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# Virginia On-Farm Soybean Test Plots

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



### Conducted and summarized by:

John Allison, Extension Agent, New Kent County and Charles City Counties Keith Balderson, Extension Agent, Essex County Taylor Clarke, Extension Agent, Mecklenburg County Brittany Council, Extension Agent, Greensville County Dr. Glenn Chappell, Virginia State University Chris Drake, Extension Agent, Southampton County Roy Flanagan, Extension Agent, City of Virginia Beach Watson Lawrence, Extension Agent, City of Chesapeake Laura Maxey-Nay, Extension Agent, King & Queen/King William Counties Haley McCann, Extension Agent, Nottoway County David Moore, Extension Agent, Middlesex County J. Scott Reiter, Extension Agent, Prince George County Stephanie Romelcyzk, Extension Agent, Westmoreland County Laura Siegle, Extension Agent, Amelia County Glenn Slade, Extension Agent, Surry County Lindy Tucker, Extension Agent, Lunenburg County Kelvin Wells, Extension Agent, Sussex County Dr. David Holshouser, Extension Soybean Specialist, Virginia Tech

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### Introduction

These demonstration and research plot results are an 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 opportunity to improve yields and profits, which improves quality of life for them and their families.

The success of these on-farm plots 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 web site (<u>http://pubs.ext.vt.edu</u>). This information reaches hundreds of Virginia soybean and grain producers plus agribusinesses, impacting over 500,000 acres of soybeans valued at over \$260 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 David Moore in Middlesex County at 804-758-4120 or contact damoore3@vt.edu.

This is the seventeenth year of this multi-county cooperative effort and further work is planned for 2014. 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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# **GENERAL SUMMARY**

These replicated studies provide information that can be used by Virginia soybean producers to make better management decisions. Refer to individual plots for discussion of results.

As in the past, agents have compared maturity group 4 & 5 varieties across multiple locations. This work is performed in concert with the State trials conducted by Dr. David Holshouser and offers producers even stronger yield comparison information that they can use when making planting decisions.

Maturity Group 4 and 5 varieties were compared at several locations across Eastern Virginia, eight (8) locations for Group 4 and eleven (11) locations for Group 5, including the site of the 2013 AG-EXPO-Land of Promise Farm in Virginia Beach. In Prince George County, an evaluation of some Liberty Link varieties yielded well. Please contact cooperating agents about results in individual test locations.

Soybean nematodes are an ever-present problem for producers here in Eastern Virginia especially on sandy soils. We continue to evaluate production strategies used to control/suppress nematode problems. This year, trials in King William, Middlesex and King & Queen compared soybeans treated with VOTiVO to untreated soybeans. The use of these seed treatments in some problem fields showed some advantage to untreated seed and in some it did not. Four years of comparison is highlighted in this publication and shows a slight yield advantage to using this seed treatment, but does not appear to have an economical advantage. Nematicide seed treatments may have more advantage in fields where nematode problems are those other than Soybean Cyst (SCN). Producers should make efforts to know their nematode problem species.

The use of resistant varieties is still one of the best tools when trying to control/suppress nematode damage. Trials in Essex looked at a new multi-race resistant soybean variety and in King William, two resistant varieties were compared.

In Middlesex, a look at the use of an insecticide to control soybean aphid "flare-ups", and an evaluation of the use of a fungicide treatment at growth stage R-3 in double crop soybeans. In Brunswick, a plot looked at the use of fungicide and insecticide on soybeans that were less than 100 miles from a known discovery of Asian Soybean Rust.

In Prince George, Surry and Virginia Beach, field tests evaluated the use of some foliar fertilizers and nutritionals to see if a yield "bump" could be observed. Products included *ESN Smart Nitrogen* fertilizer and *Awaken/ Brandt Smart Trio* nutritional. Yield advantages were not significant.

In seven (7) locations in Middlesex, King & Queen and King William, nutrients were tracked in the plant during the growing season. A&L Eastern Labs provided the information from tissue samples taken at 4-5 different stage of growth. This testing was done to see if there were any limiting nutrients for the soybeans. In 2014, plans are to do this type of testing again and keep track of soil nutrition and track yields as well.

# MATURITY GROUP 4 VARIETY COMPARISONS



			King								Avg
_		Chesa-	&	Prince			VA		West-		Rel.
Brand	Variety	peake	Queen	George	Suffolk	Sussex	Beach	VSU	moreland	Avg	Yield
Southern	SS 4917N										
States	R2	41.7	25.0	53.2	61.3	22.5	73.3	63.1	60.0	50.0	105
Asgrow	AG4632	45.0	30.6	52.4	55.7	20.8	70.2	60.2	55.2	48.8	105
	H48-										
Hubner	13R2STS	52.1	23.8	57.1	72.9	19.4	56.4	52.5	63.5	49.7	104
Asgrow	AG4933	49.0	21.0	57.1	66.3	23.7	58.4	55.6	58.5	48.7	103
RPM	DB4512RR	39.6	25.5	59.2	56.4	16.8	77.9	58.1	64.4	49.7	102
Pioneer	P48T53R	44.8	24.6	51.3	70.3		67.5	52.2	64.4	53.6	102
Seed											
Consultants	SCS9421RR		23.8	58.8	63.4	12.9	83.8	53.4	63.0	51.3	101
Progeny	P 4850 RY	50.9	25.5	64.8	69.2	15.4	52.8	55.2	58.8	49.1	101
Progeny	P 4710 RY	49.1	26.5	58.9	67.6	19.9	41.3	57.0	59.2	47.4	101
Seed											
Consultants	SCS9443RR	37.3	24.2	62.9	70.4	13.0	77.9	55.2	62.8	50.5	101
Pioneer	P46T21R	45.2	25.3	50.6	64.1	12.7	72.6	61.7	62.7	49.4	100
Mycogen	5N431R2		25.3	55.6	64.1	15.4			64.5	45.0	100
HBK	RY4721	47.3	24.8	54.4	64.8	22.1	47.0	54.1	54.7	46.2	99
USG	74B81R		20.3	57.2	58.5	21.3	57.8	57.1	59.7	47.4	99
Mycogen	5N478R2		24.4	57.5	64.0	13.6		57.8	63.7	46.8	98
USG	74A92R	47.0	18.2	56.9	66.0		59.8	52.7	63.2	52.0	97
	H46-										
Hubner	01R2STS	38.9	18.2	54.1	60.2	21.7	53.5	57.8	60.3	45.6	95
HBK	RY4620	43.3	19.7	54.7	65.3	18.2	46.5	53.3	64.0	45.6	94
Southern	SS 4700 R2										
States	STS	46.8	21.6	55.2	55.9	16.5	49.5	56.5	57.6	45.0	93
	Average	45.2	23.6	56.4	64.0	18.0	61.5	56.3	60.9	48.5	100

### 2013 OVERALL MATURITY GROUP 4 COMPARISON

### CHESAPEAKE MATURITY GROUP 4 VARIETY COMPARISON

Cooperators: Producer: Russell Temple Extension: Watson Lawrence, Chesapeake VCE Industry: Participating Seed Companies Soil Type: Tomotley-Nimmo Complex Previous Crop: Corn Tillage/Row Spacing: No-till / 24 inches Seeding Rate: 140,000 seed/acre Planting Date: June 17, 2013 Fertilization: 300 lbs. 7-18-36 Crop Protection: Postemergence: Glyphosate 1 ¼ qts./A + Flexstar 12 oz./A Harvest Date: November 25, 2013 Harvest Equipment: John Deere CTS

Brand	Varieties	Moisture (%)	Yield (Bu/A)	Adj. Yield (Bu/A) <sup>1</sup>
Check	Pioneer 95Y50	14.4	44.7	43.5
HBK	RY4620	13.6	43.9	43.3
Asgrow	AG4632	14.2	45.1	45.0
Asgrow	AG4933	14.1	48.5	49.0
RPM	DB4512RR	14.2	38.7	39.6
Hubner	H46-01R2/STS	14.2	37.6	38.9
Check	Pioneer 95Y50	13.9	41.4	43.5
Hubner	H48-13R2/STS	14.0	49.6	52.1
HBK	RY4721	13.9	44.9	47.3
Seed Consultants	SCS9474RR	14.1	48.6	51.2
Seed Consultants	SCS9443RR	13.8	35.4	37.3
Check	Pioneer 95Y50	14.1	41.2	43.5
Progeny	P 4710 RY	13.4	47.0	49.1
Progeny	P 4850 RY	13.4	49.3	50.9
Great Heart	GT-478CR2	13.6	43.3	44.2
Great Heart	GT-460CR2	14.4	36.7	37.0
USG	74A92R	13.6	47.0	47.0
Check	Pioneer 95Y50	13.8	43.9	43.5
Southern States	SS 4917N R2	13.8	42.6	41.7
Southern States	SS 4700 R2 STS	12.5	48.2	46.8
Pioneer	P46T21R	12.5	47.1	45.2
Pioneer	P48T53R	13.2	47.1	44.8
Check	Pioneer 95Y50	13.1	46.2	43.5
	Average	13.7	44.3	44.7

<sup>1</sup>Yields were adjusted by linear interpolation using check plots.

**Discussion:** Varieties were planted in same field with consistent soil type. Pioneer 95Y50 was planted at intervals as a check. Yields were good considering early September was very dry followed by heavy rains in late September. Corn earworm pressure was very low avoiding need of a fall insecticide spray. Seed quality was very good with little seed stain or other damage. Varieties are listed in order of planting across the field.

### KING & QUEEN MATURITY GROUP 4 VARIETY COMPARISON

Cooperators: Producer: David and William Davis Carlton Extension: Laura Maxey, King William and King & Queen VCE; David Moore, Middlesex VCE Industry: Participating Companies Soil Type: Emporia Sandy Loam Previous Crop: Double Crop Soybeans Tillage/Row Spacing: No-till/ 7 inch Seeding Rate: 148,000-150,000 seeds/A Planting Date: May 16, 2013 Fertilization: 200 lbs. 0-0-60, spring 2013 Crop Protection: 26 oz/A Roundup twice; 3 oz/A Envive Harvest Date: October 25, 2013 Harvest Equipment: John Deere s680/ 640D Header

					Adj. Yield
Brand	Variety	Moisture (%)	Yield (Bu/A)	% of Check	( <b>Bu/A</b> )*
Hubner	H46-01R2STS	15.9	21.6	85%	18.2
Check	Pioneer 94Y70	15.4	25.4		21.4
Hubner	H48-13R2STS	15.5	25.7	111%	23.8
Check	Pioneer 94Y70	15.3	20.7		21.4
Asgrow	AG4632	15.6	28.1	143%	30.6
Check	Pioneer 94Y70	15.2	18.6		21.4
Asgrow	AG4933	15.6	18.7	98%	21.0
Check	Pioneer 94Y70	15.1	19.6		21.4
HBK	RY4620	15.7	18.5	92%	19.7
Check	Pioneer 94Y70	15.3	20.7		21.4
HBK	RY4721	16.2	23.9	116%	24.8
Check	Pioneer 94Y70	15.4	20.4		21.4
RPM	DB4512RR	16.1	24.3	119%	25.5
Check	Pioneer 94Y70	15.5	20.4		21.4
Progeny	P 4850 RY	15.5	23.8	119%	25.5
Check	Pioneer 94Y70	15.4	19.6		21.4
Progeny	P 4710 RY	15.1	24.5	124%	26.5
Check	Pioneer 94Y70	15.0	19.8		21.4
Pioneer	P46T21	16.0	23.4	118%	25.3
Check	Pioneer 94Y70	15.3	19.8		21.4
Pioneer	P48T53	15.3	23.8	115%	24.6
Check	Pioneer 94Y70	15.4	21.4		21.4
Southern States	SS 4700 R2				21.6
	STS	15.3	22.5	101%	
Check	Pioneer 94Y70	15.2	23.2		21.4
Southern States	SS 4917 R2	15.7	26.1	117%	25.0

Check	Pioneer 94Y70	15.5	21.3		21.4
Seed Consultants	SCS 9421RR	16.3	23.2	111%	23.8
Check	Pioneer 94Y70	15.6	20.4		21.4
Seed Consultants	SCS 9443RR	16.2	25.2	113%	24.2
Check	Pioneer 94Y70	15.3	24.0		21.4
USG	74B81R	15.9	22.3	95%	20.3
Check	Pioneer 94Y70	15.1	23.0		21.4
USG	74A92R	15.7	20.1	85%	18.2
Check	Pioneer 94Y70	14.9	24.4		21.4
Mycogen	5N431R2	15.3	26.3	118%	25.3
Check	Pioneer 94Y70	14.9	20.2		21.4
Mycogen	5N478R2	15.4	23.5	114%	24.4
Check	Pioneer 94Y70	14.8	20.9		21.4
Dyna Gro	S48RS53	15.2	23.7	102%	21.8
Check	Pioneer 94Y70	14.7	25.4		21.4
Dyna Gro	37RY45	15.2	24.8	108%	23.1
Check	Pioneer 94Y70	14.7	20.3		21.4
	Average Check	15.2	21.4		21.4
	Average	15.2	22.5	109%	23.5

\*Adjusted yield was calculated by multiplying the % of check value by the average yield of the check variety.

### **Discussion:**

On this sandy ground, dry conditions at the end of growing season dramatically affected the yields of these group IV soybeans. See the overall MG IV soybean comparison numbers elsewhere in this publication. Use this and other on-farm soybean variety comparisons when making planting decisions for 2014.



### PRINCE GEORGE MATURITY GROUP 4 VARIETY COMPARISON

Cooperators: Producer: Paul Cerny and Sean Finney Extension: Scott Reiter, Prince George VCE Industry: Participating Seed Companies
Soil Type: Ackwater and Montross silt loam
Previous Crop: Wheat with straw baled
Tillage/Row Spacing: No-till / 7 inches with Great Plains 705 Drill
Seeding Rate: 200,000 seed/acre
Planting Date: June 20, 2013
Fertilization: 120 -50 -120 to wheat, 1 qt/A Brandt Manni-Plex Complete micros
Crop Protection: Herbicide – POST: Roundup 1 qt./A + Synchrony STS 0.375 oz./A Insecticide – Baythroid 2.8 oz./A + surfactant
Harvest Date: November 5, 2013

Harvest Equipment: John Deere 9500 w/ 918 platform

Brand	Variety	Moisture (%)	Yield (Bu/A)	Adj. Yield (Bu/A) <sup>1</sup>
Check	Asgrow AG4632	13.2	49.5	52.4
Asgrow	AG4933	13.1	54.3	57.1
Pioneer	P46T21R	13.2	48.4	50.6
Pioneer	P48T53R	12.9	49.4	51.3
Southern States	SS 4700 R2 STS	13.2	53.4	55.2
Southern States	SS 4917N R2	13.1	51.8	53.2
USG	74B81R	13.1	56.0	57.2
USG	74A92R	13.0	56.1	56.9
Seed Consultants	SCS9421RR	13.4	58.3	58.8
Seed Consultants	SCS9443RR	13.1	62.7	62.9
RPM	DB4512RR	13.1	59.4	59.2
HBK	RY4620	13.1	55.2	54.7
HBK	RY4721	13.1	55.2	54.4
Hubner	H46-01R2STS	13.0	55.2	54.1
Hubner	H48-13R2STS	13.0	58.6	57.1
Progeny Ag	P 4850 RY	13.1	66.9	64.8
Progeny Ag	P 4710 RY	13.0	61.1	58.9
Mycogen	5N431R2	12.7	58.0	55.6
Mycogen	5N478R2	13.0	60.3	57.5
Check	Asgrow AG4632	12.9	55.3	52.4
	Average		56.3	56.2

<sup>1</sup>Yields were adjusted by linear interpolation using check plots.

**Discussion:** This was a very successful double crop planting for 2013. The June planting date helped these soybeans escape the late August –September drought compared to other area plantings. The Group 4's yielded slightly better than the Group 5's in the same field.

### SUFFOLK MATURITY GROUP 4 VARIETY COMPARISON

Cooperators: Producer: E. Michael Ellis

Extension: David Holshouser, VCE Soybean Specialist Industry: Participating Seed Companies

Soil Type: Goldsboro fine sandy loam

Previous Crop: Cotton

Tillage/Row Spacing: Disked twice, Land Conditioner / 7.5 inch

Seeding Rate: 140,000 seed/acre

Planting Date: May 17, 2013

Fertilization: 300 lbs. 3-9-30

Crop Protection: Touchdown 26 oz./A; Quadris 6 oz./A; bifenthryn 3 oz/A

Harvest Date: October 29, 2013

Harvest Equipment: Wintersteiger plot combine

		Seed	PSS <sup>1</sup>		Moisture	Yield	Adjusted
Brand	Variety	Quality <sup>1</sup>	(%)	Seed/lb	(%)	(Bu/A)	Yield <sup>2</sup> (Bu/A)
Check	Hubner H46-01R2/STS	4	0	2747	13.5	65.6	60.2
Mycogen	5N478R2	4	0	3117	13.5	68.3	64.0
Mycogen	5N431R2	4	2	2854	13.0	67.0	64.1
Pioneer	P48T53R	4	0	3133	13.1	72.1	70.3
Pioneer	P46T21R	4	2	3133	13.4	64.3	64.1
Asgrow	AG4933	3	0	2998	13.6	65.1	66.3
Seed Consultants	SCS9443RR	4	3	2876	13.2	67.7	70.4
Seed Consultants	SCS9421RR	4	1	2400	13.0	59.6	63.4
RPM	DB4512RR	4	5	2857	13.3	51.8	56.4
Check	Hubner H46-01R2/STS	4	1	2790	13.0	54.0	60.2
HBK	RY4620	3	1	2764	12.9	59.3	65.3
HBK	RY4721	4	1	3026	13.3	59.5	64.8
Hubner	H48-13R2/STS	3	0	2826	13.0	67.7	72.9
Progeny	P 4710 RY	2	0	2872	13.1	63.5	67.6
USG	74B81R	3	1	2905	13.4	55.6	58.5
Progeny	P 4850 RY	3	2	2775	13.1	66.4	69.2
USG	74A92R	2	1	2786	13.2	64.1	66.0
Southern States	SS 4917N R2	3	1	2688	13.2	60.2	61.3
Southern States	SS 4700 R2 STS	2	1	2897	12.7	55.5	55.9
Asgrow	AG4632	4	1	3051	13.0	55.9	55.7
Check	Hubner H46-01R2/STS	4	1	2809	12.7	61.1	60.2
	Average	4	1	2872	13.1	62.1	63.7

<sup>1</sup>Seed Quality: 1 = excellent, 2 = good, 3 = fair, 4 = poor, 5 = very poor; PSS = purple seed stain <sup>2</sup>Yields were adjusted by linear interpolation using check plots.

**Discussion:** 2013 was a very wet year in Suffolk except for a 3 to 4 week dry period in September. Even with this dry period, yields were very good. Seed quality did however suffer with the wet conditions. Use this and other variety test results when making seed decisions in 2014.

### SUSSEX COUNTY MATURITY GROUP 4 VARIETY COMPARISON

Cooperators: Producer: Cox Farms Extension: Kelvin Wells, Sussex VCE Industry: Participating Seed Companies Soil Type: Emporia Fine Sandy Loam Previous Crop: Wheat Tillage/Row Spacing: No-Till/ 15 inch Seeding Rate: 200,000 seeds/acre Planting Date: July 10, 2013 Fertilization: Available from 75 bushel wheat crop Crop Protection: Burndown: Glyphosate 1.5 qts/A + Valor 2.5 ozs./A; Post: Glyphosate up 1.5 qts/A. Insecticide: Belt at2.0 ozs/A. Harvest Date: December 2, 2013 Harvest Equipment: John Deere 9500

Brand	Variety	Moisture (%)	Yield (Bu/A)
Mycogen	5N478R2	14.0	13.6
Hubner	H48-13R2/STS	15.0	19.4
Hubner	H46-01R2/STS	14.9	21.7
Southern States	SS 4917N R2	14.8	22.5
HBK	RY4721	13.9	22.1
Asgrow	AG4933	13.9	23.7
Asgrow	AG4632	13.7	20.8
USG	74B81R	13.4	21.3
RPM	DB4512RR	13.5	16.8
HBK	RY4620	13.2	18.2
Progeny	P 4850 RY	13.0	15.4
Mycogen	5N431R2	14.0	15.4
Seed Consultants	SCS 9443RR	14.0	13.0
Southern States	SS 4700 R2 STS	14.1	16.5
Progeny	P 4710 RY	14.0	19.9
Seed Consultants	SCS 9421RR	13.8	12.9
Pioneer	P46T21R	13.8	12.7
	Average	13.9	18.0

#### **Discussion:**

Soybean planted after July 4<sup>th</sup> do not always have a chance to perform to their potential. These beans started out well because we were getting timely rains. Dry conditions in September limited yields in many places. Use this and other Virginia Tech on-farm soybean plot results when making planting decisions for 2014.

### VIRGINIA BEACH MATURITY GROUP 4 VARIETY COMPARISON (AG-EXPO)

**Cooperators:** Producer: Don Horsley and Family

Extension: Roy Flanagan, Virginia Beach VCE; Watson Lawrence, Chesapeake VCE; David Holshouser, VCE Soybean Specialist Industry: Cooperating Seed Companies

Soil Type: Nimmo loam

Previous Crop: Soybean

Tillage/Row Spacing: No-till/15 inch

Seeding Rate: 140,000 seed/acre

Planting Date: May 10, 2013

**Fertilization:** 250 lbs. 11-27-24

**Crop Protection:** Herbicide - PowerMax (26 oz. /A.) + First Rate (.3 oz. /A.) post-emerge Insecticide – Bifenthrin Z EC (6.4 oz. /A.)

Harvest Date: October 21, 2013

Harvest Equipment: Wintersteiger plot combine

		Moisture		
Brand	Variety	(%)	Yield (Bu/A)	Adjusted Yield* (Bu/A)
Check	Pioneer 94Y70	14.2	76.7	70.3
Southern States	SS 4917N R2	14.6	78.5	73.3
Southern States	SS 4700 R2 STS	14.2	52.0	49.5
Hubner	H46-01R2/STS	14.4	55.1	53.5
Hubner	H48-13R2/STS	14.1	56.9	56.4
NK	S49-F8	14.2	76.7	77.7
NK	S46-L2	14.1	50.4	52.1
Check	Pioneer 94Y70	13.8	66.5	70.3
Asgrow	AG4632	14.2	67.7	70.2
Asgrow	AG4933	14.4	57.3	58.4
Seed Consultants	SCS 9474RR	14.6	83.8	83.8
Seed Consultants	SCS 9443RR	14.5	79.2	77.9
Progeny	P 4850 RY	14.3	54.7	52.8
Progeny	P 4710 RY	14.3	43.5	41.3
HBK	RY4620	14.1	49.8	46.5
HBK	RY4721	14.4	51.1	47.0
Check	Pioneer 94Y70	14.0	77.7	70.3
Great Heart	GT-478CR2	14.6	70.5	66.5
Great Heart	GT-460CR2	14.2	74.8	73.7
RPM	DB4512RR	14.1	75.5	77.9
Check	Pioneer 94Y70	12.9	65.0	70.3
Check	Pioneer 94Y70	14.0	67.5	70.3
Pioneer	P46T21R	14.2	70.0	72.6
Pioneer	P48T53R	13.6	65.3	67.5
Check	Pioneer 94Y70	13.0	68.2	70.3
USG	74B81R	14.2	56.7	57.8
USG	74A92R	12.0	59.3	59.8
Check	Pioneer 94Y70	12.8	70.5	70.3
	Average	13.8	65.0	64.6

\*Yields were adjusted by linear interpolation using check plots.

### VIRGINIA STATE UNIVERSITY MATURITY GROUP 4 VARIETY COMPARISONS

Cooperators: Producer: Rudy Grammer & Mack West – VSU Randolph Farm Extension: Glenn F. Chappell, II - VSU
Soil Type: Tetotum Loam & Bourne Fine Sandy Loam
Previous Crop: Corn
Tillage/Row Spacing: No-Till / 7.5 inch
Seeding Rate: 160,000 seed/A
Planting Date: May 30, 2013
Planting Equipment: Great Plains 706 NT Drill
Fertilization: 20-40-60 Granular Broadcast - April 10, 2013
Test/Plot Size: 15'X 300'
Crop Protection: 1.0 qt. Gly4 + 0.3 oz. First Rate-June 5; 1.0 qt. Gly4 + 0.3 oz. First Rate–July 24
Harvest Date: November 11, 2013
Harvest Equipment: John Deere 9560 STS

		Moisture	Yield	Adj. Yield	% of
Brand	Variety	(%)	(Bu/A)	$(\mathbf{Bu/A})^1$	Check <sup>2</sup>
Check	USG 74A92R	10.4	50.8	52.7	100
Asgrow	AG4632	10.0	58.1	60.2	114
Asgrow	AG4933	10.4	53.8	55.6	105
Pioneer	P46T21	10.2	59.9	61.7	117
Pioneer	P48T53	10.4	50.8	52.2	99
Southern States	SS 4700 R2 STS	9.9	55.1	56.5	107
Southern States	SS 4917 R2	10.6	61.7	63.1	120
USG	74B81R	10.1	56.0	57.1	108
Check	USG 74A92R	10.5	51.8	52.7	100
Seed Consultants	SCS 9421RR	10.5	52.8	53.4	101
Seed Consultants	SCS 9443RR	10.3	54.9	55.2	105
RPM	DB4512RR	9.8	58.2	58.1	110
HBK	RY4620	10.5	53.8	53.3	101
HBK	RY4721	10.2	54.9	54.1	103
Hubner	H46-01R2STS	10.1	59.0	57.8	110
Hubner	H48-13R2STS	10.1	54.0	52.5	100
Progeny	P 4850 RY	9.9	57.1	55.2	105
Progeny	P 4710 RY	9.5	59.4	57.0	108
Mycogen	5N478R2	9.3	60.6	57.8	110
Check	USG 74A92R	10.0	55.6	52.7	100
	Average	10.1	55.9	56.0	106

<sup>1</sup> Yields were adjusted by linear interpolation using check plots.

<sup>2</sup>% of Check = (Variety yield/(Sum of check yields/2))\*100, using adjusted yields.

**Discussion:** Monthly rainfall: May 4.25", June 6.65", July 8.9", August 2.15", September 0.8", October 4.3"

### WESTMORELAND MATURITY GROUP 4 VARIETY COMPARISON

Cooperators: Producer: F.F. Chandler, Jr.

Extension: Stephanie Romelczyk, Westmoreland VCE; Keith Balderson, Essex VCE; Robbie Longest, VCE Intern

Industry: Participating Seed Company Representatives

Soil Type: Suffolk sandy loam

Previous Crop: Corn

Tillage/Row Spacing: No-till, 30 inch rows

Seeding Rate: 140,000 seeds/acre

Planting Date: May 29, 2013

Fertilization: Preplant: 15-40-60

Crop Protection: Burndown: Touchdown (48 oz/A), Envive (3.5 oz/A)

Post-emergence: Touchdown (36 oz/A), Radiate (2 oz/A), Lokomotive (1 gal/A),

Quadris Top (8 oz/A), Sniper (6 oz/A)

Harvest Date: November 13, 2013

Harvest Equipment: John Deere 9400 with 918 header

Brand	Variety	Moisture%	Yield (Bu/A)
RPM	DB4512RR	10.1	64.4
Mycogen	5N478R2	10.1	63.7
Mycogen	5N431R2	10.0	64.5
Progeny	P 4710 RY	10.0	59.2
Progeny	P 4850 RY	10.2	58.8
Hubner	H46-01R2STS	10.0	60.3
Hubner	H48-13R2STS	10.0	63.5
Seed Consultants	SCS9443RR	10.1	62.8
Seed Consultants	SCS9421RR	10.2	63.0
USG	74B81R	10.2	59.7
USG	74A92R	10.0	63.2
HBK	RY4620	10.0	64.0
HBK	RY4721	10.1	54.7
Southern States	SS 4700 R2 STS	10.2	57.6
Southern States	SS 491N 7R2	10.2	60.0
Pioneer	P46T21	10.2	62.7
Pioneer	P48T53	10.0	64.4
Dyna-Gro	S48RS53	9.8	58.3
Dyna-Gro	38RY45	10.0	57.8
Asgrow	AG4933	10.0	58.5
Asgrow	AG4632	9.9	55.2

**Discussion:** Yields were good. There were significant groundhog burrows in Progeny P4710RY, Seed Consultants SCS9421RR, USG 74B81R, Dyna-Gro 38RY45, and Asgrow AG4933. Asgrow AG4933 had the most severe damage.

# MATURITY GROUP 5 VARIETY COMPARISONS



### 2013 OVERALL MATURITY GROUP 5 COMPARISON

		Chesa-	Glouce	Green	Prince	New	South-			VA			Avg Rel.
Brand	Variety	peake	-ster	-ville	George	Kent	ampton	Suffolk	Surry	Beach	VSU	Avg	Yield
Asgrow	AG5332	46.9	63.2	70.4	57.0		65.9	65.2	26.1	66.4	53.2	57.1	111
USG	75J90R		58.6	62.8	47.2	39.7	59.1	66.7	30.5	65.5	48.2	53.1	107
Pioneer	P50T64R		59.3	58.5	53.0		61.6	63.5	24	63.7	58.6	55.3	107
Progeny	P 5610 RY	49.7	55.4		48.2	41.2	57.9	62.0	30.2	60.8	46.6	50.2	105
Hubner	H55-13R2			54.4	50.7		61.2	60.2		70.2	51.8	58.1	103
Hubner	H58-12R2		48.2	65.2	48.0	40.8	58.2	72.5	17.6	70.4	53.5	52.7	103
Southern	SS 5511N												
States	R2	48.3	54.2	57.2	64.0	28.7	58.1	74.6	23.4	53.5	46.6	50.9	101
USG	75Z38		56.8		56.1	38.5	59.4		18.3	58.1	49.5	48.1	100
Asgrow	AG5533	45.8	50.9	64.0	53.9	42.5	58.8	66.7	23.8	37.2	44.5	48.8	99
Southern	SS 5911N												
States	R2	47.9	49.7	64.9	50.1		59.3	46.7	19	59.5	51.8	49.9	97
	DB5711R												
RPM	R	42.2	52.2	60.4	49.1	39.0	52.8	61.4	20.9	48.2	45.7	47.2	95
HBK	RY5221	45.6	54.8	56.0	52.7		54.7	57.0	27	45.2	35.6	47.6	94
Progeny	P 5210 RY	47.4	54.6	62.7	52.3		59.9	54.4	22.2	54.7	27.8	48.4	94
HBK	RY5421	44.0	44.0	58.2	47.7	29.6	58.1	62.0	23.1	53.2	41.0	46.1	92
Pioneer	95Y70		46.4	62.7	45.6	33.0	54.7	54.8	22.1	66.4	33.8	46.6	92
	Average	45.9	53.5	61.3	51.7	37.5	59.0	62.1	23.4	58.2	46.2	51.7	100

### CHESAPEAKE MATURITY GROUP 5 VARIETY COMPARISON

Cooperators: Producer: Russell Temple Extension: Watson Lawrence, Chesapeake VCE Industry: Participating Seed Companies Soil Type: Tomotley-Nimmo Complex Previous Crop: Corn Tillage/Row Spacing: No-till / 24 inches Seeding Rate: 140,000 seed/acre Planting Date: June 17, 2013 Fertilization: 300 lbs. 7-18-36 Crop Protection: Postemergence: Glyphosate @ 1 ¼ qts./A Flexstar @ 12 oz./A Harvest Date: November 25, 2013

Harvest Equipment: John Deere CTS

Brand	Varieties	Moisture (%)	Yield (Bu/A)	Adj. Yield (Bu/A) <sup>1</sup>
Check	Pioneer 95Y50	13.1	46.2	47.1
Progeny	P 5210 RY	13.3	46.7	47.4
Progeny	P 5610 RY	13.1	49.3	49.7
HBK	RY5421	13.3	43.9	44.0
HBK	RY5221	13.7	45.7	45.6
Great Heart	GT-543CR2	12.9	44.4	44.0
Great Heart	GT-550CR2	12.8	42.2	41.6
Check	Pioneer 95Y50	13.3	48.0	47.1
Southern States	SS 5911 N2	12.3	48.7	47.9
Southern States	SS 5511 NR2	12.4	48.9	48.3
Asgrow	AG5332	12.4	47.3	46.9
Asgrow	AG5533	12.3	46.1	45.8
RPM	DB5711RR	12.0	42.3	42.2
Check	Pioneer 95Y50	13.2	47.1	47.1
	Average	12.9	46.2	46.0

<sup>1</sup>Yields were adjusted by linear interpolation using check plots.

**Discussion:** Varieties were planted in same field with consistent soil type. Pioneer 95Y50 was planted at intervals as a check. Yields were good considering early September was very dry followed by heavy rains in late September. Corn earworm pressure was very low avoiding need of a fall insecticide spray. Seed quality was very good with little seed stain or other damage. Varieties are listed in order of planting across the field.

### **GLOUCESTER COUNTY MATURITY GROUP 5 VARIETY COMPARISON**

Cooperators: Producer: Charles Rich & Allen Hunt Extension: David Moore, Middlesex VCE; Robbie Longest, VCE Intern Industry: Participating Companies Soil Type: Suffolk fine sandy loam Previous Crop: Corn Tillage/Row Spacing: No-Till / 7 inch Seeding Rate: 160,000 seed/acre Planting Date: June 22, 2013 Fertilization: 15-40-60 broadcast Crop Protection: Burndown: Glyphosate; Post: Glyphosate + First Rate R3/R4: Lambda-Cy + Priaxor Harvest Date: November 11, 2013 Harvest Equipment: John Deere 9660 STS

Brand	Variety	Moisture (%)	Test Weight (lb/Bu)	Yield (Bu/A)
USG	75Z38	12.0	60.0	56.8
USG	75J90R	11.9	59.0	58.6
Progeny	P 5610 RY	11.8	59.0	55.4
Progeny	P 5210 RY	12.0	59.0	54.6
RPM	DB5711RR	12.0	58.5	52.2
Southern States	SS 5511N R2	12.0	60.0	54.2
Southern States	SS 5911N R2	12.4	59.0	49.7
Pioneer	95Y70	12.6	58.5	46.4
Pioneer	P50T64R	11.4	57.0	59.3
Asgrow	AG5533	12.0	57.0	50.9
Asgrow	AG5332	11.1	56.5	63.2
HBK	RY5221	12.1	57.0	54.8
HBK	RY5421	12.0	58.0	44.0
Hubner	H58-12R2	11.5	57.0	48.2
	Average	11.9	58.3	53.5

**Discussion:** We received great results from this plot. Sight comparison of varieties for purple seed stain determined that all varieties fell in the 0.5 to 1.0% damage category which is not significant. Plot was sprayed with fungicide at R3. Pioneer 50T64 was the only variety where purple seed stain was not evident.

Interestingly, the two highest yielding varieties were also the driest. Seed size was good, but could tell later maturing varieties had the smaller seeds. The small seed is a direct reflection on the dry conditions during pod fill. Use this and other variety information when making seed decisions for 2014.

### **GREENSVILLE MATURITY GROUP 5 VARIETY COMPARISON**

**Cooperators:** Producer: Doyle Farms

Extension: Brittany Council, Greensville VCE; Chris Drake, Southampton VCE; Kelvin Wells, Sussex VCE Industry: Participating Seed Companies Soil Type: Craven clay loam / Emporia loamy fine sand / Slagle fine sandy loam Previous Crop: Cotton Tillage/Row Spacing: Conventional / 15 inch Seeding Rate: 4.9 seeds/row foot (170, 686 seed/A) Planting Date: May 17, 2013 Fertilization: 40 lb. potash, 15 lb. nitrogen Crop Protection: Envive 2.5 oz/A, Stratego YLD 4.5 oz/A, Mustang Maxx 4 oz/A Harvest Date: November 12, 2013 Harvest Equipment: John Deere 9770 w/ 30 ft. grain platform

Brand	Variety	Moisture (%)	Yield (Bu/A)
HBK	RY5221	13.7	56.0
Hubner	H58-12R2	12.7	65.2
Pioneer	P50T64R	12.5	58.5
Southern States	SS 5911N R2	12.9	64.9
Hubner	H55-13R2	12.7	54.4
RPM	DB5711	13.3	60.4
Southern States	SS 5511N R2	13.4	57.2
USG	75J90R	13.1	62.8
Progeny	P 5210 RY	13.2	62.7
Pioneer	95Y70	13.5	62.7
Asgrow	AG5332	13.0	70.4
НВК	RY5421	13.3	58.2
Asgrow	AG5533	12.9	64.0
	Average	13.1	61.3

**Discussion:** Please use this and other yield data when making seed choices for 2014.

### NEW KENT MATURITY GROUP 5 VARIETY COMPARISON

Cooperators: Producer: Eddie Binns Extension: John Allison, New Kent VCE; Scott Reiter, Prince George VCE Industry: Participating Seed Companies Soil Type: Bojac sandy loam/ Conetoe sandy loam Previous Crop: Corn Tillage/Row Spacing: No-till, 7.5 inches, John Deere 750 drill Population: 200,000 seed/acre Planting Date: June 28, 2013 Fertilization: 80 lbs K<sub>2</sub>0 Crop Protection: Burndown: 2,4-D 1 pt/A + Gramoxone 3.2 qt/A + Authority 4 oz/A Post: Glyphosate 1.7 qt/A Harvest Date: November 22, 2013 Harvest Equipment: John Deere 9410 w/ 915 platform

Brand	Variety	Moisture (%)	Yield (Bu/A)	Adj. Yield (Bu/A) <sup>1</sup>
Check	Pioneer 95Y60	13.6	37.4	41.5
Pioneer	95Y70	13.7	30.2	33.0
Pioneer	P50T64R	12.8	8.3*	8.9*
HBK	RY5421	13.3	27.9	29.6
HBK	RY5221	13.2	8.3*	8.7*
Southern States	SS 5511N R2	13.2	27.9**	28.7**
Southern States	SS 5911N R2	12.1	28.6*	29.0*
RPM	DB5711RR	13.2	39.0	39.0
Hubner	H58-12R2	13.1	41.4**	40.8**
Asgrow	AG5332	12.9	27.3*	26.6*
Asgrow	AG5533	13.0	44.3	42.5
USG	75J90R	12.9	41.9	39.7
USG	75Z38	12.8	41.2	38.5
Progeny	P 5610 RY	12.8	44.7	41.2
Progeny	P 5210 RY	12.7	23.6*	21.5*
CHECK	Pioneer 95Y60	13.0	45.6	41.0
	Average		32.4	31.9

<sup>1</sup>Yields were adjusted by linear interpolation using check plots.

\*Severe to moderate deer and/or groundhog damage present.

\*\* Wheel tracks present.

**Discussion:** Asgrow 5332, HBK RY5221, and Progeny P 5210 RY had severe deer damage. Southern States SS 5911N R2 had moderate deer damage. The Pioneer 50T64R had severe deer damage and groundhog damage. Both Southern States SS 5511N R2 and Hubner H58-12R2 contained two wheel tracks. After considering the deer, groundhog, and wheel track damage, use this data when selecting seed in 2014.

### PRINCE GEORGE MATURITY GROUP 5 VARIETY COMPARISON

Cooperators: Producer: Paul Cerny and Sean Finney Extension: Scott Reiter, Prince George VCE Industry: Participating Seed Companies Soil Type: Ackwater and Montross silt loam Previous Crop: Wheat with straw baled Tillage/Row Spacing: No-till / 7 inches, Great Plains 705 Drill Seeding Rate: 200,000 seed/acre Planting Date: June 20, 2013 Fertilization: 120- 50-120 to wheat, 1 qt/A Brandt Manni-Plex Complete micros Crop Protection: Herbicide - Postemerge – Roundup @ 1 qt/A + Synchrony STS 0.375 oz/A Insecticide – Baythroid 2.8 oz/A + surfactant Harvest Date: November 5, 2013 Harvest Equipment: John Deere 9500 w/ 918 platform

Brand	Variety	Moisture (%)	Yield (Bu/A)	Adj. Yield <sup>1</sup>
Check	Asgrow AG4632	12.9	55.3	58.3
Asgrow	AG5332	12.9	54.5	57.0
Asgrow	AG5533	13.0	51.9	53.9
Pioneer	P50T64R	12.6	51.3	53.0
Pioneer	95Y70	13.0	44.4	45.6
Southern States	SS 5511N R2	13.0	62.8	64.0
Southern States	SS 5911N R2	12.8	49.5	50.1
USG	75J90R	12.9	46.9	47.2
USG	75Z38	13.0	56.1	56.1
RPM	DB5711RR	12.9	49.4	49.1
HBK	RY5221	13.2	53.4	52.7
HBK	RY5421	12.9	48.6	47.7
Hubner	H55-13R2	12.9	52.0	50.7
Hubner	H58-12R2	12.8	49.5	48.0
Progeny	P 5210 RY	13.2	54.3	52.3
Progeny	P 5610 RY	12.9	50.3	48.2
Check	Asgrow AG4632	12.8	61.2	58.3
	Average		52.3	52.5

<sup>1</sup>Yields were adjusted by linear interpolation using check plots.

**Discussion:** This was a very successful double crop planting for 2013. The June planting date helped these soybeans escape the late August –September drought compared to other area plantings. The Group 4's yielded slightly better than the Group 5's in the same field. AG5533 and 95Y70 are very tall plants (42-43 inches) and had noticeable lodging compared to other plots.

### SOUTHAMPTON GROUP 5 VARIETY COMPARISON

Cooperators: Producer: Edward S. Drake Extension: Chris Drake, Southampton VCE Industry: Participating Seed Companies Soil Type: Slagle Fine Sandy Loam Previous Crop: Soybean Tillage/Row Spacing: Strip Tillage / 36 inch Seeding Rate: 130,680 seeds/acre Planting Date: May 29, 2013

**Fertilization:** 200 # per acre 7-20-30 on 5/29/2013

**Crop Protection:** 1qt. /A Touchdown - 2 applications PRE; 1 qt. /A Prefix behind planter; 1 qt. /A Touchdown- 2 applications POST;6 oz. /A Quadris on 8/5

Harvest Date: October 29, 2013

Harvest Equipment: John Deere 9400 w/ 20 ft. grain platform

Brand	Variety	Moisture%	Yield
Check	Asgrow AG5732	12.7	61.9
НВК	RY5221	13.9	54.7
Dyna-Gro	32RY55	13.6	58.1
Progeny	P 5610 RY	13.5	57.9
Hubner	H58-12R2	13.2	58.2
Pioneer	P50T64R	12.6	61.6
Southern States	SS 5911N R2	13.3	59.3
Hubner	H55-13R2	13.4	61.2
Dyna-Gro	S53RY23	13.4	62.6
RPM	DB5711RR	13.7	52.8
Southern States	SS 5511N R2	13.4	58.1
USG	75J90R	13.2	59.1
Progeny	P 5210 RY	13.5	59.9
Pioneer	95Y70	13.3	54.7
Asgrow	AG5332	12.8	65.9
НВК	RY5421	13.0	58.1
Asgrow	AG5533	13.3	58.8
USG	75Z38	13.1	59.4
Check	Asgrow AG5732	12.5	60.2
	Average	13.2	59.1

**Discussion:** These were outstanding yields for 36" row soybeans. This plot received adequate rainfall throughout the growing season and timely fungicide application prevented yield loss due to disease. Please use this and other yield data when making seed choices for 2014.

### SUFFOLK MATURITY GROUP 5 VARIETY COMPARISON

Cooperators: Producer: E. Michael Ellis Extension: David Holshouser, VCE Soybean Specialist Industry: Participating Seed Companies
Soil Type: Goldsboro fine sandy loam
Previous Crop: Cotton
Tillage/Row Spacing: Disked twice with Land Conditioner / 7.5 inches
Seeding Rate: 140,000 seeds/Acre
Planting Date: May 17, 2013
Fertilization: 300 lbs. 3-9-30
Crop Protection: Touchdown 26 oz./A; Quadris 6 oz./A; bifenthryn
Harvest Date: October 31, 2013
Harvest Equipment: Wintersteiger plot combine

		Sood	DSS1		Moisturo	Viold	Adjusted Viold <sup>2</sup>
Brand	Variety	Quality <sup>1</sup>	(%)	Seed/lb	(%)	(Bu/A)	(Bu/A)
Check	Hubner H51-13R2	2.3	0	2930	15.2	61.8	63.2
Asgrow	AG5332	2.4	1	2716	14.6	63.2	65.2
Southern States	SS 5911N R2	2.3	2	3726	15.0	44.8	46.7
Pioneer	95Y70	2.4	1	3070	15.0	52.2	54.8
Pioneer	P50T64R	3.3	1	2529	14.4	60.0	63.5
Southern States	SS 5511N R2	2.4	1	2153	14.3	69.9	74.6
Asgrow	AG5533	2.1	1	2736	14.5	62.0	66.7
RPM	DB5711RR	2.4	1	2502	14.6	56.5	61.4
Check	Hubner H51-13R2	2.6	0	2915	14.7	57.7	63.2
HBK	RY5221	2.6	1	2373	12.9	53.4	57.0
HBK	RY5421	1.6	1	2590	14.7	59.6	62.0
Hubner	H58-12R2	2.1	1	2335	14.2	71.6	72.5
USG	75J90R	2.0	1	2142	14.1	67.5	66.7
Progeny	P 5210 RY	2.3	0	2431	14.3	56.4	54.4
Hubner	H55-13R2	2.4	0	2998	15.0	63.9	60.2
Progeny	P 5610 RY	2.3	1	2161	14.2	67.4	62.0
Check	Hubner H51-13R2	2.3	1	2748	14.7	70.2	63.2
	Average	2.3	1	2650	14.5	61.1	62.2

<sup>1</sup>Seed Quality: 1 = excellent, 2 = good, 3 = fair, 4 = poor, 5 = very poor; PSS = purple seed stain <sup>2</sup>Yields were adjusted by linear interpolation using check plots.

**Discussion:** 2013 was a very wet year in Suffolk except for a 3 to 4 week dry period in September. Even with this dry period, yields were very good. Use this and other variety test results when making seed decisions in 2014.

### SURRY COUNTY MATURITY GROUP 4 VARIETY COMPARISON

Cooperators: Producer: Timberneck Farms, Anthony and Darren Howell Extension: Glenn Slade, Surry VCE Industry: Various Seed Companies
Soil Type: Craven Fine Sandy Loam
Previous Crop: Wheat
Tillage/Row Spacing: No-till/ 7.5 inch rows
Population: 180,000 seeds/acre
Planting Date: July 8, 2013
Fertilization: 100-100-160 Previous Wheat Crop
Crop Protection: At Plant: 1 qt./A Glyphosate + 2 oz./A Valor
Harvest Date: December 20, 2013
Harvest Equipment: JD7720 with 920 Header

Brand	Variety	Moisture%	Yield at 13%
Asgrow	AG5533	13.6	23.8
Progeny	P5610 RY	13.3	30.2
Mycogen	5N431 R2	12.9	19.3
USG	75J90R	13.8	30.5
Southern States	SS 5511NR2	12.9	23.4
HBK	RY5221	13.4	27.0
Doebler RPM	DB5711RR	12.8	20.9
Hubner	H 58-12R2	13.6	17.6
Pioneer	P50T64R	12.6	24.0
Asgrow	AG5332	12.8	26.4
Progeny	P5210RY	12.6	22.2
Mycogen	5N478 R2	12.9	30.7
HBK	RY5421	13.4	23.1
Southern States	SS5911R2	13.6	19.0
USG	75Z38	13.2	18.3
Asgrow	AG5332	13.6	25.7
Pioneer	95Y70	13.4	22.1

**Discussion:** Yields were slightly lower in this plot due to late planting and drying conditions. Use this and other Virginia Tech on-farm soybean plot results when making planting decisions for 2014

### SUSSEX COUNTY MATURITY GROUP 5 VARIETY COMPARISON

Cooperators: Producer: Cox Farms Extension: Kelvin Wells, Sussex VCE Industry: Participating Seed Companies Soil Type: Emporia Fine Sandy Loam Previous Crop: Wheat Tillage/Row Spacing: no-till/ 15 inch Seeding Rate: 200,000 seed/acre Planting Date: July 10, 2013 Fertilization: Available nutrients from 75 bushel wheat crop Crop Protection: Burndown: Glyphosate 1.5 qt/A + Valor 2.5 oz/A Post: Glyphosate 1.5 qt/A + Valor 2.5 oz/A Insecticide: Belt 2 oz/ A Harvest Date: December 2, 2013 Harvest Equipment: John Deere 9500

Brand	Variety	Moisture (%)	Yield (Bu/A)
Progeny	P 5610 RY	13.7	16.2
Progeny	P 5210 RY	13.5	16.6
HBK	RY5221	13.6	17.2
Pioneer	P50T64R	13.0	14.2
USG	75J90R	13.2	10.5
Asgrow	AG5332	13.0	13.7
RPM	DB5711RR	13.0	12.7
USG	75Z38	13.1	10.1
Asgrow	AG5533	12.8	9.6
HBK	RY5421	12.8	12.1
Southern States	SS 5511N R2	13.2	9.0
Hubner	H58-12R2	13.4	9.2
Hubner	H55-13R2	13.4	12.3
	Average	13.2	12.6

**Discussion:** Soybeans planted after July 4<sup>th</sup> do not always have a chance to perform to their potential. These beans started out well because we were getting timely rains. Dry conditions, though, in September limited yields in many places. Use this and other Virginia Tech on-farm soybean plot results when making planting decisions for 2014.

### VIRGINIA BEACH MATURITY GROUP 5 VARIETY COMPARISON (AG-EXPO)

**Cooperators:** Producer: Don Horsley and Family

Extension: Roy Flanagan, Virginia Beach VCE; Watson Lawrence, Chesapeake VCE; David Holshouser, VCE Soybean Specialist. Industry: Cooperating Seed Companies

Soil Type: Nimmo loam

Previous Crop: Soybean

Tillage/Row Spacing: No-till/15 inch

Seeding Rate: 140,000 seed/acre

Planting Date: May 10, 2013

Fertilization: 250 lbs. 11-27-24

Crop Protection: Herbicide - PowerMax (26 oz. /A.) + First Rate (.3 oz. /A.) post-emergence Insecticide – Bifenthrin Z EC (6.4 oz. /A.)

Harvest Date: October 21, 2013

Harvest Equipment: Wintersteiger plot combine

		Moisture	Yield	Adjusted Yield*
Brand	Variety	(%)	(Bu/A)	(Bu/A)
Check	Pioneer 94Y70	12.8	70.5	63.8
Pioneer	95Y70	12.3	72.6	66.4
Pioneer	P50T64R	11.8	69.1	63.7
Progeny	P 5210 RY	12.1	58.8	54.7
Progeny	P 5610 RY	12.1	64.7	60.8
Check	Pioneer 94Y70	11.6	67.3	63.8
Asgrow	AG5332	11.7	70.2	66.4
Asgrow	AG5533	13.4	39.4	37.2
Southern States	SS 5911N R2	13.4	63.0	59.5
Southern States	SS 5511N R2	13.3	56.8	53.5
RPM	DB5711RR	13.2	51.2	48.2
NK	S56-G6	13.9	61.3	57.6
Check	Pioneer 94Y71	13.0	68.1	63.8
Seed Consultants	SCS 9544RR	12.7	58.0	58.1
Seed Consultants	SCS 9574RR	13.2	67.0	72.0
Check	Pioneer 94Y70	13.0	55.1	63.8
HBK	RY5221	14.4	39.3	45.2
HBK	RY5421	13.3	46.5	53.2
Hubner	H58-12R2	12.4	61.9	70.4
Hubner	H55-13R2	13.1	62.1	70.2
Great Heart	GT-550 CR2	14.2	48.3	54.2
Great Heart	GT-543 CRS	13.1	44.5	49.6
USG	75J90R	13.1	59.1	65.5
USG	7553nRS	12.3	52.8	58.1
Check	Pioneer 94Y70	12.5	58.3	63.8
	Average	12.9	58.6	59.4

\*Yields were adjusted by linear interpolation using check plots.

# VIRGINIA STATE UNIVERSITY MATURITY GROUP 5 SOYBEAN VARIETY COMPARISONS

**Cooperators:** Producer: Rudy Grammer & Mack West – VSU Randolph Farm Extension: Glenn F. Chappell, II, Virginia State University Industry: Participating Seed Companies

Soil Type: Tetotum Loam & Bourne Fine Sandy Loam

Previous Crop: Corn

Tillage/Row Spacing: No-Till / 7.5 inches

Seeding Rate: 160,000 seeds/ acre

Planting Date: May 30, 2013

Planting Equipment: Great Plains 706 NT Drill

Test/Plot Size: 15'X 300'

Fertilization: 20-40-60 Granular Broadcast April 10, 2013

Crop Protection: 1.0 qt./A Gly4 + 0.3 oz./A First Rate - June 5, 2013

1.0 qt./A Gly4 + 0.3 oz./A First Rate – July 24, 2013

Harvest Date: November 11, 2013

Harvest Equipment: John Deere 9560 STS

Brand	Variety	Moisture (%)	Yield (bu/A)	% of Check*
USG	74A92R	10.8	50.9	
Asgrow	AG5332	11.0	53.5	105
Asgrow	AG5333	11.2	44.5	88
Pioneer	P50T64	10.8	58.6	115
Pioneer	95Y70	10.6	33.8	66
Southern States	SS 5511N R2	10.9	46.6	92
Southern States	SS 5911N R2	10.5	51.8	102
USG	75J90R	9.8	48.2	95
USG	75Z38	11.0	49.5	97
RPM	DB5711RR	10.7	45.7	90
НВК	RY5221	11.0	35.6	70
НВК	RY5421	10.0	41.0	81
Hubner	H55-13R2	10.5	51.8	102
Hubner	H58-12R2	11.0	53.5	105
Progeny	P 5210 RY	10.7	27.8	55
Progeny	P 5610 RY	10.9	46.6	92
USG	74A92R	10.4	50.8	
	Average		46.2	

\* % of Check = (Variety yield/(Sum of check yields/2))\*100

Discussion: Monthly rainfall: May 4.25", June 6.65" July 8.9", August 2.15", Sept. 0.8", Oct. 4.3".

# 2013 TREATMENT TRIALS: FERTILIZERS, PESTICIDES, AND REISTANT VARIETIES



# FERTILIZERS

### PRINCE GEORGE ESN SMART NITROGEN FERTILIZER COMPARISON #1

Cooperators: Producer: Paul Cerny and Sean Finney Extension: Scott Reiter, Prince George Industry: Mike Howell, Agronomist, Agrium Soil Type: Ackwater silt loam **Previous Crop:** Wheat with straw baled Tillage/Row Spacing: No-till, 7.5 inches, John Deere 1590 Drill Seeding Rate: 200,000 seeds/acre Planting Date: June 20, 2013 Treatment: Treatment 1: Untreated Treatment 2: 120 lbs/A ESN Smart Nitrogen = 53 lbs N/A (applied July 19 @ V3 stage) Variety: Southern States RT 5160N STS Fertilization:  $120 \text{ N} - 50 \text{ P}_2\text{O}_5 - 120 \text{ K}_20$  to wheat, 1 qt/A Brandt Manni-Plex Complete micros Crop Protection: Herbicide: Postemergence – Roundup 1 qt/A + Synchrony STS 0.375 oz/A Insecticide: Baythroid 2.8 oz/A + surfactant Harvest Date: November 5, 2013 Harvest Equipment: John Deere 9500 w/ 918 platform

Treatment	Replication	Moisture %	Yield (Bu/A)
ESN	1	12.6	47.2
Untreated	1	12.8	50.6
ESN	2	12.6	45.1
Untreated	2	12.8	45.0
ESN Average			46.2
<b>Untreated Average</b>			47.8
LSD (0.10)			11.0

**Discussion:** The purpose of this experiment was to evaluate ESN Smart Nitrogen on double crop soybeans. ESN is a controlled release polymer coated urea nitrogen fertilizer. The controlled release feature provides a sustained nitrogen release throughout the crop growth period. We tested ESN in this trial to see if we could get a yield bump in double crop soybeans. In this particular trial, we did not see a yield response. Previous research has indicated that supplemental nitrogen applications to soybeans do not substantially increase yields in our growing environment.

### PRINCE GEORGE ESN SMART NITROGEN FERTILIZER COMPARISON #2

Cooperators: Producer: George Reiter Extension: Scott Reiter, Prince George Industry: Mike Howell, Agronomist, Agrium Soil Type: Slagle sandy loam Previous Crop: Wheat with straw baled Tillage/Row Spacing: No-till, 15 inches, Kinze 3500 Interplant Seeding Rate: 200,000 seeds/acre Planting Date: July 10, 2013 Treatment: Treatment 1: Untreated Treatment 2: 120 lbs/A ESN Smart Nitrogen = 53 lbs N/A (applied July 19 at cotyledon stage) Variety: Asgrow AG4730 Fertilization: 120-40- 120 K<sub>2</sub>0 to wheat Crop Protection: Herbicide: Postemerge – Roundup PowerMax @ 1 qt/A Harvest Date: November 6, 2013 Harvest Equipment: John Deere 9510 w/ 918 platform

Treatment	Replication	Moisture %	Yield (Bu/A)
ESN	1	12.0	33.6
Untreated	1	12.1	38.4
ESN	2	12.1	36.3
Untreated	2	12.3	32.1
ESN	3	12.2	34.2
Untreated	3	12.2	31.4
ESN Average			34.7
<b>Untreated Average</b>			34.0
LSD (0.10)		0.2	8.2

**Discussion:** The purpose of this experiment was to evaluate ESN Smart Nitrogen on double crop soybeans. ESN is a controlled release polymer coated urea nitrogen fertilizer. The controlled release feature provides a sustained nitrogen release throughout the crop growth period. We tested ESN in this trial to see if we could get a yield bump in double crop soybeans. In this particular trial we did not see a yield response. Previous research has indicated that supplemental nitrogen applications to soybeans do not substantially increase yields in our growing environment.

### SURRY FOLIAR FERTILIZER COMPARISON ON DOUBLE-CROP NATTO SOYBEAN

Cooperators: Producer: Michael and Steven Pitman Extension: Glenn Slade, Surry VCE; David Holshouser, VCE soybean specialist
Soil Type: Slage fine sandy loam & Jedburg loam
Previous Crop: 2012 – corn; 2012/13 - wheat
Tillage/Row Spacing: No-till/7.5 inches
Population: 175,000 plants/acre
Planting Date: June 19, 2013
Treatment: Treatment 1: Untreated Treatment 2: Awaken 16-0-2 at 2 qt/A + Brandt Smart Trio at 2 qt/A applied at R1/R2
Variety: Montague MFS-561
Fertilization: Fall 2012: 12 - 35-70-100; Spring to wheat: Three 15 gal applications of 24-0-0-3
Crop Protection: 1.5 pt Prowl + 1.0 qt Extreme + 24 oz Roundup PowerMax- Preemergence
Irrigation: 2 irrigations of 1 inch each in the last two weeks of September
Harvest Date: November 5, 2013
Harvest Equipment: CaseIH 2388

Treatment	Replication	Moisture (%)	Yield (Bu/A)
Awaken/Brandt Smart Trio	1	11.7	62.8
Untreated	1	11.7	62.4
Awaken/Brandt Smart Trio	2	11.7	63.1
Untreated	2	11.7	63.5
Average Awaken/Brandt	Smart Trio	11.7	62.9
Average Untreat	ed	11.7	62.9
LSD (0.10)		0.0	2.5

**Comments:** Montague MFS-561 yielded very well when double-cropped after wheat in a very wet and productive year. This was the first year that the Pitman's have grown these food-grade small-seeded soybean. In general, the Pitman's were very satisfied with the variety's characteristics and performance. Over their entire operation, the soybean graded out (meeting size requirements and discounted for any damage, off-color, cracked seed coat) at 82% when planted full-season and 92% when planted double-crop, resulting in an average premium of \$2.56 and \$2.98, respectively.

Awaken 16-0-2 is a plant nutrient solution that contains zinc ammonium acetate with potash and is used as a supplement to a regular fertilizer program. The product contains: 16% N, 2% K<sub>2</sub>O, 0.02% B, 0.15% Cu, 0.15% Fe, 0.15% Mn, 0.0006% Mo, and 2.7% Zn. Brandt Smart Tri is a specifically formulated product for foliar deliver of manganese, zinc, and boron. The product contains: 4% N, 3% S, 0.25% B, 3% Mn, and 3% Zn. Total pounds per acre of nutrients applied in the application were: N – 1.8; K<sub>2</sub>O – 0.1; S – 0.16; Mn – 0.33; Zn – 0.59; B – 0.03; Fe – 0.02; Mo – 0.00006. Such products can be of value if soil is deficit in one of the included nutrients or if tissue samples reveal deficiencies. Although tissue samples were not taken immediately before the time of application, grid soil samples did not reveal any deficiencies with the exception of low levels of Mn.

### VIRGINIA BEACH ESN SMART NITROGEN RATE STUDY

**Cooperators:** Producer: Don Horsley and Family Extension: David Holshouser, VCE soybean specialist; Roy Flanagan, Virginia Beach VCE Industry: Crop Production Services Soil Type: Nimmo loam Previous Crop: Corn, wheat Tillage/Row Spacing: No-till/15 inch Seeding Rate: 180,000 seeds/ acre Planting Date: June 17, 2013 Treatment: Treatment 1: Untreated **Treatment 2:** ESN Smart Nitrogen applied 2 weeks after planting Experimental Design: Randomized complete block with 4 replications Variety: 95Y71 Fertilization: 200 lbs. 30-40-60, before wheat planting Crop Protection: Herbicides: Burndown - Roundup PowerMaxx 1qt/A; Postemergence - Flexstar GT 2 qt/A Insecticides: bifenthryn 6.4 oz/A + Prevathon 12oz/A Fungicides: Stratego YLD 4 oz/A Harvest Date: November 19, 2013 Harvest Equipment: Wintersteiger plot combine

Treatment	Rate (lb. N/acre)	Yield (Bu/A)
Control	0	77.4
ESN	25	72.4
ESN	50	76.5
ESN	75	77.8
ESN	100	75.9
Average		76.0
LSD (0.10)		8.12

**Discussion:** ESN Smart Nitrogen is a polymer coated nitrogen (N) fertilizer that releases its N based on temperature and soil moisture. Under high yielding situations, it is thought that soybean may not be able to fix all of the N required; therefore, may need additional N from the soil during seed production. When ESN is applied soon after planting, most of the N will not be released until the reproductive stages. This not only provides N during the time that soybean needs it the most, but it also prevents nodule inhibition by high availability of N during vegetative stages.

In this experiment, ESN did not increase yields at any rate applied. More research is needed to fully understand how ESN is affecting N utilization in soybean.

## VIRGINIA SOYBEAN INOCULANT TESTS

Cooperators: Producers: Eastern Shore, Eastern Virginia, Southern Piedmont, and Tidewater ARECs; Cam Gibson, Orange Co. Extension: David Holshouser, VCE Soybean Specialist Agribusiness: BASF, INTX Microbials, Novozymes

Previous Crop: corn, cotton, or soybean

Plot Size: 5 rows x 24 feet

Replications: 3 or 4

Planting Equipment: Hege plot planter

Planting Date: May (Full-Season) – June (Double-Crop)

Row Spacing: 15 inches

Variety: Southern Harvest SH4913LL

Seeding Rate: Full-Season: 160,000; Double-Crop: 240,000

Crop Protection: Herbicides: various, depending on location

Insecticides: depending on location

Harvest Date: Oct-Nov

Harvest Equipment: Wintersteiger plot combine

	BLK	ORG	PTR	PTR	SUF	SUF	WAR	WAR	
Inoculant	FS	FS	FS	DC	FS	DC	FS	DC	Average
Control	59.1	45.9	40.7	53.5	81.8	75.2	67.4	47.6	58.9
Optimize	65.6	42.8	38.1	54.8	74.2	77.3	72.5	48.2	59.2
Tag Team LCO	57.2	45.9	40.6	53.5	77.4	75.9	67.4	47.4	58.2
Primo CL	59.0	41.1	43.5	52.2	81.6	69.0	72.2	46.0	58.1
Vault HP	58.4	49.1	38.1	61.5	79.6	71.2	70.2	48.6	59.6
Average	59.7	45.1	40.3	54.8	79.1	74.0	69.5	47.6	
LSD (P=.05)	11.0	7.7	5.5	6.8	7.2	9.5	5.8	4.4	

**Discussion:** Inoculating the seed with *Bradyrhizobia japonicum*, the bacteria that allows soybean to fix its own nitrogen, did not consistently increase yield at any location. Only at the Painter double-crop site did an inoculant (Vault HP) yield significantly greater than the control. In all locations, soybean has been grown in the last 2 or 3 years. These data indicate that inoculant is not usually needed in land that is regularly rotated to soybean; but is primarily an insurance treatment to prevent nitrogen deficiency.

### PESTICIDES

### MIDDLESEX COUNTY FUNGICIDE TREATMENT COMPARISON

Cooperators: Producer: Carlton & Calhoun Farms, Inc. Extension: David Moore, Middlesex VCE **Soil Type:** Kempsville Fine Sandy Loam **Previous Crop:** Barley Tillage/Row Spacing: No-Till/15 inch rows Seeding Rate: 148,000 seeds/acre Planting Date: June 5, 2013 Treatment: Treatment 1: Untreated/ Micro 581 only Treatment 2: Priaxor 6 oz./A Treatment 3: Ouilt 14 oz./A Variety: Delta King DK55-R22 **Crop Protection:** Glyphosate at 4 weeks after planting Karate + Micro 581 at GS 3-4 Alternating strips of Priaxor and Quilt Harvest Date: November 11, 2013 Harvest Equipment: John Deere 9770STS

Treatment	Replication	Moisture%	Test Weight	Yield
Priaxor	1	12.2	58.5	55.0
Untreated	1	12.2	59.0	52.1
Quilt	1	11.6	59.0	48.0
Priaxor	2	11.7	59.0	48.3
Untreated	2	12.2	59.0	47.0
Quilt	2	11.5	60.0	48.9
Priaxor	Average	12.0	58.8	51.7
Untreated	Average	12.2	59.0	49.6
Quilt	Average	11.6	59.5	48.5
LSD (0.10)		0.5	1.0	8.3

**Discussion:** The purpose of this experiment was to see if the addition of a newer fungicide, Priaxor, to double-crop soybeans affected yield. The producer's normal production strategy is the application of Micro 581 and Quilt to his beans at growth stage R-3. We compared Micro 581 with no fungicide to Priaxor and Quilt. We also wanted to determine if it was beneficial to make a fungicide treatment to double crop soybeans. We did not include a comparison to no treatment at all.

Due to variability between replications there were no significant differences between the three treatments. With the high cost of fungicides, you need to consider if the benefit of two bushels per acre would outweigh the cost. For a fungicide application to be beneficial, the yield potential should be high, disease pressure should be present, and weather conditions should be conducive for disease. It is likely that the dry 2013 September did not allow for disease to build up to yield-lowering levels. Use this and other replicated on-farm soybean plot information when making production decisions for 2014.

### MIDDLESEX INSECTICIDE TREATMENT FOR APHIDS

Cooperators: Producer: Jason Benton Extension: David Moore, Middlesex VCE Soil Type: Suffolk Fine Sandy Loam Previous Crop: Wheat Tillage/Row Spacing: No-Till in 7.5 inch rows Seeding Rate: 220,000 seeds/acre Planting Date: June 30, 2013 Treatment: Treatment 1: Untreated Treatment 2: 2 oz./A Silencer applied on August 31 Variety: Hubner H48-13R2/STS Crop Protection: Herbicide - Synchrony @0.75 oz. at 4wap Insecticide - Steward @ 8 oz. August 15 Harvest Date: November 15, 2013 Harvest Equipment: AGCO Gleaner R62

Treatment	Replication	TW	Moisture%	Yield
Silencer	1	57.0	11.2	41.0
Control	1	58.0	11.2	38.1
Silencer	2	57.0	11.7	41.8
Control	2	57.5	11.7	39.5
Silencer	3	58.0	11.5	40.3
Control	3	57.0	11.0	39.5
Silencer	Average	57.3	11.5	41.0
Control	Average	57.2	11.3	39.0
LSD (0.10)		1.8	0.5	1.8

**Discussion:** Early season corn earworm activity caused Jason to make application of Steward. Steward is a worm only insecticide and has little efficacy on beneficial insects. Shortly after the application of Steward, populations of soybean aphids began to balloon. Weather conditions also became dry. Other aphid problems arose in other sections of the lower middle peninsula this year possibly due to the cooler than normal summer.

Aphid populations were above the 250 per plant threshold. It was difficult to make a decision to spray since an insecticide application had been made just two weeks earlier. After much deliberation, it was decided to spray using Silencer. To get some idea of the damage to yields that aphids were causing we incorporated a plot with treated and untreated strips. Silencer increased yields by two bushels. Cost of the application was about \$2-4 plus application costs; therefore, the insecticide application was profitable at today's soybean prices.

Use this and other on-farm soybean plot results when making production decisions for 2014.

### MIDDLESEX INSECTICIDE/FUNGICIDES TREATMENT AT GS3-4

Cooperators: Producer: Jason Benton Extension: David Moore, VCE-Middlesex Soil Type: Suffolk fine sandy loam Previous Crop: Wheat Tillage/Row Spacing: No-Till in 7.5 inch rows Seeding Rate: 220,000 seeds/acre Planting Date: June 30, 2013 Treatment: Treatment 1: Insecticide and Fungicide Treatment 2: Insecticide Only Variety: Hubner H48-13R2/STS Crop Protection: Synchrony @ 0.75 oz./A at 4 WAP Steward at 6 oz./A on August 15 Silencer at 2 oz./A on August 31 Harvest Date: November 14, 2013 Harvest Equipment: AGCO Gleaner R62

Treatment	Replication	TW	Moisture%	Yield
Silencer	1	57	11.3	42.2
Silencer + Priaxor	1	58	11.0	41.6
Silencer	2	58	11.3	40.4
Silencer + Priaxor	2	58	11.7	42.3
Silencer	3	57	11.4	38.8
Silencer + Priaxor	3	58	11.3	41.4
Silencer		57.3	11.3	40.5
Silencer/Priaxor		58.0	11.3	41.8
LSD (0.10)		1.0	0.6	2.8

**Discussion:** Making an insecticide and fungicide application in full season soybeans has sometimes shown to increase yields and protect the plant against insects and foliar diseases. This may not be the case for double crop soybeans due the shorter days, changeable weather and the increased possibility of drought creating conditions less conducive to foliar disease.

In this experiment, the insecticide –fungicide application plots yielded 1.3 bushels greater than the insecticide only plots, but this difference was not significant. Since one of the plots showed the insecticide-only plot yielding higher than the strip with fungicide and the cost of fungicide to be rather pricy, this increase does not support use of this fungicide and insecticide at this location. Due to dry conditions in September 2013, making a fungicide treatment to double crop soybeans at R3 to R4 would probably not have paid in this field.

Use this and other on-farm soybean plot information when making production decisions for 2014.

### BRUNSWICK COUNTY FUNGICIDE TREATMENT COMPARISONS

Cooperators: Producer: Taylor Clarke

Extension: Lindy Tucker, Lunenburg VCE; Laura Siegle, Amelia VCE; Haley McCann, Nottoway VCE

Industry: CPS-Tyler Ashworth, Austin Puryear

**Soil Type:** Appling-Mattaponi complex

Previous Crop: Full-season soybeans then wheat, double-crop soybeans

**Tillage/Row Spacing:** No-till-15" rows (JD 1780 planter- plots 22 rows wide)

Seeding Rate: 220,000 seeds/acre

Planting Date: July 18, 2013

Treatment: Treatment 1: Untreated/ no insecticide seed treatment or fungicide

Treatment 2: Insecticide seed treatment and fungicide

Treatment 3: Insecticide seed treatment only

Treatment 4: Fungicide only

**Variety:** USG 7553nRS with Renwood Pro or Renwood Pro Plus seed treatment **Fertilization:** 30-60-90 spread at wheat planting

Crop Protection: Burndown: 1qt Roundup PowerMax and 2oz Valor;

Postemergence: 1qt Roundup PowerMax and 0.75oz Synchrony Harvest Date November 20, 2013

Harvest Equipment: JD 9500 with 915F head

		Insecticide	Foliar			Treatment
Plot #	Rep	Seed	Fungicide	Moisture	Yield (Bu/A)	Average
4	1	No	No	10.1	28.1	
5	2	No	No	10.3	28.9	
9	3	No	No	10.2	26.4	
15	4	No	No	9.9	32.1	28.8
1	1	No	Yes	8.9	33.6	
8	2	No	Yes	10.1	24.8	
11	3	No	Yes	10.1	26.8	
14	4	No	Yes	9.9	28.8	28.5
3	1	Yes	No	10.3	27.9	
6	2	Yes	No	10.3	27.0	
10	3	Yes	No	10.2	25.7	
16	4	Yes	No	10.0	30.5	27.8
2	1	Yes	Yes	9.8	29.9	
7	2	Yes	Yes	10.4	25.9	
12	3	Yes	Yes	10.2	28.8	
13	4	Yes	Yes	10.1	26.6	27.8
		Ave	rage			28.2

**Discussion:** The experiment was conducted to evaluate insecticide seed treatment and/or foliar insecticide for the control of three cornered alfalfa leafhopper. Due to low insect pressure, this purpose was abandoned and focus shifted to Soybean Rust discovery within 100 miles of test location. At the R4 to R5 stage, the plots were sprayed with *Stratego YLD* fungicide on September 26, 2013 at a rate of 4oz/acre rate (sprayed at 4.2 mph with TTIJ11002 nozzle-twin fan air induction at 50 psi delivering 18 gpa).

No significant differences in yield resulted from either the insecticide seed treatment or fungicide spray. Pods and stalks of soybeans treated with fungicide were visibly brighter at harvest despite no difference in yield. Some soybeans had a greenish tint due to frost/freeze stopping development. Plots needed another 7-10 days to reach R7.

### MIDDLESEX COUNTY VOTiVO SEED TREATMENT COMPARISON

**Cooperators:** Producer: Jason Benton Extension: David Moore, Middlesex VCE Robbie Longest, VCE Intern Industry: Ginny Barnes, Pioneer David & Jeff Hula, Renwood Farms Soil Type: Suffolk Fine Sandy Loam **Previous Crop:** Wheat Tillage/Row Spacing: No-till into wheat stubble Seeding Rate: 225,000 seeds/acre Planting Date: June 24, 2013 Treatments: Treatment 1: Pioneer 95Y70 (Untreated) Treatment 2: Pioneer 95Y70 (Treated) VOTiVO seed treatment Crop Protection: Glyphosate at 4 WAP, 2 oz. Silencer-August Harvest Date: November 14, 2013 Harvest Equipment: AGCO R62

Treatment	Replication	Moisture%	Test Weight	Yield (Bu/A)
Treated	1	11.3	57	28.7
Untreated	1	11.2	58	27.1
Treated	2	12.4	57.5	26.5
Untreated	2	12.2	57.5	26.8
Treated	3	12.3	57.5	28.2
Untreated	3	11.8	57.5	28.3
Average Treated		12.0	57.3	27.8
Average Untreated		11.7	57.6	27.4

**Discussion:** An unidentified race of soybean cyst nematode (SCN) was discovered in the tested field in 2011. Since then, the number of SCN has increased. To control the nematode population, the cooperator uses SCN resistant soybean varieties and a Counter hopper box nematicide.

Though the nematicide seed treatment VOTiVO claims to control other nematode species, it does not claim to control SCN. Figure 1 shows that SCN juveniles were in low numbers in mid-July, but had increased by mid-September when drought conditions existed.

The results of this trial indicated that yield was not increased when VOTiVO was used. Trials in previous years have shown similar results. Therefore, it is not recommended to treat soybean seeds with VOTiVO if you are planting in a field with a high population of SCN. To control SCN, it is recommended to use a granular nematicide while the field is being used for corn production. SCN resistant varieties of soybeans can also be used as a line of defense.



Figure 1: Population numbers of the lesion, root knot (RKN) and soybean cyst juvenile (SCN-Juv) nematodes in the VOTiVO trial area. Samples were taken from the treated and untreated areas on July 15, 2013 and a general sample was taken on September 10, 2013 during drought conditions.

### **VOTIVO VERSES PIONEER 95Y20 FOR NEMATODE CONTROL**

Cooperators: Producer: Howard Chandler Extension: David Moore, Middlesex VCE Robbie Longest, VCE Intern Industry: Pioneer, A DuPont Business **Renwood Farms** Soil Type: Bojac Loamy Sand/State Fine Sandy Loam Previous Crop: Corn Tillage/Row Spacing: No-Till into 15 inch rows Seeding Rate: 140,000 seed /acre Planting Date: May 24, 2013 Treatments: Treatment 1: USG 7553 (Untreated) Treatment 2: USG 7553 (Treated) with VOTiVO Treatment 3: Pioneer 95Y20 Fertilization: Liquid Potash : Mid June; Foliar Feed (Micro 581) at GS R3 **Crop Protection:** Burndown: Glyphosate + 2,4-D Post: Glyphosate + First Rate Post: Brigade + Stratego Yield

Harvest Date: October 30, 2013

Harvest Equipment: John Deere 9760STS

Treatment	Replication	Moisture %	Yield
USG 7553 Treated	1	13.5	68.1
USG 7553 Untreated	1	13.3	62.7
Pioneer 95Y20	1	13.2	64.7
USG 7553 Treated	2	13.4	65.2
USG 7553 Untreated	2	12.8	67.1
Pioneer 95Y20	2	12.4	66.0
Averages			
USG 7553 Treated		13.5	66.7
USG 7553 Untreated		13.1	64.9
Pioneer 95Y20		12.8	65.4

**Discussion:** The tested field has a history of Root-Knot Nematodes (RKN). Nematode assay samples taken in late July showed no RKN present (Figure 1). During hot and dry conditions in late summer of 2013, RKN numbers increased dramatically to more than 20 times over the high risk limit (Figure 2). For this trial, a soybean variety with no documented resistance to RKN was treated with the nematicide VOTiVO. A soybean variety that displays RKN resistance (Pioneer 95Y20) was planted for comparison. VOTiVO claims to offer protection for soybean seedlings early in the season. Treatment costs for VOTiVO ran over \$16.00 per bag. To justify use of this treatment, yield advantage would have to be more than 1.5 bushels per acre.

In all treatment areas, there were small spots where growth was stunted or prevented. According to the yields reported above, neither the seed treatment nor the resistant variety significantly impacted yield. The lack of response to treatments may be a result of the nematode population increasing late in the season. There are no recommendations for control of nematodes this late in the season. However, resistance is still the best defense to high nematode populations.





### KING WILLIAM NEMATICIDE SEED TREAMENT (VOTiVO) COMPARISON

Harvest Equipment: John Deere 6600

Treatment	Replication	Moisture %	Yield (Bu/A)
VOTiVO	1	12.1	41.0
Untreated	1	10.1	42.0
VOTiVO	2	10.1	41.4
Untreated	2	10.1	45.3
VOTiVO	3	11.7	43.9
Untreated	3	11.8	45.0
VOTiVO	4	11.7	44.3
Untreated	4	11.7	43.6
VOTiVO			42.6
Untreated			44.0
LSD (0.10)		1.2	2.2

**Discussion:** AG5533 is a mid- maturity group 5 soybeans with only Race 3 soybean cyst nematode (SCN) resistance and no root-knot nematode (RKN) resistance. It is Roundup Ready 2 and Synchrony tolerant. AG5533 was treated with VOTiVO seed treatment that offers some early season protection to a broad array of nematodes, excluding SCN. In on-farm trials, this product has not shown any convincing evidence of being beneficial in fields with SCN. This plot area has a history damaging populations of RKN.

In this experiment, samples taken in mid-July showed nematodes numbers to be little to none and stand disturbance to be negligible (Figure 1). Problem nematodes in this plot at end of season were Dagger (high risk) and Lance (moderate risk) but not RKN. Nematode numbers in samples taken at harvest showed enough to be considered a problem, but there were no differences in yields in the treated and untreated areas.

Once again, if nematodes are not an early season problem, then addition of these seed treatments is not needed. Moreover, the cost of adding this treatment equals approximately the value of one and a half bushels of beans at current prices (\$11-12/Bu.) I would say that if you do not have a nematode problem,

you definitely do not need this seed treatment. Use this and other replicated on farm results when making planting decisions for 2014.



## **USE OF NEMATICIDE SEED TREATMENTS: 2010-2013**

**Introduction:** This is a summary of four years of VOTiVO seed treatment experiments for the control/suppression of nematodes in soybeans. VOTiVO (*Bacillus firmus*,) a Bayer product, is a biological seed treatment that protects soybean roots in the presence of nematodes. VOTiVO treated soybeans are also treated with Poncho (*Clothianidin*), another Bayer product. Producers have been requesting the VOTiVO seed treatment at purchase. For four years, VOTiVO treated seeds have been compared to non-treated beans in locations throughout Eastern Virginia with a known history of damaging nematode populations. Multiple nematode species and races were present throughout the tested fields.

	Nematode	Cropping	VOTiVO	Control	Seed Trt Gain
Location/year	Species <sup>1</sup>	System	(Bu/A)	(Bu/A)	( <b>Bu/A</b> )
King & Queen 2010	SCN	Full-Season	35.1	32.7	2.4
King & Queen 2010	SCN	Full-Season	34.1	36.5	-2.4
King & Queen 2010	SCN	Full-Season	31.2	31.1	0.1
New Kent 2010	RKN	Double-Crop	39.8	36.7	3.1
New Kent 2010	RKN	Double-Crop	61.0	59.3	1.7
New Kent 2010	RKN	Double-Crop	53.6	54.7	-1.1
New Kent 2010	RKN	Double-Crop	65.7	65.1	0.6
Essex 2011	SCN	Double-Crop	37.5	40.3	-2.8
Essex 2011	SCN	Double-Crop	35.1	37.7	-2.6
Surry 2011	RKN	Full-Season	51.2	42.5	8.7
King & Queen 2012	SCN	Double-Crop	48.1	46.7	1.4
New Kent 2012	RKN	Double-Crop	55.3	48.5	6.8
Essex 2012	SCN	Full-Season	40.4	44.2	-3.8
Southampton 2012	RKN	Double-Crop	46.7	44.7	2.0
Prince George 2012	Lesion	Full-Season	51.9	51.1	0.8
Chesapeake 2012	SCN	Full-Season	56.0	56.4	-0.4
Westmoreland 2012	RKN	Full-Season	45.3	45.0	0.3
Middlesex 2013	SCN	Double-Crop	27.8	27.4	0.4
King & Queen 2013	RKN	Full-Season	66.7	64.9	1.8
King William 2013	Dagger	Double-Crop	42.6	44.0	-1.4
Average			46.3	45.5	0.8

**Treatments: Treatment 1:** Untreated **Treatment 2:** VOTiVO Seed Treatment **Soil Types:** Varied, but mostly sandy loams of Eastern Virginia

<sup>1</sup>SCN = soybean cyst nematode; RKN = root knot nematode

**Discussion:** There was rarely a difference in the yields with and without nematicide seed treatment. The cost of application for VOTiVO seed treatment adds about \$15-16 per acre and is even more costly if seeding rate is higher. Across all locations and over the past 4 years, the average advantage to yield has been less than a bushel. At \$11.00 per bushel soybeans, the advantage has been \$8.80 which does not cover the cost of treatment. It appears that the advantage of using VOTiVO, if there is one, may lie in fields infested with nematodes other than SCN. That is why it is important for producers to know what nematodes they are dealing with. Resistant nematode varieties continue to be the best, and most economical, defense to nematode problems in soybeans.

# NEMATODE RESISTANT VARITIES

### IRRIGATED SOYBEAN CYST NEMATODE RESISTANT VARIETY COMPARISON

Cooperators: Producer: Cloverfield Enterprises Extension: Keith Balderson, Essex VCE; Robbie Longest, Summer Intern Industry: Bryan Dillehay, Monsanto; Ginny Barnes, Dupont Pioneer Soil Type: Molena loamy sand Previous Crop: Barley Tillage/Row Spacing: No-till/15 inch rows Population: Planted to obtain 110,000 plants per acre Planting Date: June 6, 2013 Treatments/Varieties: Treatment 1: Multi-SCN race resistant Pioneer 95Y60 Treatment 2: Multi-SCN race resistant Asgrow AG5634 Fertilization: 0-31-85 per acre in fall of 2012 on barley; foliar Mn on soybeans Crop Protection: Herbicide—post emergence Roundup Fungicide—Quadris Insecticide—Tombstone Harvest Date: November 15, 2013

Harvest Equipment: Case IH 8120 with 35 foot draper header

Variety	Replication	Moisture%	Yield (Bu/A)
Asgrow AG5634	1	10.8	50.4
Pioneer 95Y60	1	10.6	53.3
Asgrow AG5634	2	10.8	56.5
Pioneer 95Y60	2	10.5	52.9
Asgrow AG5634	3	10.6	54.1
Pioneer 95Y60	3	10.4	56.5
Asgrow AG5634	4	10.5	54.8
Pioneer 95Y60	4	10.4	54.6
Asgrow AG5634	Average	10.7	54.0
Pioneer 95Y60	Average	10.5	54.3
LSD (0.10)		0.1	3.5

### **Discussion:**

The purpose of this experiment was to evaluate two multi-soybean cyst nematode (SCN) race resistant varieties in a field with a long history of high soybean cyst nematode levels. The most current race test from this field showed that race 4 is the predominant race in the field. A composite soil sample from each variety for nematode assay was taken twice during the growing season. The results of the assays are shown in the graph below. Please note this is not a race determinant test. There did appear to be hot areas of high levels of SCN in most of the treatments as evidenced by less growth. However, both of these varieties showed good resistance and performance. When comparing these resistant varieties to non-resistant varieties planted in this area in the past, there was an increase in yield of 10 bushels per acre. Crop rotation and variety selection remain very important production practices in managing SCN.



This picture was taken in mid-July from an area of the field that typically has very high SCN numbers. The flag is the dividing line between the varieties, and both varieties looked pretty good.



### KING WILLIAM NEMATODE RESISTANCE VARIETY COMPARISON

Cooperators: Producer: David Johnson Extension: David Moore; Middlesex VCE; Laura Maxey, King and Queen VCE; Robbie Longest, Summer intern Industry: Bryan Dillehay, Monsanto Soil Type: Wickham & Seaford Loamy Fine Sand Previous Crop: Wheat Tillage/Row Spacing: No-till into wheat stubble in 7 inch Population: 235,000 seeds/ acre Planting Date: June 21, 2013 Variety/Treatment: Treatment 1: Asgrow AG4632 Treatment 2: Asgrow AG4633 Crop Protection: 2 applications of Glyphosate and Brant manganese with 2nd application Harvest Date: November 14, 2013

Harvest Equipment: John Deere 6600

Treatment	Replication	Moisture%	Yield (Bu/A)
AG4632	1	11.7	41.1
AG4633	1	11.8	41.1
AG4632	2	11.7	40.3
AG4633	2	11.1	42.0
AG4632	3	11.0	41.8
AG4633	3	11.3	41.9
AG4632	4	11.4	39.4
AG4633	4	11.7	41.4
AG4632	5	10.0	42.0
AG4633	5	10.3	43.8
Average AG4632		11.2	40.9
Average AG4633		11.2	42.0
LSD (0.10)		0.4	0.9

**Discussion:** Asgrow AG4632 and AG4633 are mid to late maturity group 4 varieties. AG4632 has moderate resistance to Race 3 Soybean Cyst Nematodes (SCN). It also is a Synchrony Tolerant Soybean (STS) variety. AG4633 is also resistant to race 3 SCN plus also has Root-Knot Nematode (RKN) resistance. These varieties were planted in a side by side comparison in a known RKN infested field. Due to the weather, nematode numbers did not increase to any appreciable levels until late in the season and even at harvest, RKN levels were not at risk levels.

In this experiment, the variety with RKN resistance increased yield by 1.1 bushels. It looks as though we still cannot accurately predict nematode numbers, especially with RKN. RKN numbers may increase and eventually become a greater problem, but its severity appears to be related to hot and dry weather occurrences. Nematicide seed treatments are rather costly and may give protection in early season situations when numbers are low to moderate. Before spending money on seed treatments or resistant varieties, make sure you have a nematode problem. This can be achieved through taking a nematode sample that determines nematode species and population density. Refer to VCE publication for more information; <a href="http://pubs.ext.vt.edu/AREC/AREC-9/soybean\_nematodes\_PDF.pdf">http://pubs.ext.vt.edu/AREC/AREC-9/soybean\_nematodes\_PDF.pdf</a>

### SUFFOLK NEMATODE RESISTANCE VARIETY COMPARISON

<b>Cooperators:</b>	Producer: Tidewater AREC				
-	Extension: David Holshouser, Extension Soybean Specialist				
	Industry: Bryan Dillehay, Monsanto				
Soil Type: Rains fine	e sandy loam				
Previous Crop: Corr	n, Wheat				
Tillage/Row Spacing	: No-till into wheat stubble in 7.5 inch rows				
Seeding Rate: 240,0	00 seeds/ acre				
Planting Date: June	20, 2013				
Variety/Treatment:	Treatment 1: Asgrow AG4632				
	Treatment 2: Asgrow AG4633				
	Treatment 3: Asgrow AG5632				
	Treatment 4: Asgrow AG5634				
Crop Protection: Her	rbicide – Sonic Preemergence; 1 applications of glyphosate				

Harvest Date: December 19, 2013 Harvest Equipment: Wintersteiger plot combine

Treatment	Replication	Moisture%	Yield (Bu/A)
AG4632	1	10.9	58.4
AG4633	1	11.0	55.0
AG5632	1	10.7	60.6
AG5634	1	11.5	71.5
AG4632	2	10.1	59.8
AG4633	2	10.1	60.5
AG5632	2	11.3	58.4
AG5634	2	11.5	66.6
AG4632	3	9.9	60.1
AG4633	3	8.6	63.2
AG5632	3	9.0	56.1
AG5634	3	10.4	66.5
AG4632	4	12.2	54.6
AG4633	4	10.0	69.1
AG5632	4	12.4	53.2
AG5634	4	12.8	71.2
AG4632	5	10.6	56.2
AG4633	5	11.1	57.0
AG5632	5	10.7	58.2
AG5634	5	10.8	66.9
AG4632	6	9.8	58.0
AG4633	6	8.8	55.6
AG5632	6	10.6	55.5
AG5634	6	10.8	67.5
Average AG4632		10.6	57.8
Average AG4633		9.9	60.1
Average AG5632		10.8	57.0
Average AG5634		11.3	68.4
LSD (0.10)		0.6	3.7

**Discussion:** Asgrow AG4632 and AG4633 are mid to late maturity group (MG) 4 varieties. AG4632 has moderate resistance to Race 3 Soybean Cyst Nematodes (SCN). It also is a Synchrony Tolerant Soybean (STS) variety. AG4633 is also resistant to race 3 SCN plus also has Root-Knot Nematode (RKN) resistance. AG5632 and AG5634 are mid-MG 5 varieties. AG5632 has resistance to Race 3 SCN, but is susceptible to RKN. AG5634 has moderate resistance to Race 3 SCN and resistance to Race 2 SCN plus is resistant to RKN. These varieties were planted in a side by side comparison in a known RKN infested field.

Although the RKN resistance in AG4633 did not result in significantly greater yield than AG4632 (no RKN resistance), AG5634 yielded 11.4 bushels/acre more than AG5632, which does not contain RKN resistance. Maturity group 4 varieties are generally not as well adapted to Suffolk's environment at MG 5 varieties; this may have resulted in a greater benefit. It is also possible that RKN did not build up to damaging levels until later in the season (a trend that we commonly see). If this were the case, MG 5 varieties may benefit more than the less-adapted MG 4 varieties since maturity was about 10 days later.

### PRINCE GEORGE LIBERTY LINK VARIETY COMPARISON

Cooperators: Producer: J.J. Skalsky Extension: Scott Reiter, Prince George Industry: Participating companies Soil Type: Aycock and Montross silt loam Previous Crop: Soybeans Tillage/Row Spacing: No-till/14 inches Seeding Rate: 100,000 seeds/acre Planting Date: May 15, 2013 Fertilization: 20 N – 0 P<sub>2</sub>O<sub>5</sub> – 90 K<sub>2</sub>O – 24 S Crop Protection: Burndown – Roundup PowerMax 1 qt/A + 2,4-D 1 pt/A Post - Ignite 280 32 oz/A + Montys NanoBoost carbon 2 oz/A , June 7 Harvest Date: October 4 and 22, 2013 Harvest Equipment: John Deere 9400 w/ 215 platform

Brand	Variety	Moisture %	Yield (Bu/A)
HBK (Bayer)	LL4850*	12.2	49.4
HBK (Bayer)	LL5350**	14.6	41.0
Progeny	P 5160 LL**	15.0	46.3
Progeny	P 5450 LL*	14.7	46.6
Southern States	LL 473N*	12.0	48.0
Southern States	LL 511N**	15.8	44.6
	Average		46.0

\*Harvested on October 4, 2013

\*\* Harvested on October 22, 2013

**Discussion:** This full season Liberty Link evaluation yielded very well for 2013. Liberty Link and Roundup Ready soybeans are being rotated to broaden his weed control options. Final plant stands were 70,000 – 100,000 plants per acre at harvest. LL4850, LL 473N, and P 5450 LL were harvested on October 4 with the rest of the field of late Group IV soybeans. P 5450 LL matured earlier than expected and was a very tall plant at approximately 50 inches. The remaining varieties harvested on October 22 were mature but still had green stems. Use this and other information from the statewide soybean variety trials to make selections for 2014.

## NUTRITIONAL CONTENT OF SOYBEANS DURING GROWING SEASON

**Background:** This field work was initiated to better understand the nutrient content of soybean plants during the growing season. Overall, the purpose of this study is to find effective practices that result in optimal soybean yields in Virginia; especially in double crop situations. Tissue samples were taken at various growth stages and mailed to A & L Eastern Laboratories to determine nutritional content. Results of the tissue sample help us better understand the nutritional need of the plant at various stages. Results also help us understand if additional foliar "nutritionals" are needed. The chart below shows nutritional deficiencies and/or excesses from soybeans collected from seven (7) different locations around the lower middle peninsula. All samples were taken from the 2013 growing season. The "Nutrition add" column tells if a supplement was added; supplements were added only once in those fields. Samples were taken every two weeks, during the season until plant maturity. The samples consisted of leaves picked from the most recently developed nodes of the soybean plant. The area where the sample was taken was always the same 100 square feet section of field.

Field	Growth Stage	Low/Deficient	High/Very High	Nutrition add @ R-3
KQ DC 1	R-1	S, Ca		
KQ DC 1	R-3	Cu	Zn, Mn	Yes
KQ DC 1	R-5	K, Cu	Zn, Mn	
KQ DC 1	R-6	N, P, S		
Middlesex FS 1	V-1	Ca	K, Fe	
Middlesex FS 1	V-3	S, Ca	K	
Middlesex FS 1	R-1	Na	N, K	No
Middlesex FS 1	R-2		N, Cu	
Middlesex FS 1	R-4			
Middlesex FS 1	R-6	N, P	Cu	
Middlesex DC 1	V-4	S, Ca	N,	
Middlesex DC 1	R-1	Ca, Na	N, K,	No
Middlesex DC 1	R-3	Cu,	N,	INO
Middlesex DC 1	R-5	N, P, K, Mg		
Middlesex DC 1	R-6	N, S, P, K, Cu		
Middlesex DC 2	V-3		K	
Middlesex DC 2	R-1		N, K, Cu	No
Middlesex DC 2	R-3	Cu,	N, P	NO
Middlesex DC 2	R-5		N, Fe	
Middlesex DC 2	R-6	N, S, P, Cu		
Middlesex DC 3	R-1		N, K	
Middlesex DC 3	R-3		N,	Yes
Middlesex DC 3	R-5	Mg, Cu	Zn	
Middlesex DC 3	R-6	N, P, Cu	Ca	
Middlesex DC 4	V-4	S, Ca	N,	
Middlesex DC 4	R-2		Zn	Yes
Middlesex DC 4	R-4		Zn	
Middlesex DC 4	R-6	N, S, P, K, Cu		

Field	<b>Growth Stage</b>	Low/Deficient	High/Very High	Nutrition add @ R-3
K. William DC 1	V-4	S, Ca		
K. William DC 1	R-2		N, Zn, Cu	Yes
K. William DC 1	R-5	Cu		
K. William DC 1	R-6	N, S, P, K, Cu	Ca, Mn	

**Results:** Most fields exhibited few nutritional problems. Around growth stage R-6, when leaves began to turn and fall from plant, expected deficiencies in N, P, K, and S were present in most fields. In a majority of the fields, Ca and S were low or deficient early on in the plants' life. In fields where nutritional supplements were added, noticeable changes were not detected from tissue samples taken after application.

### **Discussion:**

The results are reported to better understand the soybean's nutritional makeup during the different growing stages. We hope to use this information to see if there are nutritional needs that we are overlooking in the plant. I will point out that the deficiencies and the abundances of nutrients in the plant did not seem to be changed by the addition of foliar nutrition supplement. Most, if not all, supplements were made only once at R-2 to R-3 growth stage. Beginning soil sample information and yield results from the fields are not available presently. That information will be collected and presented in a later report to the Virginia Soybean Board. It will also be available to all producers upon request.



Source: University of Illinois Extension