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## High Yield of Soybeans Study

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# High Yield of Soybeans Study

## **Abstract**

The research project was designed to study soybean plant and yield responses to certain products. Soybean producers generally look to maximize profit, and with increased soybean prices, financial returns have been obtained from even smaller yield responses. The project began in 2011 as a two-year study designed to look at the effects of both seed and foliar treatments applied to soybeans.

## **Keywords**

RFR A1180

## **Disciplines**

Agricultural Science | Agriculture

## High Yield of Soybeans Study

### RFR-A1180

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Jeff Hedges, SEIARA board member

#### Introduction

The research project was designed to study soybean plant and yield responses to certain products. Soybean producers generally look to maximize profit, and with increased soybean prices, financial returns have been obtained from even smaller yield responses. The project began in 2011 as a two-year study designed to look at the effects of both seed and foliar treatments applied to soybeans.

#### Materials and Methods

The study was planted into ground that was in corn the previous year and was chiseled in the fall. Phosphorus and potassium levels were determined to be adequate, so neither of these fertilizers were applied. Soil pH was determined to be within an acceptable range, so no lime was applied. A 2005 soil test for soybean cyst nematode (SCN) confirmed that SCNs were present (1,100 eggs per 100cc of soil), so a SCN variety was planted.

The study was randomized and replicated for seed and foliar treatments in a randomized split-block design. Initially, the seed treatments were planted in blocks that were replicated four times. Three seed treatments were randomized within each block. These treatments included an untreated check, a seed treatment of Acceleron<sup>®</sup> (insecticide and fungicide), and a seed treatment of Optimize<sup>®</sup> applied to the previous treatment.

Foliar treatments were applied randomly within each seed treatment at various stages of plant growth. There were five foliar treatments that included an untreated check, a fungicide (6.0 oz. Headline<sup>®</sup> per acre) applied at R3, an

insecticide (32.0 oz. Cobalt<sup>®</sup> per acre) applied on August 8, fertilizers (8.0 oz. BIO-FORGE<sup>®</sup> and 32.0 oz. XTRA-POWER<sup>®</sup> per acre) applied at V2.5, and Cobra<sup>®</sup> (12.0 oz. and 1 percent volume per volume crop oil per acre) applied at V2.5. When considering the above treatments, each subsequent treatment had all previous treatments applied as well.

Plant node counts and height measurements were taken on August 22 to help determine plant growth effects from the applied treatments.

#### Results and Discussion

Node numbers were affected somewhat by the treatments as shown in Figure 1. Some literature suggests that a Cobra<sup>®</sup> application can increase node numbers. The data collected in this study suggested very small numerical increase in number of nodes from the Cobra<sup>®</sup> treatment compared with the other foliar treatments. The Acceleron<sup>®</sup> and Optimize<sup>®</sup> seed treatments also minimally increased node numbers across the foliar treatments.

Plant heights were somewhat affected by some of the treatments as shown in Figure 2. The Acceleron<sup>®</sup> seed treatment numerically increased plant height across all foliar treatments. Conversely, the Optimize<sup>®</sup> treatment numerically shortened plant height across most of the foliar treatments. The Cobra<sup>®</sup> treatment numerically shortened plant height compared with the other foliar treatments.

Yields were also affected by the treatments as shown in Figure 3. The foliar fungicide and foliar insecticide treatments both seemed to numerically increase yields slightly. There were few foliar diseases present during the year which made the foliar fungicide response somewhat surprising; on the other hand, bean

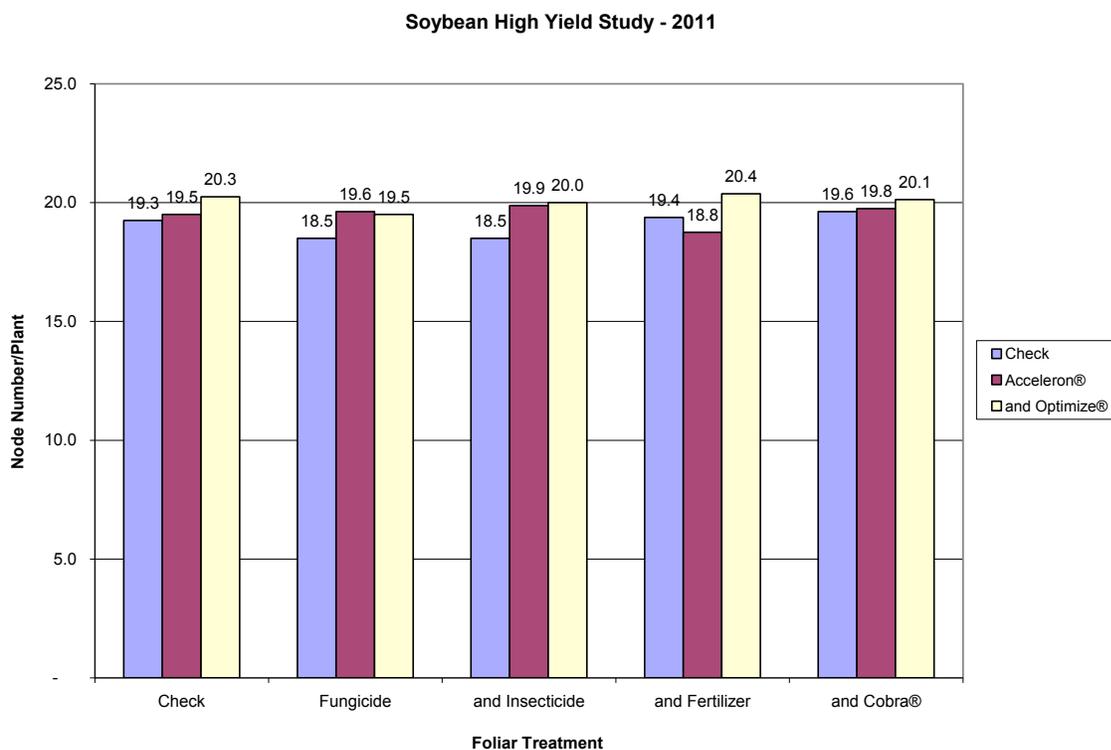
leaf beetles were present and may have moved into the plots just prior to crop maturity. This occurrence may have added to the foliar insecticide response. The foliar fertilizer treatment had a mixed effect, and the Cobra<sup>®</sup> treatment numerically lowered yields when compared with other foliar treatments.

Finally, the Acceleron<sup>®</sup> seed treatment numerically increased yield across all foliar

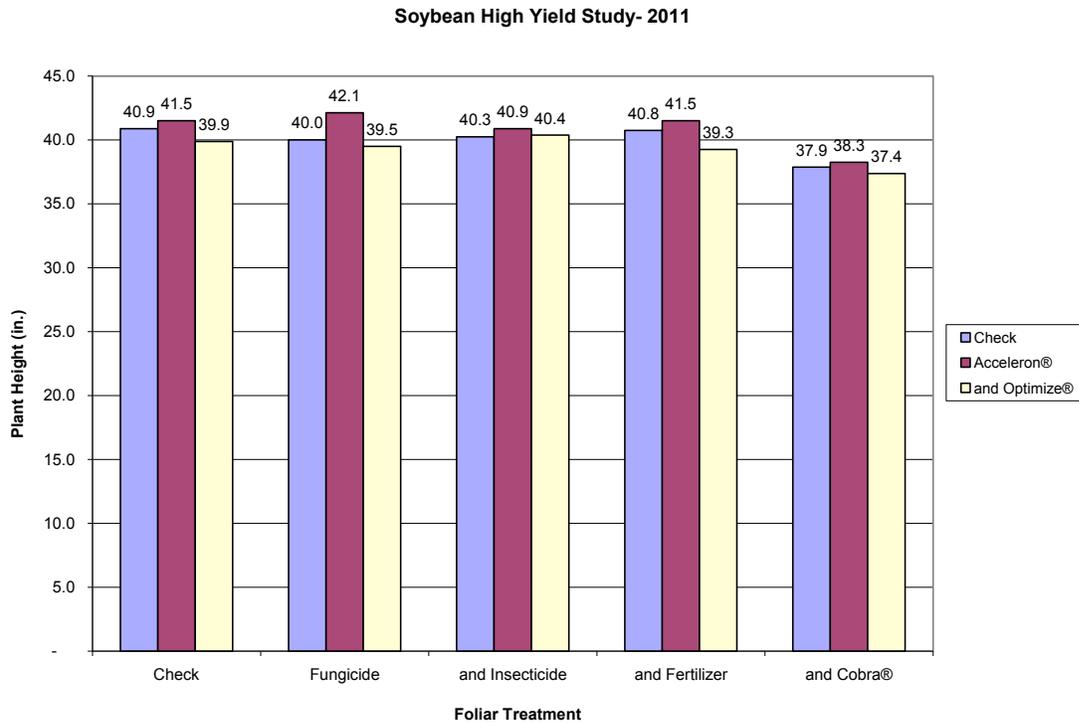
treatments. The Optimize<sup>®</sup> seed treatment generally provided mixed results.

### Acknowledgements

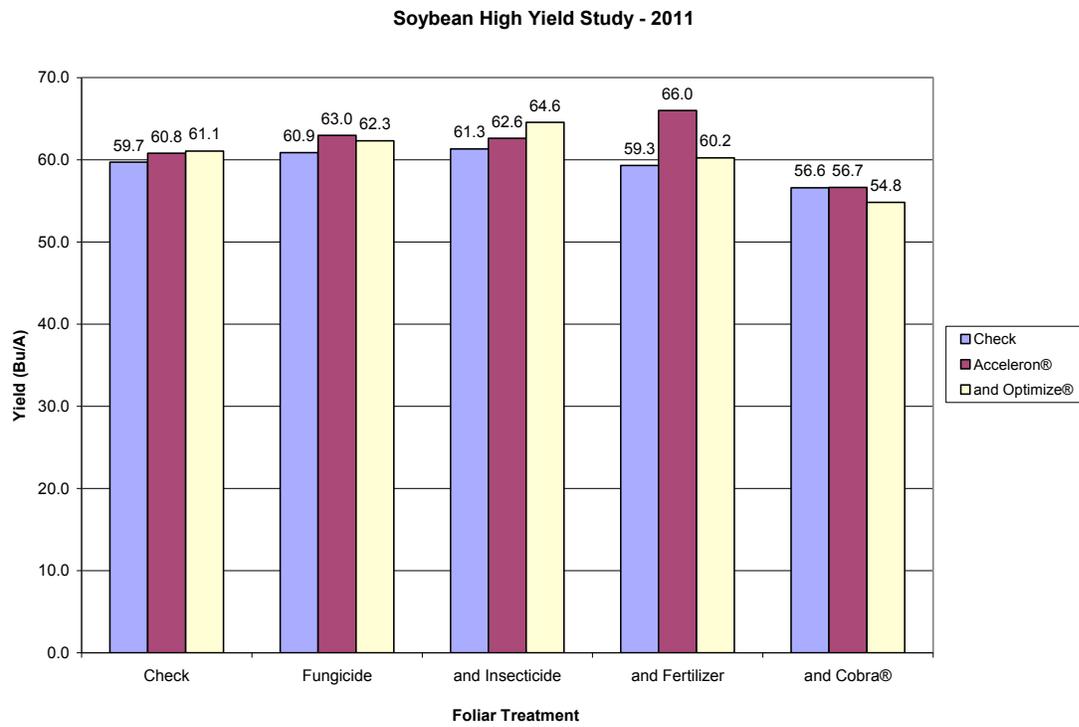
Appreciation is extended to Myron Rees and Chad Hesseltine, research farm staff, for their assistance with this project. No endorsement is intended of the products used in this study, nor is criticism implied of products not used.



**Figure 1. Number of soybean nodes per plant as influenced by seed and foliar treatments, Southeast Research and Demonstration Farm.**



**Figure 2. Soybean plant height as influenced by seed and foliar treatments, Southeast Research and Demonstration Farm 2011.**



**Figure 3. Soybean yield as influenced by seed and foliar treatments, Southeast Research and Demonstration Farm 2011.**