



SOYBEAN VARIETIES' DISEASE RATINGS–2021

Ratings for various diseases that affect soybean varieties that were grown in the 2021 Mississippi Soybean Official Variety Trials (OVT) at Brooksville, Clarksdale, Longwood, Olive Branch, Raymond, Stoneville, Tippo, and Verona are presented. Varieties were rated for indicated foliar diseases at the indicated locations in the appended tables.

Varieties were rated when plants were between R6 and R6.5. Ratings are based on each variety's reaction to natural infestations of each disease at each location; i.e., plants were not inoculated with disease pathogens. Thus, the ratings do not presume to indicate a variety's response to a known yield-reducing level of the pathogen. Rather, the ratings are to be used as an indicator of each variety's reaction to the level of the pathogen present at each location in 2021. Cercospora blight, Septoria brown spot, southern blight, and target spot were the most common diseases that occurred at each location.

Evaluations for the presence of diseases were conducted using a 0 to 9 scale where 0 = no disease and 9 = intense disease symptoms. For frogeye leaf spot (FLS), amount of affected leaf surface area was estimated.

Cercospora leaf blight (CLB) ratings were based on the presence of the disease on leaves (0 to 5), petioles (6), and pods and stems (7 to 9). This was based on disease intensity as determined by coloration of plant material (leaves with distinct purple coloration, and petioles, pods, and main stems with purple to near black coloration).

Septoria brown spot (SBS) and target spot (TS) were rated based on the presence of the disease within the plant canopy, where 0 to 3 indicated presence in the lower canopy, 4 to 5 indicated presence in the middle canopy, 6 to 8 indicated presence in the upper canopy, and 9 indicated extensive defoliation throughout the entire plant canopy and the disease present in the uppermost canopy.

Southern blight (SB) ratings were based on presence of disease on plants in an entire plot where 0 = no disease, 5 = plants in approximately half the plot exhibited symptoms, and 9 = severe infestation characterized by dead plants. In numerous cases, either white fungal growth or sclerotia (signs associated with southern blight) were noted at the base of infected plants.

Green stem ratings were made using a 0-100% scale and are based on the percentage of plants in the entire plot that had green stems and green leaf material, but mature pods.

Note: Locations with a non-irrigated trial are designated with an (N) following the location name.

Statistics

MSE (Mean Squared Error). The MSE of an estimator measures the average of error squares—i.e. the average squared difference between the estimated values and true value. It is a risk function, corresponding to the expected value of the squared error loss. The MSE assesses the quality of an estimator (the ratings shown here are estimators of how a variety will tolerate a disease). In other words, it measures the quality of the estimate of the disease incidence (ratings) on the varieties in the accompanying tables. It is always positive and values closer to zero are better—i.e., an MSE of zero means the estimate predicts disease infection potential with perfect accuracy. Of course, this is typically not possible, especially where the disease levels assessed in these environments are based on their natural occurrence, which may have been non-existent or very low.

Probability level (*p* value). The smaller the probability level, the more stringent the statistical test.

CV (coefficient of variation) and/or R² (coefficient of determination). These values are a measure of the relative precision of a given trial and can be used to compare the relative precision of different trials. The CV is generally considered to be an estimate of the amount of unexplained variation in a given trial or test, while the R² is a measure of the amount of variation that is explained or accounted for in a given test. A CV below 10% (10% unexplained variation in a trial) is desired, while an R² above 0.90 (90% of the variation in a trial has been accounted for) is desired.

Ratings

Data obtained from Mississippi soybean OVT tests that were rated for disease infection are presented in the following attached tables.

Table 1. Cercospora leaf blight (CLB) severity ratings for soybean varieties, Miss. OVT, 2021.

Table 2. Frogeye leaf spot (FLS) severity ratings for soybean varieties, Miss. OVT, 2021.

Table 3. Septoria brown spot (SBS) severity ratings for soybean varieties, Miss. OVT, 2021.



Table 4. Southern blight (SB) severity ratings for soybean varieties, Miss. OVT, 2021.

Table 5. Target spot (TS) severity ratings for soybean varieties, Miss. OVT, 2021.

Table 6. Green stem ratings for soybean varieties, Miss. OVT, 2021.

LSU Taproot Decline Ratings

Ratings for soybean varieties' tolerance/susceptibility to Tap Root Decline (TRD) were made by LSU personnel. The ratings were made for varieties grown in the LSU Soybean OVT trial at the Macon Ridge Station at Winnsboro. Those ratings can be found in the below tables of the LSU publication titled [2022 Soybean Variety Yields and Production Practices \(PUB. 2269, Dec. 2021\)](#).

Table 1C. MG 3.0-4.4.

Table 2C. MG 4.5-4.7.

Table 3C. MG 4.8-4.9.

Table 4C. MG 5.0-5.3.

Table 5C. MG 5.4-5.9.

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Table 1

Maturity Group V Conv Cercospora leaf blight ratings**Cercospora leaf blight severity rating (0-9 scale)**

Brand Variety	Brooksville (N)	Crystal Springs (N)	Stoneville-clay	Verona (N)	AVG
Uni. Of Arkansas R13-13997	7.0	6.7	6.0	6.3	6.5
Uni. Of Arkansas R15-1587	6.3	7.0	6.0	6.0	6.3
Uni. Of Arkansas UA54i19GT(R13-14635RR)	7.0	7.0	6.0	6.0	6.5
Uni. Of Missouri S16-11651C	7.0	7.0	5.3	6.0	6.3
Uni. Of Missouri S16-14801C	7.0	7.0	6.3	6.3	6.7
Uni. Of Missouri S16-15170C	8.0	6.3	5.3	6.3	6.5
Uni. Of Missouri S16-3747RY	8.0	7.0	6.3	7.0	7.1
Uni. Of Missouri S16-7840C	6.3	7.0	6.0	6.7	6.5
Uni. Of Missouri S16-9090C	6.7	7.0	6.0	6.7	6.6
Uni. Of Missouri S16-9478C	7.0	7.0	5.7	7.0	6.7
MSE	15.5	14.2	31.2	30.8	
CV	25.4	24.3	36.0	35.8	
<i>p</i> -value	<0.0001	0.0535	0.0708	0.0155	

Table 2.

Maturity Group IV early Xtend Frogeye leaf spot ratings

Frogeye leaf spot severity rating (0-9 scale)			
Brand Variety	Crystal Springs (N)	Verona (N)	AVG
AgriGold G4615XF	0.7	0.0	0.4
AgriGold G4620RX	2.7	1.0	1.9
Armor 44-D49	0.3	0.0	0.2
Armor 46-D09	2.0	0.7	1.3
Armor 46-F13	0.7	0.0	0.4
Asgrow AG44XF2	0.3	0.0	0.2
Asgrow AG45XF0	0.0	0.0	0.0
Asgrow AG46XF2	1.3	0.0	0.7
Beck's Hybrids 4119X2	1.7	0.0	0.9
Credenz CZ 4202XF	0.3	0.3	0.3
Credenz CZ 4562XF	0.3	0.0	0.2
Delta Grow 46F17/STS	0.3	0.0	0.2
Delta Grow 46X65	1.3	0.3	0.8
DonMario DM42F62S	1.3	0.0	0.7
DonMario DM45X61	0.0	0.0	0.0
DonMario DM46F62	0.0	0.0	0.0
Dyna-Gro S43XS70	1.3	0.0	0.7
Dyna-Gro S46XF31S	1.3	0.0	0.7
Dyna-Gro S46XS60	1.7	0.0	0.9
Great Heart Seed GT-4255XS	1.7	0.0	0.9
Great Heart Seed GT-4344XF	1.0	0.3	0.7
Great Heart Seed GT-4677XS	2.3	0.0	1.2
Great Heart Seed GT-4681XFS	1.0	0.0	0.5
Innvictis Seed A 4111XF	2.0	0.0	1.0
Innvictis Seed A 4371XF	1.0	0.0	0.5
Innvictis Seed A 4571XF	0.5	0.0	0.3
Innvictis Seed A 4618X	0.3	0.0	0.2
Innvictis Seed A 4690XF	1.7	0.0	0.9
Local Seed Co. LS4415XF	0.0	0.0	0.0
Local Seed Co. LS4517XFS	0.3	0.0	0.2
Local Seed Co. LS4606XFS	1.0	0.0	0.5
MorSoy MS 4531XF	0.0	0.0	0.0
MorSoy MS 4640XF	0.7	0.0	0.4
MorSoy MS 4681 RXT	0.0	0.0	0.0
NK NK39-A1XF	2.3	0.0	1.2
NK NK43-V8XF	0.0	0.0	0.0
NK NK45-P9XF	0.0	0.0	0.0
NK S44-C7X	1.0	0.0	0.5
Pioneer P46A86X	0.0	0.0	0.0
Progeny P 4501 XFS	0.0	0.0	0.0
Progeny P 4505RXS	0.3	0.0	0.2
Progeny P 4604XFS	1.0	0.0	0.5
Progeny P4521XFS	2.0	0.0	1.0
USG 7461XFS	1.3	0.0	0.7
MSE	585.4	162.4	
CV	36.4	19.2	

Table 3.

Maturity Group IV early Xtend Septoria brown spot ratings**Septoria brown spot severity rating (0-9 scale)**

Brand Variety	Brooksville	Clarksdale	Olive Branch (N)	Stoneville-clay	Stoneville- clay (N)	Tippo (N)	Verona (N)	AVG
AgriGold G4615XF	5.7	5.7	6.7	6.7	7.3	7.0	7.3	6.6
AgriGold G4620RX	5.3	6.0	6.3	6.3	6.3	6.7	7.0	6.3
Armor 44-D49	5.3	4.7	6.0	6.0	6.3	8.0	7.7	6.3
Armor 46-D09	5.0	5.0	6.0	6.7	7.0	7.3	7.0	6.3
Armor 46-F13	5.0	5.7	6.0	7.0	7.0	7.7	7.3	6.5
Asgrow AG44XF2	5.3	5.7	6.3	6.7	7.7	7.3	7.7	6.7
Asgrow AG45XF0	5.3	5.3	6.3	7.0	7.0	7.7	8.0	6.7
Asgrow AG46XF2	5.0	5.3	6.5	6.3	7.0	6.3	6.7	6.2
Beck's Hybrids 4119X2	5.7	5.7	6.5	7.0	8.0	8.0	7.7	6.9
Credenz CZ 4202XF	6.3	5.7	.	6.7	6.7	7.3	6.7	6.6
Credenz CZ 4562XF	6.3	6.0	6.3	6.7	6.7	7.3	8.0	6.8
Delta Grow 46F17/STS	5.3	4.7	6.3	7.0	8.0	7.3	8.0	6.7
Delta Grow 46X65	5.7	5.7	6.3	7.3	6.7	7.0	8.0	6.7
DonMario DM42F62S	5.0	5.0	6.5	6.0	7.3	8.0	8.0	6.5
DonMario DM45X61	6.0	4.7	6.3	6.3	6.3	6.7	7.0	6.2
DonMario DM46F62	5.3	5.0	6.0	7.0	6.7	7.7	7.7	6.5
Dyna-Gro S43XS70	5.7	5.3	6.0	6.7	7.3	7.3	7.3	6.5
Dyna-Gro S46XF31S	5.3	6.0	6.0	6.7	7.3	6.7	8.0	6.6
Dyna-Gro S46XS60	6.0	5.0	6.5	6.7	7.3	7.7	7.0	6.6
Great Heart Seed GT-4255XS	5.7	5.7	6.0	6.7	7.0	7.3	7.7	6.6
Great Heart Seed GT-4344XF	5.3	5.7	6.5	6.7	7.7	7.7	8.3	6.8
Great Heart Seed GT-4677XS	6.0	5.0	6.0	5.7	7.3	7.0	8.3	6.5
Great Heart Seed GT-4681XFS	5.7	6.0	6.3	7.0	7.3	7.3	7.3	6.7
Innvictis Seed A 4111XF	5.7	7.0	6.7	7.0	7.0	7.7	8.7	7.1
Innvictis Seed A 4371XF	5.0	5.3	7.0	7.0	7.3	8.3	8.3	6.9
Innvictis Seed A 4571XF	5.3	6.0	6.3	6.0	6.3	7.3	7.0	6.3
Innvictis Seed A 4618X	5.0	5.0	6.0	6.7	6.7	7.3	6.7	6.2
Innvictis Seed A 4690XF	5.3	6.3	6.0	6.7	6.7	7.3	8.0	6.6
Local Seed Co. LS4415XF	5.3	5.0	6.0	6.3	6.3	7.7	7.7	6.3
Local Seed Co. LS4517XFS	6.7	5.3	6.0	7.0	7.0	7.7	7.3	6.7
Local Seed Co. LS4606XFS	5.3	5.0	6.7	7.0	7.3	7.7	7.0	6.6
MorSoy MS 4531XF	5.3	5.3	6.0	6.7	6.3	7.3	7.7	6.4
MorSoy MS 4640XF	5.3	5.7	6.0	6.3	7.0	7.7	7.7	6.5
MorSoy MS 4681 RXT	5.0	5.0	6.0	6.0	6.7	7.3	6.3	6.0
NK NK39-A1XF	6.0	6.0	1.0	6.7	7.3	7.7	9.0	6.2
NK NK43-V8XF	5.3	5.0	6.0	7.0	8.0	7.7	8.3	6.8
NK NK45-P9XF	5.7	5.7	5.5	7.0	7.3	7.7	7.7	6.6
NK S44-C7X	6.0	5.0	6.5	7.3	6.7	7.7	8.0	6.7
Pioneer P46A86X	5.7	5.7	5.7	7.3	7.3	7.3	8.7	6.8
Progeny P 4501 XFS	5.3	4.7	5.7	6.0	7.0	7.0	8.0	6.2
Progeny P 4505RXS	5.7	6.0	6.0	6.0	7.3	7.7	7.0	6.5
Progeny P 4604XFS	5.7	5.0	6.3	6.7	7.7	7.7	7.7	6.7
Progeny P4521XFS	6.3	5.0	6.0	6.3	5.7	6.7	6.7	6.1
USG 7461XFS	5.7	5.7	6.3	7.3	7.3	7.3	7.3	6.7
	1138.3	1086.9	902.9	1173.4	1019.0	1099.8	942.8	

Table 4

Maturity Group V Conv Southern blight ratings

Southern blight severity rating (0-9 scale)				
Brand Variety	Brooksville (N)	Stoneville-clay	Verona (N)	AVG
Uni. Of Arkansas R13-13997	4.0	0.7	1.0	1.9
Uni. Of Arkansas R15-1587	5.0	2.7	1.7	3.1
Uni. Of Arkansas UA54i19GT(R13-14635RR)	2.7	1.3	1.3	1.8
Uni. Of Missouri S16-11651C	2.0	0.3	0.7	1.0
Uni. Of Missouri S16-14801C	5.7	0.7	1.7	2.7
Uni. Of Missouri S16-15170C	1.0	1.0	0.7	0.9
Uni. Of Missouri S16-3747RY	1.7	1.7	3.0	2.1
Uni. Of Missouri S16-7840C	5.3	0.7	1.3	2.4
Uni. Of Missouri S16-9090C	4.3	2.0	1.3	2.5
Uni. Of Missouri S16-9478C	5.3	2.7	2.0	3.3
MSE	23.6	39.4	38.3	
CV	31.4	40.5	39.9	
<i>p</i> -value	0.0001	0.1251	0.0266	

Table 5.

Maturity Group V Conv Target spot ratings

Brand Variety	Target spot severity rating (0-9 scale)		
	Crystal Springs (N)	Stoneville-clay	AVG
Uni. Of Arkansas R13-13997	5.7	4.3	4.3
Uni. Of Arkansas R15-1587	6.0	5.0	5.0
Uni. Of Arkansas UA54i19GT(R13-14635RR)	6.7	5.7	5.7
Uni. Of Missouri S16-11651C	5.7	5.0	5.0
Uni. Of Missouri S16-14801C	5.7	5.0	5.0
Uni. Of Missouri S16-15170C	6.0	5.7	5.7
Uni. Of Missouri S16-3747RY	6.7	4.7	4.7
Uni. Of Missouri S16-7840C	6.3	5.0	5.0
Uni. Of Missouri S16-9090C	6.7	5.0	5.0
Uni. Of Missouri S16-9478C	5.7	4.7	4.7
MSE	83.6	42.6	
CV	58.9	42.1	
<i>p</i> -value	0.8316	0.2309	

Table 6.

Maturity Group IV Conv Green stem ratings

Brand Variety	Green stem severity rating (%)			
	Crystal Springs (N)	Stoneville clay	Verona (N)	AVG
Uni. Of Arkansas R15-2422	0.3	0.7	28.3	9.8
Uni. Of Arkansas R16-253	0.7	0.7	11.7	4.4
Uni. Of Arkansas UA46i20C(R16-259)	7.0	0.3	7.3	4.9
Uni. Of Missouri S09-13608C	7.3	0.0	40.0	15.8
Uni. Of Missouri S16-11644C	1.3	0.7	73.3	25.1
Uni. Of Missouri S16-12137C	2.3	0.3	4.7	2.4
Uni. Of Missouri S16-14730C	4.3	1.3	53.3	19.6
Uni. Of Missouri S16-5503R	1.7	0.7	65.0	22.5
Uni. Of Missouri S16-5540R	1.0	1.0	66.7	22.9
Uni. Of Missouri S16-7922C	0.7	0.3	46.7	15.9
Uni. Of Missouri S16-8898C	4.0	0.7	7.3	4.0
Uni. Of Missouri S17-2193C	1.0	1.7	60.0	20.9
Uni. Of Missouri S17-2243C	10.7	0.0	21.7	10.8
MSE	96.4	63.9	23.7	
CV	49.1	39.9	24.4	
<i>p</i> -value	0.1229	0.0184	<0.0001	