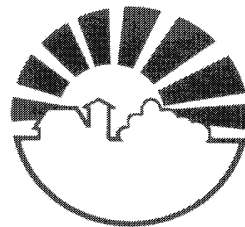


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**PERFORMANCE OF
PUBLIC AND PRIVATE
SOYBEANS
IN INDIANA, 2002**



**Department of Agronomy
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PERFORMANCE OF PUBLIC AND PRIVATE SOYBEANS IN INDIANA, 2002

INTRODUCTION

Soybeans are evaluated annually at several locations in Indiana. These trials are conducted according to the policies and procedures of the Indiana Agricultural Research Programs at Purdue University. In this bulletin, results of the 2002 performance trials are given, as well as multiple year averages for those entries tested in the past three test years. Data for experimental entries are not included.

This information is presented under authority granted Indiana Agricultural Research Programs to conduct performance trials, including interpretation of data to the public, and does not imply endorsement or recommendation by Purdue University. Also any soybean not included in this bulletin does not imply criticism by Purdue University. This bulletin is protected by copyright by the Purdue Research Foundation. Permission is granted to reproduce the tables only in their entirety provided that this bulletin, "Performance of Public and Private Soybeans in Indiana", is referenced and the data are not edited, manipulated or reinterpreted. The table number, title, heading and footnotes 1 and 2 must be included. Permission is also granted to reproduce a maturity group sub-table provided that the complete sub-table, table heading and footnotes are included with the sub-table. A conspicuous disclaimer which states "endorsement or recommendation by Purdue University is not implied" must accompany any information reproduced from this bulletin.

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Performance results for both public and private entries are presented. Certified seed was used for planting public varieties. Private entries, entered voluntarily by the owner, were accepted in the trial after meeting requirements for eligibility and payment of a testing fee. No verification has been made that the seed, or the quality of the seed, entered in this trial is the same as seed offered for sale to the public.

Plans and rules for entering this trial are available, upon request, to anyone at any time. Persons wishing to enter the soybean performance trial should contact the author by February 1.

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PERFORMANCE TRIAL METHODOLOGY

Location of Trials

This section contains information on locations and procedures used in conducting the trials.

In 2002, trials were planted at five locations (see Figure 1). The locations, numbered from north to south are:

Location 1. Porter County at the Pinney-Purdue Agricultural Center near Wanatah, on Runnymede loam, a dark gray depressional soil underlain by sandy substrata.

Location 2. Tippecanoe County at the Purdue University Agronomy Research Center near Lafayette, on Drummer silty clay loam, a very dark gray or black, poorly drained depressional soil. Drummer was formerly classified as Chalmers.

Location 3. Randolph County at the Davis-Purdue Agricultural Center near Farmland, on Blount silty clay loam, a dark grayish-brown, somewhat poorly drained soil.

Location 4. Knox County at the Southwest-Purdue Agricultural Center near Vincennes, on Ade loamy fine sand, a very dark gray, gently sloping, somewhat excessively drained soil. Ade soil has low available water capacity and rapid permeability. Organic matter is relatively high and surface runoff is slow.

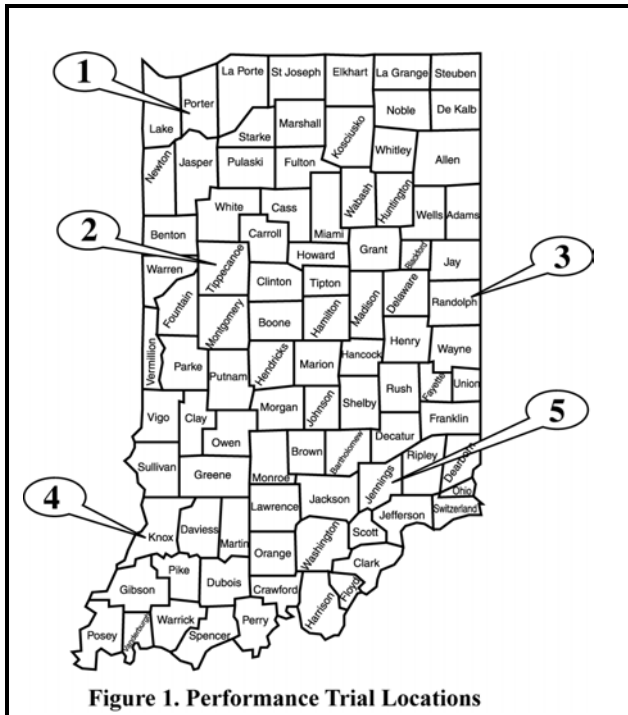


Figure 1. Performance Trial Locations

Location 5. Jennings County at the Southeast-Purdue Agricultural Center near Butlerville, on Avonburg silt loam, a light grayish, nearly level, somewhat poorly drained soil, with fragipan in the subsoil.

Methods Used in the Trials

In 2002, in all of the trials, the soybeans were grouped by maturity, and planted in the respective early or late maturity group at each location. High-germinating seed (usually 90 percent or better) was used in the trial. The soybean plots were planted in a randomized complete block design with four blocks at each location. Anticipated maturity differences between adjacent plots were restricted to 10 days or less.

Planting Equipment Used in the Trials. Two different planters were used to establish the trials reported in this bulletin. Conventional tillage seedbeds, at all five locations, were planted using an Almaco grain drill. Conventional and Roundup Ready® soybeans, planted in no-till seedbeds, (location 5 only) were planted with a Great Plains No-Till Drill. (Roundup Ready® is a trademark of Monsanto Company.) The drills are described in the following paragraphs.

The Almaco Grain Drill was designed and custom built for research plot work. The drill is equipped with 10 John Deere openers set on 7.5 inch row spacing, and is equipped with spring-loaded press wheels. The drill dropped a pre-counted number of seeds in each 33 linear feet of row. The planting rate for proprietary entries, selected by the owner, varied from 2.7 to 4.5 live seeds per linear foot of row. Public entries were seeded at the rate of 3.25 live seeds per linear foot of row, which would be 226,512 live seeds per acre. Assuming 90 percent emergence, this should produce a stand of 203,860 plants per acre.

The Great Plains No-Till Drill is equipped with 11 openers set on 7.5-inch row spacing. The drill is equipped with a belt cone distributor, which dropped a pre-counted number of seeds equivalent to 200,000 seeds per acre. Unless otherwise stated, (for the no-till trials), germination was assumed to be 90 percent for all of the entries. The target population was 162,000 plants per acre assuming that 90 percent of the viable seed emerged. The no-till trials, at location 5, were conducted by Dr. E. P. Christmas and were planted with the Great Plains No-Till drill.

Statistically valid yield comparisons may be made within the trials using either of these planters. Practical comparisons may be made among the trials planted with the same equipment, if planted at the same time, at the same location. Comparisons made between trials conducted using these two different planters could lead to incorrect conclusions.

Conventional farm equipment was used for seedbed preparation. Conventional tillage seedbeds, prepared for conventional and Roundup Ready® soybeans, were clean-tilled prior to planting. All conventional soybeans, in conventional tillage seedbeds, were treated with pre-plant and post-emergence herbicides, and season long weed control was adequate. Hand-weeding was used to remove the few weeds that emerged late in the season. Conventional soybeans, planted in no-till seedbeds, following corn, had chemical burn-down applied prior to planting, and were sprayed with post-emergence herbicides. Season long weed control was adequate, and hand-weeding was used to remove the few weeds that emerged late in the season.

Seedbeds were clean tilled for all Roundup Ready® soybean trials planted in conventional tillage seedbeds, and were sprayed once with Roundup Ultra® just prior to canopy closure. In the no-till seedbeds, chemical burn down was applied prior to

planting and the trials were sprayed again with Roundup Ultra®, just before canopy closure. Season long weed control was adequate, and hand-weeding was used to remove the few weeds that emerged late in the season. (Roundup Ultra® is a trademark of Monsanto Company.)

Trials planted in conventional tillage seedbeds (planted using the Almaco Drill, with 10 rows on 7.5 inch spacing), were calculated as 75 inches wide. Trials planted in no-till seedbeds (performed by Dr. E. P. Christmas using the Great Plains drill), were 11 drill rows wide. Row spacing was 7.5-inches, and plot width was calculated as 82.5 inches wide. The no-till drill was used only at location 5.

Plots in all of the trials were end-trimmed prior to harvest, and all rows were harvested for yield. Observations such as plant height, lodging and maturity were taken from the center rows.

Yield data. All of the trials reported in this bulletin were harvested with an Almaco combine. The combine is equipped with a modified John Deere 900 series head with a floating cutter bar. Grain yields were weighed, and moisture tested automatically, on the combine, using a Seed Spector II and a Psion Workabout (computer). The Seed Spector II equipment was calibrated using a Motomco moisture meter and Chantillon scales, and the calibrations were checked throughout the harvest season. It should be pointed out that this equipment is not the same as equipment used to meet official grain grading standards, but is believed to be suitable for field plot work. All yields were adjusted to 13 percent moisture and are reported as bushels per acre.

Plant height, taken at maturity, is the average length (to the nearest inch) from the soil surface to the tip of the main stem.

Lodging is rated at maturity according to the following scores:

- 1 - Almost all plants erect.
- 2 - All plants leaning slightly or a few plants down.
- 3 - All plants leaning moderately (45 degrees) or 25-50 percent of plants down but still harvestable with conventional equipment.
- 4 - All plants leaning considerably or 50-80 percent of plants down and difficult to harvest with conventional equipment.
- 5 - Almost all of the plants down, and harvest losses would occur with conventional equipment.

Maturity date is when more than 90 percent of the pods are ripe (tan, brown or gray); and days (to maturity) are the number of days from planting to maturity. Delayed leaf drop and green stems are not considered when assigning maturity. About a week of good drying weather may be needed before soybeans are ready to harvest after reaching maturity. Soybeans should mature about two weeks before the average date of the first killing frost, which ranges from approximately October 10 in northern Indiana to October 25 in southern Indiana.

Statewide Weather and Harvest Summary

Information contained in this section is gleaned from weekly reports, "Indiana Crop & Weather Report", from the Indiana Agricultural Statistician at Purdue University.

The first report for the 2002 growing season, issued April 7, 2002 reported spring fieldwork at a virtual stand still due to wet weather. Topsoil moisture was rated (in percent); very short 0, short 1, adequate 38 and surplus 61. Subsoil moisture was rated (in percent); very short 0, short 4, adequate 60 and surplus 36. April continued to be wet and after mid April, temperatures were unseasonably warm.

Wet weather continued in May, and the May 19 report indicated only four percent of the acreage, intended for soybeans, was planted. Soybean planting missed the optimum planting time. In 2001, 92 percent of the soybean acreage was planted by mid May, and 63 percent planted is the 5-year average. Throughout May, soil moisture remained adequate to surplus, and soybean planting progressed much slower than normal.

At the beginning of June, soybean planting was 20 days behind average. The mid June report indicated 86 percent of the soybean acreage was planted compared to 99 percent the previous year and 96 percent for average. At the end of June, double crop soybean planting was underway in southern Indiana. The regular-planted soybean crop was 95 percent emerged compared to 100 percent the previous year. Three percent of the crop was blooming compared to 14 percent the previous year and 10 percent for the 5-year average. The soybean crop was rated 61 percent good to excellent, unchanged from the previous week. In 2001 the crop, at that time, was rated 68 percent good to excellent. At the end of June, 25 percent of the topsoil moisture was rated short to very short. During the last half of June, hot weather placed stress on the crop.

During the first week of July, hot, dry weather continued to stress the soybean crop. Topsoil moisture was 36 percent adequate, 2 percent surplus; 42 percent short, and 20 percent very short. The soybean condition declined from 61 to 51 percent good to excellent. Six percent of the crop was blooming compared to 25 percent in 2001 and 23 percent for the 5-year average.

Hot, dry weather prevailed during July and by the end of the month, the soybean condition declined to 35 percent good to excellent. In 2001, at the end of July, the soybean condition was rated 72 percent good to excellent. In 2002, at the end of July, 58 percent of the soybeans were blooming compared to 92 percent in 2001 and 82 percent for the 5-year average. Sixteen percent of the crop was setting pods compared to 47 percent last year and 35 percent for average.

The first three weeks of August provided no relief from hot, dry weather for most areas of the state. At the beginning of the month, the crop was rated 38 percent good to excellent, 78 percent was blooming and 35 percent setting pods. Soil moisture was rated 33 percent very short, 43 percent short, 23 percent adequate and 1 percent surplus.

During mid August the crop was rated 33 to 34 percent good to excellent. Ninety-five percent of the crop was blooming compared to 100 percent in 2001 and 99 percent for the 5-year average. Sixty-nine percent were setting pods compared to 96 percent in 2001 and 87 percent for average. During the latter part of August, most areas in the state received some much-needed rain. Eighty-five percent of the soybeans were setting pods compared to 95 percent for the 5-year average.

The September 1 report stated that 11 percent of the soybeans were shedding leaves compared to 18 percent last year and 16 percent for average. Soils remained dry, with moisture rated 34 percent very short, 37 percent short, 29 percent adequate and none surplus. The September 15 report stated the soybean condition had dropped to 30 percent good to excellent. Thirty-nine percent had shed leaves, compared to 58 percent for average. According to the September 22 report, 3 percent of the acreage was harvested compared to 10 percent for average. At the end of September, 10 percent of the acreage was harvested compared to 22 percent for average.

Conditions were ideal, the first week of October, for soybean harvest. Thirty percent of the crop was harvested compared to 40 percent in 2001 and 44 percent for average. Harvest continued virtually uninterrupted during October. By the end of the month harvest was on par with the 5-year average. Moisture content in the grain was averaging 12 percent.

The final report for the 2002 growing season, issued November 18, reported soybean harvest to be 98 percent completed. This was on par with 2001 and the 5-year average of 99 percent. Moisture content of the soybean grain was 12.5 percent.

In summary, the 2002 Indiana soybean crop, due to wet weather, got off to a slow start. Planting was delayed about 3 weeks, and missed the optimum (early May) planting period. Hot, dry weather prevailed in June, July and August, reducing yields. September and October weather permitted harvest to proceed at a rapid pace. Yields varied widely due to local conditions. The state yield average was estimated to be 41 bushels per acre, 8 bushels less than the 49 bushels per acre produced in 2001.

On November 20, 2002 the Indiana Agricultural Report presented the following information:

"Based on conditions November 1, 2002 Indiana soybean production is forecast at 232.9 million bushels, up 3 percent from the October forecast, and 15 percent below last year's production of 273.9 million bushels. The expected yield of 41 bushels per acre is up one bushel from last month's forecast, and 8 bushels below last year's yield of 49 bushels per acre. The 5.68 million acres for harvest, is 2 percent above last year's level, but unchanged from October."

On November 20, 2002 the Indiana Agricultural Report presented the following information concerning soybean production in Indiana in 2002.

"In contrast to last year, public soybean varieties fell to 0.2 percent of the total 5.7 million acres planted in 2002.

Private varieties totaled 95.7 percent of Indiana's soybean acreage in 2002 (up 4 percent from 2001). Leading the way again this year was Pioneer with 27.6 percent. Second place went to Asgrow with 15.3 percent, and Becks came in third place with 11.2 percent of the total soybean acreage. DeKalb ranked fourth with 5.4 percent. Unidentified varieties accounted for 4.1 percent of the acreage in 2002."

"Indiana farmers practiced conventional tillage on 14.1 percent of the planted acreage and minimum tillage on 16.2 percent of the planted acres, the remaining 69.7 percent were planted with no-till."

DISCUSSION

It is not possible to absolutely determine or predict the response of plants to the environment. The results of every field trial conducted are influenced by the treatment and by the experimental error. In these trials, the treatment is the soybean entry (variety, brand, or blend) planted in the trial. Experimental error is a composite term to indicate everything that could not be controlled by the person performing the trial. Experimental error is not intended to include human error. These trials are conducted on the assumption that all the entries in the trial are equal until evidence is obtained that they are not equal. In order to obtain this evidence it is necessary to determine whether the trial results were influenced most by the entries or by experimental error. To do this an analysis of variance is performed and the relationship of the yielding ability of the entries to experimental error is determined. The analysis of soybean performance trials show that maturity relationships are very predictable whereas yield relationships are the most difficult to predict.

Probability levels have been established to assess the validity of a trial. Generally trials should be significant at the 10 percent probability level. This means 1 trial in 10 could be a fluke and not be detected. In this bulletin, 9 of the 2002 trials are significant at the 10 percent probability level, and 15 trials are not. The 2002 trials, which are not significant, at the 10 percent probability level are:

- Table 3, Conventional soybeans, maturity group II in conventional tillage.
Conventional soybeans, maturity group III in conventional tillage.
- Table 6, Roundup Ready® soybeans, maturity group II in conventional tillage.
- Table 9, Conventional soybeans, maturity group II in conventional tillage.
- Table 15, Conventional soybeans, maturity group II in conventional tillage.
(due to only 2 entries in the trial)
- Table 18, Roundup Ready® soybeans, maturity group II in conventional tillage.
- Table 21, Conventional soybeans, maturity group III in conventional tillage.
Conventional soybeans, maturity group IV in conventional tillage.
(due to only 2 entries in the trial)
- Table 27, Conventional soybeans, maturity group III in conventional tillage.
Conventional soybeans, maturity group IV in conventional tillage.
(only 1 entry in the trial)
- Table 30, Conventional soybeans, maturity group III in no-tillage.
Conventional soybeans, maturity group IV in no-tillage.
(due to only 2 entries in the trial)
- Table 32, Roundup Ready® soybeans, maturity group III in conventional tillage.
Roundup Ready® soybeans, maturity group IV in conventional tillage.
- Table 34, Roundup Ready® soybeans, maturity group IV in no-tillage.
(due to only 2 entries in the trial)

The analysis of variance makes it possible to compute a coefficient of variability (C.V.). The coefficient of variability is a relative term. It is the ratio of the standard deviation to the grand mean of the trial, expressed as a percent. On the western side of Indiana a normal C.V. for soybeans is 5 to 10 percent; whereas on the eastern side it is 10 to 15 percent. Whenever the C.V. is larger than normal for a trial location, it indicates the precision of the trial was below normal. When yields are high and the experimental error is small, the C.V. will be small.

Single-year trials, in this report, generally require yield differences of 7 to 10 bushels for (statistical) significance. This year (2002) for single locations, BLS_D (k=100) yield differences for significance, ranged from 4.8 to 16.3 bushels per acre.

A test of significance must be performed to determine if the yield difference between two entries is due to experimental error or due to the yielding ability of the entries. The single-year trial only reflects what happened one year at one location, and is generally inadequate for predicting how the soybeans may perform in the future. Data from multiple years, and in some instances multiple locations, when combined and analyzed, provide a superior estimate of how soybeans will perform in the future.

Soybean data from any source must include years (preferably three), must be analyzed, and must have a test of significance before it has any value as a basis for performance prediction.

An analysis of variance, which includes years, will show that years have a very strong influence on yields. Also, an analysis of variance that includes locations will show that locations also influence the performance of the entries in the trial.

Brief periods of favorable or unfavorable weather, when the plants are vulnerable to weather stress, can change the yield relationship among entries from year to year. Maturity relationships are photoperiod influenced and are much less affected by weather from year to year.

Often it is not beneficial or appropriate to combine data across locations from these performance trials. The trials are far enough apart from north to south that the entries in the trial may not be adapted to several locations. The trial environments from east to west are also very different, especially in regard to the presence and severity of *Phytophthora* rot. It is important to realize that locations may all provide similar trial

results one year and produce quite different results the following year.

This year (2002) data combinations were made, from selected locations, for Roundup Ready® soybeans (in conventional tillage) for maturity groups II, III and IV. Roundup Ready® maturity group IV of the 2002, multiple-location yield data was, statistically, significant, and maturity groups II and III were not.

Data were combined for maturity group II Roundup Ready® soybeans (in conventional tillage) at locations 1 and 2, for 2002 trials only, and are reported in table 35.

Data were combined for maturity group III Roundup Ready® soybeans (in conventional tillage) for 2002 trials, at locations 2, and 4, and are reported in table 36.

Data were combined for maturity group IV Roundup Ready® soybeans (in conventional tillage) for 2002 trials, at locations 4 and 5, and are reported in table 37.

Trial results are ranked by yield. The Waller-Duncan Bayesian k ratio t test is used for the test of significance. A k ratio of 100:1 was used in computing the Bayesian least significant difference (BLS_D) for the test of significance. This ratio may be considered in a loose sense to take the place of the (LSD) 5% level of significance. The BLS_D value may be used to make all possible pair-wise comparisons among the entries. Yield differences smaller than the BLS_D value should be considered due to chance (experimental error) and not due to superior performance.

An asterisk (*) is included in the yield column in each sub-table. The asterisk denotes all yields in the sub-table which are not, statistically, significantly different from the top yield. Do not place undue emphasis on yield differences followed by an asterisk. The BLS_D value must still be used to determine if the particular yields being compared are, statistically, significantly different.

At Location 1, April rain totaled 5.32 inches and was distributed in showers of less than one inch, except for 1.72 inches which fell on April 20. Mid April temperatures were unseasonably warm.

May rain totaled 5.10 inches. The heaviest rain (2.16 inches) came on May 12 and delayed planting by 11 days. May was warm the last week of the month.

Soybean emergence was uniform and vigorous stands were established.

June was hot and dry. Precipitation for the month was 0.97 of one inch, and was distributed in showers of 0.25 of one inch or less. Ten days in June had daily high temperatures of 90° F or above. Seven of the 90° F temperatures came the week beginning June 21.

July precipitation totaled 2.61 inches and came in showers of half an inch or less. Fourteen days had temperatures of 90° F or above.

August rain totaled 1.88 inches and came in showers of half an inch or less. Temperatures were a little cooler with 6 days reaching 90° F or above.

September rain totaled 1.56 inches and came in showers of less than half an inch. Three days had high temperatures of 90° F or above.

From June 1 through September 30, the soybean trials at location 1 received a total of 7.02 inches of rain. Thirty-three days had daily high temperatures of 90° F or above. Yields were down 30 to 40 percent from yields in 2001. Statistically, the conventional soybean trials (maturity groups II and III) and the Roundup Ready® trial (maturity group II) were not significant at the 10 percent probability level. The Roundup Ready® trial (maturity group III) was, statistically, significant at the 10 percent probability level. Performance data from location 1 in 2002 is not a good source for variety selection. Previous year's data or data from other trial locations should be a much better source of information.

At Location 2, April rain totaled 5.39 inches with the largest rain (1.6 inches) falling on April 28. May rain totaled 4.42 inches and came in recurring showers of less than an inch. May was cool and soils dried slowly. The trials at location 2 were planted on June 3 and 4, nearly a month later than the preferable planting date. Soil moisture was good, and uniform, vigorous stands were established.

Hot weather arrived the first of June and again during the third week of the month. Nine days had high temperatures which ranged from 92° to 94° F. Rain totaled 3.99 inches with the largest rain (1.53 inches) falling on June 5.

July rain totaled 3.41 inches with the largest amount (1.22 inches) falling on July 23. Ten days had high temperatures of 90° F or above.

August, during the first week, had 3 days with temperatures which ranged from 91° to 95° F. August precipitation totaled 3.72 inches with more than half of it (1.98 inches) arriving on August 19. After mid August, virtually no rain fell.

September received no moisture for the first 10 days of the month, and only light showers after that. Rain fell on September 20 and 21 (0.81 and 0.84 of an inch) respectively, and for the rest of the month, very little rain fell. Precipitation for the month totaled 1.98 inches. Three days (September 8, 9 and 10) had temperatures above 90° F.

From June 1 through September 30 the trials at location 2 received 13.1 inches of rain, and 25 days had temperatures at or above 90° F.

At location 2, in 2002, the conventional soybean (maturity group II) trial was not, statistically, significant at the 10 percent probability level. This trial is not suitable for making performance comparisons. The conventional soybean (maturity group III) trial and both Roundup Ready® trials (maturity group II and maturity group III) were, statistically, significant and may be used to make performance comparisons.

At location 2, yields for conventional soybeans (maturity groups II and III) are 3 percent to 7 percent lower than in 2001. Maturity group II Roundup Ready® soybeans were down about 10 percent, but yields for Roundup Ready® (maturity group III) soybeans were up about 16 percent.

At Location 3, April rain totaled 5.33 inches. May rain totaled 5.59 inches, with the largest amount (2.51 inches) arriving May 13. May was generally cool with daily high temperatures which averaged 67.8° F and night temperatures which averaged 46.2° F. Wet weather delayed soybean planting until May 29.

June was drier and much warmer. Precipitation totaled 2.17 inches with the largest shower (0.63 of an inch) falling on June 27. Eight days in June had temperatures of 90° F or above.

July was hot and dry. Rain totaled 1.44 inches. The first 9 days of the month had no precipitation. On July 10, 0.61 of an inch of rain fell and from then until July 27 there was virtually no rain. Twelve days in July had temperatures which ranged from 90° to 95° F.

August rain totaled 3.19 inches, with the largest rain (1.36 inches) falling on August 6. Nine days had high temperatures ranging from 90° to 96° F.

September moisture totaled 2.96 inches with the largest rain (1.32 inches) falling on September 21. Five days had temperatures ranging from 90° to 95° F. All of the plots were mature and harvested before the first killing frost and freeze which arrived on October 14 and 15.

From June 1 through September 30, the trials received a total of 9.76 inches of rain. Thirty-four days had temperatures which reached 90° F or above.

Conventional soybean yields were down 2 to 15 percent and Roundup Ready® soybean yields were down 18 to 29 percent from 2001 yields.

The 2002 maturity group II trials for both conventional and Roundup Ready® trials were not, statistically, significant at the 10 percent probability level, but may still be useful in evaluating performance.

The 2002 maturity group III trials for both conventional and Roundup Ready® trials are, statistically, significant at the 10 percent probability level and may be useful in evaluating performance.

At location 4, April rain totaled 5.13 inches. May rain totaled 10.32 inches, and most of it arrived during the first half of the month. Soybean planting was delayed until May 30, and the soil was very wet at planting.

During June, rain totaled 2.77 inches. The largest rain (1.18 inches) came on June 14. The beginning of a hot summer started on June 1 when temperature reached 90° F. Fourteen June days had temperature at or above 90° F.

July was hot and dry. Twenty-four July days had temperatures at or above 90° F. Rain for the month measured 1 inch. The largest shower (0.36 of an inch) came on July 30.

August was hotter. Two days (August 4 and 5) had temperatures of 100° F. Eleven days had temperatures at or above 90° F. August received 1.89 inches of rain, with the largest shower (0.90 of an inch) arriving on August 20.

September was wet, with 8.45 inches of rain. No rain fell during the first 14 days of the month. Beginning September 15, rains from 1.25 to 2.66 inches were distributed through the last half of the month. The first 11 days of the month had temperatures at or above 90° F. Two more days reached 90° F, making a total of 13 days of 90° F weather.

The soybeans were all mature and harvested before frost arrived (in November).

From May 1 through September 30, the trials received 24.43 inches of rain with most of it (18.77 inches) coming in May and the last half of September. During June, July and August, rain totaled only 5.66 inches. From June through September, 64 days had temperatures at or above 90° F.

The 2002 conventional soybean trials (maturity groups III and IV) are not, statistically, significant at the 10 percent probability level. In the maturity group IV trial this is due to only two entries in the trial. The maturity group IV trial may be useful in comparing the two entries. Yields for the maturity group III trial are down 35 percent from 2001, but the maturity group IV trial yields are up 25 percent from 2001.

The 2002 Roundup Ready® trials are highly significant and should be useful for making performance comparisons. The maturity group III trial yields are up 18 percent from the 2001 yields, and the maturity group IV trial yields are up 32 percent.

At Location 5, April rain totaled 7.89 inches. May rain totaled 10 inches with 2.36 inches falling on May 13. Wet weather continued into June and prevented planting until June 19. June rain totaled 5.69 inches with 1.29 falling on June 13. Hot weather arrived in June. Nine days had temperatures at or above 90° F.

July was hot. Sixteen days had temperatures at or above 90° F. July rain totaled 2.7 inches with 1.68 inches arriving on July 17.

August rain totaled 3.56 inches with the largest rain (1.76 inches) arriving on August 18. Twelve days had temperatures of 90° F or above.

September had 7 days with temperatures at or above 90° F. Rain for the month totaled 3.78 inches with 2.32 inches falling on September 27.

October rain totaled 4.29 inches with 1.46 inches arriving on October 25. Temperatures were mild with 87° F being the high temperature for the month.

From June 1 through September 30, the trials received 15.73 inches of rain and 44 days had temperatures at or above 90° F. However, due to delayed planting, the trials only received about 8.16 inches of rain. July, August and September combined had 35 days with temperatures at or above 90° F.

Compared to 2001, yields were down from 2 to 16 percent at location 5. The two exceptions to this were the maturity group III Roundup Ready® soybeans, in conventional till, which were up 4 percent and in no-till, which were up 1 percent.

The 2002 conventional soybean trials in both conventional tillage and no-tillage were not significant at the 10 percent probability level. However, the maturity group III conventional soybeans in no-tillage did separate the highest and the lowest yield.

The Roundup Ready® maturity group III trial in no-tillage was, statistically, highly significant. The other Roundup Ready® trials were not, statistically, significant.

SOURCES OF SEED

Information concerning certified seed may be obtained from the Indiana Crop Improvement Association, which certifies seed from both public and private sources. Publicly developed varieties, presented in this bulletin, are listed under the Indiana Crop Improvement Association, and the Ohio Seed Improvement Association addresses. Private companies have requested that inquiries concerning proprietary entries, presented in this bulletin, be directed to the addresses listed on the following pages.

Small case letters preceding the entry name are: v-variety, m-mixture (blend), and b-brand. Other names, associated with the entry name, are brand or company names usually associated, in the trade, with the entry name.

Beck's Superior Hybrids, Inc.
6767 East 276th Street
Atlanta, Indiana 46031
Telephone: 317-984-3508

b Beck 266NRR
b Beck 283RR
b Beck 288
b Beck 306NRR
b Beck 323RR
b Beck 336NRR
b Beck 349
b Beck 355RR
b Beck 367NRR
b Beck 387NRR
b Beck 417NRR
b Beck 419
b Beck 437NRR

Dairyland Seed Company, Inc.
P. O. Box 958, 3570 Highway H
West Bend, Wisconsin 53095
Telephone: 800-236-0163

v DSR-251/RR
v DSR-268/RR
v DSR-274/RR
v DSR-289/STS
v DSR-290/RR
v DSR-297/RR
v DSR-299/STS
v DSR-300
v DSR-301/RR
v DSR-320/RR
v DSR-340/RR
v DSR-357/RR
v DSR-363/RR
v DSR-375/RR
v DSR-378

Garst & AgriPro Seed Company
2369 330th Street, P.O. Box 500
Slater, Iowa 50244
Telephone: 800-831-6630

b 2603RR	Garst
b 2677RR	Garst
b 3135RR	Garst
b 3212RR/N	Garst
b 3712RR/N	Garst
b 3812RR/N	Garst
b 3906N	Garst
b 4312RR/STS/N	Garst
b D294RR/N	Garst
b D308	Garst
b D350	Garst
b D355RR	Garst

Great Lakes Hybrids, Inc.
9915 West Michigan 21
Ovid, Michigan 48866
Telephone: 989-834-2251

b GL 2704RR
b GL 2709RR
b GL 3007RR
b GL 3209RR
b GL 3409RR
b GL 3819RR
b GL 4109RR
b GL 4409RR

Indiana Crop Improvement Association
7700 Stockwell Road
Lafayette, Indiana 47909
Telephone: 765-523-2535
Fax: 765-523-2536

v Athow	Public
v Dwight	Public
v Maverick	Public
v Probst	Public
v Rend	Public
v Resnik	Public

Martin Seeds, Inc.
10045 West Second Street
Williamsport, Indiana 47933
Telephone: 765-986-2030

b M-0131STS
b M-328NRR
b M-333RR
b M-337NRR

Miles Farm Supply, L.L.C.
P.O. Box 22879, 2760 Keller Road
Owensboro, Kentucky 42304-2879
Telephone: 270-926-2420
Telephone: 800-666-4537

v SC Aaron NSTS
v SC Jordan NRR
v SC Silas NRR
v SC Solomon RR
v SC Titus NRR

Monsanto
3100 Sycamore Road
DeKalb, Illinois 60115
Telephone: 815-758-9323

v AG 2703	Asgrow
v AG 2905	Asgrow
v AG 3201	Asgrow
v AG 3302	Asgrow
v AG 3401	Asgrow
v AG 3703	Asgrow
v AG 3903	Asgrow
v AG 4403	Asgrow
v DKB 27-51	DeKalb
v DKB 28-51	DeKalb
v DKB 31-51	DeKalb
v DKB 31-52	DeKalb
v DKB 32-51	DeKalb
v DKB 35-51	DeKalb
v DKB 38-51	DeKalb
v DKB 38-52	DeKalb
v DKB 44-51	DeKalb

Royster-Clark, Inc.
70 North Market Street
Mt. Sterling, Ohio 43143
Telephone: 740-869-2181

b Vigoro V273 RR
b Vigoro V29N3 RR
b Vigoro V313 RR
b Vigoro V32N3 RR
b Vigoro V340 RR
b Vigoro V352 NRR
b Vigoro V353 RR
b Vigoro V37N3 RR
b Vigoro V382 NRR
b Vigoro V393 NRR
b Vigoro V40N3 RR
b Vigoro V42N3 RR
b Vigoro V46N3 RR

Rupp Seeds, Inc.
17919 County Road B
Wauseon, Ohio 43567
Telephone: 419-337-1841

v Rupp 4XP29RR
v Rupp 4XP43RR
v Rupp RS 2499
v Rupp RS 4230RR
v Rupp RS 4289RR
v Rupp RS 4328RR

Stine Seed Company, Inc.
2225 Laredo Trail
Adel, Iowa 50003
Telephone: 800-362-2510
Telephone: 515-677-2605

b Stine S2783-4
b Stine S3200-4
b Stine S3300-4
b Stine S3632-4
b Stine S4202-4

Strike Brand Genetics
702 SR 28 East, P.O. Box 158
Romney, Indiana 47981
Telephone: 765-538-3145

b Strike 2902NRR
b Strike 3101RR
b Strike 3702RR

Trisler Seed Farms, Inc.
3274 East 800 North
Fairmount, Illinois 61841
Telephone: 217-288-9301

v Trisoy 2907RRN
v Trisoy 3113RR
v Trisoy 3222RRN
v Trisoy 3407RR
v Trisoy 3427RR
v Trisoy 3507RRN
v Trisoy 3717RRN
v Trisoy 3911RRN
v Trisoy 4314RRN

UAP/Richter
1267 West Washington Street, P.O. Box 230
Pittsfield, Illinois 62363
Telephone: 217-285-4461

b Dyna-Gro 3200RR
b Dyna-Gro 3218RR
b Dyna-Gro 3292NRR
b Dyna-Gro 3321NRR
b Dyna-Gro 3323RR
b Dyna-Gro 3362NRR
b Dyna-Gro 3373NRR
b Dyna-Gro 3390NRR
b Dyna-Gro X416NRR

W. V. H. Tech Line
2265 West 600 North
West Lafayette, Indiana 47906
Telephone: 765-463-4455

b TL 275RR
b TL 290RR
b TL 303RR
b TL 317RR
b TL 324RR
b TL 333RR
b TL 342RR
b TL 348RR
b TL 353RR
b TL 378RR
b TL 389RR
b TL 397RR