

2024

SOYBEAN

VARIETY YIELDS & PRODUCTION PRACTICES



2024 Soybean Variety Yields and Production Practices

Soybean production guidelines are prepared by LSU AgCenter cooperating personnel from Louisiana Agricultural Experiment Station researchers and by Louisiana Cooperative Extension Service specialists.

VARIETY SELECTION

Variety selection is not a decision to be made lightly as it is the most important decision facing a producer going into the season. No other input can radically change the yield potential to the extent that variety selection can. This decision can be daunting, but through the LSU AgCenter, producers do have information at their disposal to improve this decision-making process.

Fortunately, growers in Louisiana have two types of multi-environment data to use when selecting varieties. The official variety trials (OVT) are small-plot trials where varieties are evaluated. For the 2023 OVT, 71 varieties were entered by nine seed companies and one university soybean breeding program. The varieties consisted of several different herbicide technologies, and the maturity groups range from 3.7 to 5.8. The trial was replicated at seven research stations across the state in different soil types, including fine sandy loam, silt loam, silty clay and clay.

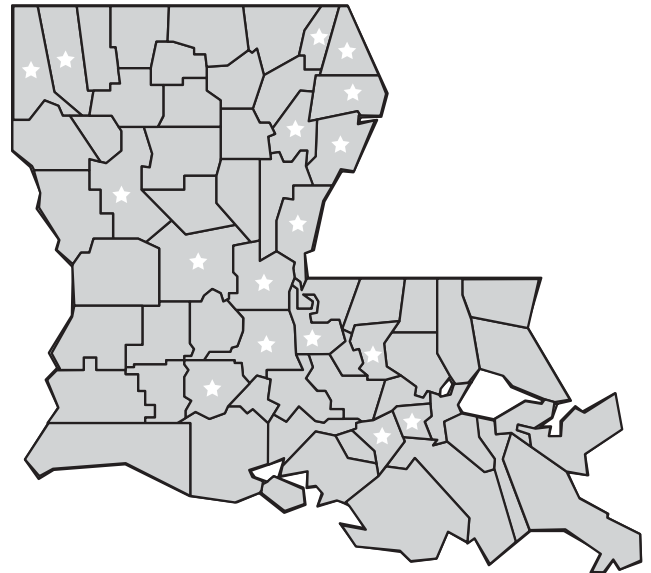
In addition to the OVT, the LSU AgCenter collaborates with soybean producers to evaluate soybean varieties directly on farms. For these core-block demonstration plots, LSU AgCenter parish agents cooperate with producers to plant, maintain and harvest strip trials submitted by seed companies and university soybean breeding programs. These demonstrations provide valuable yield data from local growing conditions and agronomic practices. The core block program is designed to evaluate a select number of soybean varieties in large plots located across the state. In some cases, observations from these large plots can result in identification of varieties that are resistant to a number of soilborne maladies. Seven seed companies submitted varieties for the 2023 core-block demonstrations. Thirty demonstrations were planted across 14 parishes. The demonstrations were divided by maturity group (MG). A demonstration consisted of varieties with a MG of 4.0 to 4.4; 4.5 to 4.9; or 5.2 to 5.6. The numbers of varieties submitted for each MG were five (MG 4.0 to 4.4), 12 (MG 4.5 to 4.9) and eight (MG 5.2 to 5.6).

The OVT and the core-block demonstrations allow producers to select from the large number of varieties in the OVT and from varieties tested in environments similar to their farms. We would advise growers to make all variety decisions based on multiyear and multi-environment data

and to identify stable varieties that perform well over a range of environments.

For best use of this guide, we recommend evaluating variety yield results based on performance and stability. Performance refers to identifying the varieties that are high yielding in environments that best represent your local farm. Stability refers to the performance of a variety across multiple environments. It is important for growers to consider both factors when making variety decisions.

2023 SOYBEAN CORE BLOCK PARISHES



OTHER VARIETAL CHARACTERISTICS

Variety yield potential is an important trait in selecting a variety, but other varietal characteristics should also be considered. How these criteria rank in importance to the grower may vary from one grower to the next and may vary from one field to the next. Several of these criteria for variety selection are discussed below.

Herbicide Tolerance and Weed Management Programs

Six different herbicide tolerances are available in soybean in 2024. They are Roundup Ready, Enlist, Liberty

Link, STS/BOLT, Xtend and XtendFlex. Roundup Ready is tolerant to glyphosate; Enlist is tolerant to glyphosate, glufosinate, and 2,4-D choline; Liberty Link is tolerant to glufosinate; STS/BOLT is tolerant to glyphosate and higher rates of Classic and other ALS-herbicides; Xtend is tolerant to glyphosate and dicamba, and XtendFlex is tolerant to glyphosate, glufosinate, and dicamba. If multiple herbicide technologies are utilized by a producer, they should be careful in their planning because there is no cross tolerance among the varieties. For example, dicamba should only be applied to Xtend and XtendFlex varieties, and 2,4-D choline should only be applied to Enlist varieties. Regardless of the herbicide-tolerant technology utilized, application of a residual herbicide prior to soybean emergence followed by a post-emergence application of a residual herbicide that is tank-mixed with a nonselective herbicide is the best strategy to manage herbicide-resistant weeds. For Enlist, Xtend, and XtendFlex varieties, the company websites should be consulted prior to mixing herbicides to ensure whether the desired herbicide combination is legal. All applications that contain Engenia, Tavium, or XtendiMax in Xtend or XtendFlex soybean require a volatility reduction agent. Also, when tank-mixing another pesticide with Engenia, Tavium, or XtendiMax, a drift retardant agent may be required. Consult the company's websites for legal requirements. Applications of Enlist One or Enlist Duo require specific spray nozzles; therefore, check the company website to ensure spray nozzles are legal. Research has shown that maintaining soybean weed-free for the first five weeks after emergence can maximize yield and the best program to accomplish this is use of residual herbicides preemergence and postemergence.

Disease Resistance

Soybean varieties differ in susceptibility to diseases and nematodes. Aerial blight is an important foliar disease south of Alexandria and is becoming more of an issue in northern parishes. Cercospora leaf blight is a major disease throughout the state. Frogeye leaf spot has been less of an issue in recent years because of resistant varieties but can be found annually. These, and other foliar diseases, may cause significant yield losses and harvest delays. Soil-borne diseases may also be a problem in any given year. Sudden death syndrome (SDS) has been confirmed in Louisiana, but it is not widespread and is rarely seen. A soil-borne disease with similar foliar symptoms as SDS known as taproot decline has recently been confirmed by pathologists and is likely the most prevalent issue in the state. Phytophthora root rot is an isolated issue and is more prevalent in clay or poorly drained soils. Root-knot nematode is prevalent in sandy soils and is an annual problem in certain areas. When these and other diseases occur in official variety trials, ratings are conducted to identify potential sources of resistance, making variety selection the most economical way for producers to manage diseases. Specialized

variety trials may be conducted in certain areas to target specific diseases, such as the taproot decline variety screening at Macon Ridge Research Station.

Insects

Soybeans are damaged by a diverse insect pest complex of stink bugs, threecornered alfalfa hoppers, beetles, several Lepidopteran defoliators (soybean loopers, velvetbean caterpillars, green cloverworms) and pod feeders (corn earworms) from plant emergence until harvest. Soybeans can compensate for considerable insect injury; however, high pest populations can cause severe yield reductions or total crop loss. To reduce yield loss, fields should be scouted weekly using a shake sheet or a sweep net, and proper insecticide materials should be applied when action thresholds have been met. Soybean varieties can differ in their ability to tolerate various insect pests, and those varieties that are less tolerant should be scouted more often.

Scouting fields is especially important for locating the most damaging soybean pest in Louisiana, the redbanded stink bug. This pest feeds only on legumes; thus, earlier maturing varieties have the most potential for redbanded stink bug damage. In general, MG IV soybeans will have more damage than MG V at pod initiation, as seed set begins earlier and lasts longer. This results in longer exposure to stink bugs over time, resulting in greater opportunities for stink bug injury. Planting soybean as early as possible can mitigate late-season-damage. As early-planted soybean plants mature and begin to be harvested, the later planted soybean plants act as a sponge and absorb all the surrounding stink bugs searching for a new host. As a rule, scouting for redbanded stink bugs should begin at R2 and occur every five days, if possible. Failure to detect early populations can result in missed opportunities for control. As a reminder, the action threshold for the redbanded stink bug is 16 insects (nymphs and adults) per 100 sweeps.

For several years, we have screened high-yielding, commercially available soybean varieties for susceptibility to stink bugs to provide agents, consultants, and growers information on what to expect from stink bug pressure. No varieties are currently available that provide immunity from stink bugs. Many commercial varieties, however, provide excellent yields under varied growing conditions that are highly susceptible to stink bugs.

Salt-Chloride Tolerance

Soybeans under continuous irrigation may be subjected to high levels of salts or chlorides from well or surface water. Observations from several years at the Macon Ridge Research Station near Winnsboro have made it possible to pinpoint varieties that have resistance or sensitivity to the problem. The problem shows up as leaf scorching and usually occurs shortly after irrigation water is applied. When choosing varieties to be utilized in irrigated systems, excluders (those varieties that can tolerate high chloride

levels) should be chosen. However, yield potential of both excluders and includers (those varieties that cannot tolerate high chloride levels) will be reduced in soils with high chloride levels.

Maturity

There is a certain amount of overlap in maturity between groups within the state. Environmental conditions, especially drought and pest pressure, can cause variation in maturity. Most varieties within a group mature in the following range when planted at recommended times:

- Very early maturity (MG 3.0-4.5): Aug. 10-Aug. 19
- Early maturity (MG 4.5-4.9): Aug. 20-Sept. 10
- Medium maturity (MG 5+): Sept. 11-Oct. 1

Where large acreages are involved, varieties of differing maturity should be selected to stagger the harvest and avoid losses from shattering and poor quality.

Lower Pod Height

Pod height is especially important in rough, poorly drained soils and new ground. It is important for all varieties to set pods a reasonable distance above the soil surface to aid in harvestability.

Poor Drainage

Many soybeans in Louisiana are planted on heavy clay soils with poor internal drainage. Research has determined that certain varieties are superior to others under these conditions. Consult results from the St. Joseph Sharkey clay test to select varieties for tolerance to poor drainage. Planting on raised beds is desirable where drainage is less than optimal.

Lodging Resistance

Soybean varieties are more likely to lodge if a population of more than six plants per foot of row is present and if grown on a highly fertile soil. Tall varieties tend to lodge more severely than short ones. When lodging occurs, seed quality and yield are affected. A lodged field is more susceptible to disease and reduces harvest efficiency.

Plant Height

Plant height varies according to growing conditions, planting date, soil type and variety. If canopy closure has been a problem, a taller variety should be selected or a closer row spacing should be adopted. On highly fertile soil, too much growth is sometimes a problem, and a shorter variety is the better choice.

Seed Quality

Poor seed quality is more often found in early maturing varieties. Poor quality is especially true for indeterminate varieties that do not mature uniformly. However, in wet harvest seasons when temperatures and humidity remain high, seed quality issues can often be observed for most varieties. Poor seed quality occurs when fields are not

harvested when ready or under heavy disease pressure. When poor conditions occur between physiological maturity (maximum dry matter accumulation) and harvest, chances increase for a decline in seed quality.

CULTURAL PRACTICES

Lime and Molybdenum

Availability of most plant nutrients is typically greatest in soils with a pH of 5.8 to 7.0. When the soil pH drops below 5.2 on sandy loam and silt loam soils, and below 5.0 on clay soils, manganese toxicity may occur. When the soil pH drops below 5.0, aluminum toxicity may also occur. Soil testing should be conducted on a regular basis, and agricultural lime should be used to correct low pH soils to proper levels.

In extreme cases, manganese toxicity is expressed as a stunted plant with crinkled leaves. In milder cases, manganese toxicity may result in reduced yields even when visible symptoms are not present. Aluminum toxicity typically affects the roots, resulting in short, thick roots, a condition known as club root. Manganese and aluminum toxicities can be controlled by keeping the soil pH above the critical levels.

Molybdenum is a critical component of the nitrogenase complex that fixes atmospheric nitrogen into a usable form for the soybean plant. Molybdenum is a nutrient needed by soybeans in small quantities. Although our soils typically have enough molybdenum for optimal growth, molybdenum is less available to plants as the soil becomes more acidic. At soil pH below 6.2, molybdenum should be applied as seed treatment at planting. However, if a commercial inoculum is needed and is applied as a seed treatment, molybdenum should not be applied as a seed treatment. The molybdenum salt will reduce the viability of the inoculum and will result in poor nodulation.

Nitrogen

Soybeans need large quantities of nitrogen. Soybeans remove about 4 pounds of nitrogen in each harvested bushel. Fortunately, soybeans are legumes and can obtain most of their nitrogen from the atmosphere. They accomplish this with the aid of the bacterium *Rhizobium japonicum*. These bacteria use soybean roots as a livable environment and form nodules on soybean roots that capture nitrogen from the atmosphere and fix it into a usable form. Seed should be inoculated with *Rhizobium japonicum* bacteria in soils with no recent history of soybeans or when conditions have reduced bacteria survival.

Phosphorus

Phosphorous is critical in the early stages of soybean growth. It stimulates root growth, is essential in the storage and transfer of energy throughout the plant and is an important component of several biochemicals that

control plant growth and development. Phosphorus is concentrated in the seed and strongly affects seed formation. Soybeans remove about 0.8 of a pound of phosphate (P_2O_5) per bushel in the harvested portion of the crop.

Phosphorus deficiencies are not easily observed. Usually no striking visual symptoms indicate phosphorus deficiency in soybeans. The most common characteristics of phosphorus-deficient soybean plants are stunted growth and reduced yields.

Phosphorus fertilization rates should be based on soil test results. Soil pH affects the availability of phosphorus, which is most available to soybeans when the soil pH is between 6.0 and 7.0.

Potassium

Potassium is essential in the growth and development of soybeans and is indirectly related to many plant cell functions. Some 60 enzymes require the presence of potassium, and plants with adequate amounts of potassium are better able to resist diseases than potassium-deficient plants. About four times as much potash (K_2O) is required by soybeans as phosphate, (P_2O_5) and about twice as much potash (K_2O) is removed in the seed as phosphate (P_2O_5). Soybeans remove about 1.4 pounds of potash (K_2O) per bushel in the harvested portion of the plant.

Potassium deficiency symptoms are easy to diagnose when they are severe enough to be seen visually and will usually occur on the lower leaves during pod fill as margins (edges) of the leaves appear necrotic (dead and brown). Severe potassium deficiencies can greatly reduce yields. Potassium fertilizer rates should be based on soil test results.

Early Planting

Soybeans should not be planted until soil temperature reaches 60 degrees Fahrenheit. Because emergence may also be affected by cool soil temperatures after planting, early planting decisions should also consider the forecast up to seven days after planting. Adequate soil temperatures are often observed in April but can vary by location and year. Maturity Group IV and indeterminate Group V varieties perform best in April plantings. Research in north Louisiana has shown instances of high yields for Group IV and V planted in mid-to-late March. In these cases, daily average soil temperatures were generally at or above 60 degrees Fahrenheit at planting. A few (especially determinate types) may be sensitive to planting before early May. Narrow row spacing may be beneficial when planting early because of the potential of reduced plant height. Always use a base fungicide seed treatment when planting early and conditions are less than favorable.

Late Planting

When planting is delayed until June 15 or later, the

amount of vegetative growth that the plant produces becomes more critical. It is important to choose varieties that grow rapidly in a short time. When blooming starts, most vegetative growth ceases in determinate varieties. When planting late, seeding rates should be increased to compensate for reduced vegetative growth.

Seeding Rate

Plant populations that are too dense reduce yields, encourage diseases and lodging, and increase seed cost. When calibrating planters, use seed-per-foot as your guide rather than pounds of seed per acre. In the following table, the estimated pounds per acre should be used only to calculate how much seed to buy. Because of varietal difference in seed size, as well as seasonal variation within lots of the same variety, planting rates can be misleading if expressed in pounds per acre. The following rates are recommended:

Row Width (Inches)	Seed/Row Foot	Plants/Row Foot	Population in 1,000s
36-40	8-9	6-8	78-104
30-32	6-7	4-5	78-104
20-24	5-6	4-5	104-130
7-10	4-5	3	104-130
Broadcast	5-6/sq. ft.	3/sq. ft.	150
Late planting	6-7/sq. ft.	4/sq. ft.	200

Planting Dates

Because weather conditions are different from year to year, seeding dates can be affected by environmental conditions. Early or late planting can cause a reduction in plant height in many varieties. Generally, late plantings have less chance of success unless irrigation is available or optimal weather and timely rains occur throughout the growing season. A general rule is that half a bushel per day is lost for every day that planting is delayed past the first week of June.

Optimal seeding dates for each maturity group planted in Louisiana are:

- Group III: April 15-May 10
- Group IV: April 15-May 10
- Group V: March 25-May 5
- Group VI (not typically recommended in Louisiana):
March 25-April 30

Row Spacing

Varieties respond differently to row spacing. An important consideration is that the canopy closes as quickly as possible to avoid late-season weed problems and to maximize the amount of light captured. Research has shown that narrow row spacing (30 inches or fewer) may outyield wide row spacing in some environments.

Depth of Seeding

Plant only deep enough to get the seed in moist soil. On sandy or silt loam soils, plant 1 inch deep if moisture is available. On clay soils, plant 1 to 2 inches deep, depending on moisture conditions. Rolling the soil, especially clays, after planting will help obtain a standby conserving moisture.

Table 1A. MG 3.7-4.4 Soybean OVT Yield Data.

Variety	Central Station	Dean Lee	Iberia	Macon Ridge	Northeast 1 ^{1d}	Northeast 2 ¹	Red River	2023 Average ²	2-Year Average	3-Year Average
Bayer Cropscience AG 38XF1	51.6	39.1	31.4	41.0	35.8	44.3	27.3	38.6	42.7	42.8
Bayer Cropscience AG 39XF3	56.8	40.9	34.4	45.5	42.7	40.7	29.4	41.5		
Bayer Cropscience AG 42XF2	61.8	39.7	38.9	42.6	65.4	43.5	21.8	44.8	45.2	
Bayer Cropscience AG 43XF2	60.8	46.9	36.5	44.6	55.7	43.5	28.7	45.2	46.6	47.7
Corteva AgriScience P37A18E	45.1	45.6	26.9	24.1	36.4	24.1	24.8	32.4		
Corteva AgriScience P42A84E	62.6	44.6	36.3	36.1	53.5	47.9	33.2	44.9	47.4	
Corteva AgriScience P44A21X	67.2	49.8	38.8	57.8	55.6	61.1	35.4	52.2	52.3	
Delta Grow Seed Company DG44XF75/STS	62.8	40.9	37.9	46.6	51.2	48.1	30.4	45.4		
Dyna-Gro Seed S43XS70	62.6	48.9	36.2	51.7	54.6	50.2	32.4	48.1	49.3	51.5
Syngenta NK42-T5XF	66.4	51.6	34.5	49.7	59.8	47.5	27.9	48.2	47.8	
Syngenta NK43-Y9XFS	60.3	38.8	32.6	45.2	45.0	40.1	24.9	41.0	43.8	
Syngenta NK44-J4XFS	63.2	39.5	32.5	46.6	52.9	43.5	34.2	44.6	44.2	
Location Average	60.1	43.8	34.7	44.3	50.7	44.5	29.2			
Soil Type	silt loam	silt loam	silty clay loam	silt loam	silt loam	Sharkey clay	sandy loam			
LSD P=0.05	7.03	11.90	4.68	5.34	18.012 - 18.066 ⁵	24.32	8.90			
Standard Deviation	4.8	8.2	3.3	3.7	7.248 ¹	16.8	6.2			
CV	8.1	18.8	9.4	8.3	16.05 ¹	37.8	21.2			

The 2023 OVT Trial was planted at these LSU AgCenter research stations: Central Station, Baton Rouge; Dean Lee, Alexandria; Iberia, Jeanerette; Macon Ridge, Winnsboro; Northeast, St. Joseph; Red River, Bossier; and Rice, Crowley. The OVT at the Rice Research Station was not harvested due to adverse growing conditions.

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Bold – Highest yielding (P=0.05) at this location in 2023.

¹Northeast locations had two different soil types (silt loam and Sharkey clay).

²Variety average from six research stations and seven locations.

⁴Means are reported in de-transformed data units.

⁵LSD value is a range calculated after transforming data.

¹Mean descriptions are reported in transformed data units and are not de-transformed.

Table 1B. MG 3.7-4.4 Agronomic Data.

Variety	Dean Lee Maturity ¹	Macon Ridge Maturity ²	Red River Maturity ²	Iberia Maturity ²	Dean Lee Height ³	Macon Ridge Height ³	Red River Height ³	Iberia Height ³	Dean Lee Lodging ⁴	Macon Ridge Lodging ⁴	Red River Lodging ⁴	Red River Damage ⁵
Bayer Cropsience AG 38XF1	104	111	118	107	37	39	39	30	1	2	1	1
Bayer Cropsience AG 39XF3	104	112	119	105	34	37	35	29	1	3	1	1
Bayer Cropsience AG 42XF2	105	112	119	110	45	44	42	33	2	3	1	1
Bayer Cropsience AG 43XF2	108	112	124	113	40	40	36	31	1	3	1	1
Corteva AgriScience P37A18E	103	111	117	109	28	16	30	28	1	1	1	1
Corteva AgriScience P42A84E	108	113	123	105	41	24	37	30	1	1	1	1
Corteva AgriScience P44A21X	110	115	121	111	42	41	41	32	2	3	1	1
Delta Grow Seed Company DG44XF75/STS	110	115	123	113	43	40	42	32	1	3	1	1
Dyna-Gro Seed S43XS70	110	114	124	110	43	38	38	33	2	3	1	1
Syngenta NK42-T5XF	109	114	122	109	40	41	35	31	1	2	1	1
Syngenta NK43-Y9XFS	105	114	122	109	36	37	37	34	1	3	1	1
Syngenta NK44-J4XFS	106	114	121	109	40	38	41	33	1	2	2	1

¹R7 Date (One pod with the mature color; Prior to desiccation; Days after planting).

²Maturity (R8 - 95% brown pods; Days after planting).

³Plant height at R8 in inches.

⁴Lodging (1-5): 1=almost all plants erect; 5=all plants down.

⁵Damage score at the Red River Research Station was taken at R6 (1-5; 1=healthy; 5=dead plants). A nematode assay indicates the damage may be from root knot nematode pressure (root-knot# = 2,720/500 cm³ of soil).

Table 1C: MG 3.7-4.4 - Abiotic/Biotic Stress Tolerance (With and Without Fungicide).

Variety	Macon Ridge OVT Salt ^{1d}	Macon Ridge Salt ^{2d}	Red River Flood ³	Central Station Yield Fungicide ⁴	Central Station Yield Untreated ⁵	Dean Lee Yield Fungicide ⁶	Dean Lee Yield Untreated ⁷
Bayer Cropscience AG 38XF1	4.0	-	4.5	51.6	49.7	39.1	36.3
Bayer Cropscience AG 39XF3	1.0	1.0	2.5	56.8	45.2	40.9	38.2
Bayer Cropscience AG 42XF2	3.9	7.0	3.0	61.8	63.7	39.7	36.5
Bayer Cropscience AG 43XF2	3.7	6.7	2.5	60.8	58.2	46.9	41.0
Corteva AgriScience P37A18E	1.3	-	3.5	45.1	39.2	45.6	35.8
Corteva AgriScience P42A84E	0.0	0.0	2.0	62.6	60.1	44.6	38.8
Corteva AgriScience P44A21X	0.4	0.0	3.7	67.2	61.8	49.8	41.8
Delta Grow Seed Company DG44XF75/STS	3.2	7.0	3.7	62.8	58.6	40.9	37.1
Dyna-Gro Seed S43XS70	0.0	0.0	3.3	62.6	58.4	48.9	41.8
Syngenta NK42-T5XF	4.5	6.6	2.7	66.4	56.8	51.6	41.0
Syngenta NK43-Y9XFS	4.7	4.0	2.7	60.3	50.6	38.8	33.7
Syngenta NK44-J4XFS	4.2	7.0	3.5	63.2	51.0	39.5	33.2
Grand Mean	1.65 ^t	0.55 ^t	3.13	61.25	54.44	44.93	37.92
LSD P=0.05	0.70 - 1.33 ^s	0.42 - 1.39 ^s	1.45	7.03	8.55	11.90	6.93
Standard Deviation	0.22 ^t	0.04 ^t	0.84	4.84	5.93	8.25	4.82
CV	13.14 ^t	8.08 ^t	26.88	8.06	10.90	18.82	12.71

¹Chloride Toxicity (SaltRating) for the regular OVT plots (salt content=1,500 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

²Chloride Toxicity (SaltRating) for the specialized salt OVT plots (salt content=3,000 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

³Flood resistant specialized OVT plots conducted at the Red River Research Station. (1-5 scale): 1=healthy plants; 5=all plants are dead.

⁴Yield (bu/A) for four-row OVT plots at the Central Station with a fungicide application.

⁵Yield (bu/A) for two-row OVT plots at the Central Station without a fungicide application.

⁶Yield (bu/A) for four-row OVT plots at the Dean Lee Research Station with a fungicide application.

⁷Yield (bu/A) for two-row OVT plots at the Dean Lee Research Station without a fungicide application.

^dMeans are reported in de-transformed data units.

^sLSD value is a range calculated after transforming data.

^tMean descriptions are reported in transformed data units and are not de-transformed.

Table 2A. MG 4.5-4.7 Soybean OVT Yield Data.

Variety	Central Station	Dean Lee	Iberia	Macon Ridge	Northeast 1 ¹	Northeast 2 ¹	Red River	2023 Average ²	2-Year Average	3-Year Average
Armorseed Armor 45-F02	64.4	35.9	30.3	53.6	45.2	52.1	37.0	45.5	46.6	
Armorseed Armor 46-F96	62.3	33.2	27.9	55.7	29.6	36.8	34.7	40.0	42.4	
Bayer Cropsience AG 45XF3	71.2	35.0	30.3	53.2	48.2	57.7	26.2	45.9		
Bayer Cropsience AG 46XF3	69.6	37.1	36.5	59.6	55.5	54.7	25.3	48.3		
Bayer Cropsience AG 47XF3	65.7	32.7	33.4	52.0	49.9	53.7	31.3	45.5		
Corteva AgriScience P46A86X	71.1	43.1	25.9	59.8	47.9	44.2	35.5	46.8	45.1	48.5
Corteva AgriScience P47A64X	66.8	41.2	37.0	65.2	48.3	51.3	22.7	47.5	46.8	49.6
Delta Grow Seed Company DG46E10	55.9	26.6	21.9	40.6	22.6	-	35.1	33.8	37.1	
Delta Grow Seed Company DG46E30	68.5	40.2	38.8	33.5	39.6	52.3	42.5	45.0		
Delta Grow Seed Company DG46X65/STS	67.6	35.8	30.6	58.2	44.4	56.8	36.7	47.1	46.7	48.4
Delta Grow Seed Company DG46XF54	62.1	35.9	32.6	59.7	51.1	44.5	29.3	45.0		
Delta Grow Seed Company DG47XF38	62.1	30.4	30.6	53.7	36.5	34.9	28.8	39.5		
Dyna-Gro Seed S46XS60	74.0	36.8	30.2	64.7	43.5	48.4	37.3	47.9	48.5	51.4
Dyna-Gro Seed S47XF23S	62.9	35.1	29.4	65.0	37.9	31.9	31.0	41.9	42.7	
GDM Seeds DM45F23	70.2	34.0	25.9	53.7	41.7	36.1	57.2	45.5		
Great Heart Seed GT-4538XFS	61.7	38.2	30.0	54.4	46.2	50.4	42.1	46.1		
Great Heart Seed GT-4756XF	65.3	36.9	27.7	60.1	49.4	42.2	35.8	45.3		
Great Heart Seed GT-4762XF	62.6	34.8	30.7	56.2	48.9	42.1	24.5	42.8		
Progeny Ag Progeny 4604XFS	63.5	37.4	30.2	47.8	48.8	53.7	34.4	45.1	45.5	48.7
Progeny Ag Progeny 4691XFS	71.3	31.0	30.5	52.7	31.3	40.6	29.5	41.0	42	
Progeny Ag Progeny 4798XF	55.2	32.3	31.6	61.7	41.7	44.9	17.9	40.7	43.6	
Syngenta NK47-Z1XF	65.2	40.2	35.3	57.9	42.0	52.8	26.2	45.7	44.4	
Location Average	65.4	35.6	30.8	55.4	43.2	46.8	32.8			
Soil Type	silt loam	silt loam	silty clay loam	silt loam	silt loam	Sharkey clay	sandy loam			
LSD P=0.05	7.41	3.32	8.18	5.98	10.57	14.00	14.26			
Standard Deviation	5.2	2.4	5.8	4.2	7.5	9.8	8.6			
CV	8.0	6.6	18.8	7.6	17.3	21.0	26.4			

The 2023 OVT Trial was planted at these LSU AgCenter research stations: Central Station, Baton Rouge; Dean Lee, Alexandria; Iberia, Jeanerette; Macon Ridge, Winnsboro; Northeast, St. Joseph; Red River, Bossier; and Rice, Crowley. The OVT at the Rice Research Station was not harvested due to adverse growing conditions.

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Bold – Highest yielding (P=0.05) at this location in 2023.

¹Northeast locations had two different soil types (silt loam and Sharkey clay).

²Variety average from six research stations and seven locations.

Table 2B. MG 4.5-4.7 Agronomic Data.

Variety	Dean Lee Maturity ¹	Macon Ridge Maturity ²	Red River Maturity ²	Iberia Maturity ²	Dean Lee Height ³	Macon Ridge Height ³	Red River Height ³	Iberia Height ³	Dean Lee Lodging ⁴	Macon Ridge Lodging ⁴	Red River Lodging ⁴	Red River Damage ⁵
Armorseed Armor 45-F02	109	117	126	110	43	43	39	30	1	2	1	1
Armorseed Armor 46-F96	109	117	126	112	40	42	34	31	2	2	1	1
Bayer Cropsience AG 45XF3	109	116	124	109	41	41	37	29	2	2	1	1
Bayer Cropsience AG 46XF3	113	117	126	110	41	39	37	30	2	2	1	1
Bayer Cropsience AG 47XF3	114	119	126	110	48	47	41	32	1	2	1	1
Corteva AgriScience P46A86X	109	119	123	109	46	46	41	31	1	3	1	2
Corteva AgriScience P47A64X	111	119	125	108	44	46	39	29	2	2	1	1
Delta Grow Seed Company DG46E10	105	119	122	110	42	25	39	30	2	1	2	1
Delta Grow Seed Company DG46E30	107	118	123	113	38	26	39	31	1	1	2	1
Delta Grow Seed Company DG46X65/STS	111	116	127	118	40	39	34	32	1	3	1	1
Delta Grow Seed Company DG46XF54	112	117	127	114	45	42	41	32	2	2	2	1
Delta Grow Seed Company DG47XF38	107	120	124	112	43	41	39	30	1	3	2	1
Dyna-Gro Seed S46XS60	112	117	126	113	41	39	33	30	1	2	1	1
Dyna-Gro Seed S47XF23S	111	119	124	106	39	39	36	28	2	2	2	1
GDM Seeds DM45F23	109	115	126	116	39	39	37	32	1	3	1	1
Great Heart Seed GT-4538XFS	112	118	127	113	46	42	38	31	1	2	2	1
Great Heart Seed GT-4756XF	113	120	126	110	39	40	36	29	2	2	1	1
Great Heart Seed GT-4762XF	118	116	127	112	41	41	36	29	2	4	1	1
Progeny Ag Progeny 4604XFS	113	119	126	113	44	46	37	30	1	3	2	1
Progeny Ag Progeny 4691XFS	109	118	124	110	43	41	42	33	2	2	2	1
Progeny Ag Progeny 4798XF	116	120	127	117	40	40	33	32	2	3	1	1
Syngenta NK47-Z1XF	115	117	126	113	42	43	38	30	2	2	1	1

¹R7 Date (One pod with the mature color; Prior to desiccation; Days after planting).

²Maturity (R8 - 95% brown pods; Days after planting).

³Plant height at R8 in inches.

⁴Lodging (1-5): 1=almost all plants erect; 5=all plants down.

⁵Damage score at the Red River Research Station was taken at R6 (1-5; 1=healthy; 5=dead plants). A nematode assay indicates the damage may be from root-knot nematode pressure (root-knot# = 2,720/500 cm³ of soil).

Table 2C: MG 4.5-4.7 Abiotic/Biotic Stress Tolerance (With and Without Fungicide).

Variety	Macon Ridge OVT Salt ¹	Macon Ridge Salt ²	Macon Ridge Seed Quality ^{3dt}	Red River Flood ⁴	Central Station Yield Fungicide ⁵	Central Station Yield Untreated ⁶	Dean Lee Yield Fungicide ⁷	Dean Lee Yield Untreated ⁸
Armorseed Armor 45-F02	2.3	3.3	3.2	3.0	64.4	64.3	35.9	31.6
Armorseed Armor 46-F96	3.0	8.3	3.2	4.0	62.3	63.5	33.2	29.9
Bayer Cropsience AG 45XF3	0.3	1.0	4.2	2.0	71.2	68.2	35.0	31.9
Bayer Cropsience AG 46XF3	0.3	0.0	2.0	2.7	69.6	67.2	37.1	36.4
Bayer Cropsience AG 47XF3	0.3	2.3	3.9	2.7	65.7	66.5	32.7	28.0
Corteva AgriScience P46A86X	0.0	0.3	5.5	3.0	71.1	61.8	43.1	35.5
Corteva AgriScience P47A64X	0.0	0.7	4.7	2.7	66.8	66.8	41.2	35.8
Delta Grow Seed Company DG46E10	0.6	1.0	2.7	5.0	55.9	46.4	26.6	22.7
Delta Grow Seed Company DG46E30	0.0	0.3	3.9	3.7	68.5	57.1	40.2	39.1
Delta Grow Seed Company DG46X65/STS	0.0	0.3	2.2	3.3	67.6	60.5	35.8	33.2
Delta Grow Seed Company DG46XF54	0.0	0.0	3.0	3.3	62.1	59.2	35.9	32.7
Delta Grow Seed Company DG47XF38	2.5	8.0	2.6	3.3	62.1	62.1	30.4	27.6
Dyna-Gro Seed S46XS60	0.3	1.3	1.7	3.0	74.0	63.7	36.8	34.2
Dyna-Gro Seed S47XF23S	0.0	1.0	1.7	3.3	62.9	57.1	35.1	30.6
GDM Seeds DM45F23	4.0	8.7	4.0	3.3	70.2	61.9	34.0	33.5
Great Heart Seed GT-4538XFS	1.0	0.3	3.7	2.0	61.7	65.1	38.2	36.8
Great Heart Seed GT-4756XF	1.0	0.0	1.7	3.0	65.3	57.9	36.9	35.3
Great Heart Seed GT-4762XF	0.8	0.0	2.7	3.7	62.6	63.2	34.8	33.5
Progeny Ag Progeny 4604XFS	2.8	7.3	1.9	2.7	63.5	63.9	37.4	37.1
Progeny Ag Progeny 4691XFS	0.0	0.0	3.0	3.3	71.3	61.9	31.0	27.4
Progeny Ag Progeny 4798XF	0.5	0.0	2.9	2.7	55.2	56.2	32.3	31.4
Syngenta NK47-Z1XF	0.0	0.0	3.2	3.7	65.2	63.7	40.2	37.3
Grand Mean	0.88	2.02	1.87 [†]	3.15	65.03	61.71	35.86	32.79
LSD P=0.05	1.14	1.25	1.15 - 1.58	1.43	7.41	6.31	3.32	4.48
Standard Deviation	0.81	0.76	0.25 [†]	0.87	5.25	4.47	2.35	3.17
CV	92.04	37.54	13.14 [†]	27.63	8.02	7.24	6.60	9.68

¹Chloride Toxicity (SaltRating) for the regular OVT plots (salt content = 1,500 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

²Chloride Toxicity (SaltRating) for the specialized salt OVT plots (salt content = 3,000 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

³Seed quality assessed from the late harvest of 11/28/2023 (0-9 scale): 0=no damage; 9=extreme damage.

⁴Flood resistant specialized OVT plots conducted at the Red River Research Station. (1-5 scale): 1=healthy plants; 5=all plants are dead.

⁵Yield (bu/A) for four-row OVT plots at the Central Station with a fungicide application.

⁶Yield (bu/A) for two-row OVT plots at the Central Station without a fungicide application.

⁷Yield (bu/A) for four-row OVT plots at the Dean Lee Research Station with a fungicide application.

⁸Yield (bu/A) for two-row OVT plots at the Dean Lee Research Station without a fungicide application.

[†]Means are reported in de-transformed data units.

[†]Mean descriptions are reported in transformed data units and are not de-transformed.

Table 3A. MG 4.8-4.9 Soybean OVT Yield Data.

Variety	Central Station	Dean Lee	Iberia	Macon Ridge	Northeast 1 ¹	Northeast 2 ¹	Red River	2023 Average ²	2-Year Average	3-Year Average
Bayer Cropscience AG 48XF2	65.1	40.4	30.0	36.3	43.2	36.6	20.8	38.9	41.3	
Bayer Cropscience AG 48XF3	66.4	37.1	29.6	37.7	57.6	51.5	22.4	43.2		
Bayer Cropscience AG 49XF3	65.5	30.8	28.0	30.9	56.2	54.0	25.1	41.5		
Corteva AgriScience P48A14E	67.5	42.2	25.3	38.0	54.8	48.5	16.9	41.9	45.4	
Delta Grow Seed Company DG48E59	65.2	31.3	31.1	33.8	51.0	38.4	36.1	41.0	42.7	47.5
Delta Grow Seed Company DG48X45	60.2	41.7	25.1	35.2	42.5	34.3	31.2	38.6	39.7	43.7
Delta Grow Seed Company DG48XF33/STS	68.5	37.2	27.0	36.6	54.6	47.2	44.1	45.0	44.5	
Delta Grow Seed Company DG48XF42	71.7	38.4	26.7	39.6	58.8	49.5	33.1	45.4		
Delta Grow Seed Company DG49XF85/STS	65.7	38.5	21.0	32.2	47.6	44.7	22.5	38.9		
Dyna-Gro Seed S49XF43S	71.6	37.1	22.0	36.4	62.9	51.4	27.6	44.1		
GDM Seeds DM48F53	71.5	40.0	28.1	32.0	58.5	49.3	26.1	43.6		
Progeny Ag Progeny 4806XFS	65.0	33.2	28.5	29.7	49.0	49.1	52.7	43.9	43.1	47.1
Syngenta NK48-A8XFS	65.0	39.2	19.5	33.3	56.4	45.9	52.0	44.5		
Syngenta NK49-C2XFS	62.4	37.7	23.5	39.0	61.7	56.1	23.7	43.4		
University of Missouri S17-17644	63.5	42.1	21.6	37.2	52.4	48.1	43.8	44.1		
Location Average	66.3	37.8	25.8	35.2	53.8	47.0	31.9			
Soil Type	silt loam	silt loam	silty clay loam	silt loam	silt loam	Sharkey clay	sandy loam			
LSD P=0.05	6.84	6.16	5.41	9.23	13.75	11.18	16.06			
Standard Deviation	4.8	4.3	3.8	6.4	9.6	7.8	11.2			
CV	7.2	11.4	14.7	18.3	17.9	16.6	35.2			

The 2023 OVT Trial was planted at these LSU AgCenter research stations: Central Station, Baton Rouge; Dean Lee, Alexandria; Iberia, Jeanerette; Macon Ridge, Winnsboro; Northeast, St. Joseph; Red River, Bossier; and Rice, Crowley. The OVT at the Rice Research Station was not harvested due to adverse growing conditions.

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Bold – Highest yielding (P=0.05) at this location in 2023.

¹Northeast locations had two different soil types (silt loam and Sharkey clay).

²Variety average from six research stations and seven locations.

Table 3B. MG 4.8-4.9 Agronomic Data.

Variety	Dean Lee Maturity ¹	Macon Ridge Maturity ²	Red River Maturity ²	Iberia Maturity ²	Dean Lee Height ³	Macon Ridge Height ³	Red River Height ³	Iberia Height ³	Dean Lee Lodging ⁴	Macon Ridge Lodging ⁴	Red River Lodging ⁴	Red River Damage ⁵
Bayer Cropsience AG 48XF2	114	119	125	119	44	40	36	29	2	2	1	3
Bayer Cropsience AG 48XF3	115	120	128	115	41	39	35	28	2	2	1	4
Bayer Cropsience AG 49XF3	119	122	130	117	44	41	40	32	2	2	1	3
Corteva AgriScience P48A14E	115	119	127	113	44	29	38	27	2	2	1	3
Delta Grow Seed Company DG48E59	114	119	129	119	44	26	34	28	2	2	1	2
Delta Grow Seed Company DG48X45	118	121	132	115	42	38	35	28	2	2	2	2
Delta Grow Seed Company DG48XF33/ STS	116	121	131	117	43	36	41	32	2	2	2	1
Delta Grow Seed Company DG48XF42	114	121	129	119	43	37	38	27	2	2	1	3
Delta Grow Seed Company DG49XF85/ STS	119	121	129	120	42	30	35	27	2	2	1	2
Dyna-Gro Seed S49XF43S	118	122	128	117	38	35	35	27	2	2	1	3
GDM Seeds DM48F53	111	119	127	113	42	36	34	29	2	2	1	2
Progeny Ag Progeny 4806XFS	116	119	131	119	43	38	38	26	2	2	1	1
Syngenta NK48-A8XFS	112	119	131	115	43	42	41	30	2	2	2	1
Syngenta NK49-C2XFS	94	121	130	121	41	40	36	31	2	2	1	3
University of Missouri S17-17644	112	122	130	119	43	35	33	28	2	2	4	1

¹R7 Date (One pod with the mature color; Prior to desiccation; Days after planting).

²Maturity (R8 - 95% brown pods; Days after planting).

³Plant height at R8 in inches.

⁴Lodging (1-5): 1=almost all plants erect; 5=all plants down.

⁵Damage score at the Red River Research Station was taken at R6 (1-5; 1=healthy; 5=dead plants). A nematode assay indicates the damage may be from root-knot nematode pressure (root-knot# = 2,720/500 cm³ of soil).

Table 3C: MG 4.8-4.9 Abiotic/Biotic Stress Tolerance (With and Without Fungicide).

Variety	Macon Ridge OVT Salt ^{1d}	Macon Ridge Salt ²	Macon Ridge Seed Quality ³	Red River Flood ⁴	Central Station Yield Fungicide ⁵	Central Station Yield Untreated ⁶	Dean Lee Yield Fungicide ⁷	Dean Lee Yield Untreated ⁸
Bayer Cropsience AG 48XF2	0.7	0.0	4.8	3.0	65.1	58.5	40.4	35.8
Bayer Cropsience AG 48XF3	0.9	1.0	4.0	1.7	66.4	65.1	37.1	30.4
Bayer Cropsience AG 49XF3	3.0	7.3	4.5	2.3	65.5	61.9	30.8	33.6
Corteva AgriScience P48A14E	0.1	1.0	3.8	2.3	67.5	66.4	42.2	39.6
Delta Grow Seed Company DG48E59	0.0	0.3	3.5	3.3	65.2	51.4	31.3	29.9
Delta Grow Seed Company DG48X45	1.2	0.3	5.0	3.3	60.2	53.3	41.7	37.7
Delta Grow Seed Company DG48XF33/STS	1.3	5.7	5.8	4.0	68.5	64.0	37.2	32.0
Delta Grow Seed Company DG48XF42	1.2	1.3	5.0	2.7	71.7	60.1	38.4	35.4
Delta Grow Seed Company DG49XF85/STS	1.7	5.3	2.7	4.7	65.7	55.4	38.5	35.5
Dyna-Gro Seed S49XF43S	3.2	8.3	2.5	3.0	71.6	63.3	37.1	37.1
GDM Seeds DM48F53	5.7	8.7	3.0	2.0	71.5	64.6	40.0	35.0
Progeny Ag Progeny 4806XFS	5.0	8.7	3.3	3.0	65.0	61.4	33.2	32.1
Syngenta NK48-A8XFS	3.9	9.0	3.5	3.0	65.0	59.7	39.2	34.6
Syngenta NK49-C2XFS	0.7	0.3	3.3	3.0	62.4	65.2	37.7	35.0
University of Missouri S17-17644	0.8	6.3	4.3	1.3	63.5	60.1	42.1	35.5
Grand Mean	7.11 ⁱ	4.52	3.91	2.84	66.49	60.69	38.20	34.61
LSD P=0.05	0.95 - 2.99 ^s	3.73	1.99	1.20	6.84	6.15	6.16	5.44
Standard Deviation	3.05 ^t	2.22	1.39	0.72	4.79	4.29	4.31	3.81
CV	42.82 ^t	49.08	35.58	25.29	7.22	7.07	11.41	11.00

¹Chloride Toxicity (SaltRating) for the regular OVT plots (salt content = 1,500 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

²Chloride Toxicity (SaltRating) for the specialized salt OVT plots (salt content = 3,000 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

³Seed quality assessed from the late harvest of 11/28/2023 (0-9 scale): 0=no damage; 9=extreme damage.

⁴Flood resistant specialized OVT plots conducted at the Red River Research Station. (1-5 scale): 1=healthy plants; 5=all plants are dead.

⁵Yield (bu/A) for four-row OVT plots at the Central Station with a fungicide application.

⁶Yield (bu/A) for two-row OVT plots at the Central Station without a fungicide application.

⁷Yield (bu/A) for four-row OVT plots at the Dean Lee Research Station with a fungicide application.

⁸Yield (bu/A) for two-row OVT plots at the Dean Lee Research Station without a fungicide application.

^dMeans are reported in de-transformed data units.

^sLSD value is a range calculated after transforming data.

^tMean descriptions are reported in transformed data units and are not de-transformed.

Table 4A. MG 5.0-5.3 Soybean OVT Yield Data.

Variety	Central Station	Dean Lee	Iberia	Macon Ridge	Northeast 1 ¹	Northeast 2 ¹	Red River	2023 Average ²	2-Year Average	3-Year Average
Bayer Cropsience AG 53XF2	65.8	27.6	26.4	23.5	53.3	40.0	47.0	39.4	41.2	46
Corteva AgriScience P52A14SE	67.2	39.2	36.2	19.3	56.1	37.8	65.6	42.6	45	
Delta Grow Seed Company DG52XF22/STS	66.8	35.7	24.5	29.8	64.5	34.4	18.8	42.6	45.2	
Delta Grow Seed Company DG53XF95/STS	64.2	33.5	24.2	27.2	62.4	39.1	17.7	41.7		
Dyna-Gro Seed S51XF84S	64.3	27.5	25.1	28.3	50.7	42.0	15.1	39.6		
Dyna-Gro Seed S52XT91	73.5	34.9	27.6	28.3	68.9	54.4	27.9	47.9	47.8	50.9
Progeny Ag Progeny 5056XFS	65.9	30.7	26.0	29.4	61.0	32.6	23.6	40.9	44.4	
Syngenta NK52-V1XF	66.8	31.2	23.7	23.2	60.3	42.9	47.9	41.3		
University of Missouri S18-6013	70.9	35.4	27.3	27.8	54.1	44.9	51.0	43.4		
University of Missouri S18-6328	65.2	36.7	29.2	23.1	63.4	58.7	25.2	46.0	47.5	
Location Average	67.1	33.2	27.0	26.0	59.5	42.7	34.0			
Soil Type	silt loam	silt loam	silty clay loam	silt loam	silt loam	Sharkey clay	sandy loam			
LSD P=0.05	5.66	6.77	3.98	7.93	10.07	11.66	12.59			
Standard Deviation	3.9	4.7	2.7	5.4	6.9	7.9	8.7			
CV	5.8	14.1	10.1	20.9	11.6	18.6	25.6			

The 2023 OVT Trial was planted at these LSU AgCenter research stations: Central Station, Baton Rouge; Dean Lee, Alexandria; Iberia, Jeanerette; Macon Ridge, Winnsboro; Northeast, St. Joseph; Red River, Bossier; and Rice, Crowley. The OVT at the Rice Research Station was not harvested due to adverse growing conditions.

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Bold – Highest yielding (P=0.05) at this location in 2023.

¹Northeast locations had two different soil types (silt loam and Sharkey clay).

²Variety average from five research stations and six locations. The average does not include the yield data from the Red River Research Station.

Table 4B. MG 5.0-5.3 Agronomic Data.

Variety	Dean Lee Maturity ¹	Macon Ridge Maturity ²	Red River Maturity ²	Iberia Maturity ²	Dean Lee Height ³	Macon Ridge Height ³	Red River Height ³	Iberia Height ³	Dean Lee Lodging ⁴	Macon Ridge Lodging ⁴	Red River Lodging ⁴	Red River Damage ⁵
Bayer Cropsience AG 53XF2	117	124	130	120	46	38	41	31	2	2	1	2
Corteva AgriScience P52A14SE	114	120	129	121	32	24	28	25	2	1	1	1
Delta Grow Seed Company DG52XF22/STS	116	122	131	115	44	30	37	28	2	2	1	3
Delta Grow Seed Company DG53XF95/STS	119	123	129	118	36	33	34	28	2	2	1	5
Dyna-Gro Seed S51XF84S	115	119	131	117	37	34	31	27	2	2	1	4
Dyna-Gro Seed S52XT91	117	121	132	116	40	30	35	27	2	2	1	2
Progeny Ag Progeny 5056XFS	115	119	131	115	45	37	35	28	2	2	1	3
Syngenta NK52-V1XF	114	121	132	115	40	24	35	27	2	1	1	1
University of Missouri S18-6013	116	123	133	119	33	27	29	27	2	2	1	1
University of Missouri S18-6328	115	123	130	117	35	37	28	26	2	2	2	2

¹R7 Date (One pod with the mature color; Prior to descication; Days after planting).

²Maturity (R8 - 95% brown pods; Days after planting).

³Plant height at R8 in inches.

⁴Lodging (1-5): 1=almost all plants erect; 5=all plants down.

⁵Damage score at the Red River Research Station was taken at R6 (1-5; 1=healthy, 5=dead plants). A nematode assay indicates the damage may be from root-knot nematode pressure (root-knot# = 2,720/500 cm³ of soil).

Table 4C: MG 5.0-5.3 Abiotic/Biotic Stress Tolerance (With and Without Fungicide).

Variety	Macon Ridge OVT Salt ¹	Macon Ridge Salt ²	Macon Ridge Seed Quality ³	Red River Flood ⁴	Central Station Yield Fungicide ⁵	Central Station Yield Untreated ⁶	Dean Lee Yield Fungicide ⁷	Dean Lee Yield Untreated ⁸
Bayer Cropscience AG 53XF2	3.0	8.7	4.5	3.3	65.8	63.2	27.6	26.7
Corteva AgriScience P52A14SE	0.8	4.7	5.5	1.7	67.2	58.0	39.2	39.4
Delta Grow Seed Company DG52XF22/STS	2.0	5.7	4.8	4.7	66.8	56.8	35.7	32.8
Delta Grow Seed Company DG53XF95/STS	3.5	9.0	3.3	3.7	64.2	55.5	33.5	30.7
Dyna-Gro Seed S51XF84S	2.5	9.0	4.0	3.3	64.3	58.0	27.5	30.6
Dyna-Gro Seed S52XT91	1.8	5.7	4.0	3.3	73.5	66.0	34.9	37.7
Progeny Ag Progeny 5056XFS	3.3	8.7	5.0	2.7	65.9	67.5	30.7	32.2
Syngenta NK52-V1XF	2.0	4.7	4.3	3.7	66.8	63.2	31.2	39.4
University of Missouri S18-6013	2.0	3.0	3.3	3.0	70.9	58.9	35.4	41.2
University of Missouri S18-6328	3.0	8.7	5.3	2.0	65.2	61.2	36.7	40.6
Grand Mean	2.38	6.77	4.38	3.13	65.18	60.81	36.68	35.11
LSD P=0.05	1.44	6.00	1.99	2.02	5.66	6.23	6.77	5.50
Standard Deviation	1.00	3.50	1.37	1.18	3.87	4.27	4.67	3.75
CV	41.93	51.71	31.31	37.51	5.77	7.02	14.05	10.69

¹Chloride Toxicity (SaltRating) for the regular OVT plots (salt content = 1,500 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

²Chloride Toxicity (SaltRating) for the specialized salt OVT plots (salt content = 3,000 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

³Seed quality assessed from the late harvest of 11/28/2023 (0-9 scale): 0=no damage; 9=extreme damage.

⁴Flood resistant specialized OVT plots conducted at the Red River Research Station. (1-5 scale): 1=healthy plants; 5=all plants are dead.

⁵Yield (bu/A) for four-row OVT plots at the Central Station with a fungicide application.

⁶Yield (bu/A) for two-row OVT plots at the Central Station without a fungicide application.

⁷Yield (bu/A) for four-row OVT plots at the Dean Lee Research Station with a fungicide application.

⁸Yield (bu/A) for two-row OVT plots at the Dean Lee Research Station without a fungicide application.

Table 5A. MG 5.4-5.8 Soybean OVT Yield Data.

Variety	Central Station	Dean Lee	Iberia	Macon Ridge	Red River	2023 Average ²	2-Year Average	3-Year Average
Armorseed Armor 54-F34	59.7	17.7	21.2	21.9	43.1	32.7		
Bayer Cropsience AG 56XF2	66.0	27.9	21.8	21.0	52.9	37.9	42.5	45.8
Bayer Cropsience AG 58XF3	30.9	-	26.0	31.8	56.7	36.4		
Corteva AgriScience P54A36SX	71.1	30.3	23.9	32.3	53.3	42.2	46.8	
Corteva AgriScience P54A54X	70.6	24.6	25.5	28.7	51.3	40.1	47.0	48.4
Corteva AgriScience P56A71E	63.7	30.8	33.5	28.9	54.7	42.3	46.9	
Delta Grow Seed Company DG55X25	59.9	33.7	30.3	27.5	62.1	42.7		
Delta Grow Seed Company DG55XF23	34.8	-	23.4	29.1	67.5	38.7		
Progeny Ag Progeny 5441XF	58.9	26.5	35.7	24.2	43.0	37.6		
Progeny Ag Progeny 5641XF	57.6	21.0	32.6	19.5	52.6	36.6		
Progeny Ag Progeny 5751XF	32.9	-	24.6	29.1	71.2	39.4		
Syngenta NK56-Z6XFS	60.9	30.7	24.3	26.3	75.0	43.5		
Location Average	55.6	27.0	26.9	26.7	56.9			
Soil Type	silt loam	silt loam	silty clay loam	silt loam	sandy loam			
LSD P=0.05	5.27	3.87	7.17	6.72	15.66			
Standard Deviation	3.7	2.7	4.9	4.7	10.9			
CV	6.6	9.8	18.4	17.5	19.1			

The 2023 OVT Trial was planted at these LSU AgCenter research stations: Central Station, Baton Rouge; Dean Lee, Alexandria; Iberia, Jeanerette; Macon Ridge, Winnsboro; Northeast, St. Joseph; Red River, Bossier; and Rice, Crowley. For the MG 5-5.8 OVT the plots were not harvested at the Rice or Northeast Research Stations due to adverse growing conditions.

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Bold – Highest yielding (P=0.05) at this location in 2023.

¹Northeast locations had two different soil types (silt loam and Sharkey clay).

²Variety average from four research stations and four locations. The average does not include the yield data from the Red River Research Station.

Table 5B. MG 5.4-5.8 Agronomic Data.

Variety	Dean Lee Maturity ¹	Macon Ridge Maturity ²	Red River Maturity ²	Iberia Maturity ²	Dean Lee Height ³	Macon Ridge Height ³	Red River Height ³	Iberia Height ³	Dean Lee Lodging ⁴	Macon Ridge Lodging ⁴	Red River Lodging ⁴	Red River Damage ⁵
Armorseed Armor 54-F34	118	126	145	139	28	34	31	33	1	1	1	2
Bayer Cropsience AG 56XF2	118	128	145	140	33	36	33	25	1	1	1	1
Bayer Cropsience AG 58XF3	142	133	149	142	30	34	33	24	2	1	1	1
Corteva AgriScience P54A36SX	117	126	144	134	27	32	33	29	1	1	2	1
Corteva AgriScience P54A54X	116	126	141	140	27	33	31	26	1	2	2	3
Corteva AgriScience P56A71E	118	128	143	134	35	16	32	27	1	1	2	1
Delta Grow Seed Company DG55X25	118	128	144	139	35	35	33	27	1	1	1	1
Delta Grow Seed Company DG55XF23	142	129	149	145	33	32	34	27	2	2	1	1
Progeny Ag Progeny 5441XF	125	126	141	143	45	45	44	31	2	3	3	2
Progeny Ag Progeny 5641XF	126	128	144	137	38	33	42	27	2	1	2	2
Progeny Ag Progeny 5751XF	142	130	149	134	35	34	33	31	2	2	1	1
Syngenta NK56-Z6XFS	123	132	145	144	23	29	30	29	1	1	1	1

¹R7 Date (One pod with the mature color; Prior to desiccation; Days after planting).

²Maturity (R8 - 95% brown pods; Days after planting).

³Plant height at R8 in inches.

⁴Lodging (1-5): 1=almost all plants erect; 5=all plants down.

⁵Damage score at the Red River Research Station was taken at R6 (1-5; 1=healthy, 5=dead plants). A nematode assay indicates the damage may be from root-knot nematode pressure (root-knot# = 2,720/500 cm³ of soil).

Table 5C: MG 5.4-5.8 Abiotic/Biotic Stress Tolerance (With and Without Fungicide).

Variety	Macon Ridge OVT Salt ^{1d}	Macon Ridge Salt ²	Macon Ridge Seed Quality ³	Red River Flood ⁴	Central Station Yield Fungicide ⁵	Central Station Yield Untreated ⁶	Dean Lee Yield Fungicide ⁷	Dean Lee Yield Untreated ⁸
Armorseed Armor 54-F34	0.2	0.0	3.3	3.0	59.7	54.5	17.7	19.1
Bayer Cropscience AG 56XF2	0.4	0.0	3.0	1.7	66.0	66.0	27.9	29.5
Bayer Cropscience AG 58XF3	0.0	0.0	0.8	3.0	30.9	32.4	-	32.8
Corteva AgriScience P54A36SX	0.9	0.7	3.5	2.3	71.1	66.4	30.3	32.2
Corteva AgriScience P54A54X	0.4	0.7	2.5	4.0	70.6	65.2	24.6	25.9
Corteva AgriScience P56A71E	0.0	0.0	2.1	2.0	63.7	52.7	30.8	33.8
Delta Grow Seed Company DG55X25	0.0	0.0	2.3	3.3	59.9	54.7	33.7	35.5
Delta Grow Seed Company DG55XF23	0.0	0.0	1.0	3.3	34.8	39.6	-	30.6
Progeny Ag Progeny 5441XF	1.5	6.0	3.0	2.3	58.9	60.6	26.5	32.5
Progeny Ag Progeny 5641XF	2.7	7.3	2.5	1.3	57.6	58.2	21.0	26.4
Progeny Ag Progeny 5751XF	0.0	0.0	1.0	2.0	32.9	30.3	-	29.9
Syngenta NK56-Z6XFS	3.5	7.3	2.0	3.3	60.9	54.9	30.7	32.0
Grand Mean	1.05 ¹	1.83	2.24	2.64	56.71	52.95	28.24	30.00
LSD P=0.05	0.63 - 1.15 ⁵	0.57	1.05	1.33	5.27	5.79	3.87	6.33
Standard Deviation	0.22 ¹	0.34	0.73	0.79	3.66	4.00	2.65	4.40
CV	20.79 ¹	18.39	32.55	29.81	6.59	7.54	9.81	14.66

¹Chloride Toxicity (SaltRating) for the regular OVT plots (salt content = 1,500 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

²Chloride Toxicity (SaltRating) for the specialized salt OVT plots (salt content = 3,000 ppm) (0-9 scale): 0=no damage; 9=all plants are dead.

³Seed quality assessed from the late harvest of 11/28/2023 (0-9 scale): 0=no damage; 9=extreme damage.

⁴Flood resistant specialized OVT plots conducted at the Red River Research Station. (1-5 scale): 1=healthy plants; 5=all plants are dead.

⁵Yield (bu/A) for four-row OVT plots at the Central Station with a fungicide application.

⁶Yield (bu/A) for two-row OVT plots at the Central Station without a fungicide application.

⁷Yield (bu/A) for four-row OVT plots at the Dean Lee Research Station with a fungicide application.

⁸Yield (bu/A) for two-row OVT plots at the Dean Lee Research Station without a fungicide application.

⁹Means are reported in de-transformed data units.

⁵LSD value is a range calculated after transforming data.

¹Mean descriptions are reported in transformed data units and are not de-transformed.

Table 6A. Summary of 2023 On-farm MG 3.9-4.4 Soybean Core Block Demonstrations at Seven Locations.

Variety	Assumption	Bossier	East Baton Rouge	Franklin	Rapides	St. James	Tensas
Bayer AG 39XF3	73.6	13.0	59.8	15.6	44.9	47.0	16.0
Bayer AG 43XF2	89.8	23.7	66.9	17.7	43.8	45.5	23.8
Corteva P40A90LX	70.1	12.3	61.3	20.6	48.5	49.2	28.2
Corteva P44A21X	92.3	30.3	78.5	22.1	47.0	45.8	28.9
Syngenta NK43-Y9XFS	80.8	23.1	62.3	14.7	43.5	48.9	31.1
Location Average	81.3	20.5	65.8	18.1	45.5	47.3	25.6
Soil Type	clay	Moreland silty clay loam	Cancienne silt Loam	Gigger-Gilbert complex	silt loam	mixed silt loam	Commerce silt loam
Planting Date	5/3/2023	6/13-14/2023	5/19/2023	6/6/23	5/16/2023	4/25/2023	6/27/2023

All yields are expressed in bushels per acre and adjusted to 13% moisture

Table 6B. Summary of 2023 On-farm MG 4.6-4.9 Soybean Core Block Demonstrations at 11 Locations.

Variety	Avoyelles	Bossier	Caddo 1	Caddo 2	East Baton Rouge	Franklin 1	Franklin 2	Rapides 1	Rapides 2	Tensas	West Carroll
Armor 46F96	16.3	28.7	67.2	64.3	63.9	64.2	22.1	43.9	37.9	29.7	75.4
Bayer AG 46XF3	17.0	32.1	64.6	63.8	66.1	76.9	15.9	36.9	39.7	30.3	79.2
Bayer AG 48XF3	19.2	34.4	60.3	57.2	70.2	82.6	15.8	40.0	26.8	33.3	74.6
Corteva P46A86X	23.3	25.5	63.9	63.3	66.7	72.3	23.0	47.3	-	27.6	86.3
Corteva P47A64X	19.1	32.6	72.9	67.2	69.7	-	20.4	43.2	-	28.0	79.4
Delta Grow DG48X45	23.7	34.0	-	-	63.9	81.8	22.9	43.3	-	25.1	85.8
Delta Grow DG48XF33/STS	18.4	32.6	72.9	57.0	69.6	-	13.2	42.9	37.3	27.6	76.5
Dyna-Gro S47XF23S	19.4	30.6	62.2	54.4	67.8	73.3	22.6	38.5	41.7	37.6	79.6
Dyna-Gro S49XF43S	17.5	39.5	68.3	66.7	72.8	84.5	15.9	42.3	33.7	36.1	79.3
Progeny 4604XFS	13.9	29.7	58.3	56.1	65.4	72.4	12.8	44.9	45.3	30.3	72.1
Progeny 4798XF	18.2	26.1	62.1	58.0	62.5	82.4	13.8	38.6	32.1	33.0	78.5
Syngenta NK47-ZIXF	18.9	33.7	62.5	60.0	73.4	74.8	25.3	46.0	40.1	27.3	78.1
Location Average	18.8	31.6	65.0	60.7	67.7	76.5	18.7	42.3	37.2	30.5	78.7
Soil Type	Moreland clay	Moreland silty clay loam			Cancienne silt loam	Gigger-Gilbert complex	Gigger-Gilbert silt loam	silt loam	Coushatta silt loam	Commerce silt loam	Dundee-Dubbs complex
Planting Date	5/19/23	6/13-14/23			5/19/23	6/6/23	4/25/23	5/16/23	5/1/23	6/27/23	4/19/23

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Table 6C. Summary of 2023 On-farm MG 5.2-5.6 Soybean Core Block Demonstrations at Six Locations.

Variety	Avoyelles	Bossier	East Baton Rouge	Franklin	Rapides 1	Tensas
Corteva P54A36SX	43.1	.	59.5	24.2	39.4	30.5
Corteva P54A54X	31.9	30.1	64.6	22.2	44.5	36.4
Bayer AG 56XF2	39.2	.	59.8	20.1	41.4	44.9
Bayer AG 58XF3*	36.1	.	43.6	-	39.3	45.1
Delta Grow DG52XF22/STS	32.2	32.4	63.5	9.9	43.8	36.6
Delta Grow DG53XF95/STS	32.6	42.0	71.1	14.3	43.1	-
Syngenta NK52-V1XF	36.7	36.1	59.4	10.3	37.8	35.8
Syngenta NK55-T2XF	33.5	23.5	48.4	12.4	33.2	33.0
Location Average	35.7	32.8	58.7	16.2	40.3	37.5
Soil Type	Coushatta silty clay loam	Moreland silty clay loam	Cancienne silt loam	Gigger-Gilbert complex	silt loam	Commerce silt loam
Planting Date	6/9/23	6/13-14/23	5/19/23	6/6/23	5/16/23	6/27/2023

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Table 7. Summary of 2023 Conventional Soybean On-farm Demonstration.

Variety	MG	Bossier	Franklin	Tensas
Corteva AgriScience P47A10	4.7	36.0	16.4	64.9
Corteva AgriScience P47A64X	4.7	43.0	20.1	57.7
University of Arkansas R18-14147	4.6	37.8	13.7	56.4
University of Arkansas R18-14502	4.9	49.3	29.5	21.4
University of Arkansas UA46i20C	4.6	41.7	15.3	83.5
University of Missouri S13-10592C	4.5	32.9	13.0	62.0
University of Missouri S16-14730C	4.7	41.1	12.2	40.9
University of Missouri S16-7922C	4.9	51.3	20.2	61.9
Location Average		41.6	17.6	56.1
Soil Type		Moreland silty clay loam	Gigger-Gilbert complex	Bruin silt loam
Planting Date		6/8-9/2023	6/6/2023	5/2/2023

All yields are expressed in bushels per acre and adjusted to 13% moisture.

Table 8. Summary of 2023 Soybean Nematode Resistance Demonstration.

Variety	MG	Bossier 1 Yield	Bossier 2 Yield	Bossier 3 Yield	Bossier 2 Reniform	Bossier 2 Stunt	Franklin Yield	Franklin Reniform	Tensas Yield	Tensas Reniform	Tensas Root-knot	Tensas Lesion	Tensas Stunt
Bayer AG 56XF2	5.6	31.3	25.6	24.4	0	360	39.6	3,840	60.7	5,120	5,440	160	0
Bayer AG 58XF3	5.8	49.8	50.6	37.9	0	240	42.7	1,280	61.4	38,080	5,440	320	1,840
Corteva AgriScience P43A42X	4.3	29.5	18.4	22.3	480	40	4.4	4,480	63.4	166,400	6,400	0	800
Corteva AgriScience P54A36SX	5.4	43.7	31.5	24.7	0	120	34.4	9,920	70.3	134,400	9,600	800	12,800
Syngenta NK47-ZIXF ¹	4.7	30.2	19.3	27.8	160	320	66.3	6,080	41.5	76,800	57,600	0	7,200
Syngenta NK52-VIXF	5.2	24.4	22.0	25.5	0	40	27.8	17,280	53.9	0	6,400	0	3,200
Syngenta NK55-T2XF	5.5	20.2	24.5	-	0	0	10.8	8,640	56.6	80,000	3,200	0	3,200
Location Average		33	27	27	91	160	32	7,360	58	82,613	14,773	187	4,840
Soil Type		Caplis very fine sandy loam	Caplis very fine sandy loam	Caplis very fine sandy loam	Caplis very fine sandy loam	Caplis very fine sandy loam	Gigger silty loam	Gigger silty loam	Bruin silt loam	Bruin silt loam	Bruin silt loam	Bruin silt loam	Bruin silt loam
Planting Date		5/31/23	5/31/23	5/31/23	5/31/23	5/31/23	5/23 & 6/22 ²	5/23 & 6/22 ²	5/17/23	5/17/23	5/17/23	5/17/23	5/17/23

All yields are expressed in bushels per acre and adjusted to 13% moisture.
¹Syngenta NK47-ZIXF was submitted as a root-knot nematode susceptible variety.
²Corteva AgriScience P43A42X and P54A36SX were replanted on 6/22/23 at the Franklin location.

Table 9. Southern Root-knot Nematode (*Meloidogyne incognita*) Reproduction on Core Block Soybean Varieties. (Project: Screening Core Block Soybean Varieties for Root-knot Nematode Resistance)

Variety	Nematode Eggs Produced (#/plant) ¹
Armorseed Armor 46-F96	25,483
Bayer Cropsience AG 39XF3	22,381
Bayer Cropsience AG 43XF2	34,589
Bayer Cropsience AG 46XF3	23,281
Bayer Cropsience AG 56XF2	12,731
Bayer Cropsience AG 58XF3	5,267
Corteva AgriScience P40A90LX	32,081
Corteva AgriScience P44A21X	6,283
Corteva AgriScience P46A86X	18,238
Corteva AgriScience P47A64X	3,281
Corteva AgriScience P54A365X	4,203
Corteva AgriScience P54A54X	823
Delta Grow Seed Company DG48X45	42,381
Delta Grow Seed Company DG48XF/STS	15,739
Delta Grow Seed Company DG52XF22/STS	15,283
Delta Grow Seed Company DG53XF95/STS	26,321
Dyna-Gro Seed S47XF23S	24,313
Dyna-Gro Seed S49XF435	21,259
Progeny AG Progeny 4604XFS	32,412
Progeny AG Progeny 4798XF	27,314
Syngenta NK43-Y9XFS	35,231
Syngenta NK47-Z1XF	65,238
Syngenta NK52-V1XF	15,273
Syngenta NK55-T2XF	14,238

The screening trial was conducted in a greenhouse at the Plant Material Center in Baton Rouge.

The Tensas population of southern root-knot nematode was used.

Bold – reduced nematode population density below initial inoculum level (i.e., highly resistant).

¹Each soybean variety was inoculated with 1,000 *M. incognita* eggs and grown in a greenhouse for 56 days prior to analysis of nematode egg production (n=3).

Table 10. Southern Root-knot Nematode (*Meloidogyne incognita*) Reproduction on Soybean Varieties. (Project: Complimentary Screening of 2023 Nematode Trial Soybean Varieties for Root-knot Nematode Resistance in the Greenhouse)

Variety	Nematode Eggs Produced (#/plant) ¹
Bayer Cropsience AG 56XF2	10,283
Bayer Cropsience AG 58XF3	8,883
Corteva AgriScience P43A42X	4,382
Corteva AgriScience P54A36SX	2,483
Syngenta NK47-Z1XF	52,398
Syngenta NK52-V1X	12,573
Syngenta NK55-T2XF	18,372

The screening trial was conducted in a greenhouse at the Plant Material Center in Baton Rouge.

The Tensas population of southern root-knot nematode was used.

Bold – reduced nematode population density below initial inoculum level (i.e., highly resistant).

¹Each soybean variety was inoculated with 1,000 *M. incognita* eggs and grown in a greenhouse for 56 days prior to analysis of nematode egg production (n=3).

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