



Virginia Cooperative Extension

Virginia Tech • Virginia State University

www.ext.vt.edu

2014 Virginia On-Farm Corn Test Plots



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

2014 Virginia On-Farm Corn Test Plots

Conducted and summarized by:

Keith Balderson, Extension Agent, Essex County
 Dr. Glenn Chappell, Associate Professor, Virginia State University
 Roy Flanagan, Extension Agent, Virginia Beach
 Watson Lawrence, Extension Agent, City of Chesapeake
 Robbie Longest, VCE Summer Intern
 Laura Maxey-Nay, Extension Agent, Hanover County
 David Moore, Extension Agent, Middlesex County
 Stephanie Romelczyk, Extension Agent, Westmoreland County
 Glenn Slade, Extension Agent, Surry County
 Landre Toulson, Extension Agent, King and Queen/King William Counties
 Dr. Wade Thomason, Virginia Tech Extension Grains Specialist



The research and demonstration plots discussed in this publication are a cooperative effort by ten Virginia Cooperative Extension employees, a faculty member at Virginia State University, numerous producers, and many members of the agribusiness community. The field work and printing of this publication are mainly supported by the Virginia Corn Check-Off Fund through the Virginia Corn Board. Anyone who would like a copy should contact their local extension agent, who can request a copy from the Essex County Extension office.

This is the twenty-third year of this multi-county cooperative project. Further work is planned for 2015.

The authors wish to thank the many producers and agribusinesses that participated in these research and demonstration plots.

Disclaimer: Commercial products are named in this publication for informational purposes only. Virginia Cooperative Extension does not endorse these products and does not intend discrimination against other products which also may be suitable.

Table of Contents

I.	General Summary	4
II.	Hybrid Comparisons	5
III.	Plant Populations.....	20
IV.	Fertility	29
V.	Tissue Sample Results	36
VI.	Root Knot Nematode Monitoring	37

General Summary

These demonstration and replicated studies provide information that can be used by Virginia corn growers to make better management decisions on their farms. Refer to individual results for more details.

Corn hybrid selection continues to be challenging. With more seed companies and more GMO options and seed treatment packages than ever before, hybrid selection can be a difficult decision. We evaluated early maturity hybrids (107 day RM or less) at 2 locations, mid maturity hybrids (108-112 day RM) at 7 locations and full season hybrids (113 day RM or more) at 4 locations. The Chesapeake location had early and mid-season entries, and as a maturity group, the mid-season hybrids yielded 18 bushels per acre higher than the early hybrids. The Ag-Expo site in Northumberland County had all three maturity groups, and under drier conditions, the mid maturity group yielded 4 bushels per acre better than the early hybrids. Farmers should continue to plant hybrids of multiple maturities to help spread risk. In fields with very good soil types and/or irrigation, farmers should consider mid or full season hybrids.

We also conducted several corn plant population tests. In one plot comparing a fixed and a variable planting rate, there was no difference in the yields with yields approaching 200 bushels per acre. In another plot comparing variable rate plant populations to fixed populations of 24,000 plants per acre and 30,000 plants per acre, the higher planting rate yielded more than the other 2 planting rates with yields also around 2000 bushels per acre.

Fertilizer plot work this year included evaluation of a hairy vetch cover crop to supply nitrogen to corn, and 4 plots evaluating variable rate nitrogen sidedressing rates to a fixed rate. In the hairy vetch cover crop work, it was estimated that the hairy vetch cover crop supplied about 45 pounds of nitrogen per acre, and the addition of 30 pounds of nitrogen applied at sidedress increased yields 8 bushels per acre compared to the plots that received 120 pounds per acre of nitrogen (60 pounds per acre broadcast pre-plant and 60 pounds per acre sidedressed) plus the cover crop. In the variable rate nitrogen work, averaged over 2 plots, yields and nitrogen use efficiency were as follows:

<u>Treatment</u>	<u>Yield (bu./acre @ 15.5%)</u>	<u>NUE (N/bu.)</u>
Fixed	125	1.331
Variable	125	1.347
Greenseeker	124	1.317

In two plots evaluating Greenseeker to a fixed nitrogen rate, the Greenseeker plots averaged 147 bushels per acre (NUE=1.119), while the fixed rate plots averaged 148.5 bushels per acre (NUE=1.172).

A summary of the results of 135 tissue samples is provided. These samples were taken as part of fertility plots and troubleshooting production problems over the past four years.

Root knot nematodes can be quite damaging to soybeans and difficult to manage with crop rotations. Soil samples within a field planted to corn with documented very high levels of root knot nematodes were submitted to the Virginia Tech Nematode Assay Laboratory three times during the growing season. Results indicate that corn is not a good rotational crop for managing this nematode.

2014 Ag Expo Corn Hybrid Demonstration Plot

Cooperators:	Producer: Bleak House Farms
	Extension: Keith Balderson, Essex Stephanie Romelczyk, Westmoreland Landre Toulson, King and Queen/King William Counties Robbie Longest, Summer Intern
	Agribusiness: Participating Seed Companies
Soil Type:	Woodstown fine sandy loam
Tillage:	No-Till
Previous Crop:	April 24, 2014
Fertilizer:	Starter: 16 gallons per acre 15-15-0 plus Micros Pop Up: 2 gallons per acre 15-15-0 plus Micros
	Side Dress: 100-0-0-18S per acre
Crop Protection:	Burndown Herbicides: Gramoxone and 2,4-D Pre-emergence Herbicides: Lumax and Princep Post-Emergence Herbicides: Halex GT and Atrazine In-Furrow Insecticide: Capture LFR
Harvest Date:	September 23, 2014

Hybrid	Maturity	Pop.	% Moisture	Yield (bu./A @15.5%)
Augusta 5457	E	29,500	16.6	139
Check- Pioneer 0636AM Poncho/ Votivo 1250		28,000	17.4	136
Augusta 4461	M	29,000	18.2	140
Augusta 6664	F	28,000	19.3	146
Check		29,250	17.8	148
Channel 203-44STXRIB	E	30,000	16.5	134
Channel 209-53STXRIB	M	28,000	17	146
Check		29,500	17.1	139
Channel 217-08VT3RIB	F	29,500	19.5	140
Dekalb DKC62-08RIB	M	30,000	18.5	142
Check		29,250	17.4	138
Dekalb DKC DK65-19RIB	F	27,000	19	149
Doeblers RPM 587AM	E	26,000	17.9	142
Check		31,000	17.1	140
Doeblers RPM 5015AM	M	28,000	17.4	151
Doeblers 5615GRQ	F	29,000	19	148
Check		29,250	17.8	142
Dyna-Gro D46SS46	E	27,000	16.8	153
Dyna-Gro D52VC91	M	27,500	18.2	162
Check		29,500	17.3	145
Dyna-Gro D57VP51	F	29,000	19.2	155
Great Heart HT 7240	E	28,500	18.5	148
Check		29,250	17.7	159
Great Heart Ht 7261	M	28,500	19	160
Great Heart HT 7778	F	28,500	19.5	148

Check		29,000	17.4	141
Hubner H5368RC3P	E	28,000	15.5	153
Hubner H5420RC3P	M	30,000	16.9	153
Check		29,250	17	139
Hubner H4744RC2P	F	29,000	18.8	154
Pioneer 0604AM	E	28,000	17.4	153
Check		30,500	17	144
Pioneer P1105AM	M	28,500	17	146
Pioneer P1690AM	F	28,500	19	146
Check		29,250	17.7	149
Seed Consultants SC 11AGT30	M	28,500	19	157
Seed Consultants SC 11AQ72	F	30,000	18.8	148
Check		28,000	17.5	134
Seed Consultants SCS 11HQ31	M	28,000	18.6	136
Seed Consultants SCS 11HR63	F	30,000	19.6	145
Check		29,250	17.8	148
Mycogen 2K595	E	29,500	16.9	144
Mycogen 2V717	M	28,500	17.2	158
Check		28,500	16.9	140
Mycogen 2C799	F	27,500	18.2	150
Overall Ave. Early Hybrids				146
Overall Ave. Mid Hybrids				150
Overall Ave. Full Hybrids				148
Average Check				143
Overall Average excluding Check				148

Discussion:

This plot experienced heavy rainfall in excess of over 4 inches within a week of planting and dry conditions in much of July. Overall these are respectable yields given the weather conditions. Please use this and replicated corn hybrid yield data when selecting hybrids for 2015.

2014 Chesapeake RR Corn Hybrid Demonstration Plot

Cooperators:
Producer: Russell Temple

Extension: Watson Lawrence

Soil Type:

Dragston Fine Sandy Loam

Tillage:

Conventional with rows planted flat

Previous Crop:

Soybeans

Planting Date:

5/14/14

Row Width:

24 inches

Fertilizer:

Broadcast 600 lbs. 30-12-12

Crop Protection:

40 oz. Roundup Powermax + 8 oz. Banvel, post-emergence

Harvest Date:

10/3/14

Hybrid	Maturity	Traits	% Moisture	Yield (bu./A @15.5%)
Great Heart HT 7240	E	VT2ProRIB	18.2	191.62
Channel 203-44STX	E	Smart Stax	16.4	177.88
Pioneer P0604 AM	E	Optimum Acremax	16.9	174.10
Augusta 5457 GT	E	VT2Pro	17.7	172.72
Doebblers RM 587	E	YGCB/HX1/LL/RR2	16.9	169.70
Dyna Gro D46SS46	E	Genuity Smart Stax	16.6	169.38
Mycogen 2K595	E	Smart Stax Refuge Advanced	17.1	121.61**
Average Early Hybrids				168.14
Pioneer 1319 HR (Check)	M	HX1,LL,RR2	18.5	197.95
Dekalb DKC 62-08	M	GENSSRIB	17.6	194.58
Great Heart HT 7261	M	VT2ProRIB	17.6	193.85
Mycogen 2V717	M	Smart Stax Refuge Advanced	17.6	190.21
Doebblers RPM 5015 AM	M	YGCB/HX1/LL/RR2	16.9	189.75
Pioneer P1105 AM	M	HX1,LL,RR2	18.2	187.49
Channel 209-53 STXRIB	M	Smart Stax	17.5	187.49
Dyna Gro D52VC91	M	Genuity VT2 Pro	17.5	186.68
Hubner 5420 RC3P	M	Genuity VT3 RIB	17.1	181.73
Seed Consultants SCS11AGT30	M	BC/LL/GT	19.3	174.19
Seed Consultants SCS11HQ31	M	HXX/LL/RR2	19.9	170.14
Average Mid Hybrids				185.61

**Reduced yield due to green snap

Discussion:

Weather conditions were very good on this plot, resulting in very good yields. Please use this and replicated yield data when selecting hybrids for 2015.

2014 King & Queen Mid-Maturity Corn Plot

Cooperators:
Producer: Robert T. Bland IV
Extension: David Moore, VCE-Middlesex
 Dorothy Baker, Summer Intern
Agribusiness: Participating Companies
Soil Type: Emporia Sandy Loam
Tillage: No-Tillage
Previous Crop: Orchardgrass
Planting Date: May 12, 2014
Check Hybrid: Pioneer P0912HR
Fertilizer: Broadcast: 21-52-60-12s + Boron
 Burndown: 42-0-0
 Sidedress: 90-0-0
Crop Protection: Burndown: Glyphosate + Atrazine + Simazine + 2,4-D
 Post: Halex GT
Harvest Date: October 30, 2014

Hybrid	Population 6/4	% Moisture	Yield (bu/A.)
Great Heart HT7261	21,000	15.8	197.7
Check	23,000	15.8	199.2
Pioneer P1105AM	24,000	16.1	203.8
Check		15.6	207.3
Doebler's 5015AM	24,500	15.7	205.6
Check		15.9	203.5
Channel 209-53	23,000	15.8	188.6
Check		16.0	198.4
Dyna-Gro DG52VC91	23,000	16.1	196.7
Check	22,000	16.0	204.4
Augusta 4461	22,000	15.9	192.7
Check		15.8	210.1
Hubner H5420	22,000	15.8	192.1
Check		15.9	208.4
Mycogen 2V717	23,000	15.3	197.2
Check		15.3	208.0
Dekalb DKC62-08	24,000	15.3	205.3
Check		15.7	196.3
Seed Consultants SC11AGT30			
	25,000	16.0	188.2
Check	23,000	16.0	200.7
Seed Consultants Extreme SCS11HQ31	23,000	16.3	196.1

Discussion: Very nice plot! The plot averaged 200 bushels. We were very fortunate in the lower Middle Peninsula this year; timely and adequate rains and cool than average temps. Use this and other Virginia Tech on-farm hybrid information when making planting decisions for 2015

2014 Westmoreland County Mid-Maturity Corn Hybrid Plot

Cooperators: Producer: F.F. Chandler, Jr.
 Extension: Stephanie Romelczyk, ANR – Westmoreland
 Keith Balderson, ANR – Essex
 Robbie Longest, VCE Summer Intern
 Agribusiness: Participating Seed Company Representatives

Soil Type: Savannah loam; Kempsville loam

Tillage: No-till

Previous Crop: Soybeans

Planting Date: April 23, 2014

Fertilizer: Broadcast: 40-0-60
 Starter: 15-15-0
 Sidedress: 90-0-0-12S per acre

Crop Protection: Preplant: Lumax 3 pt/A
 Princep 1.5 pt/A
 Postemergence: Halex 3.6 pt/A
 Atrazine 1 pt/A

Harvest Date: October 3, 2014

Hybrid	Maturity	Pop.	% Moisture	Yield (bu./A @15.5%)
Doebler's RPM 5015AM	M	29000	15.0	198
Great Heart HT7261	M	26667	17.8	193
DynaGro D52VC91	M	28000	15.6	192
Dekalb DKC62-08RIB	M	30333	15.9	187
Pioneer P1105AM	M	29333	16.2	186
ChannelBio 209-53STXRIB	M	29667	15.2	184
Mycogen 2V717	M	26000	16.5	182
Hubner H5420RC3P	M	25333	15.7	181
Seed Consultants SCS11HQ31	M	28000	17.3	181
Seed Consultants SC11AGT30	M	28333	18.0	169
Augusta 4461	M	28667	15.0	154
AVERAGE				183

Discussion:

These yields are outstanding, especially given the weather conditions. Rainfall from mid-June to mid-July was less than one inch. Use this and replicated yield data when selecting hybrids for 2015.

2014 Virginia State University Irrigated Mid & Late Corn Hybrid Demonstration Plot

Cooperators: Ruddy Grammar and Mack West, VSU-Randolph Farm
Glenn F. Chappell, II, Virginia State University

Previous Crop: Full Season Soybeans

Soil Type: Tetotum loam & Bourne Fine Sandy Loam

Planting Date: April 21, 2014

Plant Population: 31,000

Fertilizer: Broadcast: 18-45-90 Granular - April 18, 2014, Broadcast: 32-0-0 - April 25, 2014,
Sidedress: 120-0-0-20S - June 2, 2014

Crop Protection: 2qt Bicep II Mag. + 1qt Simazine + 1qt Gramoxone SL 2.0 – April 25, 2014

Harvest Date: October 1, 2014

Harvest Equipment: John Deere 9560 STS

Hybrid	Maturity	Traits	% Moisture	Yield	% of Check*
Hubner 4663RC3P (check)	F	Genuity VT2PRIB	18.4	198.8	-----
Hubner H5420RC3P	M	Genuity VP3PRIB	18.9	191.7	83.5
Hubner 6844RCSS	F	Genuity SSRIB	18.5	218.4	95.2
CPS/Dyna-Gro Seed D52VC91	M	Genuity VT2 Pro	17.4	204.8	89.2
CPS/Dyna-Gro Seed D57VP51	F	Genuity VT3 Pro	18.4	221.0	96.3
Channel 209-53STXRIB	M	Smart Stax	20.4	227.8	99.2
Channel 217-08VT3PRIB	F	VT3 Pro	19.2	213.9	93.2
Mycogen Seeds 2C799	F	Smartstax/Reguge Adv.	19.2	206.4	89.9
Dekalb DKC62-08RIB	M	GENSSRIB	16.5	248.7	108.4
Hubner 4663RC3P (check)	F	Genuity VT2PRIB	19.2	260.3	-----
Dekalb DKC65-19RIB	F	Genuity VT3RIB	18.7	225.5	87.8
Dekalb DKC67-58RIB	F	Genuity VT2PRIB	18.3	222.0	86.5
Augusta 4461	M	VT2 Pro	16.5	219.5	85.5
Augusta 6664	F	VT2 Pro	18.0	xxxx**	xxxx
Dupont Pioneer P1105AM	M		18.4	231.6	90.2
Dupont Pioneer P1690AM	F		18.6	233.4	90.9
Doebler's RPM 5015AM	M	YGCB/HX1/LL/RR2	19.0	210.3	81.9
Doebler's 5615GRQ	F	GT/CB/LL/RW	19.6	203.9	79.4
Seed Consultants SCS 11HQ31	M	HXX/LL/RR2	18.6	206.0	80.2
Seed Consultants SCS 11HR63	F	HX/LL/RR2	17.5	216.1	84.2
Seed Consultants SCS 11AGT30	M	CB/LL/GT	19.3	194.1	75.6
Seed Consultants SCS 11AQ72	F	CB/LL/GT/RW	20.7	219.6	85.5
Great Heart HT 7778	F	VT3PRIB	19.4	233.7	91.0
Great Heart HT 7261	M	VT2PRIB	17.8	239.9	93.4
Hubner 4663RC3P (check)	F	Genuity VT2PRIB	18.2	253.2	-----
PLOT AVERAGE:				218.5	
Mid Hybrids				217.4	
Late Hybrids				219.4	

Discussion:

Rainfall: April – 0.75”, May- 1.25”, June – 6.30” July – 6.15”, August – 2.20”, Irrigation: June - 0.30”, July 2.00”

* % of Check is calculated by dividing an individual hybrid's yield by the average of the two closest check hybrids and multiplying by 100.

** Augusta 6664 was eliminated from the plot due to planter skips.

2014 Virginia Beach Corn Hybrid Demonstration Plot

Cooperators: **Producer:** Russell H. Malbone
Extension: Roy D. Flanagan III

Soil Type: Tetotum Loam and Bojac Fine Sandy Loam
Tillage: No-till
Previous Crop: Soybeans
Planting Date: May 14, 2014
Fertilizer: 250lbs 7-18-36 per acre Preplant
50 gal. 30% Nitrogen Sidedress 6/10/2014
Crop Protection: 2 quarts Glyphosate Burndown
1 quart Round Up Powermax 6/6/2014
1 quart Atrazine 6/6/2014
Harvest Date: October 6, 2014

Hybrid	Maturity	Traits	% Moisture	Yield (bu./A @15.5%)
Dyna Gro- D57VP51	L	Genuity VT3 Pro	16.0	238.12
Pioneer-P1690AM	L	GT/CB/LL/RW	17.3	214.90
Dekalb- DKC67-58	L	GENVT2PRIB	16.6	203.01
Dekalb- DKC65-19	L	GENVT3PRIB	15.7	199.14
Seed Cons.-SCS 11AQ72	L	GT/CB/LL/RW	17.5	195.74
Seed Cons.- SCS11HR63	L	HX/LL/RR2	17.0	193.52
Channel- 217-08	L	VT3PRIB	16.7	187.37
Great Heart- HT-7778	L	VT3PRORIB	15.7	187.02
Augusta- 6664	L	VT2PRO	14.8	179.39
Mycogen- 2C799	L	Smartstax/refuge adv.	16.1	175.79
Doebblers- 5615GRQ	L	GT/CB/LL/RW	16.7	169.40
Average Late maturity				194.85
Dekalb- DKC62-08	M	GENSSRIB	15.5	214.37
Hubner- H5420RC3P	M	Genuity VT3PRIB	15.4	188.55
Dyna Gro- D52VC91	M	Genuity VT2Pro	15.1	186.61
Mycogen- 2V717	M	Smartstax/refuge adv.	14.7	183.10
Augusta- 4461	M	VT2Pro	15.7	182.69
Seed Cons.-SCS11HQ31	M	HXX/LL/RR2	17.3	182.62
Pioneer- P1105AM	M		15.7	179.23
Doebblers- RPM 5015AM	M	YGCB/HX1/LL/RR2	15.2	176.81
Hubner- H5368	M		14.2	171.84
Great Heart- HT-7261	M	VT2PRORIB	16.6	164.46
Channel- 209-53STXRIB	M	Smart Stax	15.4	159.88
Seed Cons.- SCS11AGT30	M	CB/LL/GT	16.1	158.56
Average Mid Maturity				179.06

Discussion:

Weather conditions were very good on this plot, resulting in very good yields. Please use this and replicated yield data when selecting hybrids for 2015.

2014 Surry County Corn Hybrid Demonstration Plot

Cooperators: **Producer:** Wooden Farms-Joseph and Jarrod Wooden
Extension: Glenn Slade

Agribusiness: Participating Seed Companies

Soil Type: Emporia Fine Sandy Loam
Tillage: No-till rip under row
Previous Crop: Soybeans
Planting Date: May 5, 2014
Fertilizer: At planting – 6.5 gallons Conklin 3-18-18, 2 qt. Sidekick, 1 pt. Boron, 1 pt. Mn., 1 pt. Cu., 90 lbs. N.
60 lbs. N. Sidedress May 28, 2014
Crop Protection: 1 qt. Roundup Powermax, 2 qt. Trizemet
Harvest Date: October 1, 2014

Hybrid	Maturity	Pop.	% Moisture	Yield (bu./A @15.5%)
Hubner 4744	Late	27,000	17.1	147.2
Dyna-Gro 57VP51	Late	27,000	16.9	172.3
Channel 217-08	Late	26,000	17.0	171.8
Mycogen 2C799	Late	26,000	17.2	162.4
DeKalb 65-19	Late	26,000	16.8	151.2
Augusta 6664	Late	26,000	16.8	143.5
Pioneer 1690AM	Late	26,000	16.4	148.7
Doebler 5615	Late	26,000	17.1	142.3
Seed Consultants 11HR63	Late	26,000	16.6	119.6
Seed Consultants 11AQ72	Late	26,000	16.9	133.6
Check NK68-B	Late	26,000	16.8	164.6
Average excluding check				149.3

Discussion:

Use these plot results and replicated yield data when selecting hybrids for 2015.

2014 VCE On-Farm Corn Hybrid Entries

Company	Early Hybrid Entry	Early Hybrid Traits	Early Hybrid Seed Trt.
Hubner Seed	H5368RC3P	Genuity VT3P RIB	Accelaron Poncho/Votivo 500
CPS/Dyna-Gro Seed	D46SS46	Genuity Smart Stax	Accelaron 500/Votivo
Channel	203-44STXRIB	Smart Stax	P500/Votivo
Mycogen Seeds	2K595	Smartstax/Refuge Advanced	Cruiser Maxx 250
Augusta	5457	Gt	C250
DuPont Pioneer	P0604AM	Optimum AcreMax	Poncho 1250 Votivo
Doebler's PA Hybrid's Inc.	RPM® 587AM™	Optimum AcreMax	Cruiser 250
Great Heart	HT 7240	VT3 Pro	

Company	Mid Hybrid Entry	Mid Hybrid Traits	Mid Hybrid Seed Trt.
Hubner Seed	H5420RC3P	Genuity VT3P RIB	Accelaron Poncho/Votivo 500
CPS/Dyna-Gro Seed	D52VC91	Genuity VT2 Pro	Accelaron 500/Votivo
Channel	209-53STXRIB	Smart Stax	P500/Votivo
Mycogen Seeds	2V717	Smartstax/Refuge Advanced	Cruiser Maxx 250
Dekalb	DKC62-08RIB	GENSSRIB	Accelaron 500 Votivo
Augusta	4461	VT2Pro	P250
DuPont Pioneer	P1105AM	Optimum AcreMax	
Doebler's PA Hybrid's Inc.	RPM® 5015AM™	Optimum AcreMax	Poncho/ Votivo

Seed Consultants	SCS 11HQ31	HXX/LL/RR2	Maxim Quatro
	SC 11AGT30	CB/LL/GT	Poncho 1250 Votivo
			Maxim Quatro
			Poncho 1250 Votivo
Great Heart	HT 7261	VT2 Pro RIB	

Company	Full Hybrid Entry	Full Hybrid Traits	Full Hybrid Seed Trt.
Hubner Seed	H4744RC2P	Genuity VT2P RIB	Accelaron Poncho/Votivo 500
CPS/Dyna-Gro Seed	D57VP51	Genuity VT3 Pro	Accelaron 500/Votivo
Channel	217-08VT3PRIB	VT3P	P500/Votivo
Mycogen Seeds	2C799	Smartstax/Refuge Advanced	Cruiser Maxx 250
Dekalb	DKC65-19RIB	GENVT3PRIB	Accelaron 500/Votivo
Augusta	6664	VT2Pro	P500/Accelaron
DuPont Pioneer	P1690AM	Optimum AcreMax	
Doebler's PA Hybrid's Inc.	Doebler® 5615GRQ	Agrisure 3000GT	Cruiser 250

Seed Consultants	SCS 11HR63	HX/LL/RR2	Maxim Quatro
	SC 11AQ72	CB/LL/GT/RW	Poncho 1250 Votivo
			Maxim Quatro
			Poncho 1250 Votivo
Great Heart		VT3 Pro RIB	

2014 Virginia Cooperative Extension On-Farm Corn Hybrid Plot Yield Summary (bushels per acre at 15.5%) Upper Coastal Plain

**Early Hybrids (107
Day RM or Less)**

Hybrid	Ag Expo-N'land	Ave.
Augusta 5457	139	139
Channel 203-44STXRIB	134	134
Doebblers RPM 587AM	142	142
Dyna-Gro 46SS46	153	153
Great Heart HT 7240	148	148
Hubner 5368RC3P	153	153
Mycogen 2K595	144	144
Pioneer 0604AM	153	153
Average	146	146

**Medium Hybrids (108-
112 Day RM)**

Hybrid	Ag Expo-N'land	K&Q 1	K&Q 2	Westmoreland	Ave.
Augusta 4461	140	134	193	154	155
Channel 209--53STXRIB	146	133	189	184	163
Dekalb DKC 62-08RIB	142	135	205	187	167
Doebblers RPM 5015AM	151	125	206	198	170
Dyna-Gro 52VC91	162	113	197	192	166
Great Heart HT 7261	160		198	193	
Hubner 5420RC3P	153	139	192	181	166
Mycogen 2V717	158	138	197	182	169
Pioneer 1105AM	146	138	204	186	169
Seed Consultants SC 11AGT30	157	129	188	169	161
Seed Consultants SCS 11HQ31	136	116	196	181	157
Average	150	130	197	183	164

**Full Hybrids (113 Day
RM or more)**

Hybrid	Ag Expo-N'land	Ave.
Augusta 6664	146	146
Channel 217-08VT3RIB	140	140
Dekalb DKC65-19RIB	149	149
Doebblers 5615GRQ	148	148
Dyna-Gro57VP51	155	155
Great Heart HT 7778	148	148
Hubner H4744RC2P	154	154
Mycogen 2C799	150	150
Pioneer 1690AM	146	146
Seed Consultants SC 11AQ72	148	148
Seed Consultants SCS 11HR63	145	145
Average	148	148

**2014 Virginia Cooperative Extension On-Farm Corn Hybrid Plot
Yield Summary (bu./acre @ 15.5%) Southeast Virginia and Va. State University (VSU)**

Early Hybrids (107 Day RM or Less)

Hybrid	Chesapeake		Ave.
Augusta 5457	173		173
Channel 203-44STXRIB	178		178
Doebblers RPM 587AM	170		170
Dyna-Gro 46SS46	169		169
Great Heart HT 7240	192		192
Mycogen 2K595	122**		122
Pioneer 0604AM	174		174
Average	168		168

** yield reduced by green snap

Medium Hybrids (108-112 Day RM)

Hybrid	Chesapeake	VSU**	Va. Beach	Ave.
Augusta 4461		220	183	
Channel 209--53STXRIB	187	228	160	192
Dekalb DKC 62-08RIB	195	249	214	219
Doebblers RPM 5015AM	190	210	177	192
Dyna-Gro 52VC91	187	205	187	193
Great Heart HT 7261	194	240	164	199
Hubner 5420RC3P	182	192	189	188
Mycogen 2V717	190		183	
Pioneer 1105AM	187	232	179	199
Seed Consultants SC 11AGT30	174	194	159	176
Seed Consultants SCS 11HQ31	170	206	183	186
Average	186	218	180	194

Full Hybrids (113 Day RM or more)

Hybrid	VSU**	Va. Beach	Surry	Ave.
Augusta 6664	xxxx	179	144	
Channel 217-08VT3RIB	214	187	172	191
Dekalb DKC65-19RIB	226	199	151	192
Doebblers 5615GRQ	204	169	142	172
Dyna-Gro 57VP51	221	238	172	210
Great Heart HT 7778	234	187		
Hubner H4744RC2P			147	
Mycogen 2C799	206	176	162	181
Pioneer 1690AM	233	215	149	199
Seed Consultants SC 11AQ72	220	196	134	183
Seed Consultants SCS 11HR63	216	194	120	177
Average	219	194	149	188

**Irrigated; xxxx-planter skips

2014 Corn Hybrid Comparison Plot

Cooperators:

Producer: Keith Balderson
Extension: Keith Balderson, VCE, Essex County
 Stephanie Romelczyk, VCE, Westmoreland County
 Robbie Longest, VCE Summer Intern

Soil Type: Kemsville sandy loam
Tillage: Continuous No-till for 12 years
Previous Crop: Soybeans
Planting Date: April 11, 2014
Fertilizer: Pre-plant: 60-60-60-20S per acre broadcast with herbicides
 Sidedress: 90-0-0-12S per acre plus zinc
Crop Protection: Burndown Herbicides: Gramoxone and 2,4-D
 Pre-emergence: Lumax and Princep
 Post-emergence: Halex GT and atrazine
Harvest Date: September 20, 2014

Treatment	Replication	% Moisture	Yield (bu./A @15.5%)
Pioneer 0912HR	1	16.4	142
Pioneer 1184	1	17.6	141
Pioneer 0912HR	2	17.5	151
Pioneer 1184	2	16.9	139
Pioneer 0912HR	3	17.5	144
Pioneer 1184	3	16.9	140
Average			
Pioneer 0912HR		17.1	145.7
Pioneer 1184		17.1	140.0
LSD (0.10)		NS	NS

Discussion:

This plot compared the yields of a 109 day Herculex hybrid (0912) to the non-Bt hybrid planted as the refuge. Insect pressure appeared to be minimal in this plot. Neither yields nor grain moisture was statistically different between the two hybrids.

2014 Corn Hybrid Challenge Plot

Cooperators:

Producer: Keith Balderson
Extension: Keith Balderson, VCE, Essex County
 Stephanie Romelczyk, VCE, Westmoreland County
 Robbie Longest, VCE Summer Intern

Soil Type: Suffolk sandy loam
Tillage: Continuous No-till for 12 years
Previous Crop: Soybeans
Planting Date: April 11, 2014
Fertilizer: Pre-plant: 60-60-60-20S per acre broadcast with herbicides
 Sidedress: 90-0-0-12S per acre plus zinc
Crop Protection: Burndown Herbicides: Gramoxone and 2,4-D
 Pre-emergence: Lumax and Princep
 Post-emergence: Halex GT and atrazine
Harvest Date: September 11, 2014

Treatment	Replication	% Moisture*	Yield (bu./A @15.5%)
Pioneer 0210	1		156
Augusta 2852	1		150
Pioneer 0210	2		155
Augusta 2852	2		147
Pioneer 0210	3		147
Augusta 2852	3		140
Average:			
Pioneer 0210		18.4	152.7
Augusta 2852		19.5	145.7
LSD (.10)			1.7

*One composite moisture sample was taken for each hybrid.

Discussion:

Both of these hybrids are 102 day RM and yielded well considering the dry conditions. Rainfall on the plot from mid June to mid July was 6/10 of an inch. Pioneer 0210 yielded significantly more than Augusta 2852 in this plot.

2014 Irrigated Corn Hybrid Plant Population Test

Cooperators:	Producer: Tyler Franklin
	Extension: Keith Balderson, Essex County Robbie Longest, Summer Intern
Soil Type:	Pamunkey loam
Corn Hybrid:	Pioneer 1690
Tillage:	No-till with row cleaners
Previous Crop:	Soybeans
Planting Date:	April 18, 2014
Fertilizer:	250-100-120-30S per acre N applied 3 different times—at planting and twice sidedressed Micronutrient Package in Burndown Herbicides
Crop Protection:	Burndown herbicides: Gramoxone Pre-emergence herbicides: 4 oz. per acre Corvus, 1 qt. per acre atrazine and 1 qt. per acre simazine Post-emergence: Laudis
Harvest Date:	October 10, 2014

Population (plants/acre)	Replication	% Moisture	Yield (bu./A @15.5%)
32,000 (31,667 measured)	1	16.7	255
32,000 (31,667 measured)	2	16.5	257
36,000 (36,333 measured)	1	16.5	255
36,000 (36,333 measured)	2	16.9	270
39,000 (39,333 measured)	1	17.0	269
39,000 (39,333 measured)	2	16.2	254
44,000 (44,333 measured)	1	16.9	253
44,000 (44,333 measured)	2	16.5	259
Averages:			
32,000		16.6	256
36,000		16.7	262.5
39,000		16.6	261.5
44,000		16.7	256

Discussion:

As farmers strive for higher corn yields, plant populations become more critical. This plot experienced two very heavy rainfall events which stressed the corn, but did not hurt stands. The 36,000 plant per acre population was the most economical, but please note there was a strip in the field (second rep. of 36,000 and first rep. of 39,000) that yielded higher than the rest of the plots. There was probably another factor causing higher yields in the strip rather than plant populations. For most hybrids, 32,000 plants per acre is probably sufficient for yield goals of 250 bushels per acre. Yield goals of 300 bushels per acre will require plant populations 35,000 to 38,000 plants per acre.

2014 Irrigated Corn Hybrid Plant Population Test

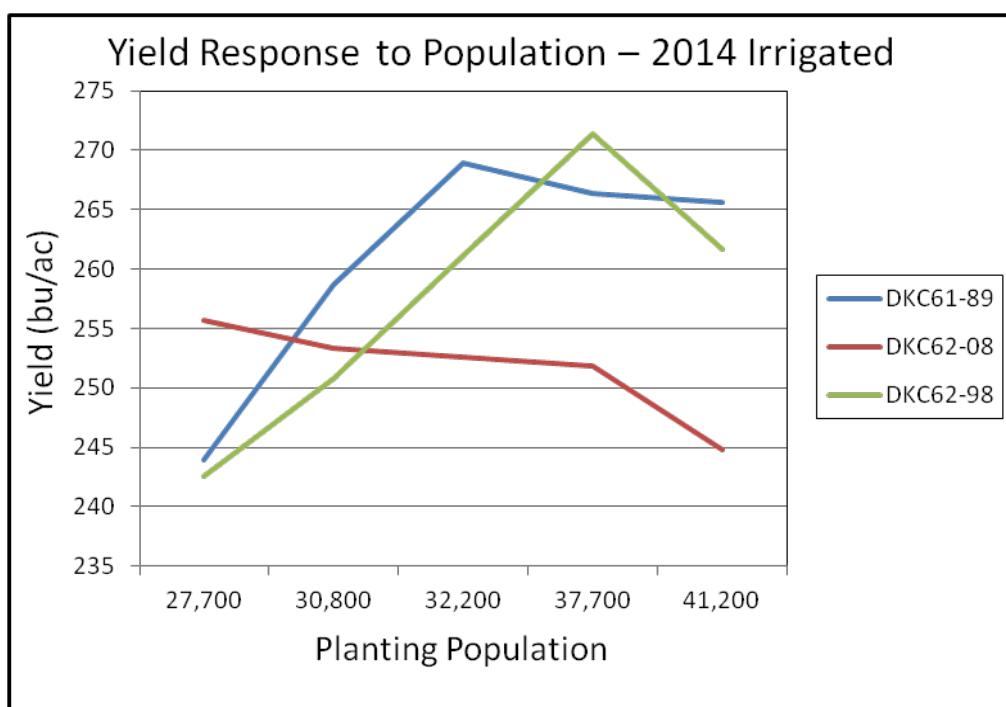
Cooperators:	Producer: Merryvale Farms
	Extension: David Moore, VCE-Middlesex
	Agribusiness: Bryan Dillehay, Monsanto
Soil Type:	Suffolk Fine Sandy Loam
Tillage:	No-Till in 30" rows
Previous Crop:	Soybeans
Planting Date:	April 25, 2014
Hybrids:	DKC62-98RIB (Fixed Ear) DKC62-08RIB (Flex Ear) DKC61-89RIB (Intermediate Ear)
Fertilizer:	Broadcast: 70-80-80-5s Sidedress: 150-0-0-10s
Crop Protection:	Herbicide: Gramoxone + Lumax + Atrazine + Princep Fungicide: Quadris at V-5 and Quilt XL at Tassel
Harvest Date:	October 6, 2014

Hybrid	Population	% Moisture	Yield (bu./A @ 15.5%)
DKC61-89	27,700	16.3	244.0
DKC61-89	30,800	16.2	258.7
DKC61-89	32,200	16.2	268.9
DKC61-89	37,700	16.3	266.4
DKC61-89	41,200	16.2	265.6
DKC62-08	27,700	16.2	255.7
DKC62-08	30,800	16.0	253.3
DKC62-08	32,200	-	-
DKC62-08	37,700	16.3	251.9
DKC62-08	41,200	16.4	244.8
DKC62-98	27,700	16.0	242.6
DKC62-98	30,800	16.0	250.8
DKC62-98	32,200	-	-
DKC62-98	37,700	16.0	271.4
DKC62-98	41,200	16.5	261.7

Discussion: Corn hybrid response to planting population is quite variable and largely depends upon ear type, as well as among other factors such as soil type, fertility, rainfall, etc. As all hybrids respond differently to population, no single population recommendation is sufficient for optimum yield potential. We conducted an irrigated population study using three different ear types and five different planting populations to demonstrate the importance of hybrid response to population. The goal of this plot is to demonstrate ear type population response trends, and is not a hybrid trial. Ear type response trends can be applied over different hybrids, regardless of brand or company. Please note the plot was not replicated.

As expected, the fixed ear hybrid (DKC62-98) increased in yield as population was increased, reaching its maximum yield at 37,700 ppa (plants per acre). This hybrid type showed the largest response to population and the overall highest yield. Alternatively, the flex ear hybrid, DKC62-08 tended to show a very flat yield response to population; this would be very typical of a flex ear hybrid and demonstrates wide adaptation to many planting practices. The semi-flex, or intermediate, hybrid (DKC61-89) increased yield until around 32,000 ppa and topped out there. Intermediate ear types tend to show some response to population, but not as great as a fixed ear hybrid; therefore they benefit from increased population, but not at the same level as fixed ear types. All 3 three ear types exhibited a different yield response to population as expected. See chart. Data at 32,200 ppa for DKC62-08 and DKC62-98 were omitted due to being outliers.

Keep in mind this was an irrigated plot and the seasonal rainfall for lower middle peninsula was adequate. Using this data on population trends, combined with ear type ratings provided by local seed companies, growers should evaluate their planting rates and consider adjustments if necessary. For example, if the general planting population is 32,000 ppa for irrigated corn on a given farm, that population would be sufficient for a flex ear hybrid; however if a fixed ear hybrid is selected, a population of potentially 35,000-38,000 could bring increased yield potential.



2014 Corn Hybrid Plant Population Plot

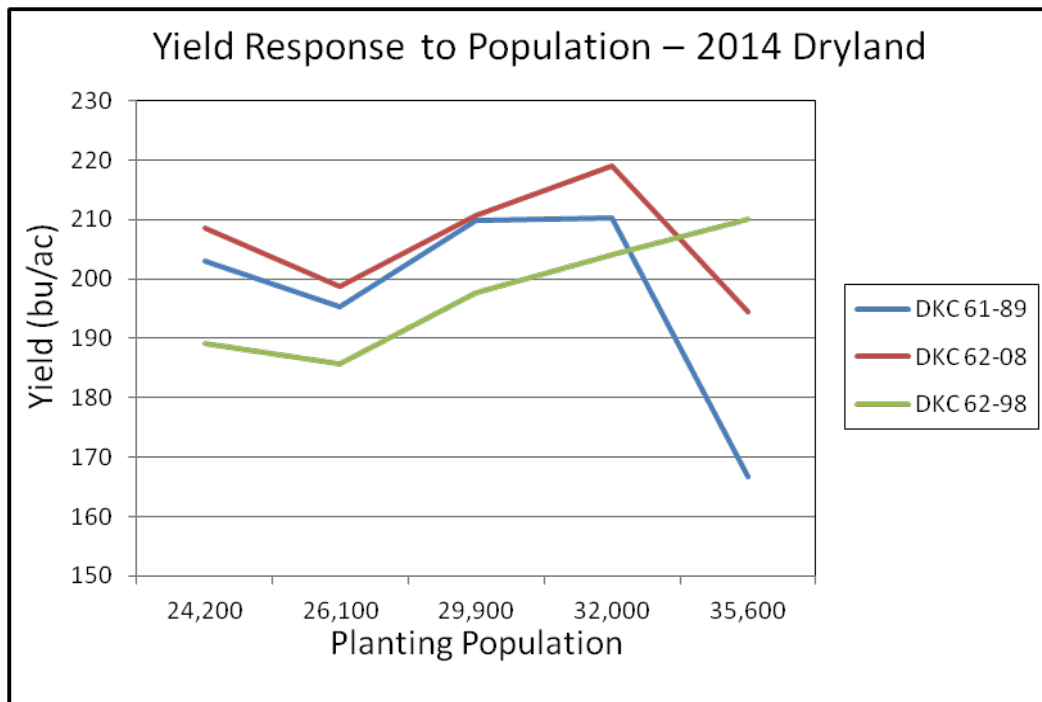
Cooperators:
Producer: William H. Wright, Barry Powell
Extension: David Moore, VCE-Middlesex
Agribusiness: Bryan Dillehay, Monsanto
Soil Type: Suffolk Fine Sandy Loam/Slagle Silt Loam
Tillage: Turbo-Tilled prior to planting
Previous Crop: Barley Cover Crop following Soybeans
Planting Date: May 9, 2014
Hybrids: DKC62-98-(Fixed Ear)
 DKC62-08-(Flex Ear)
 DKC61-89-(Intermediate Ear)
Fertilizer: Pre-Plant: 3T/A Poultry Litter
 0-0-100 Broadcast
 Side: 100-0-0-12s
Crop Protection: At Plant: Glyphosate + Dual + Atrazine
 Post: Capreno (3 oz. at 8 inches high)
Harvest Date: September 29, 2014

Hybrid	Population	% Moisture	Yield (bu./A @15.5%)
DKC 61-89	24,200	17.2	203.0
DKC 61-89	26,100	17.5	195.4
DKC 61-89	29,900	17.6	209.8
DKC 61-89	32,000	17.5	210.3
DKC 61-89	35,600	17.7	166.8
DKC 62-08	24,200	18.0	208.5
DKC 62-08	26,100	17.8	198.7
DKC 62-08	29,900	18.4	210.6
DKC 62-08	32,000	18.2	219.0
DKC 62-08	35,600	17.8	194.4
DKC 62-98	24,200	17.9	189.1
DKC 62-98	26,100	17.9	185.8
DKC 62-98	29,900	17.8	197.6
DKC 62-98	32,000	17.7	204.0
DKC 62-98	35,600	17.9	210.0

Discussion: Corn hybrid response to planting population is quite variable and largely depends upon ear type, as well as among other factors such as soil type, fertility, rainfall, etc. As all hybrids respond differently to population, no single population recommendation is sufficient for optimum yield potential. We conducted a dryland, non-irrigated population study using three different ear types and five different planting populations to demonstrate hybrid response to population. The goal of this plot is to demonstrate ear type population response trends, and is not a hybrid trial. Ear type response trends can be applied over different hybrids, regardless of brand or company. Please note the plot was not replicated.

As expected, the fixed ear hybrid (DKC62-98) increased in yield as population was increased, reaching its maximum yield at 35,600 ppa (plants per acre); this hybrid could have potentially went higher as we did not see the yields level off. Refer to graph. This fixed hybrid type showed the largest response to population but did not have the overall highest yield. Alternatively, the flex ear hybrid, DKC62-08, showed less yield response to population before declining possibly due to overpopulation; this would be very typical of a flex ear hybrid which may indicate a wide adaptation to many planting practices. However, there likely was not enough fertility or other inputs to support this ear type at such high populations. The semi-flex, or intermediate, hybrid (DKC61-89) increased yield until around 30,000 ppa and topped out there. Again, the intermediate ear types showed some response to population, but not as great as a fixed ear hybrid. All 3 three ear types exhibited a different yield response to population as expected.

Using this data on population trends, combined with ear type ratings provided by local seed companies, growers should evaluate their planting rates and consider adjustments if necessary. For example, if the general planting population is 27,000 ppa for corn on a given farm, that population would generally be sufficient for a flex ear hybrid; however if a fixed ear hybrid is selected, a higher population could bring increased yield potential. Experimentation on your own farm should be performed to better understand what your soils will support and where the higher population of fixed ear hybrids should be.



2014 Middlesex Variable Rate Corn Plant Population Plot

Cooperators:
Soil Type:
Tillage:
Previous Crop:
Planting Date:
Population:
Fertilizer:
Crop Protection:
Harvest Date:

Producer: Jason Benton
Extension: David Moore, VCE-Middlesex
 Suffolk Fine Sandy Loam
 Craven Silt Loam
 No-Till into 30" rows
 Double Crop Soybeans
 April 22, 2014
 26,700 check
 26,700/30,200 variable
 Broadcast: 20-60-110-6s
 At Plant: 50-0-0-5s
 Side: 100-0-0-9s
 Burndown: Gramoxone + Atrazine + Simazine + 2,4-D
 Post: Halex GT
 September 30, 2014

Population	Replication	% Moisture	Yield (bu./A @15.5%)
Check	1	16.6	201.3
Variable	1	16.7	207.0
Check	2	16.7	196.0
Variable	2	16.7	190.6
Check	3	16.6	193.0
Variable	3	16.7	192.2
Average Check		16.6	196.8
Average Variable		16.7	196.6
LSD (0.10)		NS	NS

Discussion:

Lots of attention on variable seeding, fertilizing, etc. Just for fun, we did a plot looking at changing the rate as soil type/elevation changed in field. Both soil types are considered to be of the same production level, but the Craven soil is a darker soil, higher in organic matter, lower in sand content, and at a lower elevation than the Suffolk.

In this test, there is no statistical difference in varying the seeding rate over a fixed rate. Some may argue that the rate was not increased to a high enough level. That may be information for another plot, another time.

Use this and other population information when making planting decisions for 2015.

2014 Variable Rate Corn Plant Population Test

Cooperators:
Soil Type:
Tillage:
Previous Crop:
Planting Date:
 Populations:
Fertilizer:
Crop Protection:
Harvest Date:

Producer: Clas Corporation
Extension: David Moore, VCE-Middlesex
 Suffolk Fine Sandy Loam & Emporia Loam
 No-Till in 30" rows
 Soybeans
 April 24, 2014
 Variable: 24, 000, 27,000, 30,000
 Check 24,000; Check 30,000
 Pre-Plant: 28-31-120-24s
 Starter: 40-20-0 w/sulfur
 Side: 125-0-0-15s
 Burndown: Glyphosate + 2,4-D +
 Atrazine + Simazine
 Plant: Bifenthrin in-furrow
 Post: Halex GT
 September 17, 2014

Treatment	Replication	% Moisture	Yield (bu./A @15.5%)
24,000	1	20.1	198.0
30,000	1	20.2	211.0
Variable	1	20.2	201.9
24,000	2	19.7	195.6
30,000	2	20.2	212.6
Variable	2	20.1	205.3
Avg. 24,000		19.9	196.8
Avg. 30,000		20.2	211.8
Avg. Variable		20.2	203.6
LSD (0.10)		NS	6.1

Discussion:

The purpose of this plot was to see any advantage to variable rate seeding over constant rate. What this plot shows is that the high rate of seeding yielded better than variable rate which yielded better than the low rate. Both soil types were sandy loams, but the topography went from elevated Suffolk Sandy Loam to lowland Emporia Loam.

The cost to plant a variable acre would be approximately \$80.76 (based on \$240.00 bag of corn). Cost of 30,000 seeding rate would be \$90.00 per acre. At current corn prices (3.50/bu.) the increased seeding rate would pay over the variable rate.

This may surprise some people and may not be the case every year on every soil type. Use this and other Virginia Tech on-farm corn plot information when making planting decisions for 2015.

2014 Evaluation of Sidedress Nitrogen on Corn Following Hairy Vetch Cover Crop

Cooperators:	Producer: Keith Balderson Extension: Keith Balderson, Essex County Stephanie Romelczyk, Westmoreland County Robbie Longest, Summer Intern
Soil Type:	Kempsville sandy loam
Tillage:	Continuous No-till for 12 years
Previous Crop:	Soybeans
Planting Date:	April 28, 2014
Fertilizer:	Pre-plant: 60-20-60-13 broadcast with herbicides Sidedress: 60-0-0-8 per acre plus zinc, boron and Radiate plant Growth regulator vs. 90-0-0-8 per acre plus zinc boron and Radiate
Crop Protection:	Burndown Herbicides: Gramoxone and 2,4-D Pre-emergence: Lumax and Princep Post-emergence: Halex GT and atrazine
Harvest Date:	September 23, 2014

Treatment	Replication	% Moisture	Yield (bu./A @15.5%)
90 lbs. N per acre	1	18.2	166
60 lbs. N per acre	1	18.0	157
90 lbs. N per acre	2	18.4	162
60 lbs. N per acre	2	17.5	158
90 lbs. N per acre	3	17.0	176
60 lbs. N per acre	3	17.0	164
Ave. 90 lbs. N per acre		17.8	168
Ave. 60 lbs. N per acre		17.5	160
LSD (0.10)			6.8

Discussion:

The purpose of this plot was to evaluate how much plant available nitrogen (PAN) a hairy vetch cover crop could provide for a corn crop and also determine if supplemental sidedress nitrogen should have been applied. The hairy vetch cover crop was planted on October 15, 2013 and terminated on April 25, 2014. Growth was fair, probably a result of later planting and a cold winter. A tissue sample of the hairy vetch was taken just prior to corn planting and analyzed for nitrogen and found to be 4.16%. Top growth of the vetch was also harvested from 2 random samples in the field, weighed, and dried. This sample showed that 2,150 lbs. of hairy vetch were produced per acre on a dry matter basis. Most current literature on estimating PAN suggests using the following formula: % nitrogen in tissue x dry matter per acre/2. Using this formula, it is estimated that 45 pounds of nitrogen per acre would be supplied by the hairy vetch cover crop. The entire field received 60 pounds per acre of nitrogen broadcast pre-plant. At sidedressing nitrogen rates of 60 lbs. per acre and 90 pounds per acre were compared. Plant tissue tests taken just prior to tasseling showed the nitrogen content in the plots receiving 90 lbs. per acre was 3.18% and 3.04% in the plots receiving 60 pounds of sidedress nitrogen. Both levels are considered sufficient. The additional nitrogen at sidedress increased yields.

2014 Variable Rate Nitrogen Corn Plot

Cooperators: **Producer:** Cloverfield Enterprises
Extension: Keith Balderson, VCE—Essex County and Robbie Longest, VCE Summer Intern
Industry: Paul Davis, Davis Produce and Jim Wallace, Agritek

Soil Type: Augusta fine sandy loam and Dogue loam
Tillage: Turbo-till prior to planting
Hybrid: Hubner 5368
Previous Crop: Soybean
Planting Date: May 10, 2014
Fertilizer: 85 lbs. per acre of pre-sidedress nitrogen + Zinc, Boron
 Broadcast: MAP and Potash—Variable Rate

Crop Protection: Pre-emergence herbicides: Lumax
 Post-emergence herbicides: Halex GT

Harvest Date: September 19, 2014

Treatment	N Sidedress Rate (lbs./acre)	Rep.	% Moisture	Yield (bu./A @15.5%)	NUE, lbs. N/ bu.
Fixed	85	1	17.4	125	1.360
Fixed	85	2	17.7	129	1.318
GreenSeeker	83	1	17.8	133	1.262
GreenSeeker	83	2	17.8	127	1.329
Fixed	82	3	17.3	127	1.315
Fixed	82	4	18.3	132	1.265
GreenSeeker	76	3	18	129	1.248
Ave. Fixed	83.5		17.7	128	1.315
Ave. Greenseeker	80.7		17.9	130	1.280
LSD (0.10)			NS	NS	NS

Discussion: This plot evaluated a fixed sidedressing nitrogen rate on corn to a sensor-based variable rate. (Greenseeker.) All treatments received approximately 85 lbs. of nitrogen per acre prior to sidedressing. Both the treatments were dribbled with the same spray rig on June 17, 2014. There were no statistical differences in the yields of any of the treatments. In this plot, Greenseeker applied almost the same total nitrogen per acre as the fixed rated plots. This field was replanted due to heavy rainfall in late April and then suffered dry conditions for much of the summer.

Random tissue samples taken on at tasseling showed nitrogen at 2.58 percent in the Greenseeker plots and 3.05 percent in the fixed plots.

2014 Variable Rate Nitrogen Corn Plot

Cooperators: **Producer:** Cloverfield Enterprises
Extension: Keith Balderson, VCE—Essex County and Robbie Longest, VCE Summer Intern
Industry: Paul Davis, Davis Produce and Jim Wallace, Agritek
Soil Type: Munden fine sandy loam, State, State fine sandy loam, and Tetotum loam
Tillage: Turbo-til prior to planting
Corn Hybrid: Hubner 5420
Previous Crop: Soybeans
Planting Date: May 11, 2014
Fertilizer: 85 lbs. per acre of pre-sidedress nitrogen
Crop Protection: Pre-emergence herbicides: Lumax
 Post-emergence herbicides: Halex GT
Harvest Date: September 22, 2014

Treatment	N Sidedress Rate (lbs./acre)	Rep.	% Moisture	Yield (bu./A @15.5%)	NUE, lbs. N/ bu.
Fixed	88	1	17.3	157	1.102
Fixed	88	2	17.8	163	1.061
GreenSeeker	73	1	17.3	163	.969
GreenSeeker	73	2	17.4	166	.951
Fixed	89	3	17.5	168	1.036
Fixed	89	4	17.8	169	1.030
GreenSeeker	70	3	17.7	156	.994
GreenSeeker	70	4	17.8	164	.945
Fixed	88	5	17.7	175	.989
Fixed	88	6	17.1	181	.956
GreenSeeker	74	5	16.7	174	.914
GreenSeeker	74	6	16.6	163	.975
Ave. Fixed	88.3		17.5	169	1.029
Ave. Greenseeker	72.3		17.3	164	.958
LSD (0.10)	2.0		NS	NS	0.04

Discussion: The plot evaluated a fixed sidedressing nitrogen rate on corn to a sensor-based variable rate. (Greenseeker.) All treatments received approximately 85 lbs. of nitrogen per acre prior to sidedressing. Both treatments were dribbled with the same spray rig on June 17, 2014. Greenseeker resulted in a nitrogen savings in this field and a more efficient NUE, but the fixed rate plots yielded 5 bushels per acre better, more than enough to cover the extra nitrogen expense. The difference, however, was not statistically significant. This field was replanted due to heavy rainfall in late April and then suffered dry conditions for much of the summer.

Random tissue samples taken on at tasseling showed nitrogen at 3.12 percent in the Greenseeker plots and 2.63 percent in the fixed plots.

2014 Variable Rate Nitrogen Corn Plot

Cooperators: **Producer:** Cloverfield Enterprises
Extension: Keith Balderson, VCE—Essex County and Robbie Longest, VCE Summer Intern
Industry: Paul Davis, Davis Produce and Jim Wallace, Agritek

Soil Type: Dogue loam
Tillage: Turbo-till prior to planting
Corn Hybrid: Hubner 5364
Previous Crop: Soybeans
Planting Date: May 10, 2014
Fertilizer: 85 lbs. per acre of pre-sidedress nitrogen + Zinc and Boron
 MAP and Potash applied variable rate

Crop Protection: Pre-emergence herbicides: Lumax
 Post-emergence herbicides: Halex GT

Harvest Date: September 19, 2014

Treatment	N Sidedress Rate (lbs./acre)	Rep.	% Moisture	Yield (bu./A @15.5%)	NUE, lbs. N/ bu.
Fixed	79	1	18.0	124	1.323
Fixed	79	2	18.1	138	1.188
Variable	87	1	18.2	131	1.313
Variable	87	2	18.5	125	1.376
GreenSeeker	77	1	18.7	111	1.459
GreenSeeker	77	2	19.2	101	1.603
GreenSeeker	79	3	18.8	113	1.451
GreenSeeker	79	4	18.6	123	1.333
Fixed	80	3	19.0	124	1.331
Fixed	80	4	18.7	124	1.331
Variable	80	3	19.6	115	1.435
Variable	80	4	20.1	117	1.410
GreenSeeker	76	5	18.9	130	1.238
GreenSeeker	76	6	19.0	133	1.210
Ave. Fixed	79.5		18.8	128	1.285
Ave. Variable	83.5		19.1	122	1.381
Ave. Greenseeker	77		18.9	119	1.361
LSD (0.10)	4.5		NS	NS	NS

Discussion: This plot evaluated a fixed sidedressing nitrogen rate on corn to variable rates based on historic yield maps (zone-based) and Greenseeker (sensor-based.) All treatments received approximately 85 lbs. of nitrogen per acre prior to sidedressing. Both the fixed rate and zone-based variable rates were dribbled on June 3rd and the

Greenseeker treatments were dribbled on June 17th. Plant tissue tests taken at ear leaf showed nitrogen levels of 2.63, 3.01, and 3.01 in the fixed, zone-based variable rate, and Greenseeker plots, respectively. This field was replanted following heavy rains in late April and experienced dry conditions for most of the summer. Yields were quite variable due to the dry conditions and there were no statistical differences in nitrogen rates or yields of any of the treatments.

2014 Variable Rate Nitrogen Corn Plot

Cooperators: **Producer:** Cloverfield Enterprises
Extension: Keith Balderson, VCE—Essex County and Robbie Longest, VCE
 Summer Intern
Industry: Paul Davis, Davis Produce and Jim Wallace, Agritek

Soil Type: Tetotum loam
Tillage: Turbo-till prior to planting
Corn Hybrid: Hubner 5420
Previous Crop: Soybeans
Planting Date: May 11, 2014
Fertilizer: 85 lbs. per acre of pre-sidedress nitrogen
Crop Protection: Pre-emergence herbicides: Lumax
 Post-emergence herbicides: Halex GT
Harvest Date: September 22, 2014

Treatment	N Sidedress Rate (lbs./acre)	Rep.	% Moisture	Yield (bu./A @ 15.5%)	NUE, lbs. N/ bu.
Greenseeker	78	1	19.8	118	1.381
Greenseeker	78	2	20.9	116	1.405
Fixed	84	1	20.8	114	1.482
Fixed	84	2	19.6	114	1.482
Variable	79	1	20.6	111	1.477
Variable	79	2	20.6	109	1.505
GreenSeeker	78	3	19.9	125	1.304
GreenSeeker	78	4	19.9	123	1.325
Fixed	82	3	19.9	122	1.369
Fixed	82	4	19.5	137	1.219
Variable	87	3	19.8	153	1.124
Variable	87	4	19.0	140	1.229
GreenSeeker	77	5	18.7	148	1.095
GreenSeeker	77	6	18.9	145	1.117
Ave. Greenseeker	77.7		19.7	129	1.272
Ave. Fixed	83.0		20.0	122	1.377
Ave. Variable	83.0		20.0	128	1.313
LSD (0.10)	4.5		NS	NS	.112

Discussion: This plot evaluated a fixed sidedressing nitrogen rate on corn to variable rates based on historic yield maps (zone-based) and Greenseeker (sensor-based.) All treatments received approximately 85 lbs. of nitrogen per acre prior to sidedressing. Both the fixed rate and zone-based variable rates were dribbled on June 3rd and the

Greenseeker treatments were dribbled on June 17th. Plant tissue tests taken at ear leaf showed nitrogen levels of 2.72, 2.33, and 2.37 in the fixed, zone-based variable rate, and Greenseeker plots, respectively. This field was replanted following heavy rains in late April and experienced dry conditions for most of the summer. Yields were quite variable due to the dry conditions and soil type differences. There were no statistical differences in yields of any of the treatments. Greenseeker provided a statistically significant reduction in nitrogen rates and more efficient NUE.

Plant Tissue Test Results
Total Samples 2011-2014

	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	6	0	2	0	0	2	0	0	0	4	3	1	2
High	54	3	33	34	4	30	1	10	11	14	25	37	1
Sufficient	43	115	79	75	61	90	96	94	95	107	107	97	109
Low	3	6	5	2	8	6	38	14	11	5	0	0	9
Deficient	29	11	16	24	62	7	0	17	18	5	0	0	14
Total	135	135	135	135	135	135	135	135	135	135	135	135	135

Root Knot Nematode Monitoring

Root knot nematode has many hosts and can be quite damaging to soybeans. In the past, rotating to corn had been a recommendation for managing root knot nematodes. However, recently, that recommendation has been changed as it is believed that corn is not only a host for root knot, but root knot can actually hurt corn yields. Below are root knot nematode assay results from the Virginia Nematode Laboratory from 2 locations in a corn field in the Northern Neck of Virginia where extremely high levels of nematodes have been documented. Soil samples were taken 3 times from 2 different locations within the field during the growing season and just after corn harvest. The purpose for taking the samples was to document root knot nematode populations in the field and to determine if populations could increase on corn roots. Given the numbers from these assays, it does appear that root knot nematodes can increase on corn roots and corn is not a good rotational crop for managing this pest.

