# Virginia Soybean Variety Evaluation Tests 2005

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# Acknowledgements

Sincere thanks are given to the many cooperators and contributors who have made the Soybean Variety Evaluation Tests possible.

The cooperation and support offered by commercial seed companies, state crop improvement associations, and several experiment stations in supplying seed and information on varieties is gratefully acknowledged.

Special thanks are given to the following cooperators for supplying land and technical assistance while conducting these tests:

Bobby Ashburn, Tidewater Agricultural Research and Extension Center, Suffolk

Lin Barrack, Eastern Virginia Agricultural Research and Extension Center, Warsaw

Tommy Custis, Eastern Shore Agricultural Research and Extension Center, Painter,

Ted Haberland, Producer, Madison County

Brian Jones, County Agent, Augusta County

Ned Jones, Southern Piedmont Agricultural Research and Extension Center, Blackstone

Kevin Phillips, Producer, Augusta County

Katy Rainey, Department of Crop and Soil Environmental Sciences, VPI & SU, Blacksburg

Dave Starner, Northern Piedmont Agricultural Research and Extension Center, Orange

A special note of appreciation is also extended to County Agents who does an excellent job of disseminating the information.

Financial assistance from the Virginia Soybean Board to help fund a portion of these tests is gratefully acknowledged.

## Introduction to Variety Tests

The purpose of this publication is to provide performance data of the many soybean varieties offered for sale in Virginia. These data should be of benefit to producers and agribusinesses in making selections of varieties for their use. It is realized that not all varieties that are offered for sale in Virginia are included in these tests. There is no implication that varieties not included are inferior in any way, but only that they have not been tested. The private varieties that have been evaluated in these tests were submitted for testing by commercial seed companies.

Variety evaluations were conducted under full-season and double cop conditions at Blackstone, Orange, Painter, the Shenandoah Valley, Suffolk, and Warsaw. All double-crop tests were no-till planted following small grain. Due to the number of entries, it was necessary to separate the varieties by maturity in all locations.

The year began as a good one, with adequate rainfall to allow the full-season crop to emerge and develop adequate leaf area. However, droughty conditions persisted through much of June, resulting in poor growth for the double-crop plantings. Rain resumed in August, but little rain fell from mid-August through mid-October in most regions. Small seed size was a result of the droughty conditions during seed fill in the full-season tests. Rainy and warm weather conditions in mid-October during the maturity stages caused phomopsis seed decay to develop rapidly. Therefore, seed quality suffered. Yield for the double-crop plantings was lower due to poor leaf area development, but the October rains filled out the seed; seed size was closer to average that one might expect.

## Interpreting the Results

Table 1 contains yield summaries over all locations. Past analysis of test data indicated that variety selection should be made from multiple years and sites. More locations result in more reliable information. However, average yields over locations should not be used to select the highest yielding variety unless all varieties are tested in all locations because data will be skewed to those varieties that are tested in the highest yielding locations. Therefore, relative yield is a better method of comparing varieties over locations. Relative yield is calculated by dividing the yield of a variety by the average yield of all varieties within the same maturity group at that location. A variety with a relative yield of 105 was 5% above the average of all varieties at that location. Relative yield is not an actual yield, but a value that is relative to all other yield values at that location. Varieties are ranked by relative yield in descending order.

Tables 2 through 9 contain detailed yield and other information from each location. The highest average yielding varieties are listed first in each table. It is not statistically correct to compare varieties from different maturity groups. However, it is recommended that producers select two to three of the highest yielding varieties from each maturity group adapted to his region in order to spread out harvesting time and yield risks associated with timing of summer rainfall patterns. Because of year-to-year variability in variety performance it is suggested that data for varieties with less than three locations or years testing be considered preliminary. The average performance of a variety over multiple environments is more reliable than its performance in one test. Multiple-year data can be obtained from the authors. Many of the new varieties, which do not have two-year averages, are excellent and will probably, earn a share of the Virginia soybean acreage. Other traits are also shown in the tables (maturity, lodging, height, seed quality, purple stain, and seed size) because each producer emphasizes certain of these traits or a combination of them when selecting varieties for his farm. After examining these results, the producer may want to plant limited quantities of several new better performing varieties to observe how they perform on his farm and under his management conditions.

An LSD (least significant difference) was calculated within maturity groups at each location. The LSD is a statistical test calculated at the 10% probability level to aid the reader in comparing the yield differences among varieties within a particular maturity group. When two entries are compared and the difference between them is greater than the calculated LSD value, the varieties are considered to be significantly different. The “NS” designation indicates that there were no significant differences for yield among the varieties within that maturity group. The coefficient of variation (CV) is a relative measure of variation and is an indicator of the degree of precision associated with the test. For soybean variety evaluation tests, CV values less than 15% indicates that the precision of the test was good in distinguishing differences between varieties.

R2 is also a measure of variability. It gives information regarding significant differences. The higher the R2, the more likely there are significant differences be-

tween varieties. When yields are low, R2 can be a better indicator of degree of precision associated with the test than CV values.

## Methods and Definitions

The variety test was evaluated in a randomized complete block design and replicated three times. All tests were maintained weed free with herbicides and hand weeding. Row widths, number of rows planted and harvested, and length of row harvested are shown on the production information page. Harvest was conduction as near to the date of first harvest maturity as work schedules and weather would permit. Fertilizer was applied according to Virginia Tech soil test recommendations.

| | Seeding Rates (seeds/acre): | |
|---|---|---|
| **Maturity Group** | **Full Season** | **Double-Crop** |
| III | 165,000 | 220,000 |
| IV | 165,000 | 220,000 |
| V | 165,000 | 220,000 |

**Maturity** was taken at the date when 95% of the pods turned brown (R8). Detailed maturity date information was not taken at each location due to greater travel distances from the Tidewater AREC.

**Lodging notes** are recorded on a scale of 1 to 5 according to the following criteria:

1.0 - almost all plants erect
2.0 - either all plants leaning slightly, or a few plants down
3.0 - either all plants leaning moderately (45o angle), or 25 to 50% down
4.0 - either all plants leaning considerably or 50 to 80% down
5.0 - all plants down

**Plant Height** is determined as the average length of plants in a plot from the ground to the uppermost node of the plant at maturity.

**Purple Seed Stain (PSS)** is the percentage of seed from a 100-seed sample that are affected with that disease.

**Seed Quality (SQ)** is rated from 1 to 5 according to the following scale:

1.0 = very good; 2.0 = good; 3.0 = fair; 4.0 = poor; 5.0 = very poor.

Seed quality ratings are a good representation of *Phomopsis* seed decay.

**Seed Size (SS)** is obtained from the weight of a 100-seed sample and is transformed to number of seed per pound.

**Yields** were collected with a small-plot combine equipped with scales and moisture tester. Yields were adjusted to 13% moisture. A bushel weight of 60 pounds (at 13% moisture) was used to determine bushel-per-acre (BU/AC) yield.

*Production Information*

| Location* | Planting Date | Tillage System | Herbicides | Date Applied | Insecticides/ Fungicides | Soil Type | Row Width | Number of Rows Planted | Number of Rows Harvested | Length of Row Harvested |
|---|---|---|---|---|---|---|---|---|---|---|
| Blackstone-FS | 5/17 | No-Till | Dual II Mag<br>Authority<br>Sencor | 5/17 | None | Appling Cecil sandy loam | 15” | 5 | 3 | 17’ |
| Orange-FS | 6/1 | Conv. | Dual II Mag<br>Canopy XL | 5/23 | None | Davidson Clay Loam | 15” | 5 | 3 | 17’ |
| Painter-FS | 5/12 | Conv. | Dual II Mag,<br>Sencor | 5/12 | Stratego 8/30/05 | Bojac/sandy loam | 15” | 5 | 3 | 17’ |
| Suffolk-FS | 5/18 | Conv | Dual II Mag, | 5/23 | Quadris 8/16/05 | Dragston / Eunola fine sandy loam | 15” | 5 | 3 | 17’ |
| Warsaw-FS | 5/30 | Conv. | Python, Dual Mag<br>Reflex<br>Select | 5/10<br>7/11<br>7/7 | Warrior T 9/1 | Kempsville loam | 30” | 4 | 2 | 12’ |
| Shenandoah-FS | 6/1 | Conv. | Roundup WeatherMax, Classic | 7/12 | None | Tempersville silt loam | 15 | 5 | 3 | 17 |
| Blackstone-DC | 6/29 | No-Till | Dual II Mag, Sencor, Authority | 6/21 | None | Appling/ Cecil sandy loam | 15” | 5 | 3 | 17’ |
| Orange-DC | 7/11 | No-Till | Roundup | 7/31 | None | Davidson Clay loam | 15” | 5 | 3 | 17’ |
| Painter-DC | 7/7 | No-Till | Touchdown, Sencor,<br>Dual II Mag<br><br>Select, Classic | 7/7<br><br>8/26 | Mustang Max 8/18<br>Stratego 9/19 | Bojac/sandy loam | 15” | 5 | 3 | 17’ |
| Suffolk-DC | 6/30 | No-Till | Dual II Mag, Canopy XL<br>Roundup WeatherMax | 7/1 | Quadris 9/12 | Dragston sandy loam | 15” | 5 | 3 | 17’ |
| Warsaw-DC | 7/14 | No-Till | Roundup Weather Max<br>Dual Mag<br><br>Select, Basagran, Reflex<br><br>Select, Basagran | 6/17<br><br>8/3<br><br>9/1 | Warrior T 9/1 | Kempsville loam | 7.5” | 5 | 5 | 12’ |

**FS = Full-Season, DC = Double-crop*

*Monthly Precipitation (inches) and Average Rainfall May through October at Variety Test Locations.*

| Location | | May | June | July | Aug. | Sept. | Oct. | Total |
|---|---|---|---|---|---|---|---|---|
| Blackstone | 2005 | 2.53 | 2.11 | 4.65 | 2.96 | 1.34 | 3.50 | 17.09 |
| | 54-yr Avg. | 3.96 | 4.02 | 4.72 | 3.96 | 3.60 | 3.30 | 23.56 |
| Orange | 2005 | 3.19 | 0.85 | 3.64 | 2.95 | 2.29 | 9.71 | 22.63 |
| | 62-yr. Avg. | 3.85 | 3.81 | 4.52 | 3.92 | 3.76 | 3.41 | 23.27 |
| Painter | 2005 | 4.56 | 6.75 | 5.82 | 5.76 | 1.32 | 7.05 | 31.26 |
| | 63-yr Avg. | 3.38 | 3.37 | 4.51 | 4.13 | 3.53 | 3.36 | 22.28 |
| Suffolk | 2005 | 4.78 | 2.64 | 5.19 | 4.5 | 3.08 | 5.68 | 25.87 |
| | 71-yr. Avg. | 3.97 | 4.21 | 5.79 | 5.74 | 4.17 | 3.41 | 27.29 |
| Warsaw | 2005 | 4.10 | 2.51 | 5.16 | 3.09 | 1.44 | 6.57 | 22.87 |
| | 39-yr Avg. | 4.41 | 3.81 | 4.24 | 4.22 | 4.28 | 3.20 | 24.16 |

*Suppliers Of Soybean Varieties Tested In 2005*

| Supplier | Brand | Variety |
|---|---|---|
| Delta and Pine Land Company<br>103 Seaboard Ave.<br>Piedmont, AL 36272 | D&PL | DP3861RR, DPX1908RR, DP4331RR, DP4546RR, DP4724RR, DP4960RR, DP5414RR, DP5634RR, DP5808RR, DP5915RR |
| Delta King Seed Co<br>P.O. Box 970<br>McCrory, AR 72101 | Delta King | DK4366, DK4866, DK5066, DK5567, DKXTJ652, DKXTJ6P51 |
| Featherstone Farm<br>13941 Genito Rd.<br>Amelia, VA 23002 | Clark<br>Delta King | CL54RR<br>DK4461RR, DK4868RR |
| Garst Seed Co.<br>4850 W 350 N<br>Danville, IN 46122 | Garst | 3824RR, 3960RR, 4512RR, 4612RR |
| Meherrin Ag& Chemical<br>P.O. Box 7040<br>Suffolk, VA 23437 | Asgrow | AG5605 |
| Monsanto Company<br>4312 Carol Ave<br>Cortland, IL 60112 | Asgrow | AG4404, AG 4503, AG4703, AG4801, AG4903, AG5301, AG5605 |
| NK Brand Seeds<br>25 Red Oak DR<br>Lititz, PA 17543 | NK | S40-R9, S43-B1, S49-Q9, S52-U3 |
| Pioneer Hi-Bred International Inc.<br>7501 Memorial Parkway<br>Huntsville, AL 35802 | Pioneer | 93M92, 94M30, 94M50, 94B73, 94M80, 95M50, 95M81 |
| Progeny Ag Products<br>1529 Hwy 193<br>Wynne, AR 72396 | Progeny | 3900, 4401, 4949, 5660, 5822 |
| R.W. White Farms, Inc<br>Virginia Beach, VA | Public | Hutcheson, Teejay |
| Royster-Clark, Inc.<br>717 Robinson Road<br>Washington C.H., OH 43160 | Vigoro | V39N4RR, EX340078, V442NRR, V44N6RR, V48N5RR, V49N6RR, EX340079, V51N6RR, V53N5RS, V55N5RR |
| Southern States Coop<br>P.O. Box 26234<br>Richmond, VA 23260 | Southern States | RT3851, RT3951, RT4151, RT4230, RT4440, RT4451, RT4502, RT4551, RT4651, RT4808, RT4981, RT5130, RT5302, RT5540, RT5401, RT5450, RT3802. |
| T.A. Seeds<br>P.O. Box 300<br>Avis, PA 17721 | T.A. Seeds | TS3999R, TS4399R, TS4599R, TS4659R |
| UniSouth Genetics, Inc.<br>2640-C Nolensville Rd.<br>Nashville, TN 37211 | USG | 7393nRR, 7415nRR, 7423nRS, 7434nRR, 7440nRR, 7455nRR, 7484nRR, 7494nRR, 7499nRR, 7504nRR, 7505nRR, 7515nRR, 7553nRR, 7582nRR, 7443nRR, 7489RR, 7482nRR, 7495nRR, 540nRR, 444nSTS, 550nSTS, 5002T, 5601T |

*Suppliers Of Soybean Varieties Tested In 2005 (cont.)*

| Supplier | Brand | Variety |
|---|---|---|
| University of Maryland<br>Room 1112 HJ Patterson Hall<br>College Park, MD 20742-5821 | Maryland<br><br>Public | Md96-57222<br><br>Manokin |
| University of Tennessee<br>2431 Joe Johnson Dr.<br>Knoxville, TN 37996-4561 | Tennessee | TN05-547RR, TN05-548RR |
| United Agri Products<br>544 Pridgen Pond Rd<br>Kenston, AL 36453 | Dyna Gro | 3392, 3443 |
| UAP Northeast<br>P.O. Box 6<br>Eastville, VA 23347 | Dyna Gro | 3390, 3437, 38T47 |

**PUBLICATION 424-107-05**

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Produced by Communications and Marketing, College of Agriculture and Life Sciences,
Virginia Polytechnic Institute and State University, 2009