

MISSOURI

2022

Soybean Seed Guide



Mission

We are committed to promoting and advancing innovative research, production and marketing solutions to maximize Missouri soybean farmer profitability.

Vision

Empowering Missouri Soybean farmers through innovation.



The Missouri Soybean Merchandising Council (MSMC) is a farmer run organization dedicated to improving the profitability of the Missouri soybean farmer through a combination of marketing, research and commercialization programs. Thirteen farmer-directors are elected in statewide elections to serve his or her geographic region and oversee the investment of 50 percent of Missouri's checkoff dollars. MSMC activities are coordinated through a full-time staff in Jefferson City, Missouri. This publication highlighting Missouri's soybean varieties and traits developed through soybean checkoff-supported research comes as a direct result of those efforts.

Leadership Recognition

MSMC Board Members:

Kyle Durham, Norborne
 Aaron Porter, Dexter
 Mark Lehenbauer, Hannibal
 John Kelly, Faucett
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 Baughn Merideth, Caruthersville
 Kevin Mainord, East Prairie
 Justin Rone, Portageville

Seed Advisory Committee

Taking soybean lines from the research program through the commercialization process is a team effort, bringing together Missouri farmers, and staff from the University of Missouri and the Missouri Soybean Merchandising Council on the Seed Advisory Committee.

For more information on the Seed Advisory Committee, contact **Sam Bish**, Senior Technology Transfer Manager for the University of Missouri, at bishs@missouri.edu or **(573) 882-5016**.



The Missouri Soybean Merchandising Council focuses on trait research for several reasons. Our priority within this area of breeding is providing diversification and price leveraging into the marketplace, as well as delivering traits that have disease resistance. For example, SCN costs the soybean farmer \$1 billion annually, so we continue to research and find that resistant trait.



Gary Wheeler

CEO
 Missouri Soybean Association

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SA17-2742 HOLL

Agronomic Traits & Disease Ratings

Growth HabitIndeterminate	Phytophthora Rot.....Field Tolerant
Relative Maturity2.7	SCN PI88788 (Race 3, 14 resistance)
Flower Color.....Purple	SDSModerately Susceptible
Pubescence Color..... Grey	Stem CankerModerately Susceptible
Pod Wall Color..... Tan	Frogeye.....Moderately Susceptible
Hila ColorBuff	Root Knot Not tested
Height (inches).....28	Protein % 36.8
Lodging.....1.2	Oil %.....19.3
Seed per lb.2850	Chloride..... Not tested
Seed luster Shiny	Herbicide Conventional
Oleic Acid.....79.5	Linolenic Acid.....0.8

Performance of SA17-2742 across two years and 9 environments in Missouri during 2018 and 2019. Maturity is presented as September 1 = 1 and Yield is presented as bushels per acre.

Name Year (Locations)	Yield 2019 (3)	Maturity 2019 (3)	Yield 2018 (6)	Maturity 2018 (6)	Oleic Acid 2018 (3)	Linolenic Acid 2018 (3)	Oleic Acid 2019 (7)	Linolenic Acid 2019 (7)
SA17-13168-1	65.0	28	62.3	12	79.3	3.4	79.2	3.9
SA17-2742	62.5	28	67.2	11	78.7	0.9	79.5	0.8
LD11 -2170	79.4	30	65.2	18				
AG3956	78.7	37	65.2	24				
AG3555	76.7	31	57.2	17				
P38A10	84.4	39	73.9	27				
P39A82S	80.7	37	69.0	25				
TEST MEAN	71.3	30	60.8	17				
CV	6.3	5.3	12.5	16.8				
LSD (0.05)	4.2	1.5	9.5	3.5				



MSMC's investment into discovering innovative soybean traits and the regional focus of our breeding programs are central to our mission of providing farmers with solutions to the challenges we face on our farms and creating value throughout the soy market.



Kyle Durham

MSMC Chairman

Missouri Soybean Farmer - Norborne, MO

SA14-9653

Agronomic Traits & Disease Ratings

Growth HabitIndeterminate	Phytophthora Rot.....Field Tolerant
Relative Maturity 3.6	SCN PI88788 (Race 3, 14 resistance)
Flower Color.....Purple	SDSModerately Susceptible
Pubescence Color..... Tawny	Stem CankerModerately Susceptible
Pod Wall Color.....Brown	Frogeye.....Moderately Susceptible
Hila ColorBlack	Root Knot Not tested
Height (inches).....36	Protein %35.6
Lodging.....2.0	Oil %.....18.4
Seed per lb.2580	Chloride..... Not tested
Seed luster Shiny	Herbicide Conventional

Performance of SA14-9653 across two years and 11 environments in Missouri during 2016 and 2017

Name Year (Locations)	Yield 2017 (6 MO)	Maturity 2017 (6 MO)	Yield 2016 (5 MO)	Maturity 2016 (5 MO)	Yield 2016 - 2017 (11 MO)	Maturity 2016 - 2017 (11 MO)
93Y41	79.2	25				
AG3832	79.1	27	85.9	35	82.2	31
SA14-9653	78.1	27	82.9	32	80.3	29
P33T60	75.5	25				
AG38X6	75.4	28				
AG3555	75	24				
TEST MEAN	67.5	26				
CV	8.5	5.9				
LSD(0.05)	4.1	1				

Performance of SA14-9653 across 10 locations in 7 states (IA, IL, IN, KS, MO, NE, and OH) during 2017 in the USDA Uniform Soybean Tests – Northern Region

Name	Yield	% Test Mean	Maturity	Lodging	Height	Seed Weight	Protein	Oil
LD11-2170	74.2	107	9/25	1.3	34	16.4	34.0	19.2
IA3048	72.3	104	1.4	1.8	36	15.9	34.5	17.9
LD07-3395bf	71.2	103	5.3	1.3	32	16.6	32.3	19.9
U11-920017	66.2	95	-4.6	1.7	32	17.7	32.7	19.3
SA13-9653	73.0	105	3.3	2.0	36	17.6	35.6	18.4
TEST MEAN	69.4		27.4	1.4	34.2	16.0		
CV	11.0		40.0	32.5	9.3	4.9		
LSD(0.05)	4.0		6.0	0.3	1.8	0.5		

SA13-1310

Agronomic Traits & Disease Ratings

Growth HabitIndeterminate	Phytophthora Rot.....Field Tolerant
Relative Maturity3.9	SCNPI88788 (Race 3, 14 resistance)
Flower Color.....Purple	SDSModerately Susceptible
Pubescence Color.....Grey	Stem CankerModerately Susceptible
Pod Wall Color.....Brown	FrogeyeModerately Susceptible
Hila ColorImperfect Black	Root KnotNot tested
Height (inches).....35	Protein %35.0
Lodging.....1.4	Oil %18.5
Seed per lb.2700	Chloride.....Not tested
Seed lusterShiny	HerbicideConventional

Performance of SA13-1310 across three years and 18 environments in Missouri during 2015, 2016, and 2017

Name Year (Locations)	Yield 2017 (6 MO)	Maturity 2017 (6 MO)	Yield 2016 (7 MO)	Maturity 2016 (7 MO)	Yield 2015 (5 MO)	Maturity 2015 (5 MO)	Yield 2015-2017 (18 MO)	Maturity 2015-2017 (18 MO)
AG43X7	77.0	32						
AG40X6	75.8	27						
SA13-1310	71.7	26	77.3	30	70.6	31	73.6	29
P39T28X	73.4	26						
AG3956	70.9	25						
94Y21	66.0	27						
AG4034			74.7	30	68.1	32		
NKS39-U2			73.5	29	69.4	32		
93Y92			73.1	30	68.9	31		
AG4232			71.7	34	67.9	36		
TEST MEAN	65.9	27	70.6	31	66.9	32		
CV	9.3	5.7	8.2	7.1	5.8	3.9		
LSD _(0.05)	4.0	1.0	3.5	1.0	2.8	1.0		

Performance of SA13-1310 across 13 locations in 7 states (IA, IL, IN, KS, MO, NE, and OH) during 2017 in the USDA Uniform Soybean Tests – Northern Region

Name	Yield	% Test Mean	Maturity	Lodging	Height	Seed Weight	Protein	Oil
LD11-2170	70.2	106	9/25	1.2	32	16.4	34.1	19.7
IA3048	66.5	100	0.2	1.7	34	15.9	34.2	18.5
LD07-3395bf	68.4	103	5.2	1.5	32	16.5	31.8	20.3
U11-920017	63.0	95	-4.5	1.5	32	17.2	31.8	19.8
SA13-1310	70.5	106	6.5	1.4	35	16.7	35.0	18.5
TEST MEAN	66.3		28.1		33.8	16.0		
CV	10.3		6.3		7.8	6.8		
LSD _(0.05)	2.8		0.7		1.1	0.6		

SA18-268PR HOLL

Agronomic Traits & Disease Ratings

Growth HabitIndeterminate	Phytophthora Rot.....Field Tolerant
Relative Maturity3.9	SCNPI88788 (Race 3, 14 resistance)
Flower Color.....White	SDSModerately Susceptible
Pubescence Color.....Light Tawny	Stem CankerResistant
Pod Wall Color.....Tan	FrogeyeModerately Susceptible
Hila ColorBlack	Root KnotNot tested
Height (inches).....29	Protein %38.6
Lodging.....1.3	Oil %21.0
Seed per lb.3200	Chloride.....Not tested
Seed lusterShiny	HerbicideConventional
Oleic Acid.....83.7	Linolenic Acid.....2.2

Performance of SA18-268PR across two years and 4 environments in Missouri during 2019 and 2020. Maturity is presented as September 1 = 1 and Yield is presented as bushels per acre.

Name Year (Locations)	Yield 2019 (1)	Maturity 2019 (1)	Yield 2020 (3)	Maturity 2020 (3)	Oleic Acid 2020 (1)	Linolenic Acid 2018 (1)
SA18-268PR	64.5	29	68.0	34	83.9	2.2
P38A10	60.9	32	84.3	36		
LD11-2170	57.7	22	80.9	26		
P39A82S	46.0	29	73.1	34		
Grand Mean	55.6	30	67.8	30		
LSD _(0.05)	17.6	2.4	6.9	2.8		



What the checkoff can provide to the producers of Missouri and the region is unique, which can be seen in the seed guide. Efforts from years of dedicated research are produced on these pages to give Missouri soybean producers the edge they need to be competitive in the domestic and international markets. MSMC's contribution to innovation is laid out on these pages, which translates to quality soybean varieties for Missouri producers to succeed in the field.



Bryan Stobaugh

Director of Licensing and Genetics
Missouri Soybean Association
Missouri Soybean Merchandising Council

SA18-350PR HOLL

Agronomic Traits & Disease Ratings

Growth Habit.....Indeterminate	Phytophthora Rot.....Field Tolerant
Relative Maturity.....3.9	SCN.....PI88788 (Race 3, 14 resistance)
Flower Color.....Purple	SDS.....Moderately Susceptible
Pubescence Color.....Gray	Stem Canker.....Resistant
Pod Wall Color.....Brown	Frogeye.....Moderately Susceptible
Hila Color.....Imperfect Black	Root Knot.....Not tested
Height (inches).....33	Protein %.....39.0
Lodging.....1.3	Oil %.....20.8
Seed per lb.....3000	Chloride.....Not tested
Seed luster.....Shiny	Herbicide.....Conventional
Oleic Acid.....84.5	Linolenic Acid.....2.1

Performance of SA18-350PR across two years and 4 environments in Missouri during 2019 and 2020. Maturity is presented as September 1 = 1 and Yield is presented as bushels per acre.

Name Year (Locations)	Yield 2019 (1)	Maturity 2019 (1)	Yield 2020 (3)	Maturity 2020 (3)	Oleic Acid 2020 (1)	Linolenic Acid 2020 (1)
SA18-350PR	66.4	31	69.4	35	84.4	2.1
P38A10	62.4	32	84.3	36		
LD11-2170	61.5	22	80.9	26		
P39A82S	50.4	29	73.1	34		
Grand Mean	56.6	30	67.8	30		
LSD(0.05)	11.2	2.4	6.9	2.8		



Missouri Soybean breeding programs at the University of Missouri are extremely important for developing soybeans that are adapted to environmental conditions specific to all regions of the state. Climate and soil type varies quite a bit across



Missouri, so having breeding programs focused on the development of new varieties throughout the entire span of the development process, from crossing to testing, allows varieties to be adapted to our state uniquely.

Andrew Scaboo, PhD
Assistant Professor
Plant Science & Technology
Bay Farm Research Facility



SA17-8882 HOLL

Agronomic Traits & Disease Ratings

Growth Habit.....Indeterminate	Phytophthora Rot.....Field Tolerant
Relative Maturity.....4.1	SCN.....PI88788 (Race 3, 14 resistance)
Flower Color.....Purple	SDS.....Moderately Susceptible
Pubescence Color.....Tawny	Stem Canker.....Moderately Susceptible
Pod Wall Color.....Brown	Frogeye.....Moderately Susceptible
Hila Color.....Black	Root Knot.....Not tested
Height (inches).....31	Protein %.....37.3
Lodging.....1.6	Oil %.....19.1
Seed per lb.....2920	Chloride.....Not tested
Seed luster.....Shiny	Herbicide.....Conventional
Oleic Acid.....79.9	Linolenic Acid.....2.3

Performance of SA17-8882 across two years and 9 environments in Missouri during 2018 and 2019. Maturity is presented as September 1 = 1 and Yield is presented as bushels per acre.

Name Year (Locations)	Yield 2019 (3)	Maturity 2019 (3)	Yield 2018 (6)	Maturity 2018 (6)	Oleic Acid 2018 (3)	Linolenic Acid 2018 (3)	Oleic Acid 2019 (8)	Linolenic Acid 2019 (8)
SA17-8882	63.9	29	62.7	28	75.7	2.8	79.9	2.3
AG3956	62.9	27	62.8	25				
P94Y21	64.7	30	57.3	29				
LD06-7620	63.9	32	60.1	24				
LD07-3395bf	66.1	28	58.8	21				
TEST MEAN	61.4	29	52.2	23				
CV	6.6	1.3	12.9	14.7				
LSD (0.05)	3.4	1.3	10.9	5.6				



The public soybean breeding programs provide invaluable contributions to soybean producers. Much of the benefit is not as obvious as a particular variety, but is in the benefit of improved genetic traits that are important to the farmer and the consumer.



Greg Luce

Director of Research
Missouri Soybean Merchandising Council

S13-10592

Agronomic Traits & Disease Ratings

Growth HabitIndeterminate	Oil20.0%
Relative Maturity 4.5	Phytophthora Rot..... Tolerant
Flower Color.....White	SDSResistant
Pubescence Color..... Tawny	Stem CankerResistant
Pod Wall Color..... Tan	Frogeye.....Susceptible
Hila ColorBlack	Charcoal.....Resistant
Height (inches).....36	Chloride..... Excluder
Lodging.....2.1	Metribuzin..... Tolerant
Seed per lb.3100	SCNSusceptible
Seed lusterIntermediate	Root KnotSusceptible
Protein.....35.3%	Reniform.....Susceptible

Five Year Means for Yield (bu/ac) by Soil Type, Maturity, Height, and Lodging Southeast MO, 2014-2018

Variety	Loam	Clay	Sand	5-Year Mean	Maturity	Height	Lodging
S13-10592C	66.6	59.9	28.9	60.5	19-Sep	27.0	2.8
AG 43X7	70.9	62.7	25.2	64.5	14-Sep	34.0	2.2
AG 4632	72.6	64.7	30.7	63.8	20-Sep	30.0	2.4
Locations	10	9	3	22	22	22	22

Performance of S13-10592C in the USDA Uniform Test Southern States (2016 – 2018)

Variety	2016	2017	2018	Average	Height	Maturity	Lodging
S13-10592C	71.2	63.7	61.6	65.5	36.0	17-Sep	2.1
AG 4135	72.0	64.6	64.5	67.0	35.0	13-Sep	1.9
AG 4232	68.2	59.5	66.9	64.9	35.0	17-Sep	2.2
Locations	7	8	8	23	23	23	23

“ I was honored to take over the Delta Center soybean program, as it has a long and successful history of developing and releasing high-yielding varieties with strong defense packages and broad adaptation. Our program has been well supported by checkoff dollars from soybean farmers in Missouri and across the country. During the last five years, we have made great progress in streamlining our breeding scheme and renovating our research facility towards improved efficiency and diverse pipeline products. ”



Pengyin Chen, Ph.D.

David M. Haggard Endowed Professorship
Soybean Breeding and Genetics
University of Missouri - Fisher Delta Research Center

S17-2243

Agronomic Traits & Disease Ratings

Growth HabitSemi-Determinate	Oil20.1%
Relative Maturity 4.5	Phytophthora Rot..... Tolerant
Flower Color.....Purple	SDSResistant
Pubescence Color..... Tawny	Stem CankerResistant
Pod Wall Color.....Black	Frogeye.....Mod. Susceptible
Hila ColorImp. Black	Charcoal.....Resistant
Height (inches).....33	Chloride..... Excluder
Lodging.....1.0	Metribuzin..... Tolerant
Seed per lb.3100	SCNR: 2, MR: 3, 5
Seed lusterIntermediate	Root KnotSusceptible
Protein.....33.5%	Reniform.....Susceptible

3-Year mean for yield (bu/ac) and relative ranking (%) in southeast MO (2018-2020) and 2-year performance across 6 southern states

Variety	2018-PYT	2019-AYT	2020-AYT	3-Yr Mean	2019-COOP	2020-COOP	Ranking
S17-2243C	61.0	58.2	65.1	61.4	61.6	61.4	17.9
AG 4135	46.8	36.2	36.8	39.9	54.0	53.3	-
AG 43X7	68.4	61.0	68.6	66.0	67.1	63.7	-
Locations	4	5	5	14	8	7	29

Performance of S17-2243C in the USDA Uniform Test Southern States (2020)

Variety	2020-UT	Rank	Maturity	Lodging	Height
S17-2243C	61.2	5	10/6	1.0	33
AG 43X7	68.5	1	9/30	2.0	37
AG 38X8	63.0	4	9/24	1.0	30
Locations	8	8	8	8	8

“ Traits are important because they can either be used to create new markets or improved uses for soybean. High Oleic soybeans are a great example of a trait that was used to create a new market with potential to increase demand for soybeans. ”

Lisa Lorenzen, PhD

MU Assistant Vice Chancellor for Technology Advancement

Summary of recently released lines from the University of Missouri

Line	Year	Type	RM	GH	FC	PC	PW	HC	SCN	RKN	RN	SC	PRR	FLS	SDS	CRT	PHO	MET	STS	Salt	Seed Available
SA18-268PR HOLL	2021	Conv/HOLL	3.9	I	W	LT	Tan	Black	R: 3,14	S	.	R	T	S	.	.	.	T	S	Inc	Foundation-21
SA18-350PR HOLL	2021	Conv/HOLL	3.9	I	P	G	Brown	Imp. Black	R: 3,14	S	.	R	T	S	.	.	.	T	S	Inc	Foundation-21
SA17-2742 HOLL	2020	Conv/HOLL	2.8	I	P	G	Tan	Buff	R: 3,14	S	.	R	T	S	.	.	.	T	S	Inc	Foundation-20
SA17-8882 HOLL	2020	Conv/HOLL	4	I	P	T	Brown	Black	R: 3,14	S	.	R	T	S	.	.	.	T	S	Inc	Foundation-20
S15-17812HOL	2019	Conv/HOL	4.8	I	W	G	Tan	Buff	R: 2	R	MR	R	R	R	R	S	S	T	S	-	Foundation-20
S17-2243	2021	Conv	4.5	SD	P	T	Bl	I Bl	R: 2; MR: 3,5	S	S	R	T	MS	R	R	-	T	-	Exc	Pre-Foundation-21
S16-14801	2021	Conv	5.0	D	P	G	T	I Bl	R: 1,2,3,5	R	MR	R	T	S	R	R	-	T	-	Exc	Pre-Foundation-21
SA13-2699	2020	Conv	3.9	I	P	G	Tan	Imp. Black	R: 3,14	S	.	R	T	S	.	.	.	T	S	Inc	Foundation-22
S16-14730	2020	Conv	4.7	I	P	T	Tan	Black	R: 3; MR: 2,5	MR	S	R	T	R	R	R	S	T	S	Inc	Foundation-20
S16-11644	2020	Conv	4.9	SD	W	T	Tan	Imp. Black	R: 2; MR: 3,5	R	MS	S	R	R	R	R	S	T	S	Exc	Breeder-20
S16-7922	2020	Conv	4.9	SD	W	T	Tan	Imp. Black	MR: 2,3,5	R	MR	R	T	R	R	R	S	T	S	Exc	Breeder-20
S16-11651	2020	Conv	5.3	SD	W	T	Tan	Black	R: 5; MR: 2,3	R	MR	R	R	R	R	R	S	T	S	Exc	Breeder-20
S16-15170	2020	Conv	5.3	I	W	G	Tan	Buff	R: 5; MR: 2	S	S	R	T	R	R	S	S	T	S	Exc	Breeder-20
SA14-9653	2019	Conv	3.7	I	P	T	Brown	Black	R: 3,14	S	.	R	R	S	.	.	.	T	S	Inc	Foundation-20
SA13-1385	2019	Conv	3.9	I	P	T	Tan	Black	R: 3,14	S	.	R	T	S	.	.	.	T	S	Inc	Foundation-19
SA14-1310	2019	Conv	3.9	I	P	G	Brown	Imp. Black	R: 3,14	S	.	R	T	S	.	.	.	T	S	Inc	Foundation-21
S13-10590	2019	Conv	4.3	I	W	T	Tan	Black	MR: 1,2	R	S	MS	T	R	R	R	S	T	S	Exc	Foundation-20
S13-10592	2019	Conv	4.5	I	W	T	Tan	Black	S	S	S	R	T	S	R	R	S	T	S	Exc	Foundation-20
S13-1955	2019	Conv	5.5	D	W	T	Tan	Black	R: 2,3,5,14	R	R	MS	T	R	R	R	R	T	S	Inc	Foundation-20
S15-10434	2019	Conv	5.5	D	P	T	Tan	Black	R: 1,2,3,5,14	R	R	MS	T	-	R	R	R	T	S	Exc	Foundation-19
S13-2743	2018	Conv	4.1	I	W	G	Brown	Buff	R: 3,14	S	S	R	R	R	R	S	S	T	S	Inc	Foundation-19
S13-3851	2018	Conv	4.4	I	P	LT	Tan	Black	S	S	S	R	R	S	R	S	S	T	S	Inc	Foundation-20
S11-20242	2017	Conv	5.1	SD	W	T	Tan	Black	R: 1,2,3,5,14	R	R	MS	T	R	R	-	-	T	S	Exc	
S11-16653	2016	Conv	5.3	D	W	G	Tan	Buff	R: 1,2,3,5; MR: 14	R	R	R	T	S	MR	-	-	T	S	Exc	
S12-4718	2016	Conv	5.3	D	W	LT	Tan	Black	R: 1,2,3,5,14	R	R	R	T	R	R	-	-	T	S	Exc	Foundation-19
S11-17025	2015	Conv	5.2	D	W	T	Tan	Black	R: 1,2,3,5,14	R	R	MS	T	R	R	-	-	T	S	Exc	Foundation-19
S16-5503GT	2021	RR1	4.8	SD	W	T	T	Bl	R: 2; MR: 3,5	R	R	S	T	R	R	R	-	T	-	Exc	Pre-Foundation-21
S16-5540GT	2020	RR1	4.6	SD	W	T	Tan	Black	R: 2,3,5	R	R	S	T	R	R	R	S	T	S	Exc	Foundation-20
S14-15138GT	2018	RR1/STS	4.8	I	W	T	Tan	Black	MR: 3,14	S	S	R	T	R	R	MS	R	T	T	Inc	Foundation-20
S14-15146GT	2017	RR1/STS	4.6	I	W	T	Tan	Black	S	S	S	R	T	R	MR	R	S	T	T	Inc	Foundation-20
S14-9017GT	2017	RR1	5.3	SD	W	LT	Tan	Black	R: 1,2,3,5	MS	R	R	R	R	R	MR	S	T	S	Inc	Foundation-19
S11-20337GT	2015	RR1	4.9	SD	P	T	Tan	Black	R: 1,2,3,5,14	R	R	MS	T	S	MR	-	-	T	S	Exc	
S11-20195GT	2015	RR1	5.3	I	P	T	Tan	Black	R: 1,2,3,5,14	R	R	MS	T	R	MR	-	-	T	S	Exc	
S11-20356GT	2014	RR1	4.9	SD	P	T	Tan	Black	R: 1,2,3,5,14	R	R	R	T	R	R	-	-	T	-	Exc	Foundation-19
S16-16641GT HO	2019	GT/HO	4.8	D	W	T	Tan	Black	R: 1,2,3,5	R	R	R	R	S	R	S	R	T	S	Exc	Foundation-19
S16-3747RR2	2020	RR2	5.0	D	W	LT	Tan	Imp. Black	R: 5; MR: 2,3	R	MS	R	T	S	R	R	S	T	S	Exc	Breeder-20
S10-2635RR2	2015	RR2	4.1	I	P	G	Tan	Imp. Black	MR: 3,14	S	S	R	T	R	MR	-	-	T	S	Exc	
S11-9618RR2	2015	RR2	4.4	I	P	G	Brown	Imp. Black	R: 1,2,3,5,14	R	S	-	T	R	MR	-	-	T	S	Exc	

Conv = Conventional; HO = High Oleic, HOLL = High Oleic low linolenic, HOL = High Oleic with one low-linolenic gene
 RM: Relative Maturity; GH: Growth Habit, D = Determinate, SD = Semi-determinate, I = Indeterminate.
 FC: Flower color, W = White, P = Purple.
 PC: Pubescence Color, G = Gray, T = Tawny, LT = Light tawny; PW: Podwall color; HC: Hilum color.
 SCN: Soybean cyst nematode; RKN: Southern root-knot nematode; RN: Reniform nematode.

SC: Stem Canker; PRR: Phytophthora root rot; FLS: Frogeye leaf spot; SDS: Sudden death syndrome; CRT: Charcoal rot; PHO: Phomopsis longicolla.
 R = Resistant, MR = Moderately resistant, MS = Moderately susceptible, S = Susceptible, T = Tolerant.
 MET: Metribuzin; STS: Sulfonyl-Urea tolerant soybean, T = Tolerant, S = Susceptible.
 Salt: Inc = Includer; Exc = Excluder.

S16-5540GT

Agronomic Traits & Disease Ratings

Growth Habit <i>Semi-Determinate</i>	Oil 17.9%
Relative Maturity 4.6	Phytophthora Rot <i>Tolerant</i>
Flower Color <i>White</i>	SDS <i>Resistant</i>
Pubescence Color <i>Tawny</i>	Stem Canker <i>Resistant</i>
Pod Wall Color <i>Tan</i>	Frogeye <i>Resistant</i>
Hilum Color <i>Black</i>	Charcoal <i>Resistant</i>
Height (inches) 31	Chloride <i>Excluder</i>
Lodging Score 1.9	Metribuzin <i>Tolerant</i>
Seed per lb. 3260	SCN <i>Resistant to races 2, 3, 5</i>
Seed Luster <i>Intermediate</i>	Root-Knot <i>Resistant</i>
Protein 36.5%	Reniform <i>Resistant</i>

2-Year mean for yield (bu/ac), maturity, height, and lodging in southeast MO (2017-2018) and 1-year performance across 8 southern states

Variety	2017-PYT	2018-AYT	2-Year Mean	2018-COOP	Maturity	Height	Lodging
S16-5540GT	70.4	67.0	68.5	70.5	10/6	28	2.8
AG 4632	70.9	57.6	64.3	73.2	10/4	36	3.4
AG 43X7	74.0	62.3	68.1	62.8	10/1	37	3.0
Locations	4	5	9	8	9	9	9

Performance of S16-5540GT in the USDA Uniform Test Southern States (2019)

Variety	2019-UT	Maturity	Height	Lodging
S16-5540GT	65.8	9/27	31	1.9
AG 39X7	52.7	9/16	30	1.6
AG 4135	56.8	9/18	30	1.5
Locations	8	8	8	8

“ The discovery of new traits adds to the diversity and competitiveness of our soybean varieties and accelerates advancement of the field of soybean genetics. Proprietary soybean traits discovered through University of Missouri research have the potential to be a source of strong intellectual property that could incentivize commercial entities to license and integrate the trait into elite soybean germplasm throughout the United States. ”

Sam Bish, PhD

MU Senior Technology Transfer Manager, Life Sciences & Agriculture

S16-14730

Agronomic Traits & Disease Ratings

Growth Habit <i>Indeterminate</i>	Oil 18.2%
Relative Maturity 4.7	Phytophthora Rot <i>Tolerant</i>
Flower Color <i>Purple</i>	SDS <i>Resistant</i>
Pubescence Color <i>Tawny</i>	Stem Canker <i>Resistant</i>
Pod Wall Color <i>Tan</i>	Frogeye <i>Resistant</i>
Hilum Color <i>Black</i>	Charcoal <i>Resistant</i>
Height (inches) 32	Chloride <i>Includer</i>
Lodging Score 1.6	Metribuzin <i>Tolerant</i>
Seed per lb. 3210	SCN <i>R: 3; MR: 2, 5</i>
Seed luster <i>Intermediate</i>	Root Knot <i>Mod. Resistant</i>
Protein 34.4%	Reniform <i>Susceptible</i>

2-Year mean for yield (bu/ac), maturity, height, and lodging in southeast MO (2017-2018) and 1-year performance across 8 southern states

Variety	2017-PYT	2018-AYT	2-Year Mean	2018-COOP	Maturity	Height	Lodging
S16-14730C	69.0	61.8	65.0	64.2	10/5	33	2.8
AG 4632	60.9	57.6	59.3	62.8	10/4	36	3.4
AG 46X7	78.0	66.4	72.2	73.2	10/2	38	2.8
Locations	4	5	9	8	9	9	9

Performance of S16-14730C in the USDA Uniform Test Southern States (2018-2019)

Variety	2018-UP	2019-UT	Average	Maturity	Height	Lodging
S16-14730C	65.0	59.5	62.3	9/27	32	1.6
AG 39X7	71.2	52.7	61.9	9/16	30	1.6
AG 4135	62.7	56.8	59.7	9/18	30	1.5
Locations	7	8	15	15	15	15

“ We are fortunate to have world-class soybean breeders in our college. They develop the highest quality seeds with the most desirable traits for the farmers of Missouri and beyond. ”

Shibu Jose PhD

MU Associate Dean for Research
Director, MO Agricultural Experiment Station

S15-17812HOL

Agronomic Traits & Disease Ratings

Growth HabitIndeterminate	Oil 19.0%
Relative Maturity 4.8	Phytophthora Rot.....Resistant
Flower Color.....White	SDSResistant
Pubescence Color.....Gray	Stem CankerResistant
Pod Wall Color.....Tan	Frogeye.....Resistant
Hila ColorBuff	Charcoal.....Susceptible
Height (inches).....30	Chloride.....Excluder
Lodging.....1.8	Metribuzin.....Tolerant
Seed per lb.3700	SCNResistant to Race 2
Seed lusterIntermediate	Root KnotResistant
Protein.....36.5%	Reniform.....Moderately Resistant

Three years mean for yield performance (bu/ac) in 25 locations across 6 states from 2016 to 2018

Variety	2016 PYT	2017 AYT	2018 AYT	2018 UT
S15-17812HOL	60.8	55.3	50.9	58.2
AG 4135			45.5	
AG 4835	64.1		49.5	
AG 51X8			49.3	
AG 5335		69.7	55.0	
Ellis				55.9
P48T27X			48.6	
UA 5612				59.3
Check Average	64.1	68.2	49.6	57.6
% Check	94.9	81.1	102.7	101.0
Test Average	52.3	60.7	36.8	56.8
% Test	116.3	91.0	138.3	102.5
Ranking (%)	96.2	11.4	93.1	62.0
CV (%)	13.3	9.9	12.7	14.2
LSD (5%)	13.6	6.4	5.2	5.4
# Locations	3	3	3	16

Three years means of S15-17812HOL Oleic (18:1) and Linolenic (18:3) acid concentrations

Soybean Oil	2016	2017	2018	Average
Oleic acid (18:1)	83.3	83.9	85.0	84.1
Linolenic acid (18:3)	4.1	2.9	1.3	2.8



S16-5503GT

Agronomic Traits & Disease Ratings

Growth HabitSemi-Determinate	Oil 18.7%
Relative Maturity 4.8	Phytophthora Rot.....Tolerant
Flower Color.....White	SDSResistant
Pubescence Color.....Tawny	Stem CankerSusceptible
Pod Wall Color.....Tan	Frogeye.....Resistant
Hila ColorBlack	Charcoal.....Resistant
Height (inches).....33	Chloride.....Excluder
Lodging.....2.0	Metribuzin.....Tolerant
Seed per lb.3100	SCNR: 2, MR: 3, 5
Seed lusterIntermediate	Root-Knot.....Resistant
Protein.....35.1%	Reniform.....Resistant

3-Year mean for yield (bu/ac) and relative ranking (%) in southeast MO (2017-2020) and 2-year performance across 6 southern states

Variety	2017-PYT	2018-AYT	2020-AYT	3-Yr Mean	2018-COOP	2020-COOP	Ranking
S16-5503GT	70.0	63.0	61.2	64.7	71.6	65.1	18.1
AG 4835	70.0	52.1	55.4	59.2	68.0	66.7	-
AG 46X64	74.0	62.0	72.2	69.4	73.2	59.8	-
Locations	4	5	5	14	7	7	28

Performance of S16-5503GT in the USDA Uniform Test Southern States (2019-2020)

Variety	2019-UP	Rank	2020-UT	Rank	Maturity	Lodging	Height
S16-5503GT	65.9	4	59.1	5	10/10	2	33
AG 46X6	67.5	1	62.9	1	10/8	2	36
Ellis	62.0	10	53.4	13	10/11	1	26
Locations	5		13	13	13	13	13



This program has a long history of success breeding high yield and disease resistant varieties for commercial production. We also provide germplasm for other private programs and public production, too. We have varieties for farmers and companies alike, and then we have germplasm, new genetics, for other breeding programs in Missouri and across the nation.



Pengyin Chen, Ph.D.

David M. Haggard Endowed Professorship
Soybean Breeding and Genetics
University of Missouri - Fisher Delta Research Center



S16-11644

Agronomic Traits & Disease Ratings

Growth Habit.....	Semi-Determinate	Oil.....	18.7%
Relative Maturity.....	4.9	Phytophthora Rot.....	Resistant
Flower Color.....	White	SDS.....	Resistant
Pubescence Color.....	Tawny	Stem Canker.....	Susceptible
Pod Wall Color.....	Tan	Frogeye.....	Resistant
Hila Color.....	Imperfect Black	Charcoal.....	Resistant
Height (inches).....	28	Chloride.....	Excluder
Lodging.....	1.8	Metribuzin.....	Tolerant
Seed per lb.....	3570	SCN.....	R: 2, MR: 3, 5
Seed luster.....	Intermediate	Root-Knot.....	Resistant
Protein.....	35.4%	Reniform.....	Mod. Susceptible

2-Year mean for yield (bu/ac), maturity, height, and lodging in southeast MO (2017-2018) and 1-year performance across 8 southern states

Variety	2017-PYT	2018-AYT	2-Year Mean	2018-COOP	Maturity	Height	Lodging
S16-11644C	74.6	59.9	66.4	66.8	10/5	27	2.8
AG 46X7	62.4	69.1	65.8	73.2	10/2	38	2.8
AG 49X6	84.0	64.3	74.1	69.7	10/4	38	2.6
Locations	4	5	9	8	9	9	9

Performance of S16-11644C in the USDA Uniform Test Southern States (2018-2019)

Variety	2018-UP	2019-UT	Average	Maturity	Height	Lodging
S16-11644C	64.0	62.5	63.1	10/1	28	1.6
AG 46X7	63.8	63.8	63.8	9/29	34	1.5
Ellis	62.0	57.2	59.6	10/1	25	1.3
Locations	7	12	19	12	12	12

“ MU soybean breeders, Dr. Pengyin Chen and Dr. Andrew Scaboo are breeding soybean varieties for not only high yield and agronomics, but also quality traits like higher protein and high oleic/low linolenic fatty acids. The high oleic SOYLEIC® trait involves the Missouri soybean breeders and other public programs across a wide geography. There is great potential for SOYLEIC® to increase soybean oil usage. ”

Greg Luce

Director of Research
Missouri Soybean Merchandising Council

S16-7922

Agronomic Traits & Disease Ratings

Growth Habit.....	Semi-Determinate	Oil.....	19.3%
Relative Maturity.....	4.9	Phytophthora Rot.....	Resistant
Flower Color.....	White	SDS.....	Resistant
Pubescence Color.....	Tawny	Stem Canker.....	Resistant
Pod Wall Color.....	Tan	Frogeye.....	Resistant
Hila Color.....	Imperfect Black	Charcoal.....	Resistant
Height (inches).....	30	Chloride.....	Excluder
Lodging.....	1.9	Metribuzin.....	Tolerant
Seed per lb.....	3510	SCN.....	Mod. Resistant 2, 3, 5
Seed luster.....	Intermediate	Root-Knot.....	Resistant
Protein.....	35.2%	Reniform.....	Mod. Resistant

2-Year mean for yield (bu/ac), maturity, height, and lodging in southeast MO (2017-2018) and 1-year performance across 8 southern states

Variety	2017-PYT	2018-AYT	2-Year Mean	2018-COOP	Maturity	Height	Lodging
S16-7922C	74.2	63.4	68.2	70.4	10/8	28	2.4
AG 49X6	67.8	64.3	66.1	59.0	10/4	38	2.6
AG 4835	71.9	62.4	67.2	68.0	10/6	35	2.8
Locations	4	5	9	7	5	5	5

Performance of S16-7922C in the USDA Uniform Test Southern States (2018-2019)

Variety	2018-UP	2019-UT	Average	Maturity	Height	Lodging
S16-7922C	63.1	61.7	62.4	10/1	30	1.9
AG 49X6	60.6	63.8	62.2	9/29	34	1.5
Ellis	61.2	57.2	59.2	10/1	25	1.3
Locations	9	12	21	12	12	12



“ Trait research can drive value, help with management and maintain yield potential. ”

Andrew Scaboo, PhD

Assistant Professor
Plant Science & Technology
Bay Farm Research Facility

S16-14801

Agronomic Traits & Disease Ratings

Growth Habit..... <i>Determinate</i>	Oil.....19.0%
Relative Maturity.....5.0	Phytophthora Rot..... <i>Tolerant</i>
Flower Color..... <i>Purple</i>	SDS..... <i>Resistant</i>
Pubescence Color..... <i>Gray</i>	Stem Canker..... <i>Resistant</i>
Pod Wall Color..... <i>Tan</i>	Frogeye..... <i>Susceptible</i>
Hila Color..... <i>Imperfect Black</i>	Charcoal..... <i>Resistant</i>
Height (inches).....32	Chloride..... <i>Excluder</i>
Lodging.....2.0	Metribuzin..... <i>Tolerant</i>
Seed per lb.....3050	SCN..... <i>R: 1, 2, 3, 5</i>
Seed luster..... <i>Intermediate</i>	Root-Knot..... <i>Resistant</i>
Protein.....34.5%	Reniform..... <i>Mod. Resistant</i>

3-Year mean for yield (bu/ac) and relative ranking (%) in southeast MO (2017-2020) and 2-year performance across 6 southern states

Variety	2017-PYT	2018-AYT	2020-AYT	3-Yr Mean	2018-COOP	2020-COOP	Ranking
S16-14801C	73.4	66.7	64.3	68.1	72.1	73.8	7.0
AG 52X9	68.3	60.8	72.9	67.3	72.9	70.6	-
AG 5335	72.5	52.1	60.8	61.8	72.6	67.2	-
Locations	4	5	5	14	7	7	28

Performance of S16-14801C in the USDA Uniform Test Southern States (2019-2020)

Variety	2019-UP	Rank	2020-UT	Rank	Maturity	Lodging	Height
S16-14801C	66.5	3	63.3	2	10/15	2	32
AG 55X7	67.5	1	61.4	5	10/16	1	33
Ellis	62.0	10	53.5	29	10/15	1	26
Locations	5	5	14	14	14	14	14



The breeding programs are important because they produce competitive and diverse soybean varieties of interest to a wide range of stakeholders, including commercial entities, research collaborators, and the breeders themselves. From a licensing and commercialization standpoint, many soybean varieties developed by the breeding programs attract licensing interest and generate financial return on the research funds invested in these programs.



Sam Bish, PhD

MU Senior Technology Transfer Manager, Life Sciences & Agriculture

S16-11651

Agronomic Traits & Disease Ratings

Growth Habit..... <i>Semi-Determinate</i>	Oil.....18.2%
Relative Maturity.....5.3	Phytophthora Rot..... <i>Resistant</i>
Flower Color..... <i>White</i>	SDS..... <i>Resistant</i>
Pubescence Color..... <i>Tawny</i>	Stem Canker..... <i>Resistant</i>
Pod Wall Color..... <i>Tan</i>	Frogeye..... <i>Resistant</i>
Hilum Color..... <i>Black</i>	Charcoal..... <i>Resistant</i>
Height (inches).....31	Chloride..... <i>Excluder</i>
Lodging Score.....1.8	Metribuzin..... <i>Tolerant</i>
Seed per lb.....3390	SCN..... <i>R: 5; MR: 2, 3</i>
Seed luster..... <i>Intermediate</i>	Root Knot..... <i>Resistant</i>
Protein.....35.4%	Reniform..... <i>Mod. Resistant</i>

2-Year mean for yield (bu/ac), maturity, height, and lodging in southeast MO (2017-2018) and 1-year performance across 8 southern states

Variety	2017-PYT	2018-AYT	2-Year Mean	2018-COOP	Maturity	Height	Lodging
S16-11651C	73.1	66.2	69.2	70.0	10/11	29	2.6
AG 5335	71.7	65.6	68.7	72.6	10/11	40	2.8
AG 51X8	65.1	52.8	58.9	66.3	10/10	42	2.8
Locations	4	5	9	6	5	5	5

Performance of S16-11651C in the USDA Uniform Test Southern States (2018-2019)

Variety	2018-UP	2019-UT	Average	Maturity	Height	Lodging
S16-11651C	66.9	62.1	64.3	10/5	31	1.8
AG 53X6	60.6	55.9	58.3	10/4	28	1.5
Ellis	61.2	59.2	60.2	10/6	26	1.4
Locations	9	13	22	13	13	13



We appreciate our funding support from the Missouri Soybean Merchandising Council and United Soybean Board. Their continued support makes the work we do possible, and the breeders appreciate this partnership.



Pengyin Chen, Ph.D.

David M. Haggard Endowed Professorship
Soybean Breeding and Genetics
University of Missouri - Fisher Delta Research Center

S16-15170

Agronomic Traits & Disease Ratings

Growth Habit.....Indeterminate	Oil.....18.5%
Relative Maturity.....5.3	Phytophthora Rot.....Resistant
Flower Color.....White	SDS.....Resistant
Pubescence Color.....Gray	Stem Canker.....Resistant
Pod Wall Color.....Tan	Frogeye.....Resistant
Hila Color.....Buff	Charcoal.....Susceptible
Height (inches).....35	Chloride.....Excluder
Lodging.....1.7	Metribuzin.....Tolerant
Seed per lb.....2820	SCN.....R: 5, MR: 2
Seed luster.....Intermediate	Root-Knot.....Susceptible
Protein.....36.6%	Reniform.....Susceptible

2-Year mean for yield (bu/ac), maturity, height, and lodging in southeast MO (2017-2018) and 1-year performance across 8 southern states

Variety	2017-PYT	2018-AYT	2-Year Mean	2018-COOP	Maturity	Height	Lodging
S16-15170C	71.4	65.3	68.0	72.7	10/11	34	2.8
AG 5335	64.5	59.5	62.0	72.6	10/12	40	2.8
AG 51X8	78.0	50.2	64.1	66.3	10/8	45	3.0
Locations	4	5	9	6	9	9	9

Performance of S16-15170C in the USDA Uniform Test Southern States (2018-2019)

Variety	2018-UP	2019-UT	Average	Maturity	Height	Lodging
S16-15170C	65.9	61.0	62.9	10/8	35	1.7
AG 53X6	63.8	55.9	59.9	10/4	28	1.5
Ellis	62.0	59.2	60.6	10/6	26	1.4
Locations ²	7	13	20	13	13	13

The MU Northern Missouri Soybean Breeding Program, located at the Missouri Soybean Association's Bay Farm Research Facility, and the MU Southern Missouri Soybean Breeding Program, located at the MU Fisher Delta Research Center, are dedicated to developing improved varieties for Missouri Producers. They focus on important agronomic and disease traits, as well as selected quality traits. Important agronomic and disease traits are, of course, yield and height and lodging resistance, as well as resistance or tolerance to key pests like SCN, SDS, Phytophthora, Frogeye leaf spot and Root Knot Nematode for the delta region.

Greg Luce

Director of Research
Missouri Soybean Merchandising Council



SOYLEIC High Oleic SOYBEANS

What is a High Oleic Soybean?

U.S. high oleic soybean has oil that typically contains **75 percent or greater oleic acid** and **less than 3 percent linolenic acid**. Typically, soybean oil has a 23 percent oleic and 8 percent linolenic acid content. The improved fatty acid profile provides an oil with **superior heat and oxidative stability** for **improved fry life and shelf life of prepared foods**. High oleic soybeans have comparable oil and protein content to commodity soybeans which produces a soybean meal with the same composition of protein and amino acids.

Benefits of High Oleic Soybean Oil

Health:

- High oleic soybean oil can be used at high temperatures in preparing foods **without hydrogenation** or producing harmful **trans fats**.
- High oleic soybean oil contains **less saturated fat** than other commonly used oils.



Environment:

- High oleic soybean oil has an **extended fry-life**, lowering cost and waste.
- Soybean are a **renewable energy source**, and a **nitrogen-fixing** legume grown across Missouri.

Functionality:

- 2-3 times longer fry life¹
- Cleaner / lighter flavor
- 2-3 times longer shelf life¹
- Less oil absorption
- Reduced foaming

Today, one bushel of U.S. soybean can be produced with 50 percent **less energy**, 50 percent **fewer emissions**, 40 percent **less water** and 35 percent **less land** than in 1980.

¹ In comparison to commodity soybean oil.

Leading the Way

SOYLEIC™, a **true non-GMO high oleic soybean trait**, was developed through partnerships between the **University of Missouri, the U.S. Department of Agriculture, Missouri Soybean Merchandising Council, and the United Soybean Board.**



In the Marketplace

Samples and additional information can be requested at:
www.SOYLEIC.com



MISSOURI SOYBEANS

SOYLEIC.com
(573) 635-3819



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Jefferson City, MO 65109

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