Virginia On-Farm Soybean Research

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

2023

by the following Extension Faculty:

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Virginia Cooperative Extension
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Virginia Cooperative Extension Soybean and Grain Crop Needs Assessment

The 2024 Soybean and Grain Crop Needs Assessment is an effort by Virginia Cooperative Extension to capture the potential research and educational needs of Virginia soybean and grain producers. In 2024, Extension will have two new specialists serving Virginia: Carrie Ortel will begin as the new Extension Soybean Specialist in April and the Extension Corn and Small Grain specialist announcement is anticipated in January.

Your assistance completing this survey will help these new specialists begin to design Extension and research programs to fit **your** needs. Please answer thoughtfully and include any issues relevant to your farming operation. You are encouraged to write in any suggestions not included in the survey in the comments section.

The survey can be completed online at the following link or request a paper copy from your local Extension office. Thank you for completing this survey.

https://bit.ly/VCESoybeanGrain24

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://pubs.ext.vt.edu). This information reaches hundreds of Virginia soybean and grain producers plus agribusinesses, impacting over 620,000 acres of soybeans valued at approximately $350 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 person, producer or agribusiness professional wishing to receive a copy of this publication or needing a more accessible version should contact their local Extension Agent who can make the request to Stephanie Romelczyk in Westmoreland County at 804-493-8924 or sromelcz@vt.edu.

This is the 27th year of this multi-county cooperative effort and further work is planned for 2024. 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.

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PHOTOS: Courtesy of Lindy Fimon, Laura Siegle, Robbie Longest, Joseph Oakes, 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.

Change is a constant theme throughout life, our farms, and a large organization such as Virginia Cooperative Extension. We would like to congratulate Dr. David Holshouser on his retirement as the Extension Soybean Specialist this past spring. We want to welcome Carrie Ortel, a PhD candidate at the University of Arkansas and Virginia Tech alum, as our next Extension Soybean Specialist starting in April 2024. On a sadder note, we want to remember Mike Broaddus, ANR Extension Agent - Caroline County, who passed away unexpectedly this spring. Mike was an annual supporter of the on-farm research program and had requested soybean seed to plant in 2023.

Weather conditions dominate every crop year and 2023 was no different. Early season conditions were generally favorable across the Commonwealth. For most locations, mid-August through September was a period of sporadic rainfall and variable drought conditions. According to the US Drought monitor, we had less widespread drought concerns in 2023 versus 2022. Judging by the reported yields this looks to be a fair assessment. This was definitely one of the best harvest seasons we experienced in several years.

Maturity Group (MG) 4 & 5 varieties were compared across multiple locations in 2023. This work is performed in concert with the Official Variety Tests and offers producers even stronger yield comparison information that they can use when making planting decisions.

Roundup Ready XtendFlex soybeans constituted the majority of varieties submitted for testing. Fourteen of 15 varieties carried the XtendFlex trait in the MG 4 tests and 10 of 12 in the MG 5 tests. Enlist E3 varieties were tested at three locations this year as interest grows in this system. Additional traits for herbicide tolerance, nematodes, and disease tolerance can be found in the accompanying tables. Weed control system, nematode resistance, and disease package should be considered when selecting varieties for 2024.

Several additional trials were also conducted. Biological seed treatment tests were established in Brunswick and Charlotte Counties with a variable yield response to the treatment. There continues to be interest in non-GMO soybean markets. A trial was planted in Essex County to evaluate conventional soybean varieties. Specialty marketing programs often pay a premium for non-GMO soybeans. Velum fungicide/nematicide was also evaluated in two fields with a history of nematode pressure. Check out those pages for details.

A special report is included on salinity levels in the Rappahannock River. This monitoring is conducted by local agents and shows the importance of water quality for irrigation.

We hope you find this information useful. If you have ideas for 2024 on-farm research or would like to be a cooperator in 2024, please contact your local Virginia Cooperative Extension Agriculture Agent.

Trait Data for 2023 VCE On-farm MG4 & MG5 Soybean Varieties
Roundup Ready 2 Xtend & XtendFlex

Brand	Variety	Relative Maturity	Herbicide Traits	Soybean Cyst Nematode	Root Knot Nematode	Frogeye leafspot	Sudden death syndrome	Brown stem rot	Southern Stem Canker
Asgrow	AG46XF2	4.6	XF/SR	R3	S	G	G	-	F
Asgrow	AG48XF3	4.8	XF/SR	R3	S	G	G	-	VG
DONMARIO	DM45F23	4.5	XF	S	-	VG	VG	-	R
DONMARIO	DM48F53	4.8	XF	S	-	VG	VG	-	R
Dyna-Gro	S47XF23S	4.7	XF/STS	R3	P	G	G	-	E
Dyna-Gro	S49XF43S	4.9	XF/STS	MR3	F	VG	G	-	E
HiSOY	HS 46F00	4.6	XF/STS	VG	-	-	G	-	-
Hubner	H47-30XF	4.7	XF/SR	R	S	VG	G	-	VG
NK	NK42-T5XF	4.2	XF	MR3	P	G	VG	VG	E
Pioneer	P44A21X	4.4	X	R	G	E	VG	-	VG
Pioneer	P46A90LX	4.6	LL/X	R	F	G	G	-	-
Revere	4606XFS	4.6	XF/STS	R3, MR14	S	-	VG	-	R
Revere	4821XFS	4.8	XF/SR	R3, MR14	S	F	G	-	MS
USG	7461XFS	4.6	XF/STS	R	S	S	F	-	E
USG	7463XF	4.6	XF	S	S	VG	VG	-	E
Asgrow	AG53XF2	5.3	XF/SR	R3	S	G	G	-	VG
Asgrow	AG54XF0	5.4	XF/SR	S	MR-MS	F	G	-	VG
Dyna-Gro	DG51XF84S	5.1	XF/STS	R3, MR14	S	G	VG	-	E
Dyna-Gro	S52XT91	5.2	X	MR3	F	VG	G	-	E
HiSOY	HS 50F10	5.0	XF/STS	VG	-	VG	VG	-	VG
Hubner	H51-22XF	5.1	XF/SR	R	R	G	G	-	-
Hubner	H58-33XF	5.8	XF	R	R	G	G	-	VG
Pioneer	P50A08LX	5.0	LL/X	R	P	G	VG	-	-
Pioneer	P54A36SX	5.4	X/STS	-	E	VG	VG	MS	VG
Revere	5029XFS	5.0	XF/STS	R3, MR14	S	A	A	-	R
Revere	5735XFS	5.7	XF/SR	R3, MR14	R	-	A	-	R
USG	7543XF	5.4	XF	S	S	VG	VG	-	E

R = Resistant
S = Susceptible
MR = Moderately resistant
P = Poor

M = Moderate
MS = Moderately susceptible
A = Average
F = Fair

XF = XtendFlex
X = Xtend
STS, SR, BOLT = Tolerant to sulfonylurea herbicides

E3 = Enlist E3
LL= LibertyLink

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 2023 VCE On-farm MG3 Soybean Varieties
Roundup Ready 2 Xtend & XtendFlex

Brand	Variety	Relative Maturity	Herbicide Traits	Soybean Cyst Nematode	Root Knot Nematode	Frogeye leafspot	Sudden death syndrome	Brown stem rot	Southern Stem Canker
Asgrow	AG38XF1	3.8	XF	R3	-	VG	G	-	VG
Asgrow	AG38XF3	3.8	XF	R3	S	F	G	VG	VG
DONMARIO	DM36F62S	3.6	XF/STS	R	-	VG	VG	-	R
Dyna-Gro	S37XF33	3.7	XF	MR3, MR14	-	VG	VG	VG	E
Dyna-Gro	S38XF22S	3.8	XF/STS	MR3	P	VG	VG	-	E
Pioneer	P39A45X	3.9	X	R	-	E	G	-	VG

R = Resistant
S = Susceptible
MR = Moderately resistant
M = Moderate
MS = Moderately susceptible
HT = Highly tolerant
X = Roundup Ready 2 Xtend
XF = Roundup Ready 2 XtendFlex
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 2023 VCE On-farm Soybean Varieties
Enlist E3

Brand	Variety	Relative Maturity	Herbicide Traits	Soybean Cyst Nematode	Root Knot Nematode	Frogeye leafspot	Sudden death syndrome	Brown stem rot	Southern Stem Canker
Dyna-Gro	S45ES10	4.5	E3/STS	R3, MR14	P	VG	G	-	E
Dyna-Gro	S48EN73	4.8	E3	R3	P	G	G	-	E
HiSOY	HS 45E00	4.5	E3	VG	-	VG	VG	-	-
HiSOY	HS 48E10	4.8	E3/STS	VG	-	E	VG	-	-
NK	NK44-Q5E3S	4.4	E3/STS	MR3, MR14	VG	VG	VG	VG	E
NK	NK49-T6E3S	4.9	E3/STS	R3, MR14	G	VG	G	-	E
Pioneer	P46A09E	4.6	E3	R	P	G	G	-	E
Pioneer	P48A14E	4.8	E3	R	F	F	G	HT	G
Seed Consultants	SC 7462E	4.6	E3	R3, R14	VG	G	G	G	VG
Seed Consultants	SC 7481E	4.8	E3	R3, R14	VG	F	G	G	E
Southern Harvest	SH 4622 E3	4.6	E3/STS	S	S	VG	VG	MR	R
Dyna-Gro	S51EN62	5.1	E3	S	P	VG	VG	-	E
NK	NK52-D6E3	5.2	E3	R3	VG	VG	VG	-	E
Pioneer	P51A33SE	5.1	E3/STS	R	F	G	F	-	-
Pioneer	P52A14SE	5.2	E3/STS	R	E	G	G	-	G
Seed Consultants	SC 7514E	5.1	E3	R3, R14	-	F	G	F	-
Seed Consultants	SC 7562E	5.6	E3	R3, R14	E	F	F	G	G
Southern Harvest	SH 5523 E3	5.5	E3	R	S	G	VG	-	R

R = Resistant
S = Susceptible
MR = Moderately resistant
M = Moderate
MS = Moderately susceptible
E3 = Enlist E3
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.

Seed Treatment Data for On-Farm Soybean Variety Comparisons

Seed Treatments on Submitted Xtend-XtendFlex Varieties

Company	Brand	Treatment Brand Name (Contents)	None	Insecticide	Fungicide	Nematicide	Inoculant	Biological
Asgrow	AG46XF2	Acceleron Seed Applied Solutions (Standard)		X	X			
Asgrow	AG48XF3	Acceleron Seed Applied Solutions (Standard)		X	X			
DONMARIO Seeds	DM48F53	SoyStar Elite ST		X	X			
DONMARIO Seeds	DM45F23	SoyStar Elite ST		X	X	X	X	
Dyna-Gro	S47XF23S	Equity VIP + Vayantis + Saltro		X	X	X	X	
Dyna-Gro	S49XF43S	Equity VIP + Vayantis + Saltro		X	X	X	X	
HiSOY	HS 46F00		X					
Hubner	H47-30XF	Acceleron Seed Applied Solutions (Standard)		X	X			
Pioneer	P44A21X	LumiGen + LumiTreo + ILEVO HL (B. pumilis, amyloliquifaciens)		X	X	X		X
Pioneer	P46A90LX	LumiGen + LumiTreo + ILEVO HL (B. pumilis, amyloliquifaciens)		X	X	X		X
Revere Seed	4606XFS	Radius Premium + innoculant + Aveo EZ		X	X	X	X	X
Revere Seed	4821XFS	Avicta Complete + Preside Ultra innoculant		X	X	X	X	
USG	7463XF	*Treated - no labeling*						
USG	7461XFS	Apron Maxx			X			
Asgrow	AG53XF2	Acceleron Seed Applied Solutions (Standard)		X	X			
Asgrow	AG54XF0	Acceleron Seed Applied Solutions (Standard)		X	X			
Dyna-Gro	DG51XF84S	Equity VIP + Vayantis + Saltro		X	X	X	X	
Dyna-Gro	S52XT91	Equity VIP + Vayantis + Saltro		X	X	X	X	
HiSOY	HS 50F10		X					
Hubner	H51-22XF	Acceleron Seed Applied Solutions (Standard)		X	X			
Hubner	H58-33XF	Acceleron Seed Applied Solutions (Standard)		X	X			
Pioneer	P50A08LX	LumiGen + LumiTreo(B. pumilis, amyloliquifaciens)		X	X			X
Pioneer	P54A36SX	LumiGen + LumiTreo(B. pumilis, amyloliquifaciens)		X	X			X
Revere Seed	5029XFS	Radius Premium + innoculant		X	X	X	X	
Revere Seed	5735XFS	Radius Premium + innoculant		X	X	X	X	
USG	7543XF	*Treated - no labeling*						

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.

MATURITY GROUP 4
VARIETY COMPARISONS

2023 Overall Group 4 Comparison

Company	Brand	Appomattox	Charlotte	Mecklenburg	Middlesex	Prince George	Virginia Beach Ag Expo	Average	Average Relative Yield
Pioneer	P46A90LX	51.6	57.6	29.8	59.5	63.0	132.2	72.8	105%
Dyna-Gro	S49XF43S	53.1	67.9	35.8	58.0	70.2	99.6	69.8	105%
Revere	4606XFS	53.7	72.0		59.4	59.4	101.0	69.1	104%
DONMARIO	DM48F53	49.3	67.4	35.8	58.1	57.8	120.4	70.6	103%
Pioneer	P44A21X	49.7	58.6		61.7	55.8	115.4	68.2	100%
Asgrow	AG48XF3	53.9	64.9	31.2	52.6	56.3	111.8	67.9	100%
Dyna-Gro	S47XF23S	49.6	61.5	29.4	54.5	58.9	117.7	68.4	100%
Asgrow	AG46XF2	55.3	51.6	28.4	53.8	53.0	130.2	68.8	99%
USG	7461XFS	50.7	61.6	28.9	58.0	60.1	99.2	65.9	99%
USG	7463XF	49.0	52.5	27.8	53.3	57.4	131.2	68.7	98%
Revere	4821XFS	49.5	56.7	26.5	57.1	61.3	103.8	65.7	98%
DONMARIO	DM45F23	51.8	62.1	28.1	49.7	54.1	111.1	65.7	97%
HiSOY	HS46F00	51.3	66.6	32.4	53.1	59.3	85.4	63.1	96%
Hubner	H47-30XF	51.3	61.4	27.8	57.5	56.4	79.4	61.2	94%
NK Seed	NK42-T5XF						120.4		
	Location Average	51.4	61.6	30.2	56.2	58.8	109.9		

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.

**NK varieties not ranked because they were only planted at the Ag Expo location.

***Mecklenburg location not included in overall averages due to missing data.

Appomattox County Maturity Group 4 Soybean Comparisons

Cooperators: **Producer:** Dark Leaf Farm
Extension: Bruce Jones, VCE – Appomattox
Joanne Jones, VCE - Charlotte
Previous Crop: No-till soybean
Soil Type: Georgeville - Brockroad loam
Tillage: No-till
Planting Date: May 27, 2023
Seeding Rate/Row Spacing: 180,000 seed/A; 7.5-inch row
Fertilization: 11-52-60 preplant
Crop Protection: Glyphosate + dicamba preplant burndown; 1 application glyphosate 4 weeks after planting
Harvest Date: November 20, 2023
Harvest Equipment: Gleaner R52

Brand	Variety	Moisture%	Yield (bu/A)
Pioneer	P44A21X	12.8	49.7
DONMARIO	DM45F23	13.0	51.8
USG	7463XF	12.8	49.0
HiSOY	HS46F00	12.7	51.3
Revere	4606XFS	12.8	53.7
USG	7461XFS	12.7	50.7
Pioneer	P46A90LX	12.8	51.6
Dyna-Gro	S47XF23S	12.7	49.6
Hubner	H47-30XF	12.6	51.3
Asgrow	AG48XF3	12.8	53.9
Dyna-Gro	S49XF43S	12.6	53.1
DONMARIO	DM48F53	13.1	49.3
Revere	4821XFS	12.5	49.5
Asgrow	AG46XF2	12.5	55.3
	AVERAGE	**12.7**	**51.4**

Discussion: A strong yielding location given the drought conditions in late summer.

Charlotte County Maturity Group 4 Soybean Comparisons

Cooperators: **Producer:** Grind-N Stone Farm - The Poindexter Family
Extension: Joanne Jones, VCE - Charlotte
Bruce Jones, VCE - Appomattox
Previous Crop: Corn; Small grain cut for hay
Tillage: No-till
Planting Date: May 15, 2023
Seeding Rate/Row Spacing: 140,000 seed/A; 15-inch row
Fertilization: 0-30-80-10S-8B
Crop Protection: May 25 - glyphosate + dicamba
June 15 - glyphosate + dicamba
July 10 - Miravis Top
Harvest Date: October 30, 2023
Harvest Equipment: Gleaner R52

Brand	Variety	Moisture%	Yield (bu/A)
Hubner	H47-30XF	12.8	61.4
Pioneer	P46A90LX	12.9	57.6
HiSOY	HS46F00	12.5	66.6
Dyna-Gro	S47XF23S	12.3	61.5
Dyna-Gro	S49XF43S	12.6	67.9
DONMARIO	DM45F23	12.5	62.1
DONMARIO	DM48F53	11.8	67.4
Revere	4606XFS	12.1	72.0
Revere	4821XFS	12.0	56.7
Asgrow	AG48XF3	12.4	64.9
USG	7461XFS	12.5	61.6
USG	7463XF	13.8	52.5
Pioneer	P44A21X	12.4	58.6
Asgrow	AG46XF2	12.5	51.6
	AVERAGE	**12.5**	**61.6**

Discussion: Charlotte County was rocking these full-season soybeans in 2023. Despite drought in late summer, still pulled a 60+ average with a low of 51.6 bu/A. We will take that anytime!!

Mecklenburg County Maturity Group 4 Soybean Comparisons

Cooperators: **Producer:** Kenneth Washburn
Extension: Taylor Clarke, VCE - Mecklenburg
Mackenzie Gunn, VCE - Amelia
Spencer Irby, VCE - Lunenburg
Previous Crop: Triticale for grain
Soil Type: Appling fine sandy loam
Tillage: No-till
Planting Date: June 19, 2023
Seeding Rate/Row Spacing: 175,000 seed/A; 15-inch row
Crop Protection: Liberty and Roundup applied two times post-emerge
Harvest Date: November 16, 2023
Harvest Equipment: John Deere 9560

Brand	Variety	Moisture%	Yield (bu/A)
Dyna-Gro	DG56XF01	11.1	34.0
Hubner	H47-30XF	11.0	27.8
Pioneer	P46A90LX	10.8	29.8
Asgrow	AG46XF2	10.7	28.4
Asgrow	AG48XF3	11.0	31.2
Dyna-Gro	DG56XF01	10.8	34.6
Dyna-Gro	DG56XF01	11.1	34.4
HiSOY	HS46F00	10.9	32.4
Dyna-Gro	S49XF43S	11.1	35.8
Dyna-Gro	S47XF23S	10.9	29.4
USG	7461XFS	10.9	28.9
USG	7463XF	11.2	27.8
Revere	4821XFS	10.8	26.5
Revere	4606XFS		Missing plot
DONMARIO	DM45F23	11.0	28.1
DONMARIO	DM48F53	10.8	35.8
Dyna-Gro	DG56XF01	10.8	31.6
	AVERAGE	**10.9**	**31.0**

Discussion: Rainfall was normal from planting until the beginning of August. From the beginning of August until the first of October rainfall was 4" below the 5-year average. Pioneer P44A21X seed was not available for this location.

Middlesex County Maturity Group 4 Soybean Comparisons

Cooperators:	**Producer:**	Crazy Clover Farm
	Extension:	Frank Long, VCE - Middlesex
		Robbie Longest, VCE - Essex
	Industry:	Jason Dawson - Chemgro; participating seed companies
Previous Crop:		Corn
Soil Type:		Emporia loam, Slagle silt loam
Tillage:		No-till
Planting Date:		May 26, 2023
Seeding Rate/Row Spacing:		30-inch row
Fertilization:		20-52-60-10S
Crop Protection:		Burndown: Gramoxone (1.5 pt/A)
		Pre-plant: Canopy + RoundupMAX 3 (28 oz/A)
		Post-emergence: RoundupMAX 3 (28 oz/A)
Harvest Date:		November 7, 2023
Harvest Equipment:		Case IH 2588 w/ platform header

Brand	Variety	Moisture%	Yield (bu/A)
Asgrow	AG48XF3	13.8	52.6
Asgrow	AG46XF2	12.1	53.8
Hubner	H47-30XF	12.1	57.5
HiSOY	HS46F00	12.1	53.1
Dyna-Gro	S47XF23S	12.6	54.5
Dyna-Gro	S49XF43S	11.7	58.0
DONMARIO	DM45F23	12.8	49.7
Check - MorSoy	5110	11.7	54.4
DONMARIO	DM48F53	12.4	58.1
USG	7463XF	11.6	53.3
USG	7461XFS	12.1	58.0
Pioneer	P44A21X	11.7	61.7
Pioneer	P46A90LX	12.6	59.5
Revere	4606XFS	11.6	59.4
Revere	4821XFS	12.4	57.1
Check - MorSoy	5110	11.5	52.7
	AVERAGE	**12.2**	**55.8**

Discussion: Overall, a great yielding trial with a plot average of 55.8 bu/A. The area received good rains early in the growing season; however, moisture was limited later during pod set and fill in late August and early September, resulting in reduced pod fill being observed across varieties at harvest. Use this data and other replicated test plot yield data when making variety selections.

Prince George County Maturity Group 4 Soybean Comparisons

Cooperators: **Producer:** Sean Finney
Extension: Scott Reiter, VCE - Prince George
Previous Crop: Wheat with straw baled
Soil Type: Ackwater-Montross silt loam
Tillage: No-till
Planting Date: June 19, 2023
Seeding Rate/Row Spacing: 220,000 seed/A; 7.5-inch row
Fertilization: 120-40-120 to wheat crop
Crop Protection: Post-emerge: Roundup PowerMAX 3 (1 qt/A) + XtendiMax (22 oz/A) - June 29
Besiege (8 oz/A) - August 29
Harvest Date: November 13, 2023
Harvest Equipment: John Deere 9500 + weigh wagon

Brand	Variety	Moisture%	Yield (bu/A)
Check-Revere	4606 XFS	13.2	58.2
Asgrow	AG46XF2	13.2	53.0
Asgrow	AG48XF3	13.1	56.3
Pioneer	P44A21X	13.1	55.8
Pioneer	P46A90LX	13.1	63.0
USG	7463XF	12.9	57.4
USG	7461XFS	12.8	60.1
Hubner	H47-30XF	12.6	56.4
HiSOY	HS46F00	12.8	59.3
Dyna-Gro	S47XF23S	13.0	58.9
Dyna-Gro	S49XF43S	12.9	70.2
Revere	4606XFS	12.6	59.4
Revere	4821XFS	13.0	61.3
DONMARIO	DM48F53	12.8	57.8
DONMARIO	DM45F23	13.4	54.1
Check-Revere	4606 XFS	12.6	54.9
	AVERAGE	**12.9**	**58.5**

Discussion: An impressive double-crop yield for this area in 2023. Rainfall was scarce from August 5 - September 9. This field was intensely scouted for diseases as part of a research project. Frogeye leafspot was not detected until early October and no varieties were noted to have heavy disease pressure.

Virginia Beach City AG EXPO Group 4 Soybean Comparisons

Cooperators: **Producer:** Land of Promise Farm
Extension: Roy D. Flanagan III, VCE - Virginia Beach
Nathan Sedghi, Ph.D., VCE - Chesapeake
Previous Crop: Corn
Soil Type: Nimmo and Portsmouth loam
Tillage: Conventional
Planting Date: May 9, 2023
Seeding Rate/Row Spacing: 115,000 seed/A; 15-inch row
Fertilization: 24N-39P-60K-18S
Crop Protection: Pre-emergence - Tendovo
Post-emergence - Flexstar GT
Insecticide- Intrepid Edge
Fungicide- Miravis Top
Harvest Date: November 16, 2023
Harvest Equipment: John Deere S780 + weigh wagon

Brand	Variety	Moisture%	Yield (bu/A)
Asgrow	AG48XF3	14.6	111.8
Hubner	H47-30XF	14.3	79.4
Dyna-Gro	S49XF43S	14.9	99.6
Asgrow	AG46XF2	15.2	130.2
Revere	4821XFS	15.2	103.8
DONMARIO	DM45F23	15.3	111.1
Dyna-Gro	S47XF23S	15.2	117.7
Revere	4606XFS	15.6	101.0
Pioneer	P44A21X	15.8	115.4
USG	7463XF	15.8	131.2
NK	NK42-T5XF	15.6	120.4
HiSOY	HS46F00	15.5	85.4
Pioneer	P46A90LX	15.1	132.2
USG	7461XFS	14.8	99.2
DONMARIO	DM48F53	16.4	120.4
	AVERAGE	**15.3**	**110.6**

Discussion: These are the highest yields ever in a VCE On-farm Research trial. Excellent soils and a good season paired with good management is hard to beat!

MATURITY GROUP 5
VARIETY COMPARISONS

2023 Overall Group 5 Comparisons

Company	Brand	Mecklenburg	Prince George	Virginia Beach Ag Expo	Average	Average Relative Yield
Revere	5029XF	34.1	57.5	119.2	88.4	114%
Dyna-Gro	S52XT91		60.6	106.6	83.6	111%
Asgrow	AG53XF2	31.1	59.8	98.7	79.3	106%
Pioneer	P54A36SX		55.0	105.9	80.4	105%
Hubner	H58-33XF	42.0	49.3	106.0	77.7	100%
Pioneer	P50A08LX		57.9	89.7	73.8	100%
Hubner	H51-22XF	33.2	51.7	98.5	75.1	98%
USG	7543XF	39.5	55.8	90.2	73.0	98%
Dyna-Gro	DG51XF84S	33.6	54.4	90.1	72.3	97%
Revere	5735XFS	40.8	45.6	100.0	72.8	93%
HiSOY	HS 50F10	30.3	48.6	92.1	70.3	92%
Asgrow	AG54XF0	39.0	53.3	70.5	61.9	86%
	Location Average	36.0	54.1	97.3		

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.

**Mecklenburg location not included in overall averages due to missing data.

Mecklenburg County Maturity Group 5 Soybean Comparisons

Cooperators: **Producer:** Kenneth Washburn
Extension: Taylor Clarke, VCE - Mecklenburg
Mackenzie Gunn, VCE - Amelia
Spencer Irby, VCE - Lunenburg
Previous Crop: Triticale for grain
Soil Type: Appling fine sandy loam
Tillage: No-till
Planting Date: June 19, 2023
Seeding Rate/Row Spacing: 175,000 seed/A; 15-inch row
Crop Protection: Liberty and Roundup applied two times post-emerge
Harvest Date: November 16, 2023
Harvest Equipment: John Deere 9560

Brand	Variety	Moisture%	Yield (bu/A)
Dyna-Gro	DG56XF01	11.3	38.5
Hubner	H51-22XF	11.2	33.2
Hubner	H58-33XF	11.2	42.0
Asgrow	AG54XF0	11.2	39.0
Asgrow	AG53XF2	11.1	31.1
Revere	5735XFS	11.4	40.8
Revere	5029XF	11.3	34.1
HiSOY	HS 50F10	11.0	30.3
Pioneer	P54A36SX		Missing
USG	7543XF	11.1	39.5
Dyna-Gro	S52XT91		Missing
Dyna-Gro	DG51XF84S	10.9	33.6
Dyna-Gro	DG56XF01	11.1	34.0
	AVERAGE	**11.2**	**36.0**

Discussion: Rainfall was normal from planting until the beginning of August. From the beginning of August until the first of October rainfall was 4" below the 5-year average. The Pioneer P54A36SX and Dyna-Gro S52XT91 were killed when the grower applied Liberty to the field. We apologize for the error and it makes the point to be sure to know what technology you are spraying. Pioneer P50A08LX seed was not available for this location.

Prince George County Maturity Group 5 Soybean Comparisons

Cooperators: **Producer:** Sean Finney
Extension: Scott Reiter, VCE - Prince George
Previous Crop: Wheat with straw baled
Soil Type: Ackwater-Montross silt loam
Tillage: No-till
Planting Date: June 19, 2023
Seeding Rate/Row Spacing: 200,000 seed/A; 7.5-inch row
Fertilization: 120-40-120 to wheat
Crop Protection: Post-emerge: Roundup PowerMAX 3 (1 qt/A) + XtendiMax (22 oz/A) - June 29
Besiege (8 oz/A) - August 29
Harvest Date: November 13, 2023
Harvest Equipment: John Deere 9500 + weigh wagon

Brand	Variety	Moisture%	Yield (bu/A)
Check-Revere	4606 XFS	12.6	54.6
Asgrow	AG54XF0	12.6	53.3
Asgrow	AG53XF2	12.9	59.8
Pioneer	P50A08LX	12.2	57.9
Pioneer	P54A36SX	12.4	55.0
USG	7543XF	12.5	55.8
Hubner	H51-22XF	12.8	51.7
Hubner	H58-33XF	12.7	49.3
Dyna-Gro	DG51XF84S	12.3	54.4
Dyna-Gro	S52XT91	12.6	60.6
HiSOY	HS 50F10	12.5	48.6
Revere	5029XF	12.8	57.5
Revere	5735XFS	13.0	45.6
Check-Revere	4606 XFS	12.6	52.1
	AVERAGE	**12.6**	**54.0**

Discussion: An impressive double-crop yield for this area in 2023. Rainfall was scarce from August 5 - September 9. This field was intensely scouted for diseases as part of a research project. Frogeye leafspot was not detected until early October and no varieties were noted to have heavy disease pressure. Hubner H58-33XF and Revere 5735XFS had noticeable lodging compared to other varieties but were still acceptable for harvest. Seeding rates for these varieties need to be considered on productive soil types.

Virginia Beach City AG EXPO Maturity Group 5 Soybean Comparisons

Cooperators: **Producer:** Land of Promise Farm
Extension: Roy D. Flanagan III, VCE - Virginia Beach
Nathan Sedghi, Ph.D., VCE - Chesapeake
Previous Crop: Corn
Soil Type: Nimmo and Portsmouth loam
Tillage: Conventional
Planting Date: May 9, 2023
Seeding Rate/Row Spacing: 115,000 seed/A; 15-inch row
Fertilization: 24N-39P-60K-18S
Crop Protection: Pre-emergence - Tendovo
Post-emergence - Flexstar GT
Insecticide - Intrepid Edge
Fungicide - Miravis Top
Harvest Date: November 16, 2023
Harvest Equipment: John Deere S780 + weigh wagon

Brand	Variety	Moisture%	Yield (bu/A)
Dyna-Gro	S52XT91	13.0	106.6
USG	7543XF	13.4	90.2
HiSOY	HS 50F10	13.7	92.1
Dyna-Gro	DG51XF84S	13.9	90.1
Hubner	H58-33XF	13.5	106.0
Asgrow	AG54XF0	13.5	70.5
Pioneer	P54A36SX	14.0	105.9
Revere	5735XFS	14.0	100.0
Asgrow	AG53XF2	14.4	98.7
Pioneer	P50A08LX	14.5	89.7
Hubner	H51-22XF	15.0	98.5
Revere	5029XF	14.9	119.2
	AVERAGE	**14.0**	**97.3**

Discussion: A high yielding plot of MG5 varieties. The MG4 varieties averaged 110.6 bu/A in adjoining plots.

Other
Soybean Weed Control System Tests

2023 Overall Group 4 Enlist Comparisons

Company	Brand	Brunswick	Virginia Beach Ag Expo	Westmoreland	Average	Average Relative Yield
Dyna-Gro	S48EN73	38.9	126.8	66.4	77.4	111%
Seed Consultants	SC 7462E	40.4	103.9	71.4	71.9	108%
Southern Harvest	SH 4622 E3	36.4	119.5	64.2	73.4	105%
Seed Consultants	SC 7481E	38.9	99.2	71.2	69.7	105%
Pioneer	P48A14E	35.4	96.6	69.4	67.1	99%
Pioneer	P46A09E	28.0	124.5	67.4	73.3	99%
Dyna-Gro	S45ES10	29.0	107.9	66.9	68.0	95%
HiSOY	HS 45E00	20.6	108.7	70.7	66.7	89%
HiSOY	HS 48E10	23.7	97.4	71.4	64.1	89%
NK	NK44-Q5E3S		92.0			
NK	NK49-T6E3S		79.2			
	Location Average	32.4	109.4	68.8		

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.

**NK varieties not ranked because they were only planted at the Ag Expo location.

2023 Overall Group 5 Enlist Comparisons

Company	Brand	Brunswick	Virginia Beach Ag Expo	Average	Average Relative Yield
Southern Harvest	SH 5523 E3	45.1	108.5	76.8	109%
Dyna-Gro	S51EN62	51.3	93.3	72.3	108%
HiSOY	HS50E21	50.0	95.1	72.5	107%
Pioneer	P52A14SE	45.3	92.8	69.1	101%
Seed Consultants	SC 7562E	43.1	93.9	68.5	99%
Seed Consultants	SC 7514E	39.1	97.2	68.1	96%
Pioneer	P51A33SE	30.4	88.8	59.6	81%
NK	NK52-D6E3		97.2		
	Location Average	43.5	95.7		

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.

**NK varieties not ranked because they were only planted at the Ag Expo location.

Brunswick County Enlist Soybean Comparisons

Cooperators: **Producer:** William Wright
Extension: Taylor Clarke, VCE - Mecklenburg
Previous Crop: Flue-cured tobacco/wheat for grain
Soil Type: Appling-Mattaponi complex
Tillage: No-till
Planting Date: June 26, 2023
Seeding Rate/Row Spacing: 200,000 seed/A; 18-inch row
Fertilization: P and K spread at wheat planting
Crop Protection: Burndown - Gramoxone (1 qt/A) + Medal (21 oz/A)
Post - Liberty (32 oz/A) + Roundup PowerMAX 3 (28 oz/A)
Harvest Date: November 14, 2023
Harvest Equipment: Gleaner R52 with 16' flex head

Brand	Variety	Moisture%	Yield (bu/A)
MorSoy	5110E	12.1	37.2
Pioneer	P48A14E	11.3	35.4
Pioneer	P46A09E	11.7	28.0
HiSOY	HS 45E00	12.3	20.6
HiSOY	HS 48E10	12.1	23.7
Dyna-Gro	S45ES10	11.9	29.0
Dyna-Gro	S48EN73	12.0	38.9
Seed Consultants	SC 7462E	11.8	40.4
Seed Consultants	SC 7481E	11.7	38.9
Southern Harvest	SH 4622 E3	11.9	36.4
MorSoy	5110E	11.5	36.1
Pioneer	P51A33SE	11.4	30.4
Pioneer	P52A14SE	11.5	45.3
Seed Consultants	SC 7562E	11.3	43.1
Dyna-Gro	S51EN62	11.5	51.3
Seed Consultants	SC 7514E	10.9	39.1
HiSOY	HS 50E21	11.1	50.0
Southern Harvest	SH 5523 E3	11.2	45.1
MorSoy	5110E	11.1	47.8
	AVERAGE	**11.6**	**37.7**

Discussion: Use this and other yield data for the most effective variety selection.

Virginia Beach City AG EXPO Enlist Soybean Comparisons

Cooperators: **Producer:** Land of Promise Farm
Extension: Roy D. Flanagan III, VCE - Virginia Beach
Nathan Sedghi, Ph.D., VCE - Chesapeake
Previous Crop: Corn
Soil Type: Portsmouth and Nimmo loam
Tillage: Conventional
Planting Date: May 9, 2023
Seeding Rate/Row Spacing: 115,000 seed/A; 15-inch row
Fertilization: 24N-39P-60K-18S
Crop Protection: Pre-emergence - Tendovo
Post-emergence - Flexstar GT
Insecticide - Intrepid Edge
Fungicide - Miravis Top
Harvest Date: November 16, 2023
Harvest Equipment: John Deere S780 + weigh wagon

Brand	Variety	Moisture%	Yield (bu/A)
Seed Consultants	SC 7562E	13.4	93.9
Pioneer	P52A14SE	13.7	92.8
HiSOY	HS50E21	13.6	95.1
Pioneer	P51A33SE	13.3	88.8
NK	NK52-D6E3	13.0	97.2
Southern Harvest	SH 5523 E3	12.8	108.5
Seed Consultants	SC 7514E	13.4	97.2
Dyna-Gro	S51EN62	13.5	93.3
Seed Consultants	SC 7481E	12.9	99.2
HiSOY	HS 48E10	12.9	97.4
Pioneer	P46A09E	12.9	124.5
Seed Consultants	SC 7462E	12.8	103.9
Dyna-Gro	S45ES10	13.0	107.9
NK	NK44-Q5E3S	13.1	92.0
Southern Harvest	SH 4622 E3	13.0	119.5
Pioneer	P48A14E	13.0	96.6
HiSOY	HS 45E00	12.4	108.7
Dyna-Gro	S48EN73	12.7	126.8
NK	NK49-T6E3S	12.8	79.2
	AVERAGE	**13.1**	**101.2**

Discussion: The Enlist varieties compared very well to the Xtend/XtendFlex platform at this location. The Enlist MG 4 varieties averaged 105.1 bu/A vs Xtend/XtendFlex average 110.6 bu/A. The Enlist MG 5 varieties averaged 95.9 bu/A vs Xtend/XtendFlex average 97.3 bu/A. The Enlist platform can fit many situations where dicamba use has more restrictions.

Westmoreland County Enlist Group 4 Soybean Comparisons

Cooperators:	**Producer:**	Louis Chandler and F.F. Chandler, Jr.
	Extension:	Stephanie Romelczyk, VCE - Westmoreland Trent Jones, VCE - Northumberland/Lancaster Robbie Longest, VCE - Essex
Previous Crop:		Corn
Soil Type:		Suffolk sandy loam
Tillage:		No-till
Planting Date:		May 16, 2023
Seeding Rate/Row Spacing:		130,000 seed/A; 30-inch row
Fertilization:		15-50-75-5S
Crop Protection:		Roundup (36 oz/A) + Sharpen (1 oz/A) + Envive (3.75 oz/A) Postemergence: 1. Makaze (1.5 qts/A) + Liberty (1 qt/A) + Nutisync D (10 oz/A) + Radiate (2 oz/A) + Terramar (1 pt/A) 2. Makaze (1 qt/A) + Miravis Top (13.7 oz/A) + Maximum Npact K (1 gal/A) + Smart Trio (1 qt/A) + Sniper (6 oz/A)
Harvest Date:		October 30, 2023
Harvest Equipment:		CAT Challenger 670

Brand	Variety	Moisture%	Yield (bu/A)
Seed Consultants	SC 7481E	12.8	71.2
Seed Consultants	SC 7462E	12.8	71.4
Southern Harvest	SH 4622 E3	12.9	64.2
Dyna-Gro	S45ES10	12.9	66.9
Dyna-Gro	S48EN73	12.8	66.4
HiSOY	HS 48E10	12.6	71.4
HiSOY	HS 45E00	13.1	70.7
Pioneer	P46A09E	12.9	67.4
Pioneer	P48A14E	12.4	69.4
	AVERAGE	**12.8**	**68.8**

Discussion: Very good yields in this Enlist variety trial. Use this and other yield data for the most effective variety selection.

Soybean Official Variety Trials

Virginia Soybean Performance Tests 2023

This data is a summary of the 2023 Virginia Soybean Performance Tests, also known as the "OVT" (Official Variety Test). Additional data will be released after seed quality tests have been performed. The purpose of this trial is to provide unbiased performance data of the many soybean varieties offered for sale in Virginia. The data collected is intended to benefit Virginia producers and agribusinesses in making selections of varieties for their use. It is realized that not all varieties that are offered for sale in Virginia are included in these tests. There is no implication that varieties not included are inferior in any way, but only that they have not been tested. Additionally, it is recognized that not all regions of Virginia were included as test locations in 2023, and data should be interpreted as such. It is recommended to use multiple data sources (University and Seed Company) when selecting soybean varieties.

Acknowledgements
The contributions of the following cooperators are gratefully acknowledged:

Participating Seed Companies and Universities:
- Bayer Crop Science
- Perdue Agribusiness
- Revere Seed
- Seed Consultants
- Syngenta
- UniSouth Genetics, Inc.
- Virginia Tech
- Mid-Atlantic Seeds
- Corteva Agriscience
- DONMARIO Seeds
- Dyna-Gro Seed
- Growmark
- Hubner Seed
- Meherrin Ag & Chemical Co.

Soybean Check-off Boards & Associations:
- Virginia Soybean Board
- Virginia Soybean Association

Tidewater Agricultural Research and Extension Center, Suffolk, VA:
- Data compiled by: Chris Buck, Lead Technician of the Soybean Agronomy Program
- Data analyzed by: Carrie Ortel, PhD Graduate Student, University of Arkansas
- Technical Support: Ron Daughtery, Soybean Technician; Karl Jones, Farm Manager; Dr. Matt Chappell, Director; Dr. David Holshouser, Retired Extension Soybean Specialist

Eastern Virginia Agricultural Research and Extension Center, Warsaw, VA:
- Data compiled and analyzed by: Dr. Joseph Oakes, Superintendent, Eastern VA AREC
- Technical Support: Mark Vaughn, Michelle Lee, Chandler Jett, & Austin Gulasky

Virginia Cooperative Extension:
- All County Extension Agents for an excellent job of disseminating this information

Field and management information of the Virginia soybean performance tests, 2023.

Location	Suffolk	Warsaw
Soil Type	Dragston fine sandy loam	Kempsville loam
Row Spacing (in.)	15”	30”
Planting Date	May 9, 2023	May 4, 2023
Harvest Dates	MG 3: 11/3/23 MG 4E: 11/7/23 MG 4L: 11/7/23 MG 5E: 11/10/23 MG 5L: 11/10/23	MG 3: 10/3/23 MG 4E: 10/11/23 MG 4L: 10/12/23 MG 5E: 10/26/23 MG 5L: 11/6/23
Rows Planted/ Harvested	6 planted/ 4 harvested	4 planted/ 2 harvested
Harvested Row Length (ft)	17’	10’
Fertilization	4/27/23 27-40-60	4/20/23 30.5-80-80-5.5
Pesticide Applications	4/15/23 1 qt/A Roundup PowerMAX 3 5/09/23 1.25 pt/A Dual II Magnum, 6.4 oz/A Authority First, 22 oz/A Roundup PowerMAX 3 6/15/22 1.5 pt/A Flexstar, 1pt/A Basagran, 6.4 oz/A Induce 6/26/23 1 pt/A Clethodim 2E, 5 oz/A DyneAmic 7/07/23 1 pt/A Clethodim 2E, 5 oz/A DyneAmic 8/17/23 9 oz/A Besiege, 13.7 oz/A Miravis Neo, 6.4 oz/A Induce	4/20/23 0.6 oz/A First Rate, 1.25 pt/A Medal II EC 6/15/23 0.4 oz/A First Rate 7/4/23 20 oz/A Flexstar 7/5/23 14 oz/A Intensity One
Rainfall (in)	May: 2.6 June: 2.6 July: 2.7 Aug: 3.5 Sept: 4.4 Oct: 1.4 Nov: 0.0	May: 3.85 June: 3.06 July: 3.65 Aug.: 3.18 Sept.: 6.52 Oct.: 1.67 Nov.: 0.00

Table 1. Yield summaries (bu/A) of full-season maturity group 3 entries, 2023.

Brand	Variety	Suffolk	Warsaw	Avg.
Hubner	H38-43XF	**62**	**83**	72
Pioneer	P38A28E	**61**	**77**	69
USG	7394XFS	**59**	**76**	68
Mid-Atlantic Seeds	MAS3723	**62**	**70**	66
Revere	3908XFS	**54**	**76**	65
Mid-Atlantic Seeds	MAS3923E3	47	**75**	61
Asgrow	AG38XF3	**54**	62	58
Mid-Atlantic Seeds	MAS3600E3/STS	**57**	56	56
Mid-Atlantic Seeds	MAS3844GG/LL	**53**	57	55
Perdue	P30IL022	46	59	52
LSD *P*=0.05		**11.3**	**18.9**	
Grand Mean		**55.4**	**69**	**62.3**

Note: Varieties in bold type are not significantly different from the highest yielding variety at that location.

Table 2. Yield summaries (bu/A) of full-season early-maturity group 4 entries, 2023.

Brand	Variety	Suffolk	Warsaw	Avg.
Pioneer	P45A40LX	**69**	**84**	77
NK	42-A6E3S	**58**	**93**	76
HiSoy	HS44F30	**66**	**85**	75
Mid-Atlantic	MAS4423E3	**65**	**84**	75
Revere	4299XS	**69**	80	74
Dyna-Gro	S45ES10	**69**	79	74
Pioneer	P44A21X	**64**	**83**	74
NK	40-P5E3	**59**	**85**	72
Seed Consultants	SC7444E	**66**	77	72
Pioneer	P45A81E	**65**	77	71
Mid-Atlantic	MAS4077GT/STS	55	**86**	71
Asgrow	AG46XF2	**64**	77	70
USG	7431ET	**59**	**81**	70
Mid-Atlantic	MAS4123E3	**60**	80	70
Dyna-Gro	S41EN72	**64**	75	70
Southern Harvest	SH 4024 E3	**61**	76	69
HiSoy	HS45E32	**63**	74	69
Asgrow	AG42XF4	57	79	68
Asgrow	AG43XF2	**58**	78	68
USG	7424ETS	51	**83**	67
Mid-Atlantic	MAS4320E3/STS	57	77	67
Pioneer	P42A84E	**61**	72	67
Asgrow	AG44XF4	57	76	67
Perdue	P41ILO22	53	79	66
HiSoy	HS45E30	**60**	71	66
USG	7434XF	54	76	65
Perdue	P41MO21	55	74	64
Donmario Seeds	DM45F23	56	72	64
Virginia Tech	V18-3866	53	71	62
Virginia Tech	V14-1235	58	66	62
Perdue	P45XP421	51	73	62
Virginia Tech	V18-3452HP	54	70	62
Virginia Tech	V19-0064DT	49	70	60
USG	7451ET	55	64	60
Virginia Tech	V18-2940OA	39	49	44
LSD *P*=0.05		**11.8**	**11.5**	
Grand Mean		**58.7**	**75**	**67.5**

Note: Varieties in bold type are not significantly different from the highest yielding variety at that location.

Table 3. Yield summaries (bu/A) of full-season late-maturity group 4 entries, 2023.

Brand	Variety	Suffolk	Warsaw	Avg.
Revere	4606XFS	**68**	**86**	77
NK	48-H3XFS	**62**	**83**	73
Mid-Atlantic	MAS4623E3	**69**	**75**	72
Seed Consultants	SC7462E	**72**	**70**	71
USG	7483XFS	**62**	**79**	71
Pioneer	P46A09E	**66**	**75**	71
Virginia Tech	V18-0483DT	**63**	**78**	70
Dyna-Gro	S49XF43S	**67**	**74**	70
USG	7461XFS	**69**	**72**	70
USG	7463XF	**66**	**74**	70
HiSoy	HS46F00	**69**	**71**	70
Southern Harvest	SH 4622 E3	54	**85**	70
Channel	4720RXF/SR	**62**	**77**	70
Genesis	G4660E	**62**	**75**	68
Pioneer	P46A86X	**69**	**67**	68
Asgrow	AG49XF4	**66**	**70**	68
Revere	Innotech 4983E3S	60	**74**	67
USG	7474XFS	**62**	**72**	67
Hubner	H47-30XF	**64**	**69**	67
USG	7464ET	**68**	65	67
Genesis	G4860E	**64**	**69**	66
Virginia Tech	V18-2393	**66**	66	66
HiSoy	HS47E32	59	**73**	66
Revere	4826XF	**64**	**68**	66
NK	46-B4XFS	**65**	**67**	66
Mid-Atlantic	MAS4823E3	**62**	**69**	66
Asgrow	AG49XF3	**69**	61	65
USG	7494ETS	61	**69**	65
Pioneer	P48A14E	**62**	**68**	65
USG	7461XTS	61	**67**	64
HiSoy	HS48E10	61	**67**	64
Asgrow	AG48XF3	61	65	63
Asgrow	AG46XF2	61	65	63
Dyna-Gro	S47XF23S	61	64	63
Dyna-Gro	S48EN73	61	64	62
Mid-Atlantic	MAS4675E3/STS	59	65	62
Asgrow	AG48XF2	57	**67**	62
HiSoy	HS48F30	58	66	62
HiSoy	HS46E92	59	64	62
USG	4824V	54	**69**	62

Mid-Atlantic	MAS4723E3/STS	60	63	61
Revere	4821XFS	61	62	61
Virginia Tech	V18-3788	60	60	60
Virginia Tech	V18-3977	59	60	59
Virginia Tech	V18-4246R	59	55	57
USG	7472ETS	59	55	57
Perdue	P48MO21	56	54	55
Virginia Tech	V18-2973OA	53	56	55
Virginia Tech	V19-0979HP	39	52	45
LSD *P*=0.05		**10.5**	**19.6**	
Grand Mean		**61.9**	**68**	**65.2**

Note: Varieties in bold type are not significantly different from the highest yielding variety at that location.

Table 4. Yield summaries (bu/A) of full-season early-maturity group 5 entries, 2023.

Brand	Variety	Suffolk	Warsaw	Avg.
Seed Consultants	SC7514E	**65**	**59**	62
Asgrow	AG53XF2	**71**	**51**	61
NK	52-D6E3	**69**	**50**	60
Revere	Innotech 5143E3	**71**	**47**	59
Virginia Tech	V19-0873	**64**	**49**	57
HiSoy	HS50F10	**62**	**51**	56
Hubner	H54-10XF	**64**	**49**	56
Southern Harvest	SH 5321 E3	**65**	**47**	56
Virginia Tech	V19-1625 HO	59	**52**	56
Asgrow	AG54XF0	**61**	**50**	55
Pioneer	P52A14SE	**63**	**47**	55
HiSoy	HS54E10	**66**	43	55
Revere	5029XF	**63**	46	55
Virginia Tech	V19-0300	**64**	43	54
Virginia Tech	V19-1626	**62**	45	54
Virginia Tech	V19-1083RR	54	**52**	53
Southern Harvest	SH 5124 E3	**61**	44	53
Southern Harvest	SH 5523 E3	55	**50**	53
Dyna-Gro	S51XF84S	58	45	52
HiSoy	HS54F10	57	46	52
Hubner	H51-22XF	**65**	38	51
USG	7514ET	**64**	39	51
HiSoy	HS50E21	59	43	51
LSD *P*=0.05		**10.2**	**12.3**	
Grand Mean		**62.7**	**47**	**55.1**

Note: Varieties in bold type are not significantly different from the highest yielding variety at that location.

Table 5. Yield summaries (bu/A) of full-season late-maturity group 5 entries, 2023.

Brand	Variety	Suffolk	Warsaw	Avg.
Hubner	H58-33XF	**63**	**69**	66
Revere	5735XFS	**63**	**66**	65
Dyna-Gro	S58XF24	**65**	**62**	63
Southern Harvest	SH 6323 E3	**60**	52	56
Asgrow	AG57XF1	48	**64**	56
Virginia Tech	V19-0496HP	**64**	47	56
HiSOY	HS56F00	**60**	48	54
Asgrow	AG56XF2	**61**	45	53
Virginia Tech	V18-0120DI	**57**	48	53
Asgrow	AG65XF2	**60**	43	52
Southern Harvest	SH 5523 E3	**56**	46	51
Perdue	P60GO21	**51**	49	50
Southern Harvest	SH 5724 E3	46	49	48
LSD *P*=0.05		**13.9**	**10.2**	
Grand Mean		**58**	**53**	**55.4**

Note: Varieties in bold type are not significantly different from the highest yielding variety at that location.

Other Research

2023 Overall Group 3 Comparisons

Company	Brand	Virginia Beach Ag Expo
Asgrow	AG38XF3	118.8
Pioneer	P39A45X	117.5
Asgrow	AG38XF1	117.3
DONMARIO	DM36F62S	111.9
Dyna-Gro	S38XF22S	102.3
	Location Average	113.6

Virginia Beach City AG EXPO Maturity Group 3 Soybean Study

Cooperators:	**Producer:**	Land of Promise Farm
	Extension:	Roy D. Flanagan III, VCE - Virginia Beach
		Nathan Sedghi, Ph.D., VCE - Chesapeake
Previous Crop:		Corn
Soil Type:		Nimmo and Portsmouth loam
Tillage:		Conventional
Planting Date:		May 9, 2023
Seeding Rate/Row Spacing:		115,000 seed/A; 15-inch row
Fertilization:		24N-39P-60K-18S
Crop Protection:		Pre-emergence - Tendovo
		Post-emergence - Flexstar GT
		Insecticide - Intrepid Edge
		Fungicide - Miravis Top
Harvest Date:		November 16, 2023
Harvest Equipment:		John Deere S780 + weigh wagon

Brand	Variety	Moisture%	Yield (bu/A)
Asgrow	AG38XF1	16.6	117.3
Pioneer	P39A45X	16.7	117.5
Asgrow	AG38XF3	16.7	118.8
Dyna-Gro	S38XF22S	16.8	102.3
DONMARIO	DM36F62S	16.8	111.9
	AVERAGE	**16.7**	**113.6**

Discussion: This is the highest ever average for the VCE On-farm variety tests. We have limited data on MG3 varieties in our on-farm testing so compare to other university and company data when selecting varieties in this maturity group.

Brunswick County Symvado ST Biological Soybean Seed Treatment Study

Cooperators: **Producer:** TTP Farm Operations
Extension: Taylor Clarke, VCE - Mecklenburg
Previous Crop: Soybean/Triticale cover crop
Soil Type: Appling-Mattaponi complex
Tillage: No-till
Planting Date: May 10, 2023
Variety: Asgrow AG54XF0
Seeding Rate/Row Spacing: 135,000 seed/A; 15-inch row
Fertilization: P and K variable rate on 2 acre grid
Crop Protection: Burndown - Roundup PowerMAX 3 (28 oz/A) + Salvo (10 oz/A) + Panther SC (2.5 oz/A)
Post - Roundup PowerMAX 3 (28 oz/A) + Engenia (12.8 oz/A) + Warrant (40 oz/A) + Sentris (8 oz/A)
Harvest Date: November 9, 2023
Harvest Equipment: JD 9500 with 918 Flexhead

Treatment	Replication	Moisture%	Yield (bu/A)
Untreated	1	12.3	44.0
Symvado ST	1	12.2	41.4
Symvado ST	2	12.2	45.3
Untreated	2	12.4	47.0
Untreated	3	11.9	45.4
Symvado ST	3	12.3	42.6
	AVERAGE	**12.2**	**44.3**
Symvado ST Average		**12.2**	**43.1**
Untreated Average		**12.2**	**45.5**
	Difference	**0.0**	**2.4**
	LSD (0.1)	**NS**	**0.99**

Discussion: Symvado ST is a biological product that enhances plant, root, and soil health applied as a seed treatment. Symvado ST contains a four species consortium of arbuscular mycorrhizal fungi (AMF) that are scientifically selected for different soils, environments, and agricultural cropping systems to provide critical plant functions throughout the crop cycle. Symvado ST improves nutrient acquisition and efficiency, optimizes fertilizer availability, and improves water acquisition and retention to mitigate abiotic stress that contributes to reduced crop productivity. **In this test, the Symvado ST treatment yielded 2.4 bushels less than the untreated check. This was statistically different with 90% confidence.**

Charlotte County Symvado ST Biological Soybean Seed Treatment Study

Cooperators: **Producer:** Grind-N Stone Farm - The Poindexter Family
Extension: Joanne Jones, VCE - Charlotte
Bruce Jones, VCE - Appomattox
Previous Crop: Corn; Small grain cut for hay
Tillage: No-till
Planting Date: May 15, 2023
Variety: Asgrow AG54XF0
Seeding Rate/Row Spacing: 140,000 seed/A; 15-inch row
Fertilization: 0-30-80-10S-8B
Crop Protection: May 25 - glyphosate and dicamba
June 15 - glyphosate and dicamba
July 10 - Miravis Top
Harvest Date: October 30, 2023
Harvest Equipment: Gleaner R52

Treatment	Replication	Moisture%	Yield (bu/A)
Symvado ST	1	11.7	70.5
Untreated	1	11.8	70.6
Symvado ST	2	11.8	70.4
Untreated	2	11.8	69.2
Symvado ST	3	11.9	67.9
Untreated	3	12.0	66.7
Symvado ST	4	11.7	66.0
Untreated	4	11.9	63.7
	AVERAGE	**11.8**	**68.1**
Symvado ST Average		**11.8**	**68.7**
Untreated Average		**11.9**	**67.6**
	Difference	**0.1**	**1.1**
	LSD (0.1)	**NS**	**NS**

Discussion: Symvado ST is a biological product that enhances plant, root, and soil health applied as a seed treatment. Symvado ST contains a four species consortium of arbuscular mycorrhizal fungi (AMF) that are scientifically selected for different soils, environments, and agricultural cropping systems to provide critical plant functions throughout the crop cycle. Symvado ST improves nutrient acquisition and efficiency, optimizes fertilizer availability, and improves water acquisition and retention to mitigate abiotic stress that contributes to reduced crop productivity. **In this test, the Symvado ST treatment yielded 1.1 bushels more than the untreated check. This was not a statistically different with 90% confidence.**

Essex County Conventional Double-Cropped Soybean Variety Study

Cooperators:	**Producer:**	Montague Farms and MTG Partners
	Extension:	Robbie Longest, VCE - Essex
	Industry:	Participating seed companies
Previous Crop:		Wheat
Soil Type:		Atlee silt loam, Slagle fine sandy loam
Tillage:		No-till
Planting Date:		July 13, 2023
Seeding Rate/Row Spacing:		190,000 seed/A; 15-inch row
Fertilization:		30-80-120-12S + Boron applied in fall '22 to wheat crop
Crop Protection:		Burndown: Fierce EZ (6 oz/ac) + Roundup (1 qt/ac) + Spectrum (5 oz/ac) Post: Flexstar (24 oz/ac) + Clethodim (16 oz/ac) + Spectrum (5 oz/ac) Fungicide and Insecticide: Both applied in season
Harvest Date:		November 7, 2023
Harvest Equipment:		John Deere 780 w/ 40' MacDon FD140 Draper Header

Treatment	Moisture%	Test Weight (lbs/bu)	Yield (bu/A)
CHECK (MFS 51P1)	12.1	57.0	39.9
AGSouth V4921S	12.6	55.8	54.6
VT V18-0400	13.8	55.8	50.5
Dyna-Gro S4751STS	12.5	55.7	59.6
Pioneer P47A10	10.9	55.7	66.1
Becks 462	11.1	55.7	51.9
AVERAGE	**12.2**	**56.6**	**53.8**

Discussion: This is the third year of work evaluating conventional soybean varieties. This plot evaluated 6 conventional non-GMO soybean varieties in a double-crop system. Overall, yields were very good considering the dry weather that was present at times in late August and early September and the plot averaged 53.8 bu/ac. The plot was irrigated during dry spells throughout the growing season. MFS 51P1 was used as a check. Local data for conventional non-GMO soybean varieties is useful to help producers make appropriate variety selections and incorporate this alternative market option for export non-GMO soybeans into their operation and take advantage of premiums that may exist for such markets.

Essex County Velum In-Furrow Soybean Study – Field 1

Cooperators:	**Producer:**	Cloverfield Enterprises
	Extension:	Robbie Longest, VCE - Essex
		David Langston, Extension Plant Pathologist
Previous Crop:		Corn
Soil Type:		Molena loamy sand
Tillage:		No-till
Planting Date:		May 4, 2023
Variety:		AgriGold G4820RX treated w/ Saltro
Seeding Rate/Row Spacing:		137,000 seed/A: 15-inch row
Fertilization:		9 N - 41 P - 98 K - 225 Ca - 23 S - 0.09 B - 0.07 Mn - 0.07 Zn
Crop Protection:		Burndown: (4/5/23) Valor SX (2.5 oz/A) + Roundup PowerMAX 3 (32 oz/A) + Salvo (12 oz/A) + LI 700 (2 oz/A) Post-emergence: (6/10/23) Engenia (12.8 oz/A) + Delta Complete (34 oz/A) + Radiate (2 oz/A), (7/14/23) Roundup PowerMAX 3 (1 qt/A) (8/9/23) Quadris Top SBX (8 oz/A) + Tombstone (2.5 oz/A) + Roundup PowerMAX 3 (1 qt/A)
Harvest Date:		November 2, 2023

Treatment	Replication	Moisture%	Yield (bu/A)
Velum	1	12.2	31.0
No Velum	1	13.3	21.0
Velum	2	12.3	32.0
No Velum	2	12.6	25.0
Velum	3	12.4	31.0
No Velum	3	12.5	24.0
Velum	4	12.2	29.0
No Velum	4	12.1	27.0
Velum AVERAGE		**12.3**	**30.8**
No Velum AVERAGE		**12.6**	**24.3**
	Difference	**0.3**	**6.5**
	LSD (0.05)	**NS**	**5.3**

Discussion: This on-farm strip trial evaluated the use of Velum (fluopyram) as an in-furrow application for use as a fungicide and nematicide in irrigated soybeans. The product was applied at the labeled rate of 6.0 fluid oz/A in alternating stirps across the field at planting. The field location has a history of nematode populations and SDS that limits yield. Plots were harvested with a combine and data obtained by the yield monitor. This plot resulted in roughly a 6.5 bu/A average yield difference. Soil nematode assays were collected early season, and again at harvest; however, the results were not available at the time of this report. An adjacent test at the same farm only resulted in a 1.5 bu/A average difference. More evaluation is needed to determine the effect of this product and its potential to impact nematode populations and SDS control under different production environments and nematode population levels in soybean production. It cannot be determined from these results if there is a consistent response as nematode populations vary across a field. Statistically, the Velum treated plots were better than the untreated plots at a 95% confidence level.

Essex County Velum In-Furrow Soybean Study – Field 2

Cooperators:	**Producer:**	Cloverfield Enterprises
	Extension:	Robbie Longest, VCE - Essex David Langston, Extension Plant Pathologist
Previous Crop:		Corn
Soil Type:		Molena loamy sand
Tillage:		No-till
Planting Date:		May 4, 2023
Variety:		AgriGold G4820RX treated w/ Saltro
Seeding Rate/Row Spacing:		137,000 seed/A; 15-inch row
Fertilization:		9 N - 46 P - 93 K - 256 Ca - 22 S - 0.09 B - 0.08 Mn - 0.08 Zn
Crop Protection:		Burndown: (4/5/23) Valor SX (2.5 oz/A) + Roundup PowerMAX 3 (32 oz/A) + Salvo (12 oz/A) + LI 700 (2 oz/A) Post-emergence: (6/10/23) Engenia (12.8 oz/A) + Delta Complete (34 oz/A) + Radiate (2 oz/A), (7/14/23) Roundup PowerMAX 3 (1 qt/A), (8/11/23) Quadris Top SBX (8 oz/A) + Tombstone (2.5 oz/A) + Roundup PowerMAX 3 (1 qt/A)
Harvest Date:		November 2, 2023

Treatment	Replication	Moisture%	Yield (bu/A)
Velum	1	12.5	46.0
No Velum	1	12.4	40.0
Velum	2	12.5	46.0
No Velum	2	12.3	42.0
Velum	3	12.3	52.0
No Velum	3	12.4	53.0
Velum	4	12.5	55.0
No Velum	4	12.6	58.0
Velum AVERAGE		**12.5**	**49.8**
No Velum AVERAGE		**12.4**	**48.3**
	Difference	**0.1**	**1.5**
	LSD (0.05)	**NS**	**NS**

Discussion: This on-farm strip trial evaluated the use of Velum (fluopyram) as an in-furrow application for use as a fungicide and nematicide in soybeans. This plot was mostly irrigated; however, one end of the plot was outside of the irrigation zone. The product was applied at the labeled rate of 6.0 fluid oz/A in alternating stirps across the field at planting. The field location has a history of nematode populations and SDS that limits yield. Plots were harvested with a combine and data obtained by the yield monitor. This plot resulted in roughly a 1.5 bu/A average yield difference. Soil nematode assays were collected early season and again at harvest; however, the results were not available at the time of this report. An adjacent test at the same farm resulted in an average 6.5 bu/A difference in yield. More evaluation is needed to determine the effect of this product and its potential to impact nematode populations and SDS control under different production environments and nematode population levels in soybean production. It cannot be determined from these results if there is a consistent response as nematode populations vary across a field. Statistically, the Velum treated plots were not better than the untreated plots at a 95% confidence level.

Westmoreland and Essex Counties Rappahannock River Salinity Monitoring

Cooperators: **Producers:** Eagle Tree Farm, Cloverfield Enterprises, Lois's Produce
Extension: Stephanie Romelczyk, VCE - Westmoreland
Robbie Longest, VCE - Essex

Discussion: The Rappahannock River is one of many tidal rivers in Virginia, meaning that the flow and the water level are affected by tide. The Rappahannock is generally considered freshwater northwest of Port Royal and is too salty for irrigation water southeast of Tappahannock. The area in between, which runs through Westmoreland and Essex Counties, fluctuates in salinity level throughout the summer. High salinity levels correlate typically with low discharge measured in Fredericksburg. Basically, when there is less rain northwest of Port Royal, salinity levels increase in the Leedstown-Loretto area of the river.

Farmers on both sides of the river in the Leedstown-Loretto area rely on the river and its tributaries to irrigate their crops. Crops range from traditional grain crops of corn and soybeans to a wide variety of vegetables. Plants vary in their sensitivity to salinity. One of the most sensitive vegetable crops is green beans with injury occurring as low as 490 ppm. Soybeans are more tolerant of salinity and can withstand salinity levels up to 2310 ppm. Broccoli, a common crop in the area, is moderately tolerant of salinity and can tolerate salinity levels up to 1330 ppm.

ANR Extension Agents in Westmoreland and Essex Counties monitored the salinity level of the Rappahannock on a weekly basis beginning around June or July and continued into the fall. Salinity is measured using a Hanna HI 9811 meter that reads electrical conductivity (EC). Three sites are monitored: the Rappahannock River in Leedstown, the Peedee Creek, which flows into the Rappahannock at Leedstown, and another tributary of the Rappahannock River at Cloverfield. The EC is read in mS/cm, so for ease of communication with farmers, the reading is converted to ppm. Weekly alerts are sent to area farmers to guide irrigation usage and frequency.

Following are the weekly measurements taken at the three locations. Readings at Cloverfield were started and ended earlier than the other two locations. Irrigation at that location is focused on corn and soybeans, so there is little need to continue sampling after irrigation is discontinued in soybeans; however, irrigation in vegetables continues well into the fall, so sampling continued at the two Westmoreland locations.

Rappahannock River at Leedstown (Westmoreland County):

Date of Sample	Sample Time	Rappahannock Salinity at Leedstown (ppm)
7/17/2023	2:20 PM	749
7/26/2023	1:54 PM	868
8/2/2023	2:08 PM	994
8/10/2023	8:41 AM	1183
8/16/2023	9:56 AM	1953
8/23/2023	2:22 PM	2590
8/30/2023	9:21 AM	2933
9/13/2023	9:14 AM	3535
9/21/2023	3:46 PM	3661
9/26/2023	1:57 PM	4312
10/4/2023	10:43 AM	5068

Peedee Creek in Leedstown (Westmoreland County):

Date of Sample	Sample Time	Peedee Creek Salinity (ppm)
7/17/2023	3:00 PM	364
7/26/2023	1:45 PM	413
8/2/2023	1:56 PM	588
8/10/2023	8:51 AM	511

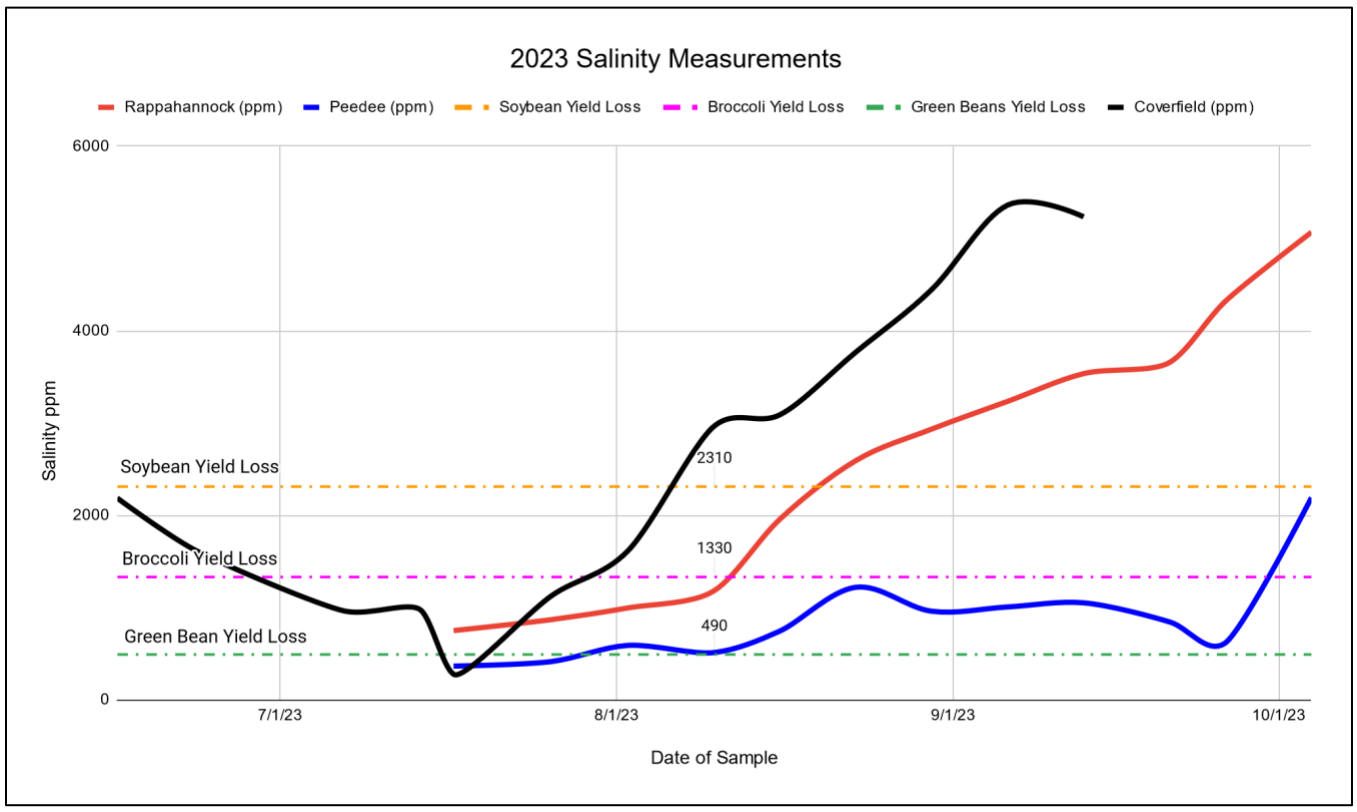
8/16/2023	10:22 AM	742
8/23/2023	2:32 PM	1218
8/30/2023	9:30 AM	959
9/13/2023	9:53 AM	1050
9/21/2023	4:04 PM	840
9/26/2023	2:06 PM	609
10/4/2023	10:53 AM	2191

Cloverfield in Champlain (Essex County):

Date of Sample	Cloverfield Salinity (ppm)
6/16/2023	2184
6/23/2023	1631
7/7/2023	959
7/14/2023	966
7/21/2023	273
7/28/2023	1127
8/4/2023	1610
8/11/2023	2968
8/18/2023	3087
9/1/2023	4445
9/8/2023	5362
9/15/2023	5236

In 2023, the Cloverfield location began the sampling season just below the soybean threshold, then salinity levels dropped through the end of July and began to rise again. The Cloverfield location surpassed the green bean threshold at the end of July (7/28) and the two Westmoreland locations surpassed that threshold in mid-July (Rappahannock at Leedstown 7/17) and early August (Peedee 8/2). The rise in salinity began almost a full month before last year and coincided with dry conditions in the immediate area and in areas west. The Peedee Creek location stayed below the broccoli threshold until the end of the season (10/4). The Cloverfield location surpassed the broccoli threshold on 8/4 and surpassed the soybean threshold on 8/11; sampling was ended 9/15. The Rappahannock River in Leedstown surpassed the broccoli threshold on 8/16 and the soybean threshold on 8/23.

Historical data from this study was used to develop a new VCE Publication: Understanding Salinity in Tidal Waters: Information for Irrigators (BSE-349P), available online:



Graph 1. This graph shows the salinity readings at the three sites from June through October in 2023. The thresholds for yield losses due to salinity are shown for green beans, broccoli and soybeans.

Center pivot irrigation at the Cloverfield location.

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