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Iowa Crop Performance Test—Soybeans

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Abstract
The Iowa Crop Performance Test—Soybeans is conducted each year to provide information farmers need to select the best varieties or brands for their production conditions. Seed companies, Iowa farmers, and the Iowa Crop Improvement Association may include entries in these tests. The experiments grown in 2005 at the Southeast Research Farm were planted May 11 and harvested October 5. One test evaluated 16 lines of soybeans treated with conventional herbicide and another test evaluated 75 lines of Roundup® Ready (RR) beans.

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Iowa Crop Performance Test—Soybeans

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Introduction

The Iowa Crop Performance Test—Soybeans is conducted each year to provide information farmers need to select the best varieties or brands for their production conditions. Seed companies, Iowa farmers, and the Iowa Crop Improvement Association may include entries in these tests. This information can be downloaded from http://extension.agron.iastate.edu/varietytesting/.

The experiments grown in 2005 at the Southeast Research Farm were planted May 11 and harvested October 5. One test evaluated 16 lines of soybeans treated with conventional herbicide and another test evaluated 75 lines of Roundup® Ready (RR) beans.

Materials and Methods

Entries were grown in four-row plots with a row spacing of 27 in. The seeding rate was nine seeds/foot (175,000 seeds/acre), unless a different rate was requested by the entrant. Entries were evaluated in one of two experiments, either a RR test or conventional herbicide test.

For testing purposes, the state of Iowa has been subdivided into three districts, more or less by latitude. The northern district includes the northern three tiers of counties, the central district includes the central three tiers, and the southern district includes the southern three tiers. Each experiment was evaluated at three locations, with three replications at each location. For the southern district, test locations were near Orient, Melrose, and Crawfordsville. Entries designated as resistant to soybean cyst nematodes were also submitted to a soybean cyst nematode (SCN) reproduction test in a growth chamber.

Weights, Moisture Content, and Yield. The plots were harvested with a self-propelled plot combine. Seed weights and moisture content were collected on the combine. Yields are reported in bushels/acre at a moisture content of 13% and as a percentage of the mean yield of the test.

Maturity. An entry was considered mature when 95% of the pods had turned brown. Seven to 10 days of good drying weather were required beyond that date before the soybeans were ready to be combined. Maturity was evaluated at one location in each district. Maturity date was reported as "days from the beginning of September." A "7" was September 7 and a "32" was October 2.

Height. Plant height was measured in inches from the soil surface to the top node of the main stem. Height was measured at all test locations.

Lodging. Scores were based on the average erectness of the main stem of all plants at maturity: 1=all plants erect; 2=slight lodging; 3=plants lodged at a 45° angle; 4=severe lodging; and 5=all plants flat. Lodging was scored at all locations in each district.

Protein and Oil Content. The protein and oil content of the entries were determined with an Infratec near-infrared transmittance analyzer. The Infratec analyzer was calibrated by the Department of Agricultural and Biosystems Engineering at Iowa State University. Whole-grain samples from all plots were analyzed. The reported values are an average across each district and are reported at 13% moisture.

Variety Selection and Data Interpretation. The primary consideration in selecting a variety or brand for planting is harvestable yield. The average performance of an entry over two or more years should be considered when data are available.

Care should be used in comparing entries that occur in different tables of the final report. Growing conditions were not identical for each test; therefore, yield of an entry varies among tests. Information from individual locations highlights how variable yields can be in different environments**.** Even though two entries have similar genetic potential for yield and other characters, their performance may differ because of variation in fertility and other environmental conditions among plots at the test sites.

These tests were conducted as an experiment, not a contest. The amount of error in the test was estimated by the LSD (least significant difference) values provided at the bottom of each table. If the difference between two entries is greater than the LSD value, it is reasonably certain that the entries differ in their genetic potential for the character. Likewise, if the difference between two entries is less than the LSD value, it can be assumed that no difference exists between the two entries.

The final report, including all descriptive information and all data collected, can be viewed online at http://extension.agron.iastate.edu/varietytesting/. The conventional test averaged 63.7 bushels/acre, and the RR test averaged 64.4 bushels/acre (Table 1).

Acknowledgments

Appreciation is extended to Kevin Van Dee, Southeast Farm superintendent, and his staff for their assistance with this study.

Table 1. Summary information for Crawfordsville.

Conventional Herbicide Experiment

	Yield[a]	Protein[b]	Oil[b]
Experiment Mean	63.7	35.4	19.1
Minimum Mean	58.3	33.0	17.7
Maximum Mean	70.7	38.7	20.3
$LSD_{(0.05)}$	4.2		

Roundup® Ready Experiment

	Yield[a]	Protein[b]	Oil[b]
Experiment Mean	64.4	34.2	19.5
Minimum Mean	54.7	31.8	17.9
Maximum Mean	72.3	36.6	20.5
$LSD_{(0.05)}$	5.4		

[a]Yield is listed as bushels/acre, adjusted to 13% moisture.
[b]Protein and oil are percentages on a 13% moisture basis.