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# *OHIO PERFORMANCE TRIALS of PUBLIC SOYBEAN VARIETIES*

*Including 1995 Results*

***S.K. St Martin, R.L. Cooper, R.J. Fioritto***
***R.J. Martin, and A. Calip-Dubois***

***Department of Horticulture and Crop Science***
***The Ohio State University***

THE OHIO STATE UNIVERSITY

OARDC

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## Ohio Performance Trials of Public Soybean Varieties

The data contained in this report are published to supplement the publication "Ohio Soybean Performance Trials, 1995" (Horticulture and Crop Science Department Series 212), which presents information on both public and private varieties. The purpose of the present report is to provide further information on public soybean varieties.

The data in this report were from randomized, replicated plots that were end-trimmed before harvest to remove unbordered plants at the ends of rows. There were two or three replications at each test location. For more accurate comparisons, bordered plots were used in all tests.

The environment affects varietal performance to a large degree. The use of multiple replications within a test reduces, but does not eliminate, the effect of micro-environmental differences within a field. The Least Significant Difference (LSD 0.30) statistic can be used to make comparisons between two varieties in the same test. The LSD (0.30) statistic is calculated in such a way that, if two varieties are in reality equal genetically, their observed means are expected to differ due to random micro-environmental variation by the amount of the LSD or greater in 30% of the tests. The 30% value for this statistic has been recommended for use in varietal trials, in preference to the 5% value often used in other research. When the difference between two varietal means exceeds the LSD, it is likely that the difference is attributable to a real genetic difference. The notation "ns", when it appears instead of a numerical LSD value, means that there were no significant differences among any varieties at the 30% probability level.

The best variety in a particular test may not be the best in all environments. Repeating the trials at different locations and in multiple growing seasons provides more precise estimates of the true genetic differences between varieties. Therefore, **the most reliable comparisons are those based on average performance across multiple years, multiple locations, or both**. Some of the tables in this publication display average yields from several different combinations of years. In these tables, the only valid comparisons are those within an individual column of figures.

Planting of 1995 tests of public varieties (Tables 2 to 7) was completed in May at all sites. The following information summarizes characteristics of the locations:

| Location | County | Soil series | Row spacing |
| --- | --- | --- | --- |
| Wooster | Wayne | Wooster | 30" |
| Hoytville | Wood | Hoytville | 30" (variety test)<br>7" (semidwarf test) |
| Lakeview | Auglaize | Milford | 15" |
| So. Charleston | Clark | Brookston | 15" (variety test)<br>7" (semidwarf test) |
| Mt. Orab | Brown | Clermont | 15" |

## Characteristics of Varieties; New Varieties

Table 1 summarizes characteristics of the public varieties tested in 1995. Certified seed of new varieties generally becomes available in limited quantities two years after the year of release. Thus, certified seed of 1993 and 1994 releases should be available in 1996, although supplies of the latter will be limited.

IA 2021, IA 2008R, and IA 2007R are new group II varieties developed by Iowa State University. All three carry the *Rps1k* gene for resistance to phytophthora.

Kenwood 94 is a group II variety similar to Kenwood, except that Kenwood 94 has the *Rps1k* gene for resistance to phytophthora. Because Kenwood has relatively low tolerance to phytophthora, it is possible that Kenwood 94 will be damaged by new Ohio races.

Conrad 94 is a mid-group II variety similar to Conrad, except that Conrad 94 has the *Rps1k* and *Rps6* genes for resistance to phytophthora.

Ohio FG1 and Ohio FG2 are early group III varieties selected for the food-grade market. They have large seeds and a relatively high protein content. Ohio FG1 has a yellow hilum, while Ohio FG2 has a gray hilum.

Iroquois and Macon are group III varieties developed by the University of Illinois. Both are relatively tolerant to phytophthora.

Probst was developed by USDA-ARS and Purdue University. It carries *Rps1k*.

HS90-3647 is a group III variety developed by OARDC and released for sale as a brand. It carries *Rps1k*.

General is a group III variety developed by OARDC. It has the *Rps1k* gene for resistance to phytophthora and is also tolerant to new races.

Yale was released because of its resistance to soybean cyst nematode and should not be used unless cyst nematode is known to be a problem. Yale has very good lodging resistance but yields less than most varieties of similar maturity in the absence of cyst nematodes.

Stressland is a group IV variety developed by USDA-ARS and OARDC. It is a tall variety, specifically adapted for soils of low inherent productivity in Southern Ohio and similar latitudes.

## 1995 Results

The 1995 growing season was characterized by excess moisture early in the season, followed by a dry period in August and September. Plants at Mt. Orab and Lakeview were injured by standing water early in the growing season. Mature plant height was shorter than in most years, and lodging was not a serious problem. Neither phytophthora rot nor white mold appeared at any test sites.

Maturity group II and early group III varieties and experimental lines were tested together (Ohio Advanced Line Test A; Tables 2 and 3). A separate test was conducted for the remaining group III and group IV entries (Ohio Advanced Line Test B; Tables 4 and 5). Each test was conducted at five locations, but the early test at Plain City (Union Co.) was lost due to flooding. Two private varieties (Pioneer varieties 9301 and 9392) were selected for inclusion in these tests on the basis of superior performance relative to other private varieties for the previous three years in the Ohio Soybean Performance Trials.

As usual, results of the test of early varieties revealed a correlation between yield and maturity (Table 2), with later varieties yielding more. The early varieties Erie, Vertex, and Newton had very poor yields at Lakeview and Hoytville. Chapman's yield at Lakeview was also very poor. Overall, Conrad 94 yielded significantly more than Conrad. Conrad 94 also exceeded the new Iowa varieties IA 2021 and IA 2008R. Pioneer variety 9301 yielded well in relation to other group II varieties. Experimental lines HF91-070, HF91-078, C1875, and HS91-4523 yielded well and may be released in 1996.

Six years of data are now available for many of the early varieties (Table 3). The strong relationship between maturity and yield is revealed in these data, as the early varieties yielded less than later ones. Vertex and Erie are the earliest-maturing public varieties sold in Ohio. Of the two, Vertex is better adapted to productive sites, such as South Charleston, while Erie is better adapted to lighter soils, such as at Wooster. Conrad was more productive than Erie or Vertex and matured only 3 days later. Chapman and Sandusky have had equal mean yields during the six-year period. Examination of individual locations reveals that Sandusky has yielded better than Chapman at Hoytville and South Charleston, while Chapman was better at Lakeview and Plain City. Generally, Sandusky is best adapted to darker, more productive soils. Experimental line HF91-078 yielded similarly to Resnik during 1992-95, and HS91-4523 yielded more than Resnik in 1993-95. In the two-year (1994-95) mean, Conrad 94 and 9301 had high yields for their maturities.

In the 1995 test of late-maturing varieties, newer varieties and experimental lines generally performed better than the older varieties, such as Resnik, Edison, and Flyer (Table 4). Stressland had the highest yield in the test overall, and yielded much better than other entries at Mt. Orab. Stressland was later than other entries, however. General yielded more than the similarly-maturing

Flyer and 9392. Other lines with good performance were HS90-3647, HS91-4523, and Iroquois. The Group II entries Conrad and IA 2007 yielded poorly in relation to the later entries.

Four-year mean yields of later varieties produced the ranking General >HS90-3647 > Flyer >Thorne >Edison >Resnik (Table 5). The superior yield of General was also evident at most individual locations. In the three-year (1993-95) mean, Charleston and Probst outyielded Flyer and Resnik. Iroquois, HS91-4523, and Macon had good two-year means. Stressland also yielded very well, particularly at Mt. Orab, but was later, taller, and more lodging-susceptible than other entries.

The comparison of food-grade varieties with other varieties in 1995 is presented in Table 6. Yield data from the Lakeview site were subject to large experimental errors and should be interpreted with caution. Seed size of all entries was reduced in 1995, because of dry weather during seed-fill.

Multiple-year means for the large-seeded test are reported in Table 7. Five-year mean yields indicate that Ohio FG1 and Ohio FG2 were 6 to 7 bu/a higher yielding than Vinton 81. They were 2 to 4 bu/a lower in yield than Chapman and Thorne. Ohio FG1 and Ohio FG2 had lower protein content but larger seed than Vinton 81.

## Semidwarf Varieties

To maximize the yield potential of semidwarf varieties they should be solid-seeded in 7- to 10-inch rows at a seeding rate of 3.5 seeds/ft of row (270,000 viable seeds/a). Because of the shorter, more lodging resistant plant type, semidwarf varieties are more responsive to solid-seeding and higher seeding rates than taller, more lodging susceptible indeterminate varieties. Semidwarf varieties were developed specifically for high-yield environments (>50bu/a) where lodging can limit the yield of taller varieties. The increased acreage of solid-seeded soybeans in Ohio (nearly 70% of the Ohio soybean acreage is now solid-seeded) has significantly increased the potential acreage for semidwarf varieties (semidwarf varieties are recommended only for solid seeding). The data shown in Tables 8 and 9 are from solid-seeded plots at the recommended seeding rates for semidwarf and indeterminate varieties, respectively.

Sprite 87 and Hobbit 87 have been the primary semidwarf varieties recommended for Ohio because of their excellent yield record (Tables 8 and 9). In a long-term study (10-year period), solid-seeded Sprite outyielded Williams 82 in 30-inch rows by 12 bu/a at Hoytville (61 vs. 49 bu/a). At South Charleston, solid-seeded Sprite had a 14 bu/a yield advantage over 30-inch Williams 82 (75 vs. 61 bu/a). About half of this yield advantage was due to the narrow rows, and half was due to the higher yield potential of semidwarf varieties when solid-seeded. To take advantage of these long-term higher average yields, a grower has to use the solid-seeded-semidwarf (SSS) system over a period of years to average in those favorable moisture years when the yield advantage of the SSS system may be as much as 20 bu/a (50 vs. 70 bu/a). In dry years, there may be no yield advantage for the SSS system because of moisture limitations. We call this the HYSIP (High-Yield-System-In-Place) concept.

The newest semidwarf variety, Charleston, continues to yield well, and it is anticipated it will largely replace Sprite 87 and Hobbit 87, except where phytophthora root rot is a serious problem. Charleston is tolerant to root rot but does not have the major-gene resistance found in Sprite 87 and Hobbit 87. At Hoytville, averaged over 3 years (1992-94), in subirrigation/drainage yield trials, Charleston has averaged irrigated yields of 78 bu/a and non-irrigated yields of 60 bu/a. This compares to irrigated yields of 73 bu/a for Resnik and Edison and non-irrigated yields of 58 and 56 bu/a. In 1993, a dry year at Hoytville, Charleston showed a 30 bu/a yield increase from subirrigation (79 vs. 49 bu/a), showing its ability to respond to favorable moisture conditions. Averaged over 3 years (1993-95), non-irrigated yields of Charleston have averaged 74.4 bu/a in South Charleston yield trials, compared to 71.7 bu/a for Resnik and 73.5 bu/a for Sprite 87 (Table 9). At Hoytville, Charleston has averaged 60.8 bu/a, compared to 53.5 for Resnik and 54.8 for Sprite 87 (Table 8). Like all semidwarf varieties, Charleston should be solid-seeded in 7- to 10-inch rows at a seeding rate of 270,000 viable seeds/a for maximum yields.

Hoytville. 1995 was an average to good year with soybean yields in the 50 to 60 bu/a range (Table 8). In maturity group III, the semidwarf varieties, Sprite 87, Hobbit 87, and Charleston, outyielded the taller indeterminate varieties, with yields of 61.1, 61.8, and 63.2 bu/a, respectively. The cyst nematode resistant variety, Jack, the new OSU release, General, and Resnik were the highest yielding indeterminate varieties (58.0, 57.6, and 57.6 bu/a, respectively). Thorne yielded 55.2 bu/a, with Edison lowest in yield of the group III varieties (50.1 bu/a). Averaged over the last three years (1993-95), Charleston at 60.8 bu/a and Hobbit 87 at 58.3 bu/a have significantly outyielded all the other varieties tested at this location. These data suggest that growers willing to follow the specific recommendations for the solid-seeded-semidwarf system in Northwest Ohio, on properly drained Hoytville silty clay loam (like at the OSU Northwestern Branch Experiment Station, Hoytville), would be rewarded with higher long-term average yields. In maturity group II, the early maturing variety Kenwood 94 and the late group II semidwarf variety Gnome 85 were the highest in yield ion 1995 (60.0 and 59.3 bu/a, respectively). Chapman and Vertex also had good yields for their maturity (58.8 and 57.7 bu/a, respectively). The mid-group II semidwarf variety Hoyt yielded 56.5 bu/a. Sandusky, IA 2007, and Conrad 94 were lowest in yield. Averaged over three years, 1993-95, Gnome 85 at 55.6 bu/a, and Chapman and the semidwarf variety Hoyt, at 53.9 and 53.4 bu/a, respectively, were the highest in yield. These data suggest that these earlier semidwarf varieties (Gnome 85 and Hoyt) will yield well on some soils in Northwest Ohio when properly managed.

South Charleston. Minimum tillage was used for the first time at this location in 1995 and the planting date, April 28, was a week earlier than normal. This, combined with unusually cool spring weather, resulted in slow early vegetative growth and shorter plant height, especially for the semidwarf varieties (Table 9). As a result, the relative yields of the semidwarf varieties were lower than normal. In maturity group III, the new OSU indeterminate variety, General, topped the test with 76.3 bu/a, followed next by Thorne with 72.3 bu/a. The cyst nematode resistant variety, Jack, and Resnik were the next highest in yield with 69.9 and 68.7 bu/a, respectively. Charleston was the highest yielding semidwarf variety, 66.7 bu/a, followed by Sprite 87 with 64.0 bu/a. Edison yielded 63.2 bu/a, with the semidwarf variety, Hobbit 87, lowest in yield. Note that Sprite 87 and Hobbit 87 reached a mature plant height of only 16 and 18 inches, respectively, which contributed to their relatively lower yield performance in 1995. The determinate semidwarf varieties must reach their full height by flowering, after which there is an abrupt termination of further plant height increase. This growth habit is a real advantage in highly productive environments where excessive plant height can result in severe lodging and loss in potential yield. The semidwarf varieties will continue vegetative growth after flowering by producing branches and new flowers on these branches, extending the flowering period and reproductive cycle. Because of the abrupt termination of further plant height increase after flowering, cool soils and early-season cool weather, such as occurred at the South Charleston location in 1995, can result in excessive reduction in the plant height of semidwarf varieties. These results suggest that under minimum-till conditions at this location, planting of semidwarf varieties should be delayed until the first week of May (our normal planting date at this location). Averaged over the three years, 1993-95, Edison and the semidwarf variety, Charleston, were highest in yield with 74.5 and 74.4 bu/a, respectively., followed by the semidwarf variety Sprite 87, with 73.5 bu/a. Resnik was the next highest in yield with 71.7 bu/a. Thorne and the semidwarf variety Hobbit 87 were the lowest in yield with 67.4 and 66.9 bu/a, respectively. In maturity group II,, the relatively new OSU indeterminate varieties Sandusky and Chapman were highest in yield with 69.8 and 69.0 bu.a, respectively. The very early OSU variety Vertex was next highest in yield with 66.0 bu/a. Conrad 94 and IA 2007 were lowest in yield with 63.0 and 57.2 bu/a, respectively. Averaged over three years, Sandusky and Chapman were highest in yield with 73.4 and 73.1 bu/a, respectively. In maturity group IV, the new drought-tolerant variety, Stressland, was highest in yield with 71.4 bu/a, followed closely by Flyer with 69.9 bu/a. The semidwarf variety, Ripley, was hurt by the cool soil and cool spring, resulting in reduced plant height and yield. Averaged over the three years, Flyer has shown a significant yield advantage over the later maturing Ripley variety (75.4 versus 69.7 bu/a).

SUMMARY. In 1995, at the Hoytville location, the maturity group III semidwarf varieties, Charleston, Hobbit 87, and Sprite 87, were highest in yield. Averaged over the past three years, Charleston and Hobbit 87 have significantly outyielded all other varieties at this location. In contrast, at the South Charleston location in 1995, the indeterminate varieties General and Thorne were highest in yield. The lower yield of the semidwarf varieties at this location in 1995 is attributed to the use of minimum till for the first time, resulting in cooler soils, earlier planting (April 28) and an unusually cool spring, all of which contributed to an excessive reduction in plant height of the semidwarf varieties. Delaying planting at this location until the first week of May should help avoid this problem in the future. Averaged over the last three years, Edison and the semidwarf variety Charleston have been the highest in yield.

Table 1. Characteristics of public varieties in 1995 trials.

| Variety | Origin | Year released | Maturity rating[a] | Pedigree | Resistance[b] |
|---|---|---|---|---|---|
| Erie | Ohio | 1991 | 2.3 | A78-123018$^{2}$ x Century 84 | Rps1k |
| Vertex | Ohio | 1993 | 2.4 | Conrad x Hayes | Rps1k |
| Conrad 94 | Iowa | 1994 | 2.5 | (Conrad$^{5?}$ x Elgin 87) x (Conrad$^{5?}$ x Preston BC) | Rps1k,Rps6 |
| Kenwood 94[c] | Iowa | 1994 | 2.5 | Kenwood$^{4?}$ x Elgin 87 | Rps1k |
| IA 2021[c] | Iowa | 1995 | 2.5 | Elgin 87 x Marcus | Rps1k |
| Conrad | Iowa | 1988 | 2.6 | A3127 x Tri-Valley Charger | |
| Hoyt† | Ohio | 1986 | 2.6 | Harcor x Elf | |
| Vinton 81 | Iowa | 1981 | 2.7 | L60-347-4-4G-2-B x Vinton$^{5}$ | Rps1c |
| IA 2008R[c] | Iowa | 1995 | 2.8 | IA 2008$^{4}$ x Archer | Rps1k,BSR |
| Newton | Iowa | 1990 | 2.8 | BSR101 x CN210 | SCN |
| Chapman | Ohio | 1990 | 2.8 | A79-236002$^{3}$ x HW79149 | Rps3 |
| IA 2007 | Iowa | 1991 | 2.9 | Pride B152 x A80-244003 | Rps1c |
| IA 2007R[c] | Iowa | 1995 | 2.9 | IA 2007$^{4}$ x Archer | Rps1k |
| Sandusky | Ohio | 1993 | 2.9 | Conrad x Hayes | Rps1k |
| Gnome 85† | Ohio | 1985 | 2.9 | Gnome$^{6}$ x Williams 82 | Rps1k |
| Jack | Illinois | 1989 | 3.0 | Fayette x Hardin | SCN |
| Ohio FG1 | Ohio | 1994 | 3.2 | LS301 x HS84-6247 | Rps3 |
| Ohio FG2 | Ohio | 1994 | 3.2 | LS301 x HS84-6247 | Rps3 |
| Resnik | Ohio | 1987 | 3.4 | A3127$^{4}$ x L24 (Williams 82) | Rps1k |
| Iroquois[c] | Illinois | 1995 | 3.4 | LN81-1029 x A2943 | |
| Hobbit 87† | Ohio | 1987 | 3.4 | Hobbit$^{6}$ x Williams 82 | Rps1k |
| Sprite 87† | Ohio | 1987 | 3.4 | Sprite$^{7}$ x Williams 82 | Rps1k |
| Thorne | Ohio | 1992 | 3.6 | A80-344003 x (A3127$^{4}$ x L24) | Rps1k,BSR |
| Charleston | Ohio | 1992 | 3.6 | HC74-634RE x HC78-676 | |
| Probst | Indiana | 1994 | 3.7 | Spencer x Resnik | Rps1k |
| Edison | Ohio | 1990 | 3.7 | unknown | Rps1k |
| HS90-3647 | Ohio | 1995 | 3.7 | Voris 311 x Resnik | Rps1k |
| Yale | Illinois | 1994 | 3.8 | Sherman x Fayette | SCN |
| Flyer | Ohio | 1988 | 3.9 | A3127$^{4}$ x L24 (Williams 82) | Rps1k |
| Macon[c] | Illinois | 1995 | 3.9 | Sherman x Resnik | |
| General[c] | Ohio | 1995 | 3.9 | Voris 311 x Resnik | Rps1k |
| Ripley† | Ohio | 1985 | 4.3 | Hodgson x V68-1034 | Rps root gene |
| Stressland | Ohio | 1994 | 4.3 | HC80-1946 x A3127 | |

†denotes semidwarf variety. [a]ratings based on regional and Ohio tests. [b]Rps genes confer resistance to phytophthora rot; BSR=resistant to brown stem rot; SCN=resistant to soybean cyst nematode. [c]prior designations of new releases: Kenwood 94 = IA 2014 = A-Kenwood BC; IA 2021 = A91-607052; IA 2008R = IA 2008BC; IA 2007R = IA 2007BC; Iroquois = LN88-10534; Macon = LN89-295; General = HS90-3653.

Table 2. Summary of 1995 trials of early-maturing varieties (Ohio Advanced Line Test A).

| Entry | Date mature | Lodging[1] | Ht (in) | Yield (bu/a) S.Charleston | Lakeview | Hoytville | Wooster | mean |
|---|---|---|---|---|---|---|---|---|
| Vertex | 9/ 5 | 1.0 | 23 | 46.8 | 18.8 | 21.5 | 28.6 | 28.9 |
| Erie | 9/ 6 | 1.1 | 25 | 44.1 | 19.7 | 24.0 | 37.7 | 31.4 |
| Conrad 94 | 9/ 8 | 1.0 | 27 | 49.2 | 39.4 | 41.4 | 32.9 | 40.7 |
| Newton | 9/ 9 | 1.2 | 27 | 43.5 | 7.4 | 18.9 | 40.5 | 27.6 |
| Conrad | 9/ 9 | 1.0 | 26 | 46.9 | 29.3 | 30.7 | 31.0 | 34.5 |
| Kenwood 94 | 9/10 | 1.2 | 27 | 54.3 | 25.8 | 43.4 | 34.4 | 39.5 |
| 9301[2] | 9/11 | 1.3 | 29 | 56.8 | 40.9 | 41.7 | 44.4 | 46.0 |
| IA 2007 | 9/11 | 1.0 | 24 | 50.1 | 31.7 | 31.1 | 38.2 | 37.8 |
| IA 2008R | 9/12 | 1.2 | 26 | 50.5 | 30.5 | 29.0 | 42.3 | 38.1 |
| Chapman | 9/12 | 1.1 | 25 | 55.2 | 13.7 | 36.2 | 39.5 | 36.1 |
| Sandusky | 9/12 | 1.2 | 27 | 49.8 | 20.1 | 40.6 | 32.7 | 35.8 |
| IA 2021 | 9/12 | 1.2 | 27 | 54.3 | 32.8 | 33.9 | 31.8 | 38.2 |
| IA 2007R | 9/13 | 1.0 | 26 | 55.6 | 43.7 | 34.6 | 32.5 | 41.6 |
| HF91-070* | 9/14 | 1.1 | 28 | 57.4 | 29.1 | 39.0 | 42.9 | 42.1 |
| HF91-078* | 9/14 | 1.3 | 28 | 63.7 | 22.5 | 41.9 | 43.5 | 42.9 |
| C1875* | 9/15 | 1.1 | 28 | 57.9 | 42.6 | 40.4 | 45.1 | 46.5 |
| HS91-4523* | 9/16 | 1.1 | 30 | 51.6 | 39.7 | 41.2 | 49.8 | 45.6 |
| Thorne | 9/17 | 1.5 | 28 | 56.9 | 25.2 | 36.9 | 50.2 | 42.3 |
| Resnik | 9/17 | 1.1 | 29 | 57.9 | 31.4 | 39.8 | 46.3 | 43.9 |
| LSD (0.30) | 1 | 0.1 | 1 | 4.7 | 5.9 | 6.5 | 5.9 | 4.1 |

*indicates experimental strain.
[1]rated from 1 (erect) to 5 (prostrate). [2]Pioneer variety included as check.

Table 3. Multi-year summary for early-maturing varieties.

| | 1994-95 | | | yield (bu/a) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mat. | lodg.[1] | ht. | Hoytville | | | Wooster | | Lakeview | | | S. Charl. | | All locations[2] | | | |
| Entry | (date) | | (in) | 94-5 | 92-5 | 90-5 | 94-5 | 90-5 | 94-5 | 92-5 | 90-5 | 94-5 | 92-5 | 94-5 | 93-5 | 92-5 | 90-5 |
| Erie | 9/ 8 | 1.8 | 28 | 40.4 | 37.9 | 37.0 | 47.1 | 37.2 | 35.5 | 35.7 | 36.8 | 47.1 | 50.4 | 43.3 | 42.6 | 42.6 | 40.0 |
| Vertex | 9/ 8 | 1.3 | 28 | 40.3 | 35.1 | 36.0 | 37.8 | 29.6 | 33.0 | 37.6 | 37.3 | 51.4 | 56.0 | 43.0 | 43.5 | 42.5 | 39.8 |
| Conrad 94 | 9/10 | 1.3 | 29 | 52.4 | -- | -- | 43.2 | -- | 46.2 | -- | -- | 51.9 | -- | 49.2 | -- | -- | -- |
| Conrad | 9/11 | 1.2 | 30 | 47.3 | 42.2 | 41.8 | 44.8 | 36.4 | 40.0 | 43.2 | 43.0 | 54.2 | 56.3 | 47.4 | 46.6 | 46.2 | 44.2 |
| Kenwood 94 | 9/11 | 1.4 | 29 | 51.2 | -- | -- | 43.8 | -- | 38.7 | -- | -- | 57.3 | -- | 48.9 | 48.3 | -- | -- |
| Newton | 9/11 | 1.7 | 31 | 37.0 | -- | -- | 49.0 | -- | 23.7 | -- | -- | 46.5 | -- | 40.5 | -- | -- | -- |
| 9301[3] | 9/13 | 1.6 | 33 | 53.1 | -- | -- | 49.8 | -- | 46.5 | -- | -- | 58.7 | -- | 53.6 | -- | -- | -- |
| IA 2007 | 9/13 | 1.2 | 29 | 50.9 | 45.8 | 46.2 | 44.8 | 38.4 | 44.8 | 46.9 | 47.4 | 55.2 | 58.7 | 50.4 | 49.3 | 49.5 | 47.5 |
| Chapman | 9/13 | 1.3 | 28 | 49.7 | 44.4 | 42.6 | 44.5 | 34.2 | 33.5 | 42.3 | 44.5 | 55.6 | 56.7 | 47.8 | 48.1 | 47.4 | 44.9 |
| Sandusky | 9/13 | 1.3 | 30 | 52.7 | 44.7 | 45.1 | 40.9 | 32.4 | 36.8 | 41.1 | 43.1 | 54.9 | 60.5 | 47.2 | 47.0 | 46.6 | 44.9 |
| HF91-070* | 9/14 | 1.4 | 30 | 51.8 | 46.7 | -- | 50.6 | -- | 42.8 | 45.7 | -- | 58.1 | 58.9 | 50.3 | 49.5 | 49.2 | -- |
| HF91-078* | 9/15 | 1.4 | 31 | 56.0 | 48.2 | -- | 51.9 | -- | 40.8 | 43.3 | -- | 61.6 | 63.0 | 53.8 | 51.4 | 51.1 | -- |
| HS91-4523* | 9/17 | 1.2 | 32 | 51.0 | -- | -- | 55.4 | -- | 47.3 | -- | -- | 57.7 | -- | 53.7 | 52.9 | -- | -- |
| Resnik | 9/18 | 1.2 | 31 | 54.8 | 48.2 | 47.5 | 54.3 | 39.9 | 40.0 | 46.1 | 46.9 | 58.7 | 64.9 | 52.7 | 51.1 | 51.2 | 48.4 |

*denotes experimental strain. [1]lodging rated from 1 = erect to 5 = prostrate. [2]includes Plain City (1993-94) and Columbus (1991-92).
[3]Pioneer variety included as check variety.

Table 4. Summary of 1995 trials of late-maturing varieties (Ohio Advanced Line Test B).

| | | | | Yield (bu/a) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Entry | Date mature | Lod-ging[1] | Ht (in) | S.Char-leston | Mt. Orab | Lake-view | Hoyt-ville | Woos-ter | mean |
| Conrad | 9/ 9 | 1.0 | 26 | 44.9 | 18.1 | 21.4 | 34.8 | 37.4 | 31.3 |
| IA 2007 | 9/10 | 1.0 | 24 | 46.3 | 31.7 | 36.8 | 38.1 | 35.7 | 37.7 |
| Iroquois | 9/14 | 1.1 | 29 | 55.6 | 39.2 | 38.8 | 39.8 | 51.4 | 45.0 |
| HF91-078* | 9/15 | 1.1 | 25 | 51.3 | 29.0 | 20.1 | 39.7 | 49.5 | 37.9 |
| HS91-4523* | 9/16 | 1.1 | 30 | 57.3 | 39.6 | 27.7 | 43.8 | 57.2 | 45.1 |
| Thorne | 9/17 | 1.3 | 28 | 52.0 | 24.7 | 26.7 | 39.9 | 48.9 | 38.4 |
| Resnik | 9/17 | 1.1 | 28 | 55.3 | 36.8 | 20.3 | 38.8 | 46.8 | 39.6 |
| Charleston | 9/18 | 1.1 | 20 | 50.9 | 36.8 | 32.3 | 35.6 | 34.3 | 38.0 |
| Probst | 9/19 | 1.2 | 30 | 52.1 | 37.6 | 22.7 | 45.4 | 53.1 | 42.2 |
| Edison | 9/20 | 1.1 | 27 | 50.9 | 29.0 | 28.5 | 32.5 | 39.6 | 36.1 |
| Macon | 9/20 | 1.2 | 28 | 49.9 | 31.0 | 27.4 | 48.5 | 56.1 | 42.6 |
| HS90-3647 | 9/20 | 1.1 | 29 | 60.4 | 40.0 | 46.8 | 37.3 | 51.4 | 47.2 |
| Yale | 9/22 | 1.0 | 31 | 52.8 | 29.7 | 33.3 | 26.9 | 53.6 | 39.2 |
| Flyer | 9/22 | 1.2 | 30 | 51.0 | 27.2 | 33.2 | 35.1 | 51.5 | 39.6 |
| 9392[2] | 9/22 | 1.3 | 31 | 53.9 | 29.5 | 30.3 | 43.1 | 46.6 | 40.7 |
| General | 9/22 | 1.0 | 29 | 57.2 | 31.3 | 30.8 | 43.0 | 53.6 | 43.2 |
| Stressland | 9/27 | 1.5 | 37 | 54.0 | 46.3 | 49.4 | 32.4 | 55.4 | 47.5 |
| LSD (0.30) | 1 | 0.2 | 1 | 3.2 | 5.1 | 5.2 | 5.1 | 5.2 | 3.1 |

*indicates experimental strain.
[1]rated from 1 (erect) to 5 (prostrate). [2]Pioneer variety included as check.

Table 5. Multi-year summary for late-maturing varieties.

| | 1994-95 | | | yield (bu/a) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mat. | lodg.[1] | ht. | Hoytville | | | Wooster | | Lakeview | | S. Ch. | Mt. Orab | | All locations[2] | | |
| Entry | (date) | | (in) | 94-5 | 93-5 | 92-5 | 94-5 | 92-5 | 94-5 | 92-5 | 94-5 | 94-5 | 92-5 | 94-5 | 93-5 | 92-5 |
| Iroquois | 9/15 | 1.3 | 31 | 49.5 | -- | -- | 55.3 | -- | 43.0 | -- | 63.1 | 50.4 | -- | 52.2 | -- | -- |
| HS91-4523* | 9/16 | 1.2 | 32 | 51.3 | -- | -- | 54.2 | -- | 44.5 | -- | 62.5 | 49.5 | -- | 52.4 | -- | -- |
| Resnik | 9/16 | 1.2 | 30 | 49.7 | 44.8 | 45.3 | 48.3 | 42.0 | 32.4 | 43.6 | 61.5 | 46.7 | 48.4 | 47.7 | 45.8 | 47.1 |
| Thorne | 9/18 | 1.5 | 30 | 50.7 | 45.4 | 46.0 | 51.4 | 42.6 | 45.6 | 51.1 | 63.1 | 45.5 | 48.5 | 51.3 | 48.5 | 49.6 |
| Charleston | 9/19 | 1.3 | 23 | 49.3 | 46.8 | -- | 42.6 | -- | 42.3 | -- | 64.6 | 51.3 | -- | 50.0 | 48.7 | -- |
| Probst | 9/19 | 1.3 | 31 | 56.3 | 50.9 | -- | 54.3 | -- | 35.5 | -- | 63.7 | 49.1 | -- | 51.8 | 49.7 | -- |
| Edison | 9/20 | 1.2 | 29 | 47.8 | 43.0 | 46.5 | 49.2 | 42.2 | 38.5 | 46.4 | 65.4 | 45.8 | 49.8 | 49.3 | 46.4 | 49.0 |
| Macon | 9/20 | 1.3 | 31 | 56.2 | -- | -- | 53.8 | -- | 40.3 | -- | 62.8 | 48.4 | -- | 52.3 | -- | -- |
| HS90-3647 | 9/20 | 1.3 | 31 | 49.7 | 46.1 | 47.2 | 54.6 | 45.2 | 47.5 | 51.4 | 69.1 | 49.0 | 51.4 | 54.0 | 50.6 | 51.2 |
| General | 9/22 | 1.3 | 32 | 55.0 | 50.8 | 50.5 | 56.5 | 46.7 | 44.6 | 51.5 | 65.9 | 47.2 | 53.1 | 53.8 | 51.7 | 52.9 |
| Yale | 9/22 | 1.4 | 32 | 41.2 | -- | -- | 48.3 | -- | 46.5 | -- | 60.0 | 39.9 | -- | 47.2 | -- | -- |
| Flyer | 9/22 | 1.4 | 32 | 49.5 | 45.2 | 47.4 | 54.2 | 45.3 | 41.7 | 50.2 | 62.1 | 44.1 | 49.0 | 50.3 | 48.1 | 50.2 |
| Stressland | 9/28 | 1.9 | 38 | 45.4 | -- | -- | 55.6 | -- | 53.0 | -- | 63.9 | 55.7 | -- | 54.7 | -- | -- |

*denotes experimental strain.
[1]lodging rated from 1 = erect to 5 = prostrate. [2]includes Plain City (1993) and Columbus (1992).

Table 6. Summary of 1995 test of food-grade varieties and checks.

| Entry | Pedigree | Maturity (date) | Lodging[1] | Seed wt.[2] | Yield (bu/a) Lake-view | So. Char. |
|---|---|---|---|---|---|---|
| Vinton 81 | | 9/ 9 | 1.1 | 20.6 | 29.3 | 39.2 |
| Chapman | | 9/14 | 1.1 | 16.7 | 17.8 | 58.0 |
| Thorne | | 9/19 | 1.3 | 14.3 | 24.2 | 53.5 |
| Ohio FG1 | | 9/19 | 1.2 | 18.7 | 11.1 | 55.2 |
| Ohio FG2 | | 9/20 | 1.1 | 21.3 | 15.3 | 47.3 |
| General | | 9/23 | 1.2 | 14.9 | 31.5 | 63.0 |
| LSD (0.30) | | | | | 10.1 | 6.7 |

[1]rated from 1 (erect) to 5 (prostrate). [2]grams per 100 seeds; to convert to seeds/lb., divide 45360 by figure given (for example, 20.6 g/100 seeds equals 2115 seeds/lb.).

* * * * *

Table 7. Multiple-year summary for tests of food-grade varieties and checks, 1991-95 (except 1991-94 for protein and oil).

| Entry | Date mature | Lodging (score)[1] | Seed wt.[2] | Yield[3] (bu/a) | Protein %[4] | Oil %[4] |
|---|---|---|---|---|---|---|
| Vinton 81 | 9/10 | 1.9 | 22.5 | 43.8 | 43.3 | 20.5 |
| Chapman | 9/12 | 1.5 | 18.8 | 53.1 | 41.3 | 21.9 |
| Ohio FG1 | 9/17 | 1.7 | 23.1 | 51.1 | 42.3 | 21.0 |
| Ohio FG2 | 9/17 | 1.9 | 24.8 | 50.4 | 42.4 | 20.8 |
| Thorne | 9/20 | 1.5 | 17.9 | 54.6 | 41.9 | 21.1 |

[1]rated from 1 (erect) to 5 (prostrate). [2]grams per 100 seeds; to convert to seeds/lb., divide 45360 by figure given (for example, 22.5 g/100 seeds equals 2016 seeds/lb.). [3]includes Columbus and Lakeview in 1991, South Charleston, Lakeview, and Hoytville in 1992-94, and South Charleston in 1995. [4]expressed on dry-weight basis; to convert to 13% moisture basis, multiply figure given by 0.87.

Table 8. Yield comparison of semidwarf and indeterminate varieties planted in 7-inch rows at Hoytville, OH, 1993-1995.

| Variety[1] | 1995 Date Mature | 1995 Height (in.) | 1995 Lodging[2] (score) | Yield (bu/a) 1995 | Yield (bu/a) 1993-95 |
|---|---|---|---|---|---|
| GROUP II | | | | | |
| Vertex | 9/12 | 23 | 1.0 | 57.7 | 48.2 |
| Kenwood 94 | 9/12 | 24 | 2.5 | 60.6 | -- |
| Conrad 94 | 9/14 | 25 | 1.0 | 52.0 | 49.7 |
| Chapman | 9/16 | 24 | 1.0 | 58.8 | 53.9 |
| Hoyt | 9/17 | 21 | 1.5 | 56.5 | 53.4 |
| Gnome 85 | 9/17 | 24 | 1.5 | 59.3 | 55.6 |
| IA 2007 | 9/17 | 24 | 1.5 | 50.7 | 51.2 |
| Sandusky | 9/17 | 25 | 1.0 | 52.0 | 52.7 |
| GROUP III | | | | | |
| Jack | 9/19 | 30 | 2.0 | 58.0 | -- |
| Resnik | 9/21 | 33 | 1.0 | 57.6 | 53.5 |
| Sprite 87 | 9/22 | 16 | 1.0 | 61.1 | 54.8 |
| Hobbit 87 | 9/22 | 20 | 1.0 | 61.8 | 58.3 |
| Edison | 9/22 | 30 | 1.0 | 50.1 | 53.1 |
| Thorne | 9/22 | 29 | 1.0 | 55.2 | 53.2 |
| Charleston | 9/23 | 24 | 1.0 | 63.2 | 60.8 |
| General | 9/25 | 33 | 1.0 | 57.6 | -- |

[1] Semidwarf varieties (Hoyt, Gnome 85, Sprite 87, Hobbit 87 and Charleston) planted at 4 seeds/ft (300,000 seeds/A of 90%+ germ seed or 270,000 viable seeds/A). Indeterminate varieties planted at 3 seeds/ft (225,000 seeds/A of 90%+ germ seed or 202,500 viable seeds/A).

[2] 1 = erect to 5 = prostrate.

Table 9. Yield comparison of semidwarf and indeterminate varieties planted in 7-inch rows at South Charleston, OH, 1993-95.

| | 1995[3] | | | Yield (bu/a) | |
|---|---|---|---|---|---|
| Variety[1] | Date Mature | Height (in.) | Lodging[2] (score) | 1995 | 1993-95 |
| GROUP II | | | | | |
| Vertex | 9/7 | 26 | 1.3 | 66.0 | 68.4 |
| Conrad 94 | 9/7 | 27 | 1.5 | 63.0 | 69.5 |
| Chapman | 9/10 | 26 | 1.3 | 69.0 | 73.1 |
| IA 2007 | 9/11 | 27 | 1.3 | 57.2 | 70.2 |
| Sandusky | 9/13 | 29 | 1.0 | 69.8 | 73.4 |
| GROUP III | | | | | |
| Jack | 9/17 | 31 | 2.0 | 69.9 | -- |
| Resnik | 9/19 | 30 | 1.2 | 68.7 | 71.7 |
| Sprite 87 | 9/20 | 16 | 1.0 | 64.0 | 73.5 |
| Hobbit 87 | 9/20 | 18 | 1.0 | 59.6 | 66.9 |
| Edison | 9/21 | 30 | 1.0 | 63.2 | 74.5 |
| Thorne | 9/21 | 30 | 1.7 | 72.3 | 67.4 |
| Charleston | 9/21 | 21 | 1.3 | 66.7 | 74.4 |
| General | 9/24 | 32 | 1.2 | 76.3 | -- |
| GROUP IV | | | | | |
| Flyer | 9/24 | 33 | 1.0 | 69.9 | 75.4 |
| Ripley | 9/25 | 21 | 1.0 | 60.2 | 69.7 |
| Stressland | 9/30 | 36 | 2.0 | 71.4 | -- |

[1] Semidwarf varieties (Sprite 87, Hobbit 87, Charleston and Ripley) planted at 4 seeds/ft (300,000 seeds/A of 90%+ germ seed or 270,000 viable seeds/A). Indeterminate varieties planted at 3 seeds/ft (225,000 seeds/A of 90%+ germ seed or 202,500 viable seeds/A).

[2] 1 = erect to 5 = prostrate.

[3] Early season cool weather, combined with minimum till and early planting (April 28), resulted in slow early vegetative growth, reducing the plant height and yield potential of the semidwarf varieties compared to previous years. Delaying planting until the first week of May (normal planting date at this location) should avoid this problem.

# Locations of Public Soybean Variety Trials in Ohio


1. Private Test Site, Lakeview
2. Northwestern Branch Station, Hoytville
3. Agronomy Farm, Marysville
4. Private Test Site, Mt. Orab
5. Western Branch Station, South Charleston
6. Wooster Campus
7. Columbus Campus

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