Virginia Cooperative Extension
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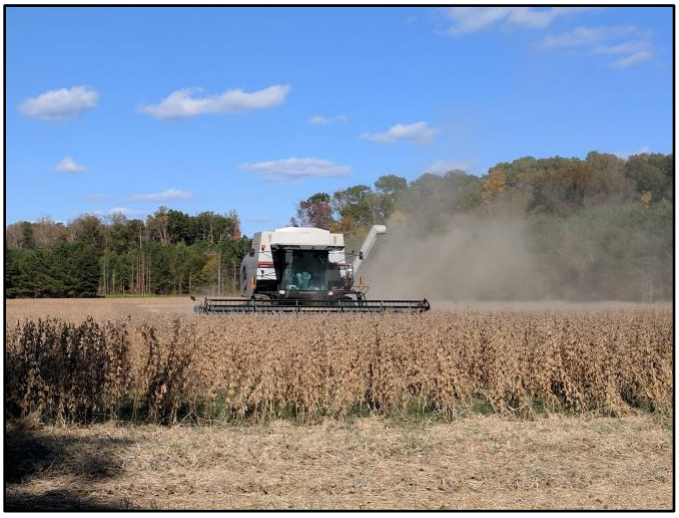
Virginia On-Farm Soybean Research

A summary of replicated research conducted by
Virginia Cooperative Extension in cooperation with local producers and agribusiness

2020



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Introduction

These results are a collaborative effort of Virginia Cooperative Extension (VCE) Agents and Specialists, area producers, and agribusiness. The purpose of this publication is to provide research-based information to aid in the decision-making process for soybean producers in Virginia. It provides an unbiased evaluation of varieties, management practices, and new technologies through on-farm replicated research using producer equipment and time. These experiments enable producers to make better management decisions based on research and provide greater opportunities to improve yields and profits, which improves quality of life for them and their families.

The success of these on-farm experiments is very dependent on the cooperative effort of the producer and the assisting agribusinesses. We are grateful for that cooperation. We hope the information will be beneficial to you and your individual agribusiness operations. This publication is made available each year at the Virginia Grain and Soybean Conference, at regional production meetings throughout Virginia, and on the VCE website (http://resources.ext.vt.edu). This information reaches hundreds of Virginia soybean and grain producers plus agribusinesses, impacting over 550,000 acres of soybeans valued at approximately $200 million.

The field work and printing of this publication is supported by Virginia Soybean Board Check-Off Funds. The cooperators graciously wish to acknowledge this support. Any producer or agribusiness professional wishing to receive a copy of this publication should contact their local Extension Agent who can request a copy from Stephanie Romelczyk in Westmoreland County at 804-493-8924 or **sromelcz@vt.edu.**

This is the 24th year of this multi-county cooperative effort and further work is planned for 2021. The authors wish to thank the many producers who participated in this project. Appreciation is extended to seed, crop protection, and fertilizer representatives who donated products and/or assisted with the field work.

DISCLAIMER: Trade and brand names are used only for educational purposes, and Virginia Cooperative Extension does not guarantee or warrant the standards of the product, nor does Virginia Cooperative Extension imply approval of the product to the exclusion of others which may also be suitable.

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PHOTOS: Courtesy of Lindy Fimon, Laura Siegle, Scott Reiter, Trent Jones, Robbie Longest, and Stephanie Romelczyk

GENERAL SUMMARY

First, we would like to thank everyone that participated in on-farm plot work: seed and input suppliers for providing materials for the trials, our farmer-cooperators for supplying equipment, land, and patience to get these tests from planting to harvest, the Virginia Soybean Board for funding to assist with expenses, Extension Agents for securing locations, hauling seed, and sending in data, and you, the soybean grower, for showing interest in our work and taking time to review this publication.

Weather continued to keep us guessing and frustrated in 2020. May and June brought various levels of rain and cool temperatures across the State. Then hot, dry conditions set in July for about 3 weeks. August and September provided record rainfall for much of Virginia. Overall, yields have been very good across trial locations. Harvest was also a struggle with wet soils and high moisture seed for much of the season. Weather is still a risk difficult to manage.

As in the past, Extension Agents have compared Maturity Group (MG) 4 & 5 varieties across multiple locations. This work is performed in concert with the Official Variety Tests conducted by Dr. David Holshouser and offers producers even stronger yield comparison information that they can use when making planting decisions. In addition, a special MG 2.5-3.9 trial was conducted at the Virginia Ag Expo site in Northumberland County.

For 2020, the decision was made to accept only Roundup Ready 2 Xtend soybeans for the Roundup Ready trials. This simplified management for grower cooperators and eliminated damage to non-Xtend plots. This also represented the current trend in new soybean variety offerings. The LibertyLink trials included LibertyLink, LibertyLink GT27, and Enlist E3 varieties. Included in this publication is a chart with the various herbicide systems and corresponding herbicides. Weed control system, nematode resistance, and disease package should be considered when selecting varieties for 2021.

The widespread use of cover crops and a focus on soil health continue to look at yield advantage and return on investment. A study in Westmoreland evaluated wheat, barley, oats, and rye cover crop effects on biomass and soybean yields. Another study in Essex investigated the effect of brassica cover crops on in-season nutrient cycling.

A demonstration of Plenish soybeans was planted to evaluate yield. Plenish soybeans produce a high oleic oil that is desired by some processors. Some Virginia soybean buyers have programs for Plenish soybeans. Four seeding rate trials were conducted in full-season and double-crop plantings. The 2020 results continue to reinforce that yields can be maintained with April- or May-planted seeding rates of 90,000-125,000 seed/acre and 160,000-200,000 seed/acre with late plantings.

We hope you find this information useful. If you have ideas for 2021 on-farm research or would like to be a cooperator in 2021, please contact your local Virginia Cooperative Extension Agriculture Agent.

Trait Data for 2020 VCE On-farm Soybean Varieties

Roundup Ready 2 Xtend

Company	Brand	Relative Maturity	Herbicide Traits	Soybean Cyst Nematode	Root Knot Nematode	Frogeye leafspot	Sudden death syndrome	Brown stem rot	Cercospora blight
Asgrow	AG47X9	4.7	RR2X	R3	S	VG			
Asgrow	AG48X9	4.8	RR2X/SR	R3	S	G	VG		
Credenz	CZ 4869X	4.8	RR2X	G	S	VG	G		
Credenz	CZ 4979X	4.9	RR2X		F	G	G		
Dyna-Gro	S48XT56	4.8	RR2X	R3, MR14	S	VG	VG		VG
Dyna-Gro	S48XT90	4.8	RR2X	S	F	VG	VG		
Hubner	H46-29R2X	4.6	RR2X/SR	R3	S	F	G		
Hubner	H49-27R2X	4.9	RR2X/SR	MR1, R3	S	G	G		
LG Seed	C4845RX	4.8	RR2X	R3, MR14	MR	VG	VG		VG
LG Seed	C4227RX	4.2	RR2X/STS	R3, MR14	S	G	E		
Local Seed Company	LS4889XS	4.8	RR2X/STS	R3, MR14	S	G	G		
Local Seed Company	LS4999X	4.9	RR2X	R3, MR14	S	E	VG		
MorSoy	MS 4616 RXT	4.6	RR2X/STS	MR	S	E	G		
MorSoy	MS 4846 RXT	4.8	RR2X	MR	S	VG	VG		
NK Seed	S42-B9XS	4.2	RR2X/STS	R3	S	G	VG	VG	
NK Seed	S44-C7X	4.4	RR2X	R3,14	G	VG	G		
Pioneer	P42A96X	4.2	RR2X	R	S	VG	VG		
Pioneer	P48A60X	4.8	RR2X	R	S	F	VG		
Progeny	4821RX	4.8	RR2X	R3, MR14	S	MR	MR		
USG	7447XTS	4.4	RR2X/STS	R3, MR14	S	MR	MR		
USG	7480XT	4.8	RR2X	S	MS	MR	MR		
Asgrow	AG55X7	5.5	RR2X	S	R	G	G		
Asgrow	AG56X8	5.6	RR2X	R1,3	R	VG	G		
Credenz	CZ 5299X	5.2	RR2X		S	G	G		
Credenz	CZ 5420X	5.4	RR2X		S	G	G		
Dyna-Gro	S56XT99	5.6	RR2X	R1,3	VG	VG	G		VG
Hubner	H50-10R2X	5.0	RR2X/SR	R3	S		VG		
LG Seed	LGS5315RX	5.3	RR2X	R3, MR13		VG	VG		
Local Seed Company	LS5087X	5.0	RR2X	R3, MR14	S	EX	VG		
Local Seed Company	LS5386X	5.3	RR2X	R3, MR14	MR-MS	VG	G		
MorSoy	MS 5398 RXT	5.3	RR2X	MR	S	G	G		
MorSoy	MS 5607 RXT	5.6	RR2X	MR	E	EX	G		
NK Seed	S51-R3XS	5.1	RR2X/STS	R3, MR14	F	VG	G		
NK Seed	S53-F7X	5.3	RR2X	MR3, R14	F	VG	VG		
Pioneer	P52A05X	5.2	RR2X	R	E	G	G		
Pioneer	P55A49X	5.5	RR2X	R	E	G	G		
Progeny	5016RXS	5.0	RR2X/STS	R3, MR14	MR	MR	MR		
USG	7529XTS	5.2	RR2X/STS	S	S	MR	MS		
USG	7540XT	5.4	RR2X	S	S	MR	MR		

R = Resistant
S = Susceptible
MR = Moderately resistant
M = Moderate
MS = Moderately susceptible
RR2X = Roundup Ready 2 Xtend
STS or SR = Tolerant to sulfonylurea herbicides

No entry for a particular trait means that no information was provided or trait has not been rated by the company.

All ratings were taken from company literature available in current catalogs or websites.

Trait Data for 2020 VCE On-farm Soybean Varieties

LibertyLink, LibertyLink GT27, Enlist E3, and Early Roundup Ready 2 Xtend

Company	Brand	Relative Maturity	Herbicide Traits	Soybean Cyst Nematode	Root Knot Nematode	Frogeye leafspot	Sudden death syndrome	Brown stem rot	Cercospora blight
Credenz	CZ 4649 LL	4.6	LL	G	S	VG			
Credenz	CZ 4539 GTLL	4.5	LLGT27	VG	S	VG	G	VG	
Dyna-Gro	S45ES10	4.5	E3/STS	R3, MR14	S	VG	G		
Dyna-Gro	S49EN79	4.9	E3	R3, MR14	S	VG	G		
Local Seed Company	LS4706GL	4.7	LLGT27	R3, MR14	S	VG	VG		
Local Seed Company	ZS4694E3S	4.6	E3/STS	R3, MR14	S	E			
MorSoy	MS 4800E	4.8	E3	MR	S	VG			
Progeny	P 4775 E3S	4.7	E3/STS	R3, MR14	S	MR			
Credenz	CZ 5147 LL	5.1	LL		MR	E	E	E	
Credenz	CZ 5859 LL	5.8	LL	MR	MR	VG			
Dyna-Gro	S52LL66	5.2	LL	MR3	F	VG	G		
Dyna-Gro	S55LS75	5.5	LL/STS	S	F	VG	G		
Local Seed Company	ZS5098E3S	5.0	E3/STS	S	S	VG	VG		
MorSoy	MS 5110E	5.1	E3	MR	S	VG	G		
Progeny	P 5211 E3	5.2	E3	S	S	MR			
Asgrow	AG36X6	3.6	RR2X	R3	S	F	G	VG	
Asgrow	AG38X8	3.8	RR2X	R3	S	VG	G		
Channel	3919R2X	3.9	RR2X	R		F			
Dyna-Gro	S37XS89	3.7	RR2X/STS	R3, MR14		VG	G		
LG Seed	LGS3777RX	3.7	RR2X	R3, MR14		VG	VG	E	
LG Seed	C2888RX	2.8	RR2X	R3, MR14			VG	E	
Local Seed Company	LS3976X	3.9	RR2X	R3, MR14	MS	E	G		
MorSoy	MS 3907 RXT	3.9	RR2X	MR	S	F	G		
NK Seed	S39-G2X	3.9	RR2X	R3, R14	F	G	VG		
NK Seed	S37-A4X	3.7	RR2X	R3, MR14	F	G	VG		
Pioneer	P39A58X	3.9	RR2X	R3, MR14	S	VG	G		
Pioneer	P37A69X	3.7	RR2X	R3, MR14		F	G		

R = Resistant
S = Susceptible
MR = Moderately resistant
M = Moderate
MS = Moderately susceptible
RR2X = Roundup Ready 2 Xtend
E3 = Enlist E3
LL = LibertyLink
LLGT27 = LibertyLink GT27
STS or SR = Tolerant to sulfonylurea herbicides

No entry for a particular trait means that no information was provided or trait has not been rated by the company.

All ratings were taken from company literature available in current catalogs or websites.

Soybean Herbicide Systems and Herbicide Selection Chart

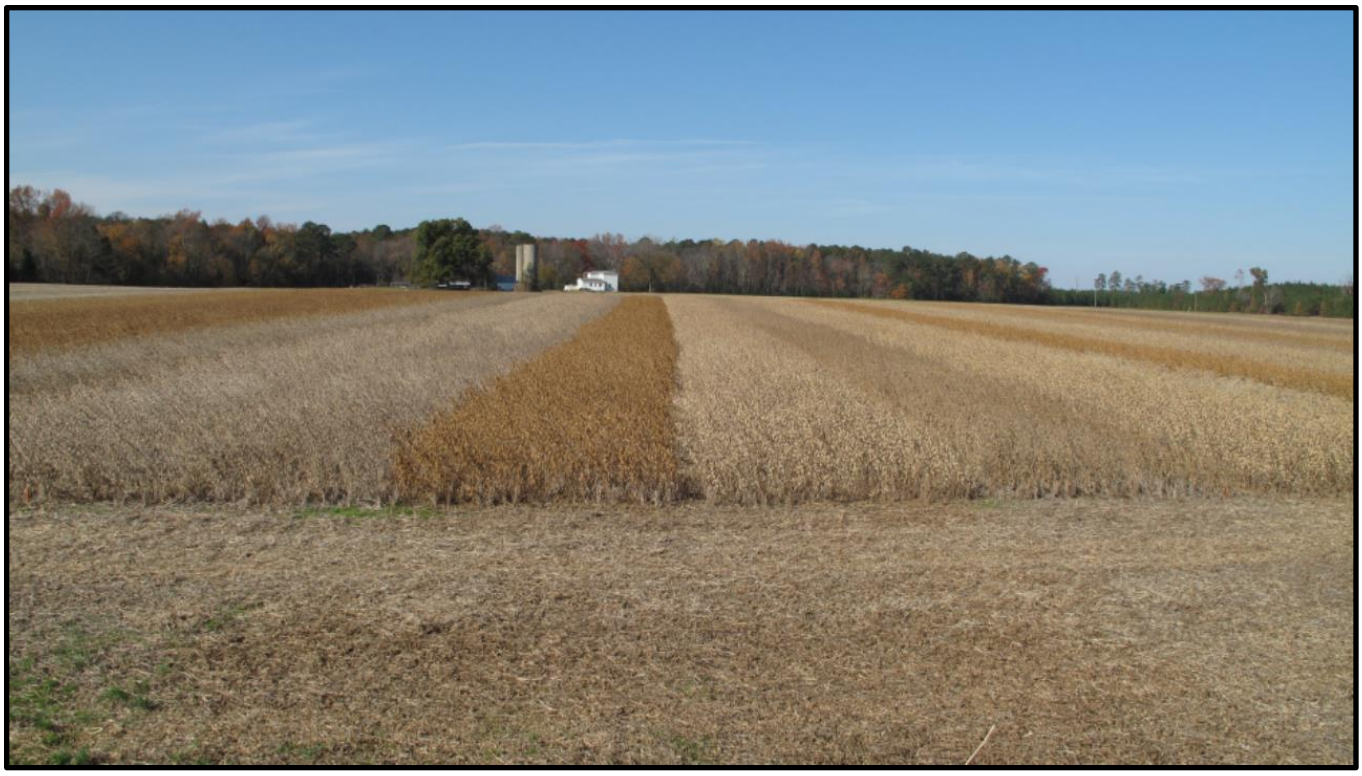
	Glyphosate (Group 9) EPSP Synthase Inhibitor	Glufosinate (Group 10) Glutamine Synthetase Inhibitor	Dicamba (Group 4) Synthetic Auxin - Benzoic acid	2,4-D choline (Group 4) Synthetic Auxin - Phenoxy	Sulfonylureas (Group 2) ALS Inhibitors	Isoxaflutole (Group 27) HPPD Inhibitors
	Roundup brands *Generics*	Liberty *Generics*	XtendiMax Engenia Tavium	Enlist One Enlist Duo *(premix)*	Synchrony XP Classic Harmony GT Permit Plus *Generics*	Alite 27[1]
Conventional						
STS, SR, and BOLT[2]					✓	
Roundup Ready	✓				[3]	
Roundup Ready 2 Yield	✓				[3]	
Glyphosate Tolerant	✓				[3]	
Roundup Ready Xtend	✓		✓		[3]	
Roundup Ready XtendFlex	✓	✓	✓		[3]	
GT27[4]	✓					✓
LibertyLink		✓			[3]	
LibertyLink GT27	✓	✓			[3]	✓
Enlist E3	✓	✓		✓	[3]	

[1] Alite 27 has a federal label but is not yet registered or available in VA. [2] STS, SR, and BOLT are non-GMO traits and may fit into non-GMO soybean programs. These varieties also have tolerance to Basis Blend, LeadOff, Classic, Crusher, Harmony Extra, Harmony GT, Permit Plus, Synchrony XP applied preemerge in soybean and Finesse, Outrider, Peak, Harmony Extra, Harmony GT applied to wheat. Generic versions of these herbicides may also be available.
[3] STS, SR, and BOLT traits can be stacked with these systems - see variety information for details. [4] GT27 is not yet commercially available.

Thank you to Dr. Michael Flessner, Extension Weed Specialist, for assistance with this chart.

Seed Treatments on Submitted Varieties

Company	Brand	Treatment Brand Name (Contents)	None	Insecticide	Fungicide	Nematicide	Inoculant	Biological
Asgrow	AG47X9	Acceleron Seed Applied Solutions Standard		X	X			
Asgrow	AG48X9	Acceleron Seed Applied Solutions Standard		X	X			
Pioneer	P42A96X	Lumigen, Lumisena, ILeVO, B. subtilis & pumilis		X	X	X		X
Pioneer	P48A60X	Lumigen, Lumisena, ILeVO, B. subtilis & pumilis		X	X	X		X
USG	7447XTS	RenPro Plus Clariva Riznate		X	X	X		X
USG	7480XT	RenPro Plus Clariva Riznate		X	X	X		X
Hubner	H46-29R2X	Acceleron Seed Applied Solutions Standard		X	X			
Hubner	H49-27R2X	Acceleron Seed Applied Solutions Standard		X	X			
Dyna-Gro	S48XT56	Saltro, Equity VP		X	X	X		
Dyna-Gro	S48XT90	Saltro, Equity VP		X	X	X		
Progeny	P 4821RX	Poncho/Votivo, Obvious Plus		X	X	X		
Local Seed Company	LS4999X	Radius Premium + Innoculant		X	X		X	
Local Seed Company	LS4889XS	Radius Premium + Innoculant		X	X		X	
NK Seed	S42-B9XS		X					
NK Seed	S44-C7X		X					
LG Seed	C4845RX	*Seed treated but not specified on bag*						
LG Seed	C4227RX	*Seed treated but not specified on bag*						
MorSoy	MS4846RXT	Avicta Complete Beans + Optimize XC		X	X	X	X	
MorSoy	MS4616RXT	Avicta Complete Beans + Optimize XC		X	X	X	X	
Credenz	CZ 4979X	Poncho/Votivo, Obvious Plus, ILeVO		X	X	X		
Credenz	CZ 4869X	Poncho/Votivo, Obvious Plus, ILeVO		X	X	X		
Asgrow	AG56X8	Acceleron Seed Applied Solutions Standard		X	X			
Asgrow	AG55X7	Acceleron Seed Applied Solutions Standard		X	X			
Pioneer	P52A05X	Lumigen, Lumisena, ILeVO, B. subtilis & pumilis		X	X	X		X
Pioneer	P55A49X	Lumigen, Lumisena, ILeVO, B. subtilis & pumilis		X	X	X		X
USG	7540XT	RenPro Plus Riznate		X	X			X
USG	7529XTS	RenPro Plus Clariva Riznate		X	X	X		X
Hubner	H50-10R2X	Acceleron Seed Applied Solutions Standard		X	X			
Dyna-Gro	S56XT99	Saltro, Equity VP		X	X	X		
Progeny	P 5016RXS	Poncho/Votivo, Obvious Plus		X	X	X		
Local Seed Company	LS5386X	Radius Premium + Innoculant		X	X		X	
Local Seed Company	LS5087X	Radius Premium + Innoculant		X	X		X	
NK Seed	S53-F7X		X					
NK Seed	S51-R3XS		X					
LG Seed	LGS5315RX	*Seed treated but not specified on bag*						
MorSoy	MS5398RXT	Avicta Complete Beans + Optimize XC		X	X	X	X	
MorSoy	MS5607RXT	Avicta Complete Beans + Optimize XC		X	X	X	X	
Credenz	CZ 5420X	Poncho/Votivo, Obvious Plus, ILeVO		X	X	X		
Credenz	CZ 5299X	Poncho/Votivo, Obvious Plus, ILeVO		X	X	X		



MATURITY GROUP 4

VARIETY COMPARISONS

2020 Virginia Cooperative Extension On-farm Soybean Variety Trials - MG 4

Company	Brand	Caroline	Chesapeake-Virginia Beach	Culpeper	Mecklenburg	VA Ag Expo Northumberland	Prince George	Southampton	Westmoreland	Overall Average	Average Relative Yield
Local Seed Co	LS4889XS	48.0	38.1		50.9	91.4	56.2	54.2	74.7	62.5	109
MorSoy	MS 4846 RXT	50.2	28.0	74.6	45.2	94.3	52.0	45.8	80.5	63.2	105
Dyna-Gro	S48XT90	45.7	15.1	70.3	51.7	86.5	55.5	50.2	75.4	62.2	105
Pioneer	P48A60X	48.3	16.1	65.7	44.1	92.3	61.0	52.3	67.3	61.6	104
USG	7480XT	44.1	25.9	76.1	50.4	68.9	53.9	54.0	75.4	60.4	103
Credenz	CZ 4979X	40.2	27.5	67.7	48.9	81.4	53.5	54.3	77.6	60.5	102
Asgrow	AG48X9	42.4	32.5	73.2	48.0	88.2	58.7	44.5	70.1	60.7	102
Dyna-Gro	S48XT56	37.4	21.8	74.8	48.4	77.5	57.0	48.7	80.0	60.5	101
Local Seed Co	LS4999X		32.8		48.2	86.2	54.6	44.5	74.2	61.5	101
MorSoy	MS 4616 RXT	41.1	40.5	70.0	43.3	85.8	59.3	44.9	74.9	59.9	100
Hubner	H46-29R2X	50.5	40.8	62.5	45.7	75.0	59.7	46.2	68.8	58.3	100
Hubner	H49-27R2X	48.2	44.1	62.4	48.4	87.1	58.6	50.3	52.7	58.2	100
LG Seed	C4845RX	39.8	25.2	71.6	47.2	88.4	50.7	44.3	76.3	59.8	99
Asgrow	AG47X9	39.9	31.5	62.9	46.1	86.2	62.1	44.9	73.0	59.3	99
NK Seed	S42-B9XS	44.9	44.2	78.4	34.9	78.9	57.1	50.3	70.1	59.2	99
Progeny	P 4821 RX	38.1	30.3	74.4	46.1	83.4	53.0	44.4	77.0	59.5	99
Credenz	CZ 4869X	37.4	35.6	65.5	44.5	75.7	60.5	54.1	71.9	58.5	99
USG	7447XTS	42.8	39.1	67.7	40.3	73.6	60.1	50.9	70.9	58.1	98
NK Seed	S44-C7X	36.6	39.8	66.4	39.5	80.7	55.3	44.7	70.0	56.2	94
LG Seed	C4227RX	42.1	40.3	71.5	33.4	77.7	50.1	39.9	69.3	54.9	91
Pioneer	P42A96X	48.0	38.6	71.0	22.6	75.3	53.4	41.3		51.9	89
	Location Average	**43.3**	**32.7**	**69.8**	**44.2**	**82.6**	**56.3**	**47.8**	**72.5**		

Notes:

* Local Seed Company varieties not received by Culpeper planting date.
* Chesapeake-Virginia Beach location not included in the overall average or relative yield due to extremely late harvest.
* Average Relative Yield ranks varieties based on their performance compared to the location average. It is a percentage above or below the location average.

2020 CAROLINE COUNTY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators: **Producer:** Charity Hill Farm/Steve and Chris Smith

Extension: Mike Broaddus, VCE Caroline /King George
Robbie Longest, VCE-Essex

Industry: Participating seed companies

Previous Crop: Summer 2019: corn
Fall/Winter 2019/20: wheat

Soil Type: Kempsville-Emporia complex, 2-6% slopes

Tillage: No-tilled into standing wheat straw

Planting Date: June 22, 2020

Seeding Rate/Row Spacing: 175,000 seeds/A drilled in 7-inch rows

Fertilization: none

Crop Protection: Burndown: 1 qt./A PowerMax (glyphosate); 48 oz./A Warrant; 1 pt./100 gal Liberate surfactant.

Harvest Date: December 1, 2020

Harvest Equipment: New Holland CR9040 w/ 30-foot flex head

Brand	Variety	Moisture %	Yield (bu./ac.@13.0%)
USG	7480XT	13.0	44.1
Pioneer	P42A96X	12.3	48.0
Pioneer	P48A60X	12.4	48.3
Asgrow	AG48X9	13.3	42.4
Asgrow	AG47X9	12.8	39.9
Hubner	H46-29R2X	12.9	50.5
Hubner	H49-27R2X	13.1	48.2
Credenz	CZ 4869X	12.9	37.4
Credenz	CZ 4979X	13.6	40.2
LG Seed	C4845RX	12.7	39.8
LG Seed	C4227RX	12.0	42.1
Local Seed Company	LS4889XS	12.7	48.0
Dyna-Gro	S48XT90	12.9	45.7
Dyna-Gro	S48XT56	12.5	37.4
MorSoy	MS 4846 RXT	13.5	50.2
MorSoy	MS 4616 RXT	13.1	41.1
NK Seed	S42-B9XS	14.0	44.9
NK Seed	S44-C7X	13.9	36.6
Progeny	P4821RX	12.8	38.1
USG	7447XTS	13.1	42.8
	AVERAGE	**13.0**	**43.3**

Discussion: Planted in standing wheat straw due to a failed wheat crop. Although record heat was recorded in mid-July and early August, this area of Caroline received several rain storms during that time that seemed to produce good double-crop soybean yields.

2020 CHESAPEAKE/VA BEACH CITY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Frank Brickhouse
	Extension:	Watson Lawrence-Chesapeake VCE
		Roy Flanagan-Virginia Beach VCE
Previous Crop:		Corn grain
Soil Type:		Acredale Silt Loam
Tillage:		Conventional
Planting Date:		June 30, 2020
Seeding Rate/Row Spacing:		30-inch rows
Fertilization:		500 lbs. 15-15-15/acre
Crop Protection:		Post-emerg. herbicide: 12 oz. Select + 16. oz. Reflex Insecticide: 9 oz. Besiege
Harvest Date:		December 30, 2020
Harvest Equipment:		JD 95 Combine-1967 Model-Operator Trey Brickhouse

Brand	Variety	Moisture%	Yield (bu/A)
Pioneer	P42A96X	13.6	38.6
LG Seed	C4227RX	13.5	40.3
NK Seed	S42-B9XS	13.8	44.2
NK Seed	S44-C7X	13.1	39.8
USG	7447XTS	13.3	39.1
MorSoy	MS 4616 RXT	13.2	40.5
Hubner	H46-29R2X	13.3	40.8
Progeny	P 4821 RX	13.3	30.3
Local Seed Company	LS4889XS	13.3	38.1
USG	7480XT	13.5	25.9
Pioneer	P48A60X	13.7	16.1
Asgrow	AG48X9	13.8	32.5
Dyna-Gro	S48XT90	13.7	15.1
Dyna-Gro	S48XT56	13.9	21.8
MorSoy	MS 4846 RXT	13.4	28.0
Credenz	CZ 4869X	13.7	35.6
Credenz	CZ 4979X	13.7	27.5
Asgrow	AG47X9	13.7	31.5
Hubner	H49-27R2X	13.5	44.1
Local Seed Company	LS4999X	13.8	32.8
LG Seed	C4845RX	13.7	25.2
	AVERAGE	**13.5**	**32.7**

Discussion: Use these data, as well as other test plot results, when making variety selections.

2020 CULPEPER COUNTY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	The Glebe at Ratrie, Ross Swan
	Extension:	Carl Stafford, ANR - Culpeper
	Industry:	John VanderCromert, Hubner
Previous Crop:		Corn
Soil Type:		Fauquier silt loam
Tillage:		No-till
Planting Date:		May 27, 2020
Seeding Rate/Row Spacing:		140,000/15"
Fertilization:		80 lbs Ammonium Sulfate, P&K variable rate removal
Crop Protection:		Glyphosate, Surveil, Salvo, Engenia, Reign
Harvest Date:		November 4, 2020

Brand	Variety	Moisture%	Yield (bu/A)
Check 1		13.9	53.6
MorSoy	MS 4616 RXT	13.8	70.0
Progeny	P 4821 RX	13.0	74.4
Credenz	CZ 4869X	13.4	65.5
USG	7447XTS	13.4	67.7
Credenz	CZ 4979X	13.5	67.7
NK Seed	S42-B9XS	13.6	78.4
MorSoy	MS 4846 RXT	13.3	74.6
Hubner	H46-29R2X	13.4	62.5
USG	7480XT	13.2	76.1
LG Seed	C4845RX	13.2	71.6
Check 2		13.2	57.8
LG Seed	C4227RX	13.4	71.5
Dyna-Gro	S48XT56	13.4	74.8
Pioneer	P48A60X	13.1	65.7
Hubner	H49-27R2X	13.0	62.4
Dyna-Gro	S48XT90	13.0	70.3
Asgrow	AG48X9	12.7	73.2
Asgrow	AG47X9	12.8	62.9
Pioneer	P42A96X	13.0	71.0
NK Seed	S44-C7X	13.2	66.4
Check 3		13.1	51.8
	AVERAGE	**13.3**	**67.7**

Discussion: Local Seed Company varieties were not provided to this location at planting.

2020 MECKLENBURG COUNTY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	John Manning
	Extension:	Lindy Fimon, Taylor Clarke
Previous Crop:		Soybeans
Tillage:		No-till
Planting Date:		May 26, 2020
Seeding Rate/Row Spacing:		148,000 on 18" rows
Fertilization:		200 lbs 6-15-40
Crop Protection:		Burndown: Roundup + Envive POST: Roundup + Flexstar
Harvest Date:		November 10, 2020
Harvest Equipment:		JD 4420 with 15 ft head

Brand	Variety	Moisture%	Yield (bu/A)
CHECK	Axis 4730	16.1	44.0
Asgrow	AG47X9	16.6	46.1
Asgrow	AG48X9	16.2	48.0
Pioneer	P42A96X	15.8	22.6
Pioneer	P48A60X	16.0	44.1
USG	7447XTS	15.5	40.3
USG	7480XT	15.4	50.4
Hubner	H46-29R2X	15.4	45.7
Hubner	H49-27R2X	16.0	48.4
CHECK	Axis 4730	15.8	43.1
Dyna-Gro	S48XT56	15.5	48.4
Dyna-Gro	S48XT90	15.4	51.7
Progeny	P 4821 RX	15.2	46.1
NK Seed	S42-B9XS	15.6	34.9
NK Seed	S44-C7X	15.2	39.5
Credenz	CZ 4869X	15.3	44.5
Credenz	CZ 4979X	15.3	48.9
LG Seed	C4845RX	15.0	47.2
CHECK	Axis 4730	15.9	44.1
LG Seed	C4227RX	16.0	33.4
Local Seed Company	LS4889XS	16.1	50.9
Local Seed Company	LS4999X	16.2	48.2
MorSoy	MS 4616 RXT	15.0	43.3
MorSoy	MS 4846 RXT	15.1	45.2
Dyna-Gro	S49EN79	15.9	44.6

CHECK	Axis 4730	15.3	48.3
	AVERAGE	**15.6**	**44.3**

Discussion: The dry period this summer adversely impacted the earliest varieties.

2020 NORTHUMBERLAND COUNTY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Bleak House Farm
	Extension:	Trent Jones, David Holshouser
	Industry:	Ian Walker, Pioneer Seeds
Previous Crop:		Corn
Soil Type:		Woodstown fine sandy loam
Tillage:		No-till
Planting Date:		May 4, 2020
Seeding Rate/Row Spacing:		128,000 Seed / Acre - 15" Row Spacing
Fertilization:		**May 4** - 2 gal. 3-18-18, 1 qt. Mn in furrow
Crop Protection:		**April 7** - 16 oz. Dicamba, 48 oz. Roundup PowerMax, 3 oz. Envive, 1 qt. Prowl H2O **July 7** - 32 oz. Roundup, 12.8 oz. Engenia, 2 qt. Task Force 3D **July 28** - 8 oz. Besiege, 13.7 oz. Miravis Top, 2 qt. Maximum N-Pact K
Harvest Date:		November 9, 2020
Harvest Equipment:		Case 8250 with Mac Don FD135

Brand	Variety	Moisture%	Yield (bu/A)
MorSoy	MS 4616 RXT	15.6	94.5
MorSoy	MS 4846 RXT	15.5	94.3
Dyna-Gro	S48XT56	15.6	77.5
Dyna-Gro	S48XT90	15.2	86.5
Local Seed Company	LS4999X	15.6	86.2
Local Seed Company	LS4889XS	15.1	91.4
Hubner	H46-29R2X	15.8	75.0
Hubner	H49-27R2X	15.9	87.1
Credenz	CZ 4869X	15.6	75.7
Credenz	CZ 4979X	15.2	81.4
USG	7447XTS	15.2	73.6
USG	7480XT	15.8	68.9
LG Seed	C4227RX	15.7	77.7
LG Seed	C4845RX	15.9	88.4
Pioneer	P42A96X	15.6	75.3
Pioneer	P48A60X	14.9	92.3
Progeny	P 4821 RX	14.9	83.4
NK Seed	S44-C7X	15.4	80.7
NK Seed	S42-B9XS	15.5	78.9
Asgrow	AG47X9	15.0	86.2

Asgrow	AG48X9	15.2	88.2
Channel	4519 R2X/SR	15.1	79.0
Channel	4218 R2X/SR	15.0	78.3
MorSoy	MS 4616 RXT	15.3	77.1
	AVERAGE	**15.4**	**82.4**

Discussion: Use these data, as well as other test plot results, when making variety selections.

2020 PRINCE GEORGE COUNTY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators: **Producer:** Sean Finney
Extension: Scott Reiter
Previous Crop: Wheat
Soil Type: Aycock and Montross silt loam
Tillage: No-till
Planting Date: June 15, 2020
Seeding Rate/Row Spacing: 220,000 seed/acre, 7.5 inch rows
Fertilization: 120-50-120 to wheat
Crop Protection: Roundup 1 qt/A + XtendiMax 22 oz/A
Harvest Date: November 29, 2020
Harvest Equipment: John Deere 9510 + weigh wagon

Brand	Variety	Moisture%	Yield (bu/A)
CHECK	Hubner 51-10R2X	17.3	58.2
Asgrow	AG47X9	16.7	62.1
Asgrow	AG48X9	16.5	58.7
Pioneer	P42A96X	17.1	53.4
Pioneer	P48A60X	16.7	61.0
USG	7447XTS	16.5	60.1
USG	7480XT	16.4	53.9
Hubner	H46-29R2X	16.1	59.7
Hubner	H49-27R2X	16.6	58.6
Dyna-Gro	S48XT56	16.5	57.0
Dyna-Gro	S48XT90	16.1	55.5
Progeny	P 4821 RX	15.6	53.0
NK Seed	S42-B9XS	16.8	57.1
NK Seed	S44-C7X	16.9	55.3
Credenz	CZ 4869X	16.5	60.5
Credenz	CZ 4979X	16.5	53.5
LG Seed	C4845RX	16.4	50.7
LG Seed	C4227RX	16.8	50.1
Local Seed Company	LS4889XS	16.1	56.2
Local Seed Company	LS4999X	15.9	54.6
MorSoy	MS 4616 RXT	15.6	59.3
MorSoy	MS 4846 RXT	16.0	52.0
CHECK	Hubner 51-10R2X	16.1	65.0
	AVERAGE	**16.4**	**56.8**

Discussion: This was a great yielding double-crop soybean trial. Excess water was an issue as it rained for a week after planting. The last three weeks of July were hot and dry. August and September provided about 20 inches of total rainfall. Test weights ranged from 54.9 to 56.7 lbs/bu with an average of 56 lbs/bu. Credenz CZ4869X, Credenz CZ4979X, Local Seed LS4889XS, and MorSoy MS4616RXT were taller varieties with notable lodging but were still harvestable.

2020 SOUTHAMPTON COUNTY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Pittman Farms LLC
	Extension:	Josh Holland, VCE Southampton
Previous Crop:		Peanuts
Soil Type:		Emporia fine sandy loam
Tillage:		No-till
Planting Date:		May 26, 2020
Seeding Rate/Row Spacing:		155,000 / 15" rows
Fertilization:		5-13-43 @ 275 lbs./Acre
Crop Protection:		Pre: RoundUp @ 32 oz + Valor @ 2 oz Post: RoundUp @ 32 oz + Xtendimax @ 28 oz
Harvest Date:		November 24, 2020
Harvest Equipment:		John Deere 9450 w/ 918 Header

Brand	Variety	Moisture%	Yield (bu/A)
Asgrow	AG47X9	13.2	44.9
Asgrow	AG48X9	13.6	44.5
Pioneer	P42A96X	13.1	41.3
Pioneer	P48A60X	13.8	52.3
USG	7447XTS	13.3	50.9
USG	7480XT	13.2	54.0
Hubner	H46-29R2X	13.1	46.2
Hubner	H49-27R2X	13.4	50.3
Dyna-Gro	S48XT56	13.8	48.7
Dyna-Gro	S48XT90	13.7	50.2
Progeny	P 4821 RX	13.7	44.4
NK Seed	S42-B9XS	13.1	50.3
NK Seed	S44-C7X	13.4	44.7
Credenz	CZ 4869X	13.8	54.1
Credenz	CZ 4979X	13.8	54.3
LG Seed	C4845RX	13.5	44.3
LG Seed	C4227RX	13.6	39.9
Local Seed Company	LS4889XS	13.8	54.2
Local Seed Company	LS4999X	13.9	44.5
MorSoy	MS 4616 RXT	13.2	44.9
MorSoy	MS 4846 RXT	13.5	45.8
	AVERAGE	**13.5**	**47.8**

Discussion: Planting conditions were wet early on, followed by extremely hot/dry conditions for all of July. Yields remained favorable due to rainfall events in August.

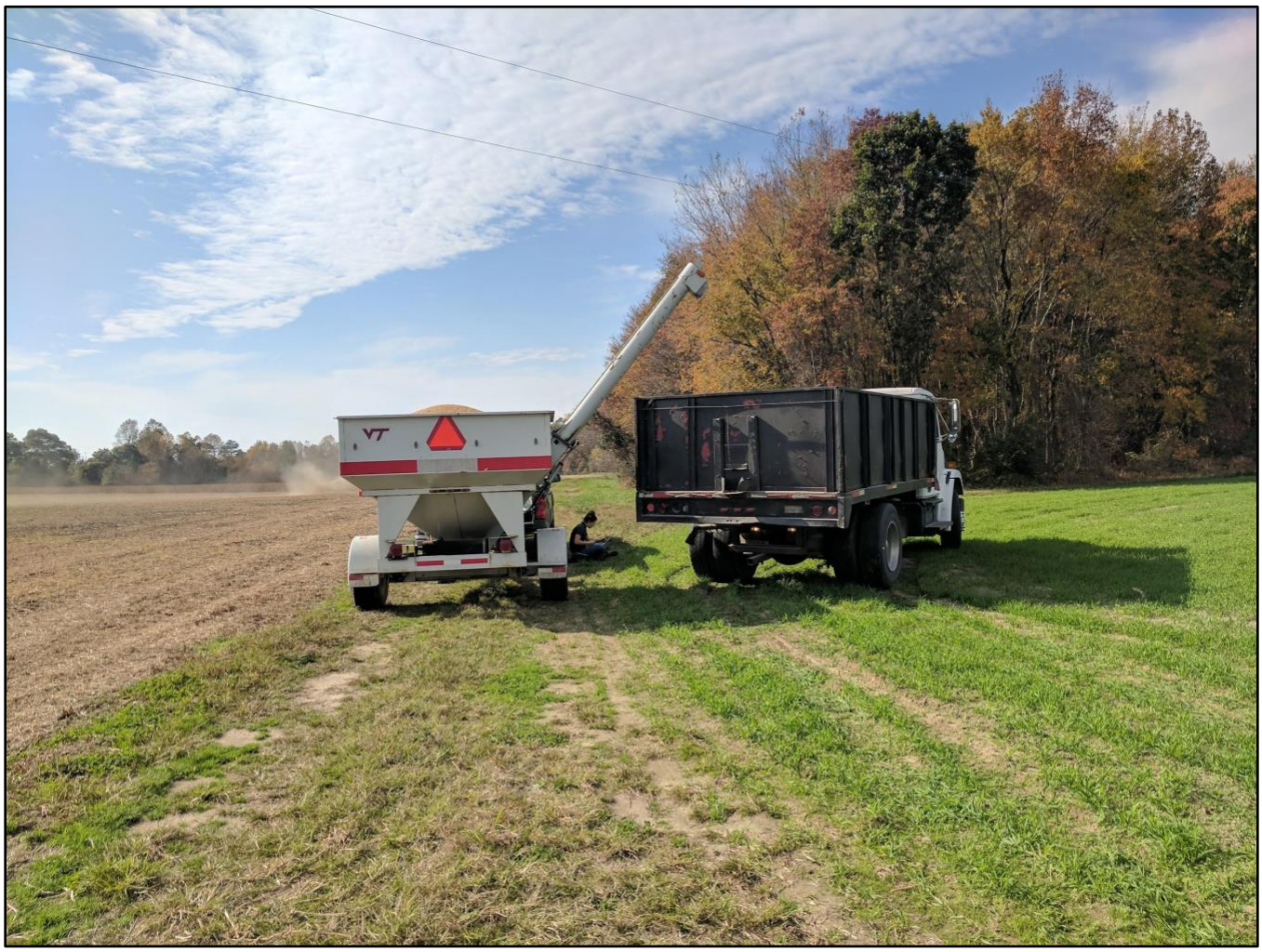
2020 WESTMORELAND COUNTY MATURITY GROUP 4 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	F.F. Chandler, Jr. and Louis Chandler
	Extension:	Stephanie Romelczyk, ANR - Westmoreland Trent Jones, ANR - Northumberland/Lancaster
Previous Crop:		Corn
Soil Type:		Kempsville loam
Tillage:		No-till
Planting Date:		May 11, 2020
Seeding Rate/Row Spacing:		132,000/30" rows
Fertilization:		20-50-75-5S
Crop Protection:		**Preplant:** Gramoxone 2 pts/A + Liberate 3.4 pts/A + Broadaxe 24 oz/A **Postemergence:** 1. Makaze 1.5 qts/A + Weather Gard 1 qt/100 gal + Anthem Max 3 oz/A + Radiate 2 oz/A 2. Makaze 1 qt/A + Miravis Top 13.7 oz/A + Sniper Helios 6 oz/A + Radiate 2 oz/A + Maximum Npact K 1 gal/A
Harvest Date:		November 6, 2020
Harvest Equipment:		John Deere 9400

Brand	Variety	Moisture%	Yield (bu/A)
MorSoy	MS 4846 RXT	13.7	80.5
MorSoy	MS 4616 RXT	13.9	74.9
Credenz	CZ 4979X	13.6	77.6
Credenz	CZ 4869X	13.8	71.9
Local Seed Company	LS4889XS	14.0	74.7
Local Seed Company	LS4999X	13.2	74.2
NK Seed	S44-C7X	13.4	70.0
NK Seed	S42-B9XS	13.8	70.1
Progeny	P 4821 RX	13.7	77.0
Dyna-Gro	S48XT90	13.3	75.4
Dyna-Gro	S48XT56	12.9	80.0
LG Seed	C4227RX	13.7	69.3
LG Seed	C4845RX	13.6	76.3
Hubner	H49-27R2X	13.5	52.7
Hubner	H46-29R2X	13.2	68.8
USG	7480XT	13.6	75.4
USG	7447XTS	13.5	70.9
Asgrow	AG47X9	13.2	73.0

Asgrow	AG48X9	13.2	70.1
Pioneer	P48A60X	12.9	67.3
	AVERAGE	**13.5**	**72.5**

Discussion: Given the year, soybean yields were good. Pioneer 42A96X was not harvested as part of the variety trial. Local Seed Company LS4889XS had lodging issues at harvest.



MATURITY GROUP 5

VARIETY COMPARISONS

2020 Virginia Cooperative Extension On-farm Soybean Variety Trials - MG 5

Company	Brand	Brunswick	Charlotte	Dinwiddie	VA Ag Expo Northumberland	Prince George	Southampton	Overall Average	Average Relative Yield
Hubner	H50-10R2X	54.7	48.9	59.6	88.7	59.5	52.5	60.6	107
Progeny	P 5016 RXS	54.9	56.4	59.2	80.1	59.6	47.9	59.7	105
Local Seed Co	LS5087X	56.1	62.2	53.5	71.1	58.9	51.1	58.8	104
Dyna-Gro	S56XT99	53.3	52.6	58.6	78.5	59.8	49.3	58.7	103
MorSoy	MS 5607 RXT	49.1	51.9	58.2	84.1	52.5	50.3	57.7	101
LG Seed	LGS5315RX	53.6	58.2	52.3	84.0	51.1	46.6	57.6	101
Credenz	CZ 5420X	58.0	53.1	59.1	58.3	57.0	51.6	56.2	100
NK Seed	S51-R3XS	61.4	57.5	55.7	57.2	56.5	47.5	56.0	100
Pioneer	P55A49X	48.6	54.2	59.0	62.9	60.8	51.3	56.1	100
NK Seed	S53-F7X	59.5	53.9	57.3	65.1	53.8	46.4	56.0	99
MorSoy	MS 5398 RXT	55.4	52.4	62.6	64.2	50.5	49.1	55.7	99
Pioneer	P52A05X	43.5	52.5	58.7	70.2	62.6	47.8	55.9	99
USG	7529XTS	55.7	60.0	57.4	45.4	60.8	49.5	54.8	98
Local Seed Co	LS5386X	55.7	53.6	52.2	65.9	51.9	50.6	55.0	98
USG	7540XT	54.6	49.1	58.2	53.2	59.1	52.2	54.4	97
Credenz	CZ 5299X	59.9	54.3	48.9	48.4	58.9	52.8	53.9	97
Asgrow	AG55X7	43.1	55.5	58.6	61.2	60.5	46.0	54.2	96
Asgrow	AG56X8	39.2	49.4	60.1	71.6	57.3	48.2	54.3	96
	Location Average	**53.1**	**54.2**	**57.2**	**67.2**	**57.3**	**49.5**		

Notes:

* Average Relative Yield ranks varieties based on their performance compared to the location average. It is a percentage above or below the location average.

2020 BRUNSWICK COUNTY MATURITY GROUP 5 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Edward, William and Howard Wright
	Extension:	Taylor Clarke Lindy Fimon Sarah Rutherford
Previous Crop:		Tobacco followed by wheat for grain
Soil Type:		Appling-Mattaponi complex
Tillage:		No-till in Wheat Stubble
Planting Date:		June 26, 2020
Seeding Rate/Row Spacing:		200,000 on 15" rows
Fertilization:		30-70-90 to wheat
Crop Protection:		Burndown: Liberty + Volunteer POST: Roundup and Flexstar
Harvest Date:		November 18, 2020
Harvest Equipment:		Gleaner R42

Brand	Variety	Moisture%	Yield (bu/A)
CHECK	Pioneer 55A49X	11.9	55.5
MorSoy	MS 5607 RXT	12.1	46.0
MorSoy	MS 5398 RXT	11.8	44.5
Local Seed Company	LS5386X	11.7	35.8
Local Seed Company	LS5087X	11.9	61.8
CHECK	Pioneer 55A49X	11.6	46.5
Asgrow	AG55X7	11.9	43.1
Asgrow	AG56X8	11.6	39.2
Pioneer	P52A05X	11.4	43.5
Pioneer	P55A49X	11.7	48.6
USG	7529XTS	11.9	55.7
USG	7540XT	11.9	54.6
Hubner	H50-10R2X	11.8	54.7
Dyna-Gro	S56XT99	12.0	53.3
Progeny	P 5016 RXS	11.4	54.9
CHECK	Pioneer 55A49X	11.3	54.8
NK Seed	S51-R3XS	11.6	61.4
NK Seed	S53-F7X	11.9	59.5
Credenz	CZ 5299X	12.0	59.9
Credenz	CZ 5420X	12.4	58.0
LG Seed	LGS5315RX	12.5	53.6
Local Seed Company	LS5087X	12.8	56.1

Local Seed Company	LS5386X	12.9	55.7
MorSoy	MS 5398 RXT	12.8	55.4
MorSoy	MS 5607 RXT	12.3	49.1
CHECK	Pioneer 55A49X	11.9	50.0
	AVERAGE	**12.0**	**52.0**

Discussion: Use these data, as well as other test plot results, when making variety selections.

2020 CHARLOTTE COUNTY MATURITY GROUP 5 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Grind-N-Stone Farm
	Extension:	Joanne Jones - Charlotte County Bruce Jones - Appomattox County
Previous Crop:		wheat hay
Soil Type:		Appling fine sandy loam
Tillage:		No-till
Planting Date:		May 26, 2020
Seeding Rate/Row Spacing:		15 inch - John Deere 7000 140,000 seed per acre
Fertilization:		0-30-60
Crop Protection:		Burndown: Glyphosate + Dicamba POST: Glyphosate + Engenia + Province insecticide 1 month after planting
Harvest Date:		November 11, 2020
Harvest Equipment:		Gleaner R52

Brand	Variety	Moisture%	Yield (bu/A)
MorSoy	MS 5398 RXT	14.8	52.4
Dyna-Gro	S56XT99	14.4	52.6
Pioneer	P52A05X	14.7	52.5
Credenz	CZ 5299X	14.1	54.3
MorSoy	MS 5607 RXT	14.1	51.9
USG	7529XTS	15.0	60.0
Credenz	CZ 5420X	14.8	53.1
Local Seed Company	LS5386X	15.0	53.6
Progeny	P 5016 RXS	14.9	56.4
USG	7540XT	15.1	49.1
Pioneer	P55A49X	14.8	54.2
NK Seed	S53-F7X	15.1	53.9
Asgrow	AG55X7	14.6	55.5
NK Seed	S51-R3XS	14.6	57.5
Local Seed Company	LS5087X	15.1	62.2
LG Seed	LGS5315RX	15.2	58.2
Hubner	H50-10R2X	14.7	48.9
Asgrow	AG56X8	14.1	49.4
	AVERAGE	**14.7**	**54.2**

Discussion: Use these data, as well as other test plot results, when making variety selections.

2020 DINWIDDIE COUNTY MATURITY GROUP 5 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Billy Bain
	Extension:	Mike Parrish
Previous Crop:		Double Crop Soybeans - cover crop was Guardian Rye
Soil Type:		Mattaponi sandy loam
Tillage:		No-till
Planting Date:		May 26, 2020
Seeding Rate/Row Spacing:		160,000/30 in rows
Fertilization:		Pre-plant 300lbs 5-10-30
Crop Protection:		**Burn down -** 1qt Roundup + 1pt Dual + 24oz Barrage + 1 qt/100 80/20 **POST** - #1 = 12 oz Engenia + Clasp drift retardant + 1qt Roundup + 1qt/100 80/20 #2 = 1qt Roundup + 1qt 80/20 + 8 oz Besiege
Harvest Date:		November 11, 2020
Harvest Equipment:		2588 Case International

Brand	Variety	Moisture%	Yield (bu/A)
CHECK	Local LC5588X	12.2	61.5
Asgrow	AG55X7	12.2	58.6
Asgrow	AG56X8	11.3	60.1
Pioneer	P52A05X	12.0	58.7
Pioneer	P55A49X	12.0	59.0
USG	7529XTS	11.8	57.4
USG	7540XT	12.0	58.2
Hubner	H50-10R2X	12.0	59.6
Dyna-Gro	S56XT99	11.8	58.6
CHECK	Local LC5588X	11.4	56.8
Progeny	P 5016 RXS	11.7	59.2
NK Seed	S51-R3XS	12.2	55.7
NK Seed	S53-F7X	11.9	57.3
Credenz	CZ 5299X	11.3	48.9
Credenz	CZ 5420X	11.9	59.1
LG Seed	LGS5315RX	11.9	52.3
Local Seed Company	LS5087X	11.9	53.5
Local Seed Company	LS5386X	11.2	52.2
MorSoy	MS 5398 RXT	12.0	62.6
MorSoy	MS 5607 RXT	12.0	58.2
CHECK	Local LC5588X	11.5	55.8

	AVERAGE	**11.8**	**57.3**

Discussion: Use these data, as well as other test plot results, when making variety selections.

2020 NORTHUMBERLAND COUNTY MATURITY GROUP 5 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Bleak House Farm
	Extension:	Trent Jones, David Holshouser
	Industry:	Ian Walker, Pioneer Seeds
Previous Crop:		Corn
Soil Type:		Woodstown fine sandy loam
Tillage:		No-till
Planting Date:		May 4, 2020
Seeding Rate/Row Spacing:		128,000 Seed / Acre - 15" Row Spacing
Fertilization:		**May 4** - 2 gal. 3-18-18, 1 qt. Mn in furrow
Crop Protection:		**April 7** - 16 oz. Dicamba, 48 oz. Roundup PowerMax, 3 oz. Envive, 1 qt. Prowl H2O **July 7** - 32 oz. Roundup, 12.8 oz. Engenia, 2 qt. Task Force 3D **July 28** - 8 oz. Besiege, 13.7 oz. Miravis Top, 2 qt. Maximum N-Pact K
Harvest Date:		November 9, 2020
Harvest Equipment:		Case 8250 with Mac Don FD135

Brand	Variety	Moisture%	Yield (bu/A)
Asgrow	AG56X8	14.8	84.4
Asgrow	AG55X7	14.1	61.2
MorSoy	MS 5607 RXT	14.7	84.1
MorSoy	MS 5398 RXT	14.3	64.2
Dyna-Gro	S56XT99	14.6	78.5
USG	7529XTS	15.0	45.4
USG	7540XT	15.0	53.2
Progeny	P 5016 RX	15.0	80.1
Local Seed Company	LS5386X	14.8	65.9
Local Seed Company	LS5087X	14.4	71.1
Pioneer	P55A49X	14.9	62.9
Pioneer	P52A05X	14.6	70.2
LG Seed	LGS5315RX	14.8	84.0
Hubner	H50-10R2X	14.7	88.7
NK Seed	S51-R3XS	15.1	57.2
NK Seed	S53-F7X	14.7	65.1
Credenz	CZ 5420X	14.8	58.3
Credenz	CZ 5299X	15.0	48.4
Asgrow	AG56X8	14.7	58.8

	AVERAGE	**14.7**	**67.5**

Discussion: Use these data, as well as other test plot results, when making variety selections.

2020 PRINCE GEORGE COUNTY MATURITY GROUP 5 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Sean Finney
	Extension:	Scott Reiter
Previous Crop:		Wheat
Soil Type:		Aycock and Montross silt loam
Tillage:		No-till
Planting Date:		June 25, 2020
Seeding Rate/Row Spacing:		220,000 seed/acre; 7.5 inch rows
Fertilization:		120-50-120 to wheat
Crop Protection:		Roundup 1 qt/A + XtendiMax 22 oz/A
Harvest Date:		November 29, 2020
Harvest Equipment:		John Deere 9510 + weigh wagon

Brand	**Variety**	**Moisture%**	**Yield (bu/A)**
CHECK	Hubner 51-10R2X	16.1	65.0
Asgrow	AG55X7	15.5	60.5
Asgrow	AG56X8	15.0	57.3
Pioneer	P52A05X	15.0	62.6
Pioneer	P55A49X	15.6	60.8
USG	7529XTS	16.0	60.8
USG	7540XT	15.9	59.1
Hubner	H50-10R2X	15.9	59.5
Dyna-Gro	S56XT99	15.4	59.8
Progeny	P 5016 RXS	15.3	59.6
NK Seed	S51-R3XS	15.7	56.5
NK Seed	S53-F7X	15.5	53.8
Credenz	CZ 5299X	15.7	58.9
Credenz	CZ 5420X	15.9	57.0
LG Seed	LGS5315RX	15.8	51.1
Local Seed Company	LS5087X	15.7	58.9
Local Seed Company	LS5386X	15.7	51.9
MorSoy	MS 5398 RXT	15.7	50.5
MorSoy	MS 5607 RXT	15.2	52.5
CHECK	Hubner 51-10R2X	15.6	52.3
	AVERAGE	**15.6**	**57.4**

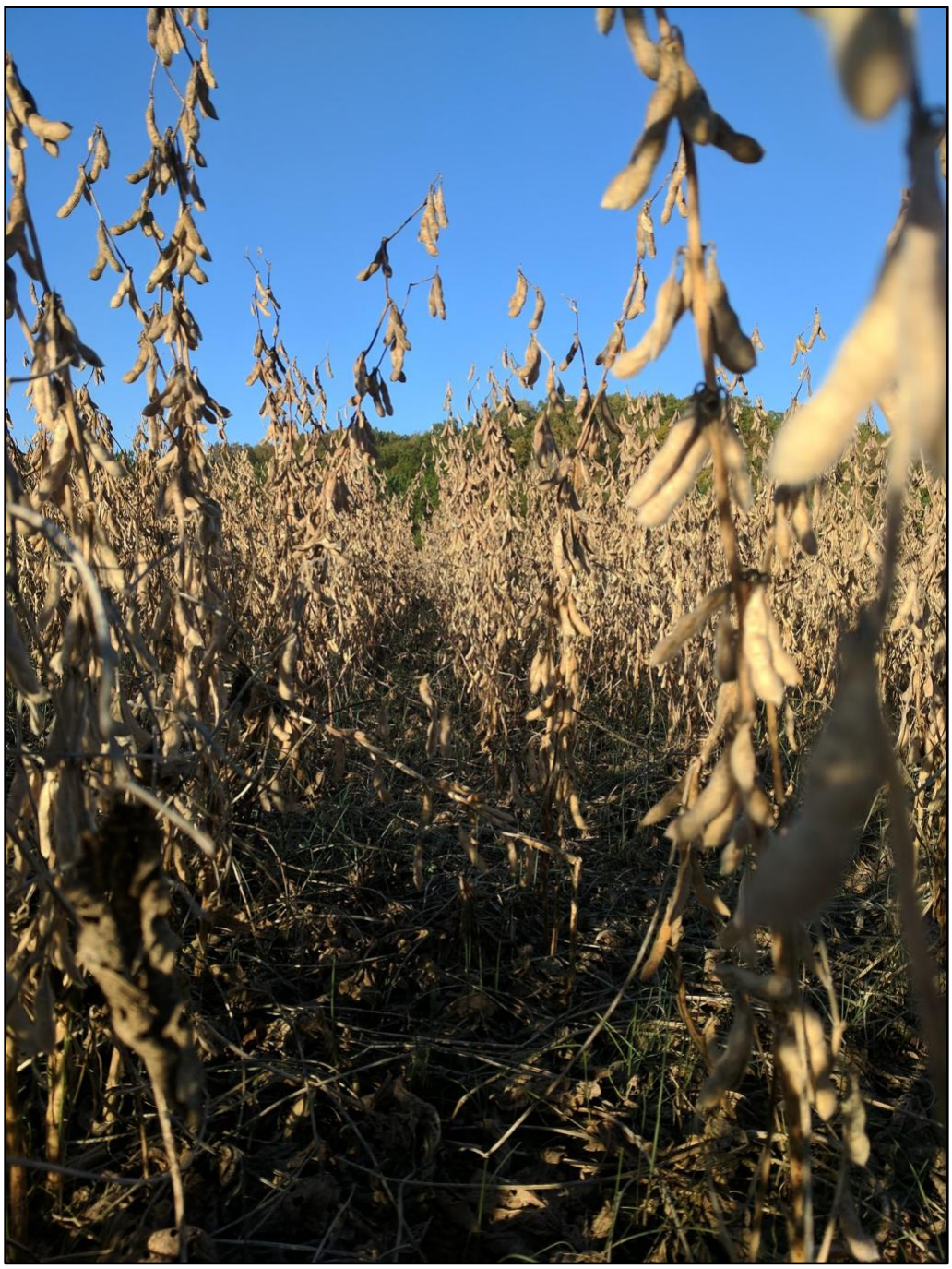
Discussion: This was a great yielding double-crop soybean trial. Excess water was an issue as it rained 1.5 inches the night after planting. The last three weeks of July were hot and dry. Test weights ranged from 55.5 to 56.9 lbs/bu with an average of 56.2 lbs/bu. USG7540XT and Credenz CZ5420X had notable lodging but were still harvestable. The last six plots had some drowned spots that likely affected yields. With 30 inches of rain from August 1 - November 30 it did not take much depression for water to pool this season.

2020 SOUTHAMPTON COUNTY MATURITY GROUP 5 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Pittman Farms LLC
	Extension:	Josh Holland, VCE Southampton
Previous Crop:		Peanuts
Soil Type:		Emporia fine sandy loam
Tillage:		No-till
Planting Date:		May 26, 2020
Seeding Rate/Row Spacing:		155,000 / 15" rows
Fertilization:		5-13-43 @ 275 lbs./Acre
Crop Protection:		**Pre:** RoundUp @ 32 oz. + Valor @ 2 oz **Post:** RoundUp @ 32 oz. + Xtendimax @ 28 oz
Harvest Date:		November 24, 2020
Harvest Equipment:		John Deere 9450 w/ 918 Header

Brand	**Variety**	**Moisture%**	**Yield (bu/A)**
Asgrow	AG55X7	13.6	46.0
Asgrow	AG56X8	13.8	48.2
Pioneer	P52A05X	13.3	47.8
Pioneer	P55A49X	13.2	51.3
USG	7529XTS	13.1	49.5
USG	7540XT	13.4	52.2
Hubner	H50-10R2X	13.4	52.5
Dyna-Gro	S56XT99	13.6	49.3
Progeny	P 5016 RX	13.0	47.9
NK Seed	S51-R3XS	13.1	47.5
NK Seed	S53-F7X	13.3	46.4
Credenz	CZ 5299X	13.1	52.8
Credenz	CZ 5420X	13.2	51.6
LG Seed	LGS5315RX	13.5	46.6
Local Seed Company	LS5087X	13.1	51.1
Local Seed Company	LS5386X	13.4	50.6
MorSoy	MS 5398 RXT	13.4	49.1
MorSoy	MS 5607 RXT	13.2	50.3
	AVERAGE	**13.3**	**49.5**

Discussion: Planting conditions were wet early on, followed by extremely hot/dry conditions for all of July. Yields remained favorable due to rainfall events in August.



OTHER
SOYBEAN WEED CONTROL SYSTEM TESTS

2020 Virginia Cooperative Extension On-farm Soybean Variety Trials - Liberty Link

Company	Brand	Brunswick
Dyna Gro	45ES10	42.8
MorSoy	MS 4800 E	42.7
Dyna Gro	49EN79	42.1
Credenz	CZ 4649 LL	41.6
Local Seed Company	LS4706GL	41.4
Progeny	4775 E3	41.2
Credenz	CZ 4539 GTLL	40.7
Local Seed Company	ZS4694E3S	40.7
	LOCATION AVERAGE	**41.7**
MorSoy	MS 5110 E	44.9
Credenz	CZ 5147 LL	43.2
Credenz	CZ 5859 LL	41.6
Progeny	5211 E3	40.9
Dyna Gro	52LL66	39.4
Local Seed Company	ZS5098E3	38.7
Dyna Gro	55LS75	38.1
	LOCATION AVERAGE	**41.0**

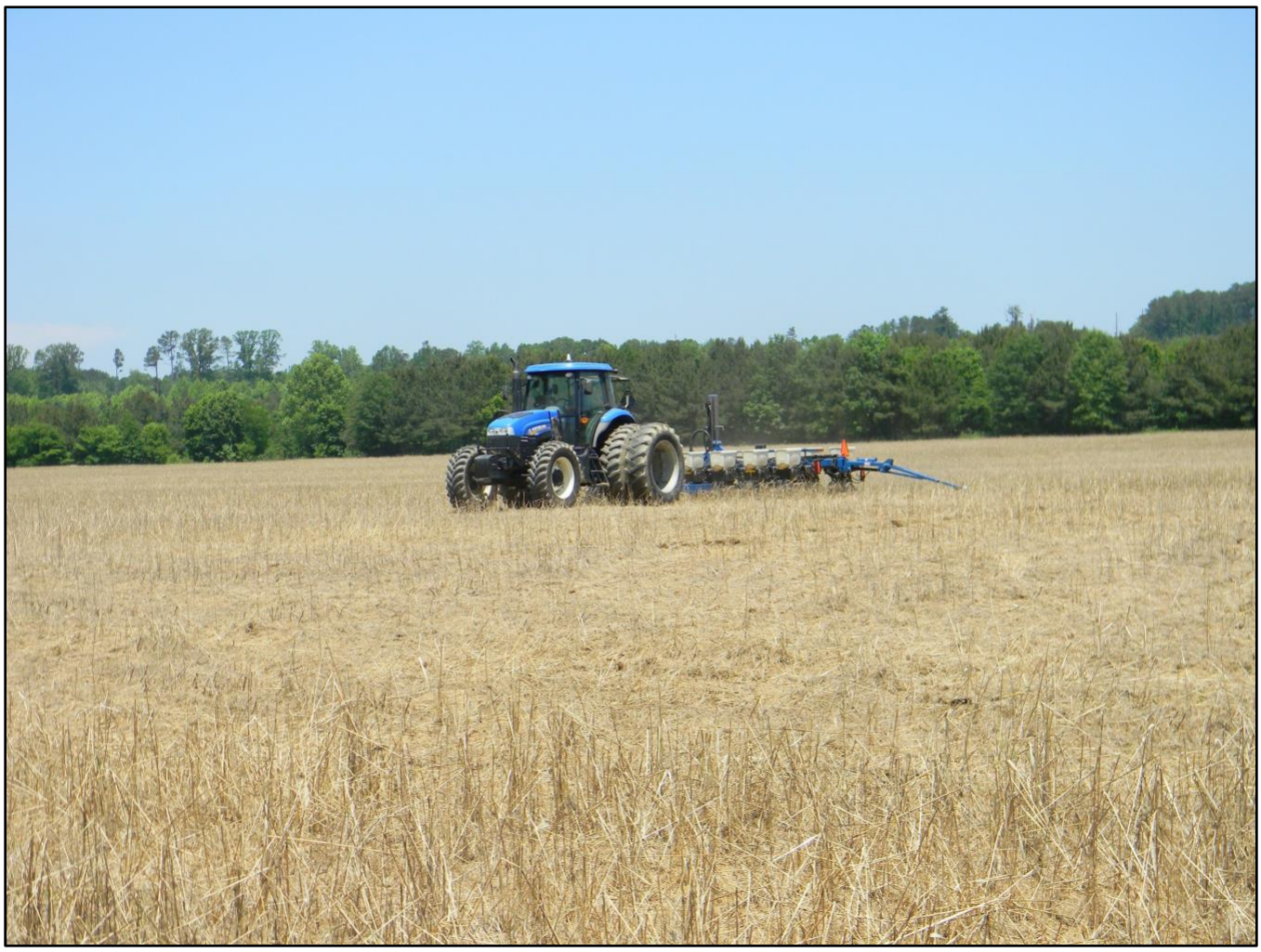
2020 BRUNSWICK COUNTY LIBERTY LINK SOYBEAN COMPARISONS

Cooperators:	**Producer:**	William and Howard Wright
	Extension:	Taylor Clarke Lindy Fimon Sara Rutherford
Previous Crop:		Wheat
Soil Type:		Appling-Mattaponi complex
Tillage:		No-till
Planting Date:		June 23, 2020
Seeding Rate/Row Spacing:		200,000 on 15" rows
Fertilization:		30-70-80 at wheat planting
Crop Protection:		Burndown: Roundup (1 qt), 2-4D (10 oz), Envive (3 oz) POST: Liberty (1 qt), Volunteer (8 oz)
Harvest Date:		November 23, 2020
Harvest Equipment:		Gleaner R42

Brand	Variety	Moisture%	Yield (bu/A)
Southern Harvest	SH5120LL	15.2	34.2
Southern Harvest	SH4817LL	15.2	38.6
Southern Harvest	SH5515LL	15.1	39.9
Credenz	CZ 4539 GTLL	14.9	40.7
Credenz	CZ 4649 LL	15.0	41.6
Credenz	CZ 5147 LL	13.9	43.2
Credenz	CZ 5859 LL	13.7	41.6
Progeny	P 4775 E3S	14.5	41.2
Progeny	P 5211 E3	14.5	40.9
Southern Harvest	SH5515LL	14.5	42.8
Dyna-Gro	S45ES10	14.5	42.8
Dyna-Gro	S49EN79	14.6	42.1
Dyna-Gro	S52LL66	14.7	39.4
Dyna-Gro	S55LS75	14.2	38.1
MorSoy	MS 4800 E	14.9	42.7
MorSoy	MS 5110 E	15.3	44.9
Southern Harvest	SH5515LL	15.3	40.1
Local Seed Company	ZS4694E3S	15.2	40.7
Local Seed Company	LS4706GL	15.0	41.4
Local Seed Company	ZS5098E3S	15.5	38.7
Southern Harvest	SH4817LL	15.5	24.1

Southern Harvest	SH5215LL	15.0	37.1
Southern Harvest	SH5515LL	15.5	34.8
	AVERAGE	**14.9**	**39.6**

Discussion: Two varieties exhibited noticeable deer preferential grazing: Southern Harvest 4817LL and Local Seed Company ZS5098E3S.



Other Research

2020 NORTHUMBERLAND COUNTY MATURITY GROUP 2.5 - 3.9 SOYBEAN COMPARISONS

Cooperators:	**Producer:**	Bleak House Farm
	Extension:	Trent Jones, David Holshouser
	Industry:	Ian Walker, Pioneer Seeds
Previous Crop:		Corn
Soil Type:		Woodstown fine sandy loam
Tillage:		No-till
Planting Date:		May 4, 2020
Seeding Rate/Row Spacing:		128,000 Seed / Acre - 15" Row Spacing
Fertilization:		**May 4** - 2 gal. 3-18-18, 1 qt. Mn in furrow
Crop Protection:		**April 7** - 16 oz. Dicamba, 48 oz. Roundup PowerMax, 3 oz. Envive, 1 qt. Prowl H2O **July 7** - 32 oz. Roundup, 12.8 oz. Engenia, 2 qt. Task Force 3D **July 28** - 8 oz. Besiege, 13.7 oz. Miravis Top, 2 qt. Maximum N-Pact K
Harvest Date:		November 9, 2020
Harvest Equipment:		Case 8250 with Mac Don FD135

Brand	Variety	Moisture%	Yield (bu/A)
Local Seed Company	LS3976X	15.5	81.4
LG Seed	C2888RX	16.1	53.7
LG Seed	LGS3777RX	16.4	93.3
NK Seed	S37-A4X	16.0	75.0
NK Seed	S39-G2X	15.7	95.8
Pioneer	P39A58X	16.0	81.6
Pioneer	P37A69X	15.2	73.4
Dyna-Gro	S37XS89	16.2	83.7
MorSoy	MS 3907 RXT	15.5	75.2
Asgrow	AG36X6	15.8	84.4
Asgrow	AG38X8	15.2	78.3
Channel	3919 R2X	15.7	80.7
Local Seed Company	LS3976X	15.4	75.8
	AVERAGE	**15.7**	**79.4**

Discussion: Use these data, as well as other test plot results, when making variety selections.

2020 WESTMORELAND COUNTY SOYBEAN FOLLOWING COVER CROP STUDY

Cooperators:	Producer: Keith Balderson Extension: Robbie Longest, ANR - Essex County & Stephanie Romelczyk, ANR - Westmoreland Other: Danny Withers, Three Rivers SWCD
Previous Crop:	Corn followed by cover crops or left fallow
Soil Type:	Kempsville loam and Montross silt loam
Tillage:	Continuous no-till
Planting Date:	October 16, 2019 for Cover Crops and May 15, 2020 for Soybeans
Variety:	Asgrow 43XRR2X
Seeding Rate:	approx. 125,000 seeds/A
Fertilization:	16-78-75 per acre
Crop Protection:	Burndown: Roundup + Sharpen Pre-emergence: Envive Post-emergence: Makaze and Synchrony
Harvest Date:	November 7, 2020
Harvest Equipment:	John Deere 7720 w/18 foot header

Treatment	Moisture%	Yield (bu/A)
Rye	14.2	64.4
Wheat	14.1	63.5
Barley	14.3	63.9
Oats	14.4	62.4
Fallow	14.0	61.9

Discussion: The purpose of this plot was to evaluate the performance of full-season soybean following small grain cover crops and fallow land (corn residue.) Barley, oats, rye, and wheat cover crops were established on October 16, 2019 following corn harvest using a no-till drill. A very good stand of all four species was achieved, but the germination on the rye seed was only about 50%, which resulted in a thinner rye stand than desired. Bio-mass samples were taken by cutting all plant material from two 1 square foot samples in each species on April 10th. Samples were air-dried for several days until the samples were crispy and bio-mass was calculated on a dry matter per acre basis. As expected, the rye cover crop produced the most bio-mass. The results are reported below.

Bio-mass (April 10, 2020)

Species	Weight (Lbs. per acre)
Barley	4,764
Oats	4,764
Rye	7,487
Wheat	6,125

Cover crops were terminated using herbicides in mid-April. Full-season soybeans were planted with a no-till drill on May 15th. A good stand of soybeans was obtained in all treatments. After a dry spell from June 25th to July 21st, growing conditions were very good. Harvest was somewhat delayed due to damp conditions, but seed quality was very good and no excessive shattering losses were noted. Overall yields were very good in all treatments. This was only a demonstration plot so no hard conclusions should be made from the results. We encourage farmers to continue to experiment with cover crops to help them determine how they can fit into their cropping systems.

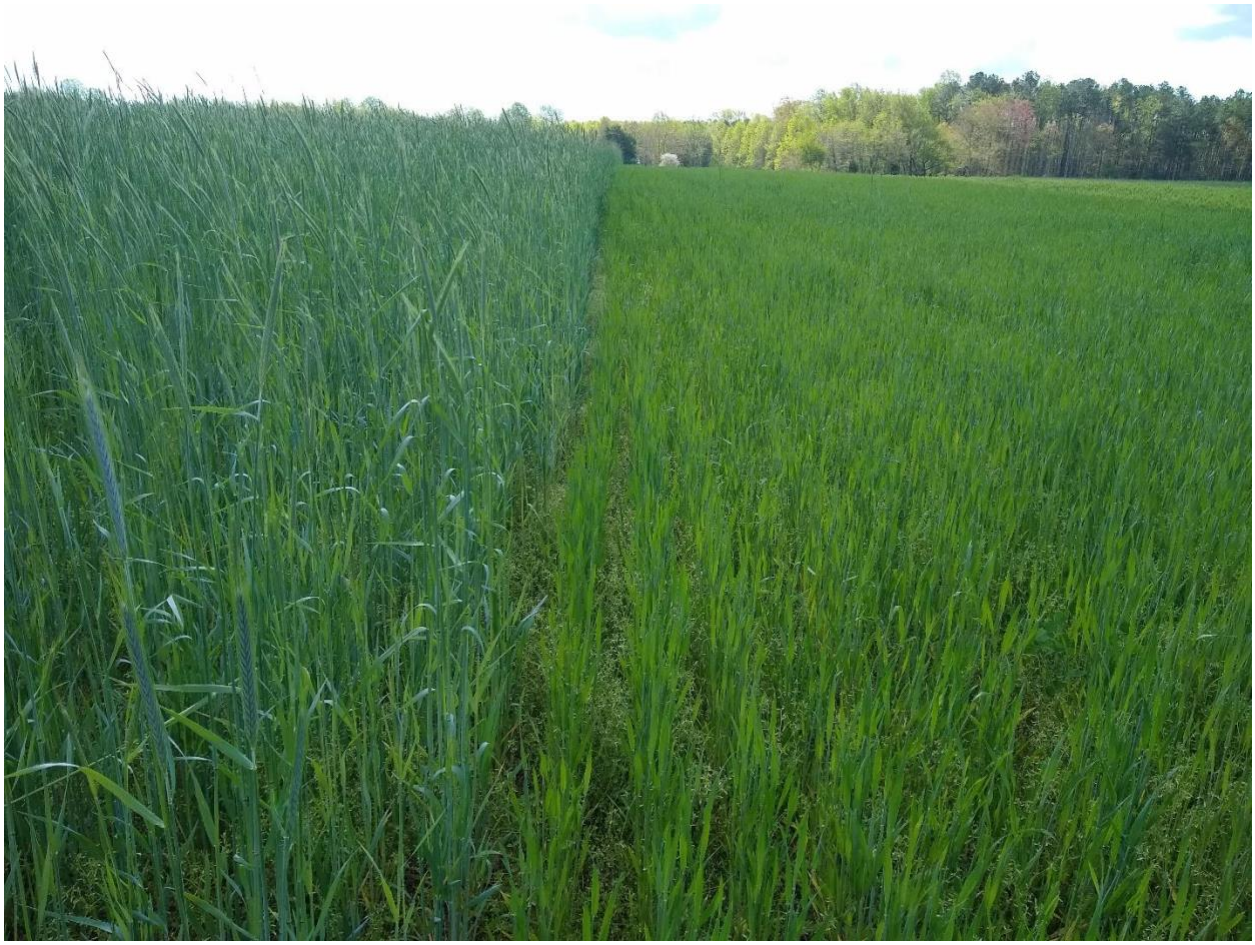


Figure 1. View of rye and wheat cover crops prior to burndown in April 2020

2020 ESSEX COUNTY PLENISH SOYBEAN EVALUATION STUDY

Cooperators:	**Producer:**	Mount View Farm - Barry Bates
	Extension:	Robbie Longest, VCE-Essex
	Industry:	Ginny Barnes - Coastal Agrobusiness
		Corteva - Pioneer Seed
		Perdue Agribusiness
Previous Crop:		Small grain cover crop
Soil Type:		Kempsville sandy loam
Tillage:		No-till
Planting Date:		June 4, 2020
Seeding Rate:		160,000 seeds/acre
Fertilization:		100 lbs. 19-19-19 per acre
Crop Protection:		Burndown: 1.5 qt/A Roundup
		Post-emerge: 1.5 qt/A Roundup
Harvest Date:		November 5, 2020
Harvest Equipment:		Gleaner F2 w/ 12 ft. header

Variety	Moisture%	Test Weight (lbs/bu)	Yield (bu/A)
Pioneer 41T65PR	13.4	57.0	49.3
Pioneer 42T71PR	12.9	59.0	54.6
Pioneer 46A45PR	13.6	59.2	59.3
Pioneer 48A94PR	13.7	60.0	65.9
AVERAGE	**13.4**	**58.8**	**57.3**

*Please note that these varieties were not replicated at this location

Discussion: The purpose of this plot was to evaluate four Pioneer brand Plenish soybean varieties on-farm in a comparison plot. The varieties ranged in maturity from 4.1 to 4.8. Good yields were observed in this plot despite a hot and dry period during the growing season in June and July. Test weights ranged from 57-60 lbs/bu. Samples were submitted to Perdue Agribusiness in Tappahannock for oil content testing, but results were not available at the time of this report.

These varieties are marketed as having high oleic soybean oil content. There has been advertisement from some grain elevator locations offering a premium program for high oleic soybeans, but this offer varies by location and not all grain elevators are currently offering premiums or a program. Please contact your local grain elevator representative for more information about this program.

More extensive, replicated research is needed to draw conclusions from this data, but it is presented here for demonstration purposes.

2020 ESSEX COUNTY BRASSICA COVER CROP SOYBEAN DEMONSTRATION

Cooperators:	**Producer:**	Brandon Farms
	Extension:	Robbie Longest, VCE-Essex
	Other:	Keith Balderson, NRCS
		Danny Withers, Three Rivers SWCD
Previous Crop:		Corn
Soil Type:		Pamunkey
Tillage:		No-till
Planting Date:		**Cover Crops**: October 16, 2019
		Soybeans: May 12, 2020
Variety:		Mission Early MG4
Seeding Rate/Row Spacing:		**Cover Crop**: Tillage radish (9 lb/A), Rapeseed (7 lb/A) **Soybeans**: 140,000 seeds/A (15-inch rows)
Fertilization:		0-35-75 (May 6, 2020)
Crop Protection:		**Cover Crop Burndown**: (April 8, 2020) 1 qt/A Roundup (51%) + 0.5 pt/A 2,4-D **Post-Emergent (Soybeans)**: 1 qt/A Roundup (51%)
Harvest Date:		November 8, 2020
Harvest Equipment:		John Deere S670 w/ 625F Header

Treatment	Replication	Moisture%	Yield (bu/A)
Tillage Radish	1	14.5	67.1
Check (Fallow)	1	14.5	70.6
Tillage Radish	2	14.6	68.5
Rapeseed	1	14.3	70.2
Check (Fallow)	2	15.3	68.2
Tillage Radish	3	14.8	68.7
Average Tillage Radish*		**14.6**	**68.1**
Average Check (Fallow)*		**14.9**	**69.4**
Rapeseed*		**14.3**	**70.2**

* Please note that due to weather-related flooding at harvest, only the above plots were able to be harvested for yield data. At planting, each treatment was replicated 4 times, for a total of 12 plots, but only half could be harvested. Not all treatments had the same number of replications harvested to be averaged.

Discussion: The purpose of this demonstration plot was to evaluate the nutrient cycling and deposition of two brassica cover crop species, tillage radish and rapeseed, when compared to a fallow check plot. Cover crops were planted following corn and prior to a soybean crop. Soybean yield following these cover crop treatments was not the primary objective of this study, but partial yield data is reported above. Three replications were planned for all treatments, but some replications could not be harvested due to poor field conditions at harvest.

Cover crops were drilled October 16, 2019 and terminated on April 8, 2020. Neither the tillage radish nor rapeseed plots winter-killed and were still living at the time of herbicide termination. Soybeans were planted May 12, 2020. Baseline soil samples were taken from all 12 plots on October 29, 2019 and soil pH, P, and K were measured using the Virginia Tech Soil Testing Lab. Soil samples were taken again from each of the 12 plots on May 4 and June 30, 2020 to a soil depth of 6 inches. Soil nitrate tests (PSNT) were also collected on June 30, 2020 to a soil depth of 12 inches. Soil sampling interval results from each plot were averaged by treatment and are reported in the table below (Table composed and provided courtesy of Bob Waring).

Treatment ID	Sampling Date	P (lbs/ac)	K (lbs/ac)	Notes
Check Avg.	Oct 29, 2019	22	128	
	May 4, 2020	23	130	
		1	**2**	Difference
	Oct 29, 2019	22	128	
	June 30, 2020	33	174	
		11	**46**	Check
Tillage Radish Avg.	Oct 29, 2019	24	117	
	May 4, 2020	25	127	
		1	**10**	Difference
	Oct 29, 2019	24	117	
	June 30, 2020	29	220	
		5	**103**	Difference
		11	**46**	Check
		6	**57**	Treatment minus Check
Rapeseed Avg.	Oct 29, 2019	27	119	
	May 4, 2020	27	123	
		0	**4**	Difference
	Oct 29, 2019	27	119	
	June 30, 2020	39	156	
		12	**37**	Difference
		11	**46**	Check
		1	**9**	Treatment minus Check

The table above reports treatment averages for each of the sampling dates and compares the average baseline soil test reading taken just after planting of the cover crop treatments (October 29, 2019) to the treatment average soil test results taken prior to soybean planting (May 4, 2020) and in-season (June 30, 2020). This table expresses the changes in soil test readings for P and K for the three treatments. Since the entire plot received commercial fertilizer, the "value" for that fertilizer was determined in the fallow treatment (check) and then used to theoretically adjust the values for the tillage radish and rapeseed averages to determine a net increase (gain) or decrease (loss) in P and K. It is interesting to note that it appears that the tillage radish treatment resulted in an increase of 57 lbs/A of K in the soil test result measured on June 30. This could potentially be explained by the taproot growth of this species that may have been able to pull K from lower in the soil profile and recycle those nutrients after decay.

More research is needed to justify the effect that these cover crop species may have on nutrient cycling of phosphorus and potassium. In theory, these species are taking up phosphorus and potassium from the soil profile during growth and releasing these nutrients back into the soil during the decomposition process. However, the rate at which these species decay and their nutrient uptake potential and cycling ability should be evaluated further in Virginia.

2020 NORTHUMBERLAND DOUBLE-CROP SOYBEAN SEEDING RATE STUDY

Cooperators:	**Producer:**	Harris Farms, Inc
	Extension:	Lindsey Bowers, Virginia Tech
		Dr. David Holshouser, Virginia Tech
		Trent Jones, Lancaster/Northumberland
Previous Crop:		Wheat
Planting Date:		June 30, 2020
Tillage:		No-till
Variety:		Mission A4847NSXR2
Row Spacing:		20"
Harvest Date:		November 17, 2020

Treatment (Seeding Rate/A)	Replication	Moisture%	Yield (bu/A)	Average NDVI
170,000	1	12.7	50.0	0.79
210,000	1	12.9	51.0	0.78
170,000	2	12.6	52.0	0.77
210,000	2	13.3	53.8	0.78
170,000	3	12.7	61.9	0.76
210,000	3	13.0	60.2	0.77
170,000	4	13.1	61.2	0.77
210,000	4	13.5	59.2	0.77
AVERAGE (170,000)		**12.8**	**56.3**	**0.77**
AVERAGE (210,000)		**13.2**	**56.0**	**0.78**
LSD P=0.05		**0.25**	**2.2**	**0.01**

Discussion:

Seed is one of the most expensive costs that soybean farmers incur. This experiment evaluated two seeding rates, the farmer's current practice of 170,000 seed/acre and one with 40,000 more seed. Normal difference vegetative index (NDVI) measurements, which are a good indication of plant growth, were taken every two weeks at 100-foot intervals within each seeding rate strip beginning at early plant growth. There was little difference in growth averaged across all replications. In comparison to the greater seeding rate, the 170,000 seed/acre rate yielded 0.3 bushels/acre more, but this difference was not significant. This validates previous theories that less seed can be used if growth from the lower seeding rate is not compromised. Even though the yield difference was not significant, this small gain in yield represents an additional $3.30 increase in income at $11.00 per bushel. Furthermore, using 40,000 less seeds/acre resulted in an additional $14.29 gain in seed savings, assuming an average seed cost of $50/unit. This resulted in a benefit of $17.60 per acre from using less seed. In this experiment, there was no benefit to using the greater seeding rate. Nonetheless, the farmer may choose to use the higher seeding rate to avoid risk of yield loss, especially if the field is not as productive as this field.

2020 NORTHUMBERLAND COUNTY FULL-SEASON SOYBEAN SEEDING RATE TRIAL

Cooperators:	**Producer:**	Giese Farm
	Extension:	Lindsey Bowers, Virginia Tech
		Dr. David Holshouser, Virginia Tech
		Trent Jones, Lancaster/Northumberland
Previous Crop:		Corn
Planting Date:		June 4, 2020
Tillage:		No-till
Variety:		Pioneer P46A57BX
Row Spacing:		15"
Harvest Date:		November 10, 2020

Treatment (Seeding Rate/A)	Replication	Moisture%	Yield (bu/A)	Average NDVI
135,000	1	15.2	53.2	0.82
95,000	1	16.1	49.7	0.82
135,000	2	14.9	54.1	0.83
95,000	2	14.5	49.3	0.82
95,000	3	14.8	50.9	0.80
135,000	3	14.5	52.6	0.81
135,000	4	14.4	54.5	0.81
95,000	4	14.1	52.8	0.81
AVERAGE (95,000)		**14.9**	**50.7**	**0.81**
AVERAGE (135,000)		**14.8**	**53.6**	**0.82**
LSD P=0.05		**0.7**	**1.8**	**0.01**

Discussion:

Seed is one of the most expensive costs that soybean farmers incur. This experiment evaluated two seeding rates, the farmer's current practice of 135,000 seed/acre and one with 40,000 less seed. Normal difference vegetative index (NDVI) measurements, which are a good indication of plant growth, were taken every two weeks at 100-foot intervals within each seeding rate strip beginning at early plant growth. Average growth was slightly better at the greater seeding rate compared to the lesser rate (as indicated by NDVI). The 95,000 seed/acre rate yielded 2.9 bushels/acre less than the 135,000 seed/acre rate. This gain in yield over the lower seeding rate represents a $31.90 per acre increase in income. Although decreasing the seeding rate by 40,000 seeds/acre results in a $14.29 savings, assuming an average seed cost of $50/unit, this less-than-optimal seeding rate resulted in a net loss of $17.61. Therefore, there was little benefit to using less seed. To avoid risk of yield loss, farmers may want to use greater seeding rates when planting in early-June.

2020 NORTHUMBERLAND COUNTY FULL-SEASON SOYBEAN SEEDING RATE STUDY

Cooperators:	**Producer:**	Bleak House Farm
	Extension:	Lindsey Bowers, Virginia Tech
		Dr. David Holshouser, Virginia Tech
		Trent Jones, Lancaster/Northumberland
Previous Crop:		Soybean
Tillage:		No-till
Planting Date:		May 4, 2020
Variety:		Asgrow AG48X9
Seeding Rate/Row Spacing:		15" row spacing
Harvest Date:		November 9, 2020

Treatment (Seeding Rate/A)	Replication	Moisture%	Yield (bu/A)	Average NDVI
125,000	1	18.0	65.7	0.85
85,000	1	17.8	65.9	0.83
125,000	2	17.6	66.0	0.85
85,000	2	17.4	63.4	0.82
125,000	3	17.2	66.3	0.85
85,000	3	17.1	63.6	0.81
125,000	4	16.8	69.4	0.85
85,000	4	16.7	66.7	0.83
AVERAGE (85,000)		**17.3**	**64.9**	**0.82**
AVERAGE (125,000)		**17.4**	**66.9**	**0.85**
LSD P=0.05		**0.07**	**1.70**	**0.01**

Discussion:

Seed is one of the most expensive costs that soybean farmers incur. This experiment evaluated two seeding rates, the farmer's current practice of 125,000 seed/acre and one with 40,000 less seed. Normal difference vegetative index (NDVI) measurements, a good indication of plant growth, were taken every two weeks at 100-foot intervals within each seeding rate strip beginning at early plant growth. Growth was better with the greater seeding rate (as indicated by NDVI) and the 125,000 seed/acre rate yielded 2.0 bushels/acre more than the 85,000 seed/acre rate. This gain in yield over the lower seeding rate represents a $22.00 increase in income at $11.00 per bushel. Decreasing the seeding rate by 40,000 seeds/acre results in a $14.29 savings, assuming an average seed cost of $50/unit. Therefore, in this experiment, there appears to be a nearly $8/acre benefit to using the greater seeding rate. This and past research indicate that to avoid risk of yield loss, soybean farmers should not use seeding rates less than 90,000.

2020 SUFFOLK LATE-PLANTED SOYBEAN SEEDING RATE STUDY

Cooperators:	**Producer:**	Mike Ellis, Suffolk
	Extension:	Lindsey Bowers, Virginia Tech
		Dr. David Holshouser, Virginia Tech
Previous Crop:		Cotton
Planting Date:		June 30, 2020
Tillage:		No-till
Variety:		Hubner H59-18R2X
Row Spacing:		15"
Harvest Date:		November 20, 2020

Treatment (Seeding Rate/A)	**Replication**	**Moisture%**	**Yield (bu/A)**	**Average NDVI**
160,000	1	12.7	48.9	0.87
200,000	1	12.7	52.7	0.86
160,000	2	12.0	47.0	0.85
200,000	2	12.0	49.9	0.84
160,000	3	12.5	46.7	0.87
200,000	3	12.3	52.7	0.87
AVERAGE (160,000)		**12.4**	**47.5**	**0.86**
AVERAGE (200,000)		**12.3**	**51.8**	**0.86**
LSD P=0.05		**0.2**	**2.7**	**0.01**

Discussion:

Seed is one of the most expensive costs that soybean farmers incur. This experiment evaluated two seeding rates, the farmer's current practice of 200,000 seed/acre and one with 40,000 less seed. Normal difference vegetative index (NDVI) measurements, which are a good indication of plant growth, were taken every two weeks at 100-foot intervals within each seeding rate strip beginning at early plant growth. There was no average difference in growth between both rates. However, the 160,000 seed/acre rate yielded 4.3 bushels/acre less than the 200,000 seed/acre rate. This gain in yield from the greater seeding rate represents a $47.30/acre gain in income at $11.00 per bushel. Decreasing the seeding rate by 40,000 seeds/acre results in a $14.29 savings, assuming an average seed cost of $50/unit. This results in a $33.01 per acre benefit to using the greater seeding rate although average growth was similar. To avoid risk of yield loss, farmers should use greater seeding rates when soybeans are planted late.

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