....	25
Number of soybean rust Iowa Fast Track System First Detectors/Triage.....	650
Percent of Iowa area with ISU IPM radio broadcasts aired.....	100
Annual participants at the ISU IPM scout school in March.....	120
Percent of 2006 scout school attendees self-identified as "new" scouts.....	62

For more information, see [www.ipm.iastate.edu/ipm](http://www.ipm.iastate.edu/ipm).

**... and justice for all**

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**Slow-release nitrogen shows promise in corn,** *continued*—

**Learn more.** Results to date have been reported in progress reports for the research and demonstration farms. The reports are available online at <http://www.ag.iastate.edu/farms/05reports/nw/EffectofControlled.pdf>.

**SPECIAL ANNOUNCEMENT —**

**Oleson awarded Corn and Soybean Initiative's Dean of Agriculture Achievement Award**

On December 8, 2006, ISU Senior Associate Dean of the College of Agriculture Joe Colletti presented Jim Oleson, project coordinator of the ISU Corn Insect Management Project, with a special achievement award for his work related to corn production in Iowa. This award is given at the discretion of the dean of the ISU College of Agriculture in recognition of exemplary service to corn and/or soybean production in Iowa.



**Jim Oleson (left) receives the special achievement award from Senior Associate Dean of the College of Agriculture Joe Colletti.**

Oleson is retiring this spring after 33 years in the program. During his career at ISU, he has been integral in assisting Iowa farmers by generating unbiased, independent evaluations of corn

insecticides. Northern and western corn rootworms are two insect species that are an annual billion-dollar problem for corn producers in the United States and are the primary insect pests studied in the Corn Insect Management Program. Jim's efforts have served as the basis for ISU Extension's soil insecticide recommendations, and the results are shared for use throughout the Corn Belt.

An example of Jim's innovative talents is his development of the Node Injury Scale, a much improved rootworm damage assessment tool that more directly relates corn root damage to resultant yield losses. This tool has rapidly been adopted by scientists who research corn rootworm damage and is additionally valuable as a teaching tool to help understand how rootworm damage progresses.

Jim is a great example of the kind of responsiveness and innovation that Iowa State University provides to benefit Iowa agriculture—the mission of the Corn and Soybean Initiative.

The award included a certificate as well as a monetary contribution.

*Partnership Matters* is published electronically once a month for partners of the Corn and Soybean Initiative, with funding from the College of Agriculture and support from Iowa State University Extension. Brian Meyer, College of Agriculture, is executive editor of *Partnership Matters*; Keven Arrowsmith, Extension Communications and Marketing, is managing editor; and Donna Halloum, Information Technology Services, Iowa State University, is production designer.

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