2004
Virginia On-Farm Corn Test Plots

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

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Virginia Cooperative Extension
Knowledge for the CommonWealth

VIRGINIA STATE UNIVERSITY

2004 Virginia On-Farm Corn Test Plots

Conducted and summarized by:

Keith Balderson, Extension Agent, Essex County

Glenn Chappell, Extension Agent, Prince George County

Paul Davis, Extension Agent, New Kent County/Charles City County

Sam Johnson, Extension Agent, Westmoreland County

Watson Lawrence, Extension Agent, City of Chesapeake

Matt Lewis, Extension Agent Lancaster/Northumberland Counties

David Moore, Extension Agent, Middlesex County

Wade Thomason, Extension Specialist, Grains, Virginia Tech

The research and demonstration plots discussed in this publication are a cooperative effort by several Virginia Cooperative Extension agents, numerous producers, several Extension specialists, a local Soil and Water Conservation District, and members of the agribusiness community.

The field work and printing of this publication is supported mainly by the Virginia Corn Check-Off Fund. Any corn producer who would like a copy should contact their local extension agent, who can request a copy from the New Kent or Charles City County Extension offices.

This is the thirteenth year of this multi-county cooperative project. Further work is planned for 2005.

The authors wish to thank the many producers and agribusinesses that participated in these research plots. Special thanks are due to Theresa Carter in the New Kent office for her efforts in helping to put this book together.

Table of Contents

I. General Summary 2

II. Combined Analysis of Corn Insecticide Seed Treatment Plots of 2004 3

III. Corn Insecticide Seed Treatment Studies: Cruiser Extreme Pak, Poncho 250, Poncho 250 + Prevail, Poncho 1250, Latitude 4

IV. Preplant Deep Ripping for No-Till Corn 9

V. Corn Hybrid Comparisons and Challenges 13

VI. Stacked Gene Comparison and Population Comparisons 36

General Summary

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

This is the fourth year looking at seed corn insecticide treatments as replacements for hopper box and/or soil in-furrow insecticide treatments.

Our studies have shown that seed treatments will increase planted stand populations and yields when corn is planted early followed by cool-wet soil conditions, which we had in 2001 and 2003. We also saw no advantage to seed treatments when corn was planted after mid-April followed by warm day and nighttime temperatures, as in 2002 and 2004. The $4.00 - $5.00/Ac cost for Cruiser Extreme Pak and Poncho 250 seed treatments are good insurance for a better stand and have the potential for higher yields if wireworms, white grubs, or seed corn maggots have been a problem. The $12.00 - $14.00/Ac costs with high rates of Cruiser Extreme Pak and Poncho 1250 are recommended for past problems with billbugs and cutworms. These are mainly a problem in earlier plantings and/or planting into heavy crop residue. Latitude, a Gaucho hopper box treatment, looks good if you want to order your seed untreated then treat individual fields as you get to them. With the earlier planted fields, use higher rates of Latitude for added protection.

After six years and over 35 site locations across many soil types and weather conditions, we are seeing a 6 bu/Ac increase when ripping prior to planting NO-TILL corn. However, it is not that simple – we have gotten 29 bu/Ac more and as much as 22 bu/Ac less with ripping. So when should you rip? We always see a significant yield increase when ripping end-rows. Another situation where we see an advantage to ripping NO-TILL corn land is in the rotation with tillage ahead of wheat with heavy disking. What we are starting to see, and research data from Kentucky has shown, is that soils in continuous NO-TILL production do not show any yield increases when ripped after 10 years in a "NEVER-TILL" cropping system.

The three site locations this year have been in the "NEVER-TILL" cropping system since 1998 and the only yield increase came from ripping the compacted bottomland in one of the locations.

Always test for compaction before pulling a ripper through your fields. If compaction is a problem, ripping is a good management decision.

Corn hybrid selection is getting more technical than ever. Today a single hybrid may come standard or stacked with Bt and/or different herbicide tolerances. For example, Augusta 1187 is Trisler 5337Bt is Trisler 5337 Bt/RR, the same hybrids with different traits added. This year the hybrid strip trials were replicated as many as seven times by location. The Bt hybrids out yielded the non-Bt hybrids at the Charles City location by 50+ bushels due to heavy corn borer pressure, while the sample hybrids in Westmoreland, Chesapeake and the Eastern Shore showed very little difference between Bt and non-Bt hybrids. These hybrid comparisons should help you make seed corn selections for 2005 and beyond.

2004 Combined Corn Seed Insecticide Treatment Plot Results

Poncho 1250 vs. Cruiser Extreme Pak vs. Poncho 250 + Prevail vs.Poncho 250 vs. Latitude vs. Untreated							
	Charles City	**New Kent**	**Essex**	**Dinwiddie and Prince George**	**Middlesex**	**Average Yield**	**Average Stand Count**
Poncho 1250	141.6	183.0	194.0	135.7	185.3	167.9	23,750
Cruiser Extreme Pak	147.9	178.5	187.0	128.7	169.4	162.3	23,500
Poncho 250 + Prevail	150.0	182.5	190.5	126.3	180.0	165.9	24,180
Poncho 250	127.1	185.0	189.5	133.3	172.6	161.5	23,760
Latitude	140.9	174.3	183.0	133.9	181.1	162.6	23,970
Untreated	145.2	184.8	183.0	129.6	175.9	163.7	23,280
Site Averages	**124.1**	**181.4**	**187.8**	**131.3**	**177.4**		

Discussion:

All five seed treatments plots were late planted – between April 19 and April 30. Following the hottest May on record, the seed corn did not lie in the soil long before germinating and sprouting. Since the seed was planted later into warmer soils, followed by warmer temperatures, there were no major differences in yields with or without seed treatments. In 2001 and 2003 our studies showed significant differences, as much as 14 bu/Ac with Poncho 250 and 10 bu/Ac with Cruiser Extreme Pak, with seed treatments averaging 7 bu/Ac yield increase over untreated corn seed.

Seed corn maggots in kernel.
Photo used by permission.

2004 Corn Insecticide Seed Treatment Trial

Evelynton Farms, Charles City County

Cooperators: **Producers:** Archer and Tim Ruffin
Agribusiness: Berry Lewis, Gustafson
Extension: Paul Davis, VCE, NewKent/Charles City Counties Glenn Chappell, VCE, Prince George County
Hybrid: Pioneer 34K77
Soil Type: Wickham, fine sandy loam
Fertilizers: **Broadcast:**
Starter: None
Sidedress: 120#N
Planted: April 22, 2004
Population: 27,000
Tillage: No-Till since 2002
Herbicide: 3 pts. Atrazine and 3 pts. Simizine
Harvested: August 30, 2004

Treatment	Yield (bu/Ac)	% Moisture	Stand Count
4 rows each treatment x 4 reps		*4 Rep Averages*	
Untreated	145.2	24.8	25,000
Poncho 1250	141.6	25.1	26,600
Cruiser Extreme Pak	147.9	24.4	25,400
Poncho 250 + Prevail	150.0	24.5	26,600
Poncho 250	127.1	25.4	26,100
Latitude	140.9	25.1	26,250

Discussion:

In this study the seed insecticides increased the final plant populations but did not necessarily increase yields. This location had a severe European corn borer infestation (90% of stalks had at least one borer) which may have affected the treatments. Compare this study with other corn seed treatments in this book and across Virginia.

2004 Corn Seed Treatment Plot

Dinwiddie and Prince George Counties

Producer: Glenn Chappell, Sr.
Planting Date: April 26, 2004
Plot: Seed Treatment
Population: 24,690
Soil: Slagle sandy loam
Herbicides: April 27, 2004 – 1.0 qt Honcho + 2.5 qt Bicep II + 1 qt 820/100gal
Tillage: Disk/Chisel/Ripped and Bedded
Fertility: 600 lb 10-10-10 broadcast at planting
110 lb N sidedress
Harvested: September 27, 2004

Treatment	% Moisture	Yield (bu/Ac)	Over Check*	Stand Average
	2 Rep Averages			
Latitude	17.3	134.0	4.31	24,900
Poncho 1250	16.7	135.7	6.06	24,200
Poncho 250 + Prevail	18.6	126.3	-3.28	25,900
Poncho 250	17.0	133.3	3.64	25,100
Cruiser Extreme Pak	17.5	128.7	-0.95	24,200
Check - 34K77	18.2	129.6	0	24,200
* Average yield increase over the Check plot.				

Discussion:

Compare multi-year data under similar conditions before making a decision on seed treatments. Match your individual pest populations with seed treatments for optimal results.

2004 Corn Insecticide Seed Treatment Plot

Essex County

Cooperators:	**Producer:**	Daniel Tignor
	Agribusiness:	Berry Lewis, Gustafson, Inc.
	Extension:	Keith Balderson, VCE, Essex County
Previous Crop:	Double crop soybeans	
Soil Type:	Kempsville sandy loam	
Planting Date:	April 19, 2004	
Seedbed Preparation:	No-till	
Corn Hybrid:	Pioneer 34K77	
Fertilization:	**Broadcast:**	0-75-100 per acre
	Starter:	15-15-0 @ 200 lbs/acre
	Sidedress:	100 lbs. nitrogen per acre
Crop Protection:	Roundup, Bicep, Prowl	
Harvest Date:	September 14, 2004	

Treatment	Rep.	Moisture (%)	Yield (bu/Ac @ 15.5%)
Cruiser Extreme Pak	1	18.2	186
Check	1	18.5	186
Poncho 250	1	18.2	191
Poncho 250 & Prevail	1	18.3	194
Poncho 1250	1	18.7	194
Latitude	1	18.6	186
Poncho 250	2	18.6	188
Check	2	18.7	175
Latitude	2	18.8	180
Cruiser Extreme Pak	2	18.0	188
Poncho 250 & Prevail	2	18.8	187
Check	3	18.8	180
Poncho 1250	2	18.4	194
Averages:			
Cruiser Extreme Pak	18.1	187	
Check	18.6	180.5	
Poncho 250	18.4	189.5	
Poncho 250 & Prevail	18.55	190.5	
Poncho 1250	18.55	194	
Latitude	18.7	183	

Discussion:

The purpose of this plot was to continue our work with corn seed treatments. Following planting, the white grub population in the plot area was determined to be 1.7 grubs per square foot. Grub populations are never uniform in a field and the second replication in the plot had the highest grub population. One small area of the replication sustained some stand loss, except for the Poncho 1250 seed treatment. Stand counts in the first replication showed very little difference. Final populations were around 22,000 plants per acre in that replication. All seed treatments yielded better than the untreated check.

Stand loss due to heavy white grub pressure.

2004 Corn Seed Treatment Plot

Middlesex County

Cooperators:
Producer: Jason Benton
Agribusiness: Pioneer, Ginny Barnes
Gustafson, Berry Lewis
Extension: David Moore, VCE, Middlesex County

Previous Crop: Soybeans
Soil Type: Suffolk Fine Sandy Loam
Fertilizer: 180-60-120
Crop Protection: Bicep II Magnum at 1.8 Quarts +1 Quart Simazine
Corn Hybrid Treated: Pioneer 34K77
Check: Pioneer 31G98
Date Harvested: October 4, 2004

Treatment	Moisture	Yield (bu/Ac) @ 15.5%
Check	15.4	214.1
Latitude	15.5	174.2
Latitude	15.5	187.9
Poncho 250	15.6	163.2
Poncho 250	15.4	182.0
Cruiser Extreme Pak	15.5	170.1
Cruiser Extreme Pak	15.5	168.4
Check	*15.5*	*210.5*
Poncho 250 + Prevail	15.6	178.9
Poncho 250 + Prevail	15.5	182.8
Poncho 1250	15.4	184.6
Poncho 1250	15.5	185.9
Untreated	15.4	175.9
Untreated + Experimental	15.4	170.5
Check	*15.5*	*209.0*
Average Stand Count per Acre		**Average Yield**
Latitude	21,780	181.1
Poncho 250	21,430	172.6
Cruiser Extreme Pak	22,300	169.4
Poncho 250 + Prevail	21,260	180.0
Poncho 1250	21,810	185.3
Untreated	21,710	175.9
Untreated + Experimental	22,500	170.5

Discussion:

For the past several years, corn plots in Eastern Virginia have looked at the use of various seed treatments either on, or coming on, the market. Up until this year, according to these plots, it has never paid to use the "Cadillac" treatment. This plot, however, showed some advantage to the Poncho 1250 treatment with its control of grubs, wireworms, and limited control of Black Cutworm. There was also some advantage to the use of Poncho 250 + Prevail. Many seed companies have decided to treat much of their corn one or two ways and only provide certain treatments as "special orders". Every year is a little different and 2005 will no doubt hold something for us that isn't quite like anything we've seen before. Consider this and other Virginia Tech replicated plot information when making seed corn decisions for 2005.

Excellent stand with seed treatments in heavy white grub pressure fields.

2004 Corn Seed Treatment Plot

Pamunkey Farms, New Kent County

Producers: Renwood Farms, Stanley, David, and Johnny Hula
Cooperators: Berry Lewis, Gustafson; Paul Davis, VCE, New Kent/Charles City Counties
Planted: April 30, 2004
Tillage: No-Till (7 years)
Soil Type: Tetotum, loam
Fertilizers: 70-35-0-5 .5oz.
200#Potash
110#N sidedress
Herbicide: 1.5 qt. RoundUp (early)
32 oz. Weather Max
3 pt. Atrazine
3 pt. Simizine
Harvested: October 7, 2004

Treatment	Yield (bu/Ac)	% Moisture	Stand Count
4 rows each treatment x 4 reps		*4 Rep Averages*	
Untreated	184.8	14.4	22,200
Poncho 250	185.0	14.4	22,400
Cruiser Extreme Pak	178.5	14.3	22,100
Poncho 1250	183.0	14.3	22,400
Poncho 250 + Prevail	182.5	14.3	22,950
Latitude	174.3	14.3	22,950

Discussion:

Seed insecticide treatments reduce the risk of insects causing problems with early corn stands. Poncho 250, Cruiser Extreme Pak, and Latitude are registered to control white grubs, seed corn maggots and wireworms. The high rates of Poncho and Cruiser Extreme Pak are both labeled to control cutworms and billbugs after emergence.

The earlier you plant, the more protection your seed corn needs because of cool soils and slow germination. If you plan to plant all your corn in late April and May, seed insecticide treatments are not as important in most situations.

Compare these results with other similar studies across Virginia.

2004 Evaluation of Deep Tillage
Ripped vs. Non-Ripped No-Till Corn
L. C. Davis Sons, New Kent County

Producers: Boogie, Wayne and Paul Davis
Cooperators: Jim Oliver, Monsanto; Cavalier International, Inc.; Paul Davis, VCE, New Kent/Charles City Counties
Hybrid: Pioneer 34K77
Soil Type: Altavista, fine sandy loam
Planted: April 21, 2004
Tillage: No-Till since 1998
Fertilization: **Starter:** 40-25-0-8-1 Zn
Sidedress: 135#N
Herbicides: 1.8 qts Bicep, 1 qt Princep and 2 pts RoundUp Original
Harvested: September 2, 2004

Treatment	Replication	Moisture %	Yield (bu/AC) @ 15.5%
Ripped	1	20.5	170.1
Check	1	20.3	174.5
Ripped	2	18.1	172.1
Check	2	19.0	171.5
Ripped	3	17.8	175.4
Check	3	18.1	176.5
Ripped	**Average**	**18.8**	**172.5**
Check	**Average**	**19.1**	**174.2**

Discussion:

We have evaluated NO-TILL deep tillage on over 35 different cornfields since 1999, and the results show a six bushel per yield increase with ripping. But the yields have ranged from 29 bushels more, to 22 bushels less, depending on the soil and compaction problem in that field.

Kentucky researchers have shown that fields under long-term "Never-Till" (10+ years) are not seeing a yield advantage to ripping prior to NO-TILL corn planting. This field has been in the Never-Till corn-wheat-soybean rotation since 1998 and, as you can see, ripping did not increase corn yields.

What is the bottom line? The key to making money on subsoiling is to only run the ripper when you are likely to get a strong yield response. How do you identify those situations? Scouting your fields for compaction with a penetrometer or simple probe is a good start. However, some researchers suggest that how much a soil layer resists penetration with a probe in March may not have much to do with how much it limits root growth in July. We believe a combination of factors must be considered when trying to predict how a particular field will respond to ripping. These factors can be grouped into the following three categories:

1. History of the field – amount and type of traffic, degree of compaction, etc.
2. Soil type – tendency to compact, presence of water-holding soil layer below compaction zone, etc.
3. Ripping technique – timing of ripping, placement of seed in relation to ripper track, etc.

If you want help making a decision on whether or not to rip a particular field, give one of us a call. We don't have all the answers yet, but these plots have taught us a few things. For everyone else pulling a ripper, we still stand behind the following advice:

1. Know how much it costs to own and run your own ripper.
2. Set up plots with us or on your own to see what ripping is doing for your fields.
3. Calculate whether ripping is helping or hurting your bottom line.

2004 Deep Tillage Study

Renwood Farms and Pamunkey Farms, New Kent County

Producers: Renwood Farms, Stanley, David, and Johnny Hula
Cooperators: Berry Lewis, Gustafson; Paul Davis, VCE, New Kent/Charles City Counties
Planted: April 17, 2004
Tillage: No-Till (8 years)
Soil Type: Pamunkey, fine sandy loam
Fertilizers: **Starter:** 65-35-0-7 S-.5 Zn-.1 B
Sidedress: 120#N – 30 S
Herbicide: 26 oz RoundUp Original Max
3 pt. Atrazine – April 20, 2004
3 pt. Simizine – April 20, 2004
Harvested: August 23, 2004

Treatment	Replication	Moisture %	Yield (bu/Ac) @ 15.5%
Ripped	1	25.7	193
Not Ripped	1	24.4	193
Ripped	2	24.8	204
Not Ripped	2	24.9	192
Ripped	3	25.1	195
Not Ripped	3	24.8	195
Ripped	4	22.9	210
Not Ripped	4	23.0	189
Ripped	5	24.5	199
Not Ripped	5	22.1	199
Ripped	**Average**	**24.6**	**198.2**
Not Ripped	**Average**	**23.8**	**193.6**

Discussion:

Ripping prior to No-Till corn planting at this location increased yields by 4.6 bu/Ac. Can you afford to run a No-Till ripper for this increase in yield? At this location, the difference in yield came from a bottom in the field that did not drain as well as the rest of the field. The yield monitor registered lower yields in the non-ripped bottoms compared to the strips that were ripped through the same bottom. Ripping end-rows and bottoms could pay every time while ripping the whole field may not pay. See discussion on page 10.

Ripping end-rows and compacted areas in your fields can pay big dividends.

2004 Deep Tillage Study

L. C. Davis and Sons, New Kent County

Producers: Boogie, Wayne and Paul Davis
Cooperators: Jim Oliver, Monsanto; Cavalier International, Inc.; Paul Davis, VCE, New Kent/Charles City Counties
Hybrid: Pioneer 33M54
Soil Type: Altavista and Altavista/Dogue, fine sandy loams
Planted: April 21, 2004
Tillage: No-Till since 1998
Fertilization: **Broadcast:** 60#K
Starter: 40-25-0-8-1 Zn
Sidedress: 135#N on May 21, 2004
Herbicides: 2 qts Bicep, 1 qt Princep and 1 qt RoundUp Original
Insecticides: Poncho 250 seed treatment
Fungicides: None
Harvested: September 4, 2004

Treatment	Replication	Moisture %	Yield (bu/Ac) @ 15.5%
Ripped	1	24.5	151.1
Not Ripped	1	23.0	163.3
Ripped	2	25.0	163.0
Not Ripped	2	24.5	168.9
Ripped	3	23.5	157.0
Not Ripped	3	24.5	157.5
Ripped	4	24.0	151.0
Not Ripped	4	23.0	160.2
Ripped	**Average**	**24.2**	**155.5**
Not Ripped	**Average**	**23.8**	**162.5**

Discussion:

There is no guarantee that ripping prior to NO-TILL corn planting will increase yields, as this study shows. Ripping end-rows and field bottoms that hold standing water are a good bet to improve stands and yields.

Conduct a soil compaction test with either a soil penetrometer or a simple probe to determine if you have a problem and how deep that problem exists in the soil horizon. See discussion on page 10.

2004 Corn Hybrid Comparison By Maturity

Northeast and Southest District Agriculture Agents

EARLY HYBRIDS	Eastern Shore Ag Expo	Charles City	Chesa-peake	Essex	Middle-sex	New Kent	Prince George	West-Moreland	Hybrid Averages
Augusta 5234	172	158		180		172		161	169
Chemgro 6494						152			152
Chemgro 6930	163	141		168				148	155
Dekalb C 57-84 Bt	222	206		217		227		155	205
Doeblers 469RYG						160			160
Doeblers 528XW		111		164					138
Doeblers 528 XYG	180							148	164
Dynagro 5295 Bt	174	138		154		172	147	172	160
Garst 8590 IT	175	112		166		145	129	145	145
Hubner H4488 Bt	199	216		181		207		181	197
Northrup King N 58-D1						201			201
Northrup King N 60-B6	174	172		185				169	175
Pioneer 34B20 Bt	201	198		182		190		179	190
Pioneer 34M24	174								174
SS 670 Bt	200	209				197		181	197
T.A. Seeds 6331 Bt	169	196		151		180		173	174
Trisler T5255RRCB	209	220		177		218		192	203
Vigoro V4910	195	144		166	184	163		160	169
Plot Averages	186	171		174	184	183	138	166	174

2004 Corn Hybrid Comparison By Maturity

Northeast and Southest District Agriculture Agents

MID HYBRIDS	Eastern Shore Ag Expo	Charles City	Chesa-peake	Essex	Middle-sex	New Kent	Prince George	West-Moreland	Hybrid Averages
Asgrow RX702YG	221	269	204	208	196		165	220	212
Augusta 1187	222	187	208	174	197		122	195	186
Augusta 9561					175				175
Chemgro 7323RR Bt		227		171	190			204	198
Chemgro 7294	177								177
Dekalb C 61-45 Bt	230	222	207	214	198		167	222	209
Doeblers 648RYG	234	234		183	181		174	209	202
Dyna-gro 5467	205	163	228	181	191			185	192
Garst 8348	208	199	186	201	186			217	200
Hubner H4497 Bt	230	204	205	182	183		162	204	196
Northrup King N 65-M7	200	161		176	190		113	179	170
Northrup King N 65-Y3			161						161
Pioneer 33B51	218								218
Pioneer 34B99 Bt	214	240	217	215	188		177	226	211
SS 692 Bt	197	177	198	189	181		141	189	182
T.A. Seeds 6704	206	160	226	176	179		118	206	182
Trisler T5337CB	218	230		189	197		172	190	199
Vigoro V51C49	177	181		176	184		105	208	172
Vigoro V5240			179						179
Vigoro V58Y41			222						222
Plot Averages	211	204	203	188	188		147	204	192

2004 Corn Hybrid Comparison By Maturity

Northeast and Southeast District Agriculture Agents

MID HYBRIDS	Eastern Shore Ag Expo	Charles City	Chesa-peake	Essex	Middle-sex	New Kent	Prince George	West-Moreland	Hybrid Averages
Asgrow RX778RR2	183		198		179		130		172
Augusta 03-62	180		179				129		163
Chemgro 7740 Bt	208		222		198				209
Dekalb C 64-11 Bt	195		212		188		156		188
Doeblers 784XYG	206		224		199		189		204
Dyna-gro 57F67Bt	187		227		190		164		192
Garst 8292Bt	194		229		186		163		193
Hubner H4807	220								220
Hubner 4808			217		188		165		190
Northrup King N 75-C4	201		186		173				187
Northrup King N 82-B2							142		142
Pioneer 33M54	200		212		203		139		188
SS 740			173						173
SS 764RRYG	188		207		181		145		180
T.A. Seeds 6953 RR/Bt	191		181		173		149		174
Trisler T03-19CB	190		208		199		148		186
Vigoro V55Y21	166								166
Plot Averages	193		205		188		152		184

2004 Ag Expo Corn Hybrid Trial

Eastern Shore

Producers: Woodlands Farm, Northampton County, Bennie Etheridge
Cooperators: **Extension:** Jim Belote, VCE, Accomack County; Bill Shockley, VCE, Northampton County; Wade Thomason, Extension Specialist, Grain, Virginia Tech
Planted: April 20, 2004
Tillage: No-till
Soil Type: Bojac, fine sandy loam
Population: 23,000
Irrigation: None
Fertilizers: Preplant - 350#4-11-34, 26#S, 3.5#Zn, 6#Mn, 1#B
One day after planting - 170#N/Ac
Herbicide: 2 qts Bicep, 4oz Permethrin, 1 pt Gramoxone plus surfactant
Harvested: August 28, 2004

Hybrids	Yield (bu/Ac)	% Moisture
*Trisler/AugustaT5337 RRCB	211.2	23.0
Southern States 670 Bt	199.9	20.5
Chemgro 6930	163.1	20.0
T. A. Seeds 6331 Bt	169.2	20.0
Northrup King N 60-BG	174.2	23.0
*Trisler/Augusta T5337 RRCB	214.5	20.0
Dekalb C 57-84	221.8	18.0
Doebler's 528 XYG	180.2	20.0
Pioneer 34B20	201.3	18.5
Pioneer 34M24	174.1	20.0
Augusta A5234	171.7	21.0
*Trisler/Augusta T5337 RRCB	211.7	22.0
Trisler/Augusta T5255RRCB	209.3	19.5
Hubner H4488	198.9	19.0
Garst 8590 IT	175.5	18.5
Dyna-Gro 5295 Bt	174.4	24.0
*Trisler/Augusta T5337 RRCB	230.2	19.5
Vigoro 4910	194.9	21.0
Southern States 692 Bt	196.6	20.0
Chemgro 7294	176.7	21.0
T. A. Seeds 6704	206.4	20.0
Northrup King N 65-M7	200.1	23.0
*Trisler/Augusta T5337 RRCB	232.7	22.0
Dekalb C 61-45	230.2	21.5
Asgrow RX 702 YG	220.8	22.0
Doebler's 648 RYG	233.6	21.0
Pioneer 34B99	214.4	25.0
Hybrids	Yield (bu/Ac)	% Moisture
*Trisler/Augusta T5337 RRCB	223.1	23.0

Hybrids	Yield (bu/Ac)	% Moisture
Pioneer 33B51	218.1	25.0
Augusta A1187	222.5	25.0
Trisler/Augusta T5337 CB	218.4	22.0
Hubner H4497	230.2	21.0
Garst 8348	208.4	23.0
*Trisler/Augusta T5337 RRCB	227.9	21.0
Dyna-Gro 5467	204.6	22.0
Vigoro V51C49	177.2	24.0
Southern States 764 RRYG	188.3	24.0
Chemgro 7740 Bt	207.7	24.0
*Trisler/AugustaT5337 AND Southern States 764	223.3	21.0
T. A. Seeds 6953 RR/Bt	191.4	21.0
Northrup King N75C4	201.3	22.0
Dekalb C 64-11	195.1	24.0
Asgrow RX 778 RR2	182.9	24.0
*Southern States 764 RRYG	174.0	25.0
Doebler's 784 XYG	205.7	26.0
Pioneer 34M54	199.7	24.0
Augusta A03-62	179.9	26.0
Trisler/Augusta T03-19CB	189.8	24.0
Hubner H4807	219.9	25.0
*Southern States 764 RRYG	181.1	23.0
Garst 8292 Bt	194.3	26.0
Dyna-Gro 57F67Bt	187.2	22.0
Vigoro V55Y21	165.8	22.0
*Southern States 764 RRYG	151.0	25.0

Discussion:

Overall, growing conditions were excellent throughout the season. Weed control was excellent and insect pressure was relatively low. Grain yields averaged 199 bu/Ac for all entries. We ran low on seed for the original check and substituted SS 764RRYG in the final three check passes.

2004 Evaluation of Early Maturity Corn Varieties

Northumberland/Lancaster Counties

Cooperators: **Producer:** Five "L" Farms
Extension: Matt Lewis, VCE, Northumberland/Lancaster Counties
Soil Type: State fine sandy loam
Planted: April 9, 2004 – no-till in bean stubble
Seeding Rate: 24,200 seeds/acre
Equipment: JD MaxEmerge 6-row planter
Row Width: 30 inches
Fertilization: **Broadcast:** 65-50-50 w/herbicides
Sidedress: 80-0-0
Pesticides: 2 qt Bicep, 1 qt Princep, 1.5 pt Gramoxone
2 oz Warrior

Hybrid	Seed Trt.	Traits	Stand	Moisture	Yield (bu/Ac) @ 15.5%
Check - K77	KG	None	19728	18.7	161
Vigoro 4910	Cruiser	None	19728	19.6	160
Hubner 4488	Poncho	Bt	21307	18.3	181
NK N60-B6	Cruiser	Bt, Liberty	19728	21.0	169
Trisler 5255	Poncho	RR, Bt	18150	21.4	192
Check - K77	KG	None	20517	18.8	159
Augusta 5234	Latitude	None	18150	20.8	161
TA 6331	Latitude	None	18939	21.5	173
Garst 8590IT	Poncho	Clearfield	20517	19.5	145
Pioneer 34B20	Latitude	RR, Bt	19728	20.8	179
Check - K77	KG	None	18150	21.0	155
Dekalb c57-84	Poncho	Bt	18150	19.5	155
Dyna-Gro 5295Bt	Latitude	Bt	21307	20.3	172
Doebler's 528XYG	Poncho	Bt	21307	20.4	148
Chemgro 6930	Latitude	None	21307	22.3	148
SS 670Bt	Latitude	Bt	18150	21.9	181

Discussion:

Yields were excellent (165 bu/Ac average) despite excessive rain and stand problems. An extended period of cold, wet weather followed planting and reduced emergence. None of the varieties showed signs of lodging. Corn borer pressure was light but evident in the plot, and Bt varieties averaged 14 bu/Ac higher than non-Bt varieties. Pioneer 34K77 was used as a check in this plot. There was little variation across the checks, indicating the plot was located on a uniform area of the field. Please use these plot results and results from previous years when selecting hybrids for 2005. Remember the last two years have seen more than adequate rainfall – take a look at 2002 hybrid performance in case 2005 is a dry one.

2004 Early Corn Hybrid Trial

Shimokin Farm, New Kent County

Producers: Ralph, Reed and Eric Randolph, New Kent
Cooperators: Ginny Barnes, Pioneer Seed; Paul Davis, VCE, New Kent/Charles City Counties
Planted: April 30, 2004
Tillage: No-Till
Soil Type: Altavista, fine sandy loam
Population: 25,500
Irrigation: Yes, 3 inches
Fertilizers: 125#Potash broadcast
64#N plus ½#Zn Starter
150#N sidedress
Herbicide: Lumex and Princep – 1 quart on April 25, 2004
Harvested: August 30, 2004

Hybrids	Yield (bu/Ac)	% Moisture	% Stalks lodged below ears
1. Pioneer 34B20 Bt	190	22.2	0
2. Southern States 670 Bt	197	22.2	0
3. Dyna-Gro 5295 Bt	172	20.0	0
4. Hubner 4488 Bt	207	22.0	0
5. DeKalb C57-84 Bt	227	22.0	0
6. T A 6331	180	22.2	4
7. Augusta 5234	172	22.2	0
8. Trisler/Augusta 5255RR/Bt	218	22.2	8
9. Northrup King N58-D1	201	22.1	4
10. Garst 8590 IT	145	21.8	0
11. Vigoro 4910	163	21.9	4
12. Doebler's 469 RYG	160	22.1	0
13. Chemgro 6494	152	21.1	0
Plot Averages	**183**	**21.1**	
Bt	**196**		
Non-Bt	**169**		

≈ 25% European Corn Borer Infestation

Discussion:

This corn trial looked at early hybrids only, less than 109 day relative maturity. As you see, we had excellent yields, but there was almost a 30-bushel advantage to using a Bt hybrid over the non-Bt hybrids at this location. We estimated that European Corn Borers infested 25% of the stalks. This year, the corn borer damage was more severe than normal in both the New Kent and Charles City counties. Hopefully this will not occur in the future, but planting Bt hybrids will eliminate the risk of heavy corn borer damage.

Compare this study with other Virginia Tech hybrid trials.

2004 Corn Hybrid Trials

Evelynton Farms, Charles City County

Producers: Archer and Tim Ruffin
Cooperators: Jim Wallace and Brian Noyes, Colonial Soil and Water District;
Daryl Clay, Hubner Seed; Paul Davis, VCE, New Kent/Charles City Counties
Planted: April 22, 2004
Tillage: No-Till
Soil Type: Wickham, fine sandy loam
Fertilizers: Biosolids in December 2003 at 160 P.A.N. rate
Sidedress: 40#N
Herbicide: 22 oz. RoundUp Ultra Max on March 15, 2004
3 pts. Attrex and 3 pts. Princep on April 23, 2004
Harvested: August 27, 2004

Hybrids	Yield (bu/Ac)	% Moisture	% Stalks lodged below ears
1. DeKalb C61-45	222	21.2	0
2. Vigoro V51-C49	181	17.8	15
3. Vigoro 4910	144	21.6	15
4. Check	225	20.1	0
5. Dyna-Gro 5467	163	18.2	15
6. Dyna-Gro 529 Bt	138	21.0	0
7. Garst 8348	199	20.7	0
8. Garst 8590 IT	112	21.1	18
9. Check	266	19.9	0
10. T A 6704	160	17.1	15
11. T A 6331	196	20.1	4
12. Asgrow RX702 ZY	269	20.0	0
13. DeKalb C57-84	206	18.7	0
14. Check	282	22.0	0
15. Pioneer 34B99 Bt	240	19.8	0
16. Pioneer 34B20 Bt	198	19.6	0
17. Augusta 1187	187	19.3	18
18. Augusta 5234	158	23.4	18
19. Check	229	24.9	0
20. Trisler/Augusta 5337 CB	230	25.8	0
21. Trisler/Augusta 5255 RR CB	220	22.0	0
22. Hubner 4497 Bt	204	18.8	4
23. Hubner 4488 Bt	216	18.8	0
24. Check	238	21.4	0
25. Northrup King N65 M7	161	18.1	11
26. Northrup King N60 B6	172	20.9	0
27. Doebler's 648RYG	234	20.4	4
28. Doebler's 528 XW	111	18.0	15
29. Check	245	23.2	0
30. Chemgro 7323 RR/Bt	227	18.9	0

Hybrids	Yield (bu/Ac)	% Moisture	% Stalks lodged below ears
31. Chemgro 6390	141	20.0	4
32. Southern States 692 Bt	177	22.2	0
33. Southern States 670 Bt	209	23.8	0
34. Check	231	25.5	0
Check = Trisler/Augusta 5337RR/CB Non-Bt averaged 160 bu/Ac Bt averaged 214 bu/Ac ≈90% European Corn Borer Infestation			

Discussion:

This corn hybrid plot looked at both early- and mid-season corn hybrids (104 to 113 day maturity). The European Corn Borer pressure was the worst in memory with 90% of stalks infested. Because of the insect, the Bt hybrids averaged over 50 bu/Ac more yield than the non-Bt hybrids. This was an unusual year for corn borers, but for less than $10.00 an acre you can eliminate this type of pressure by planting a Bt hybrid.

Compare these results with other Virginia Tech corn hybrid trials.

2004 Corn Hybrid Demonstration Plot

Essex County

Cooperators: **Producer:** Hundley Brothers
Agribusiness: Various Seed Company reps.
Extension: Keith Balderson, VCE, Essex County
Hybrid: Various
Planting Date: April 19, 2004
Soil Type: Kempsville sandy loam
Tillage: Conventional
Fertilization: 3.5 tons/Ac poultry litter
Crop Protection: Bicep, Atrazine, Princep
Harvest Date: September 13, 2004

Hybrid	% Moisture	Plant Pop. (1,000)	Yield (bu/Ac) @ 15.5%
SS 670 Bt	not harvested due to water damage		
SS 692 Bt	19.3	27	189
Check-Trisler/Augusta 5337RRCBP250	19.9	25	180
Chemgro 6930	17.8	26	168
Check	19.9	26	180
Chemgro 7323 Bt	18.0	27	171
T.A. Seeds 6331 Bt	18.4	27	151
T.A. Seeds 6704P250	18.0	27	176
* NK N60-B6C5FS	18.5	26	185
NK N65-M7C5FS	18.5	27	176
* Dekalb 57-84YGP250	17.6	25	217
* Dekalb 61-45YGP250	19.4	28	214
* Asgrow RX702YGP250	19.3	27	208
Check	19.3	26	204
Doebler's 528XWP250	17.5	25	164
Doebler's 648RYGP250	19.3	27	183
Check	19.3	26	203
Pioneer 34B20RR Bt	18.1	27	182
* Pioneer 34B99 Bt LL P1250	18.5	27	215
Augusta 5234	19.3	28	180
Augusta 1187P250	19.7	24	174
Trisler/Augusta 5255RR Bt	19.4	29	177
Trisler/Augusta 5337CB	20.2	27	189
Hubner 4488 Bt P250	17.5	25	181
Hubner 4497 Bt P250	18.2	27	182
* Garst 8590IT P250	17.9	24	166
* Garst 8348	20.3	25	201
Dyna-Gro 5295 Bt	18.2	26	154
Dyna-Gro 5467 P250	19.1	26	181

Hybrid	% Moisture	Plant Pop. (1,000)	Yield (bu/Ac) @ 15.5%
Check	19.9	26	205
Vigoro 4910	18.1	25	166
Check	19.9	26	205
Vigoro 51C49	18.5	27	176

Discussion:

This plot received excessive rainfall throughout much of July and August. Twice during that time period, five to seven inches of rain fell within a 24- to 72-hour period. At harvest, most of the hybrids exhibited some lodging. Hybrids with a * stood well. European corn borer pressure was not heavy in this plot, but the average yield of the Bt hybrids was 189 bushels per acre vs. 176 for the non-Bt hybrids. Lodging appeared to be caused by stalk and root rots caused by excessive rainfall.

Key:

RR = Roundup Ready

CB = Bt

P250 = Poncho seed treatment (low rate)

P1250 = Poncho seed treatment (high rate)

YG = Bt

C5FS = Cruiser (low rate)

LL = Liberty Link

IT = Clearfield Corn

2004 Midseason Corn Hybrid Trial

Windsor Farms, Westmoreland County

Producers: F. F. Chandler, Windsor Farms, Montross, Va.
Cooperators: Virginia Barnes, Pioneer Seed; Curtis Packett, Royster Clark; Sam Johnson, VCE, Westmoreland County
Planted: April 20, 2004
Tillage: No-till behind wheat/beans
Soil Type: Kempsville
Population: 26,000
Irrigation: No
Fertilizers: 30-50-60 at planting
150#N sidedress
Herbicide: 2.8 qts Bicep, 1 pt Princep and 2 oz Warrior
Harvested: September 23, 2004

Hybrids	Yield (Bu/Ac)	% Moisture	Population
1. Southern States 692 Bt	189.0	17.1	27,007
2. Chemgro 7323 RBt	204.0	17.1	25,787
3. T. A. Seeds 6704	206.2	15.8	27,529
4. Northrup King N65M7	179.0	15.9	28,226
5. Pioneer 31G98 (Check)	224.7	18.5	26,484
6. Dekalb C61-45	221.9	17.0	28,575
7. Asgrow RX702YG	220.0	16.5	27,529
8. Doebler's 648 RYG	208.9	17.0	27,878
9. Pioneer 34B99 Bt/L	225.8	16.8	26,136
10. Pioneer 31G98 (Check)	214.1	19.1	26,484
11. Augusta A1187	194.8	17.9	26,658
12. Trisler/Augusta 5337CB	190.3	18.4	25,787
13. Hubner 4497	203.8	16.4	28,401
14. Garst 8348	216.7	17.5	25,613
15. Pioneer 31G98 (Check)	215.8	18.3	26,484
16. Dyna-Gro 5437	185.2	16.7	27,529
17. Vigoro 51C49	208.3	16.8	27,704
Plot Average	**206.4**		
Check Average	**218.2**		

Discussion:

There was a 10 bu. difference in the check variety across the plot so there may have been inconsistencies in soil conditions, fertility, etc. There was considerable lodging in some varieties from excessive rains and wind, which definitely affected yields. These are strip plots. Please compare and average with similar tests done across the area and with state performance trials in making your variety decisions.

2004 Corn Hybrid Comparison

Middlesex County

Cooperators:
Producer: Jason Benton
Agribusiness: Participating Companies
Extension: David Moore, Carl Thiel-Goin, VCE, Middlesex County

Previous Crop: Soybeans
Soil Type: Suffolk Fine Sandy Loam
Date Planted: April 20, 2004 (No-Till 30" Rows with Kinze 3000)
Fertilization: 190-60-120
Crop Protection: Bicep II Magnum @ 1.8 Quart
1 Quart Simazine
Check Hybrid: Pioneer 31G98
Plant Population: 22,000
Standability: 1= Good, 5=Poor
Date Harvested: October 1, 2004

Hybrid	Moisture	Yield (bu/Ac) @ 15.5%	% of Check	Standability
Check	15.5	210.3		1
Augusta 9561	16.0	175.2	83%	3
Check	15.7	211.6		2
Augusta 1187	15.7	196.9	93%	2
Check	15.6	210.0		2
Asgrow 702 YG	15.1	195.9	93%	1
Check	15.2	210.4		2
Asgrow 778RR2	15.1	178.8	84%	2
Check	15.1	214.1		2
Chemgro 7323 RR/Bt	15.1	189.6	90%	1
Check	15.2	209.3		2
Chemgro 7740 Bt	15.7	198.4	95%	1
Check	15.5	206.5		2
DeKalb 61-45 RR/Bt	15.8	198.0	96%	2
Check	15.6	206.8		1
DeKalb 64-11 RR/Bt	15.3	187.9	90%	1
Check	15.3	209.8		2
Doebler's 648 RYG	15.2	181.4	86%	2
Check	15.5	212.1		2
Doebler's 748 XYG	16.0	199.2	95%	1
Check	15.6	205.1		2
Dyna-Gro 5467	15.3	190.7	93%	2
Check	15.4	206.7		2
Dyna-Gro 57F67 Bt	15.3	189.6	91%	1
Check	15.4	209.0		2
Garst 8292 Bt	15.4	186.0	90%	3
Check	15.5	206.5		2

Hybrid	Moisture	Yield (bu/Ac) @ 15.5%	% of Check	Standability
Garst 8348	16.2	185.9	91%	2
Check	16.0	203.6		2
Hubner 4808 Bt	16.2	187.6	92%	1
Check	15.8	203.5		2
Hubner 4497 Bt	15.4	183.3	89%	1
Check	15.4	210.1		2
NK N65-M7	15.2	190.4	91%	2
Check	15.3	207.0		2
NK N75-C4	15.4	173.8	84%	2
Check	15.4	206.2		2
Pioneer 33M54	15.6	202.9	98%	2
Check	15.6	206.2		2
Pioneer 34B99	15.2	188.2	90%	1
Check	15.3	211.4		2
Southern States 692 Bt	15.4	181.0	86%	1
Check	15.5	208.1		2
Southern States 764 Bt	15.4	181.0	90%	1
Check	15.5	198.7		2
T.A. Seeds 6704	15.4	178.8	88%	2
Check	15.4	208.6		2
T.A. Seeds	15.6	173.4	83%	2
Check	16.2	208.2		3
Trisler 5337 Bt	16.7	196.6	95%	2
Check	16.2	206.1		2
Trisler TO3-19	16.3	198.7	95%	1
Check	16.2	210.0		2
Vigoro 51C49	15.9	184.3	86%	2
Check	15.6	218.0		2
Vigoro 4910	15.6	184.4	85%	2
Check	15.4	214.1		2
Average Check:	**208.6**			

Discussion:

This plot was a lot of fun with very good to excellent yields. Consider plot results over all locations when making planting decisions for 2005.

2004 Corn Variety Plot

Dinwiddie & Prince George Counties

Producer: Glenn Chappell, Sr.
Planting Date: April 26, 2004
Plot: Variety
Population: 24,690
Soil: Slagle sandy loam
Herbicides: April 27, 2004 – 1.0 qt Honcho + 2.5 qt Bicep II + 1 qt 820/100gal
Tillage: Disk/Chisel/Ripped and Bedded
Fertility: 600 lb 10-10-10 broadcast at planting
110 lb N sidedress
Harvested: September 27, 2004

Company	Variety	Early	Mid	Full	% H_2O	bu/Ac	% Check*
Check	T5337RRCB				18.0	173.7848	Check
T. A. Seeds	6704		X		16.5	117.9758	0.696663
	6953RRBT			X	16.5	149.1552	0.880781
NK	N 65-M7		X		16.9	113.2175	0.668564
	N82-B2			X	17.1	142.227	0.839869
Dekalb	C 61-45		X		15.5	167.1442	0.987008
	C64-11			X	17.4	156.7171	0.925435
Asgrow	RX 702YG		X		14.3	165.1934	0.975489
	RX778RR2			X	17.5	129.8844	0.766985
Doebler's	648RYG		X		17.1	174.0189	1.027604
	784XYG			X	19.5	189.2912	1.117789
Pioneer	34B99BTL		X		16.9	176.9547	1.04494
	33M54			X	15.8	138.5091	0.817914
Augusta	A1187		X		19.0	121.8007	0.719249
Check	T5337RRCB				18.3	164.9038	Check
	A-03-62			X	19.2	128.8389	0.785317
Trisler/Augusta	T5337CB		X		21.0	172.2104	1.049682
	T03-19CB			X	17.3	147.7261	0.900442
Hubner	H4497		X		17.9	162.3969	0.989865
	H4808			X	18.5	164.5001	1.002685
Garst	8590IT	X			14.0	129.3193	0.788245
	8292BT			X	18.1	162.8279	0.992492
Dyna-Gro	5295BT	X			15.2	147.1983	0.897224
	57F67BT			X	17.1	163.9794	0.99951
Vigoro	V51C49		X		17.6	104.7795	0.638667
FFR	692BT		X		18.0	140.6829	0.857511
	764RRYG			X	18.5	144.7601	0.882362
Check	T5337RRCB				20.1	163.2156	Check

*% Check = Hybrid yield divided by the average of the two closest check varieties.

2004 Corn Variety

Chesapeake County

Cooperators: Ray and Marc McPherson
Extension: Watson Lawrence, VCE, Chesapeake County
Check Variety: Trisler 5337 CB…….Relative Maturity: 113 Days
Average Yield:: 212 bu/Ac
Planting Date: April 21, 2004
Harvest Date: September 8, 2004
Row Spacing: 24 inches
Population: 28,000 plants/acre
Fertilizer: 500 lbs. 25-10-15 preplant/acre
10 gal. 19-19-0 starter + 6 OZ. asset/acre
10 gal. 30% nitrogen
Herbicide: 1.5 qts. Lasso/acre at planting
2 qts. Attrazine/acre post-emergence plus Dynamic Adjuvanct
Tillage: Disk; Ripped; Dyna-Drive
Soil Type: Mattapex Very Fine Sandy Loam

Mid-Maturity Corn Variety Test (108 to 112 days)			
Variety	**% Moisture**	**% Lodging**	**Adjusted Yield (Bu/ac) @15.5%**
Dyna-Gro 5467	19.5%	2%	227.959
TA 6704	19.4%	1%	226.340
Vigoro 58Y41	22.4%	1%	221.918
Pioneer 34B99 Bt/L	20.0%	3%	216.833
Augusta 1187	22.4%	7%	208.350
Dekalb C61-45	21.3%	0%	207.209
Hubner 4497	22.9%	0%	205.346
Asgrow 702 YG	21.2%	1%	203.987
Southern States 692 Bt	19.3%	1%	197.880
Garst 8348	20.4%	2%	186.448
NK 65Y3	20.4%	0%	160.611
Full-Maturity Corn Variety Test (> 113 days)			
Dyna-Gro 57F67 Bt	22.0%	2%	226.500
Pioneer 33M54	23.9%	2%	212.443
Southern States 764 RR/YG	21.7%	0%	207.027
Garst 8292 Bt	23.7%	0%	229.437
Chemgro 7740 Bt	26.0%	2%	222.082
Trisler T03-19 CB	23.7%	0%	208.462
Hubner 4808	24.7%	0%	217.066
Doebler's 784x YG	25.5%	0%	223.560
Dekalb C64-11	20.6%	0%	211.584
Vigoro 5240	19.3%	4%	179.152
Asgrow 778 RR	22.7%	0%	197.708
Agusta 03-62	24.8%	16%	179.376
Northrup King 75-C4	22.3%	0%	185.718
TA Seeds 6953	21.0%	25%	180.526
Southern States 740	21.7%	10%	172.828

Discussion:

These varieties were selected by seed representatives for replicated testing in counties both north and south of the James River. There may be varieties specifically recommended for Chesapeake that were not included in this test.

A check variety was planted beside each variety in the test to monitor minor soil differences across test plot. Variances were minor. The overall check variety average was used as a benchmark from which all varieties were compared and adjusted yields calculated. An adjusted yield was calculated by comparing the check variety with the overall average of that check variety in the plot. A small adjustment was made to each variety based on that variance. The check variety Trisler 5337 CB had excellent standability and yielded well across the entire plot.

Weed control was excellent due to adequate rain activating the herbicide for grasses, attrazine over the top post-emergence controlling weeds, and 24-inch rows promoting excellent crop competition.

Yields were excellent on this productive, moderately well-drained soil. Crop received over 28 inches of rain from time of planting to harvest.

It is always best to look at multiple years of testing when choosing varieties.

2004 Corn Hybrid Yield Challenge Plot

Essex County

Cooperators:
Producer: J & D Carlton Farms, Inc.
Agribusiness: Mike Day, Southern States Coop.
Extension: Keith Balderson, VCE, Essex County

Previous Crop: Soybean
Soil Type: Loamy sand
Planting Date: April 6, 2004
Seedbed Preparation: No-till
Corn Hybrid: Various
Harvest Date: September 3, 2004

Hybrid	Rep.	% Moisture	Yield (bu./A @ 15.5%
Hubner 3487P250	1	20.1	167.4
Longest SC11B55Bt	1	21.7	167.7
Vigoro 5110	1	20.7	156.5
Southern States 670Bt	1	20.4	176.8
Southern States 670Bt	2	21.7	161.2
Vigoro 5110	2	21.1	157.9
Longest SC11B55Bt	2	23.4	173.4
Hubner 3487P250	2	21.7	170.2
Hubner 3487P250	3	21.3	174.8
Longest SC11B55Bt	3	23.6	181.7
Vigoro 5110	3	21.3	165.9
Southern States 670Bt	3	21.3	168.8
Southern States 670Bt	4	21.5	172.2
Vigoro 5110	4	20.9	172.4
Longest SC11B55Bt	4	23.4	183.4
Hubner 3487P250	4	20.9	174.7
Averages:			
Hubner 3487P250		21.0	171.8
Longest SC11B55Bt		23.0	176.6
Vigoro 5110		21.0	163.2
Southern States 670Bt		21.2	169.8

Discussion:

These yields are very good on a light soil type. All hybrids were planted assuming 110 RM. We believe the Longest hybrid is a longer maturing hybrid due to its consistently higher moisture at harvest. The tops of the non-Bt hybrids were broken out at harvest due to European corn borer (ECB) damage. Yield loss due to ECB damage was not severe in any of the hybrids.

Key

P250 = low rate Poncho

Bt = Bt

2004 Corn Hybrid Demonstration Plot

Essex County

Cooperators: **Producer:** B.A. Tignor, Jr.
Extension: Keith Balderson, VCE, Essex County
Previous Crop: Soybean
Soil Type: Sandy loam
Seedbed Preparation: No-till
Corn Hybrid: Various
Harvest Date: August 26, 2004

Hybrid	Moisture(%)	Harvest Population	Yield (bu/Ac @ 15.5%)
Pioneer 35P12	21.4	21,500	178
Augusta 3387	25.0	21,000	195
Pioneer 34K77	23.1	23,500	201
Doebler's 649XY	26.9	22,000	184
Augusta 4587	27.2	20,500	191
Vigoro 5110	24.9	23,000	186
Vigoro 5110	27.0	23,000	196

Discussion:

Mr. Tignor set this plot up to compare some of the hybrids he planted in 2004. Yields were excellent. Producers with well-calibrated yield monitors are encouraged to set up plots such as this and replicated "challenge" plots to evaluate how hybrids perform on their farms.

2004 Corn Challenge Plot

Middlesex County

Cooperators: **Producer:** Charles Rich, Chuck Hunt
Agribusiness: Mike Day, Southern States
Extension: David Moore, VCE, Middlesex County
Previous Crop: Soybeans
Soil Type: Kempsville Fine Sandy Loam
Fertilizer: 180-60-150
Crop Protection: Bicep II Magnum 1.8 Quarts
1 Pint Aatrex
1 Quart Simazine
Date Harvested: September 27, 2004

Hybrid	Rep	Moisture	Yield (bu/Ac) @ 15.5%
Doebler's 649 XYG	1	15.9	165.0
Southern States 670 Bt	1	16.3	163.9
Doebler's 649 XYG	2	15.8	178.2
SS 670 Bt	2	15.9	177.7
Doebler's 649 XYG	3	15.6	180.5
SS 670 Bt	3	16.0	170.4
Doebler's 649 XYG	4	15.7	180.0
SS 670 Bt	4	15.7	167.1
Averages:			
Doebler's 649 XYG		15.8	175.9
SS 670 Bt		16.0	169.8

Discussion:

When making planting decisions for 2004, use available replicated corn plot information. Statistically, there was a yield difference in favor of the Doebler's hybrid. When planting comparative plots, the more replications you can have, the stronger your results will be.

2004 Corn Hybrid Challenge

Middlesex County

Cooperators: **Producer:** "Turk" & Tyler Crittenden
Agribusiness: Mike Day, Southern States
Extension: David Moore, VCE, Middlesex County
Soil Type: Suffolk Fine Sandy Loam
Previous Crop: Soybeans
Planting Date: April 15, 2004
Fertilization: 28-46-120-12S
50#N at planting, 90# N Sidedress
Crop Protection: 1.8 Qt. Bicep II magnum + 1 Pt. Aatrex
Harvest Date: September 3, 2004

Hybrid	Replication	Moisture	Yield (bu/Ac) @ 15.5%
SS 804 RR	1	20.3	149.7
SS 740	1	19.9	135.7
Pioneer 32R25	1	21.5	154.0
SS 849 CL	1	23.1	170.2
SS804 RR	2	20.6	149.1
SS 740	2	19.7	128.0
Pioneer 32R25	2	21.3	154.9
SS 849 CL	2	25.8	158.0
SS 804 RR	3	21.2	145.4
SS 740	3	20.1	127.3
Pioneer 32R25	3	22.5	152.1
SS 849 CL	3	25.8	146.8
SS 804 RR	4	22.7	143.9
SS 740	4	21.5	123.8
Pioneer 32R25	4	19.8	148.9
SS 849 CL	4	25.8	138.1
Averages:			
SS804 RR	147.0		
SS 740	128.7		
Pioneer 32R25	152.5		
SS 849 CL	153.3		

Discussion:

This plot was initiated by Southern States to show producers their hybrids in a challenge to a hybrid of similar maturity that the producer was familiar with. Statistically, SS740 was beaten by all three of the other hybrids. Also, of the top two hybrids, Pioneer 32R25 and SS 849CL, there is no statistical difference in yield. Certainly, one of the things learned here is the importance of replicating the comparisons at least three or more times. Please use this and other Virginia Tech replicated plot information when making planting decisions for 2005.

2004 Corn Hybrid Challenge

Middlesex County

Cooperators:
Producer: Jimmie Blake
Agribusiness: Mike Day, Southern States
Extension: David Moore, VCE, Middlesex County

Previous Crop: Soybeans
Soil Type: Wrightsboro Fine Sandy Loam
Planting Date: April 24, 2004
Fertilizer: 30-70-120-pre-plant
60 #N at planting
90# N Sidedress
Crop Protection: Bicep II Magnum at 1.8 Quart
Simazine at 1 Quart
Harvest Date: September 24, 2004

Hybrid	Rep	Moisture	Yield (bu/Ac) @ 15.5%
Southern States 670 Bt	1	16.2	155.8
Hy-Test 7806	1	19.3	165.2
SS 670 Bt	2	14.8	178.6
Hy-Test 7806	2	18.6	158.8
SS 670 Bt	3	16.6	172.8
Hy-Test 7806	3	19.3	164.5
SS 670 Bt	4	15.1	162.3
Hy-Test 7806	4	18.6	151.3
Average:			
SS 670 Bt		15.7	167.4
Hy-Test 7806		19.0	160.0

Discussion:

This is another challenge plot initiated by Southern States to challenge the producer's familiar hybrid. Statistically, because of Rep 1, there is no difference in the yields of the entire plot, although the average shows a seven bushel increase. Use this and other replicated plot information when making corn planting decisions for 2005.

2004 Corn Variety Challenge Plot

Northern Neck County

Cooperators: **Producer:** Five "L" Farms
Extension: Matt Lewis, VCE, Northumberland/Lancaster Counties
Soil Type: Tetotum loam
Planted: April 30, 2004 – no-till in bean stubble
Seeding Rate: 24,200 seeds/acre
Equipment: JD MaxEmerge 6-row planter
Row Width: 30 inches
Fertilization: **Broadcast:** 65-50-50
Sidedress: 80-0-0
Pesticides: 2 qt Bicep, 1 qt Princep, 1.5 pt Gramoxone
2 oz Warrior

Hybrid	Replication	Traits	Moisture	Yield (bu/Ac) @ 15.5%
Vigoro 5110	1	none	12.4	179
Trisler/Augusta 5337	1	RR, Bt	15.0	205
Vigoro 5110	2	none	14.5	176
Trisler/Augusta 5337	2	RR, Bt	15.6	201
Vigoro 5110	3	none	14.3	170
Trisler/Augusta 5337	3	RR, Bt	15.6	207
Vigoro 5110	4	none	14.4	178
Trisler/Augusta 5337	4	RR, Bt	15.7	213
Average Vigoro 5110			13.9	176
Average Trisler/Augusta 5337			15.5	206

Discussion:

This plot was used to test the performance of one of the farmer's best yielding varieties against a newer variety he is considering. Yields were excellent (191 bu/acre average) despite a late planting date. Corn borer pressure was light but evident in the plot, and stalk tunneling was seen in the non-Bt hybrid. The Vigoro was treated with Cruiser, and the Trisler/Augusta was treated with Poncho. There was little yield variation across the plot, indicating the plot was located on a uniform area of the field. Please use these plot results and results from previous years when selecting hybrids for 2005.

2004 Stacked-Genetic Corn Comparison

Chesapeake County

Cooperator: Chris Slabaugh
Extension: Watson Lawrence
Planting Date: April 23, 2004
Harvest Date: September 16, 2004
Row Spacing: 36 inches
Population: 24,000 plants/acre
Fertilizer: 400 lbs. 6-18-36
50 gal. 30% Nitrogen
Herbicide: 1.5 QTS. Lasso/acre at planting
2 qts. Attrazine/acre post-emergence
Tillage: Disk twice, rip and bed
Soil Type: Othello-Fallsington fine sandy loam

Variety	Rep	% Moisture	Yield (bu/ac @15.5%)
Augusta 3387	1	17.9	183.9
Augusta 5244 RR	1	19.5	181.6
Augusta 5244 RR/Bt	1	18.3	197.9
Augusta 3387	2	19.1	193.6
Augusta 5244 RR	2	17.4	191.1
Augusta 5244 RR/Bt	2	18.6	206.4
Augusta 3387	3	19.0	194.2
Augusta 5244 RR	3	18.3	191.7
Augusta 5244 RR/Bt	3	17.6	199.6
Averages			
Augusta 3387		18.7	190.6*a
Augusta 5244 RR		18.4	188.1 a
Augusta 5244 RR/Bt		18.2	201.3 b
*Means within a column not sharing a letter in common differ significantly at P=0.10, DMRT			

Discussion:

There have been claims of a yield advantage resulting from combining genetic traits into a stacked variety. An example of a stacked variety would be Augusta 5244 RR/Bt which has the Roundup Ready (RR) and the Corn Borer (CB) gene inserted in the Augusta 3387 line.

This comparison looks at Augusta 3387, Augusta 5244 RR, and Augusta 5244 RR/Bt. All replicated plots were planted side by side using 8-row field equipment. Plots were 48 ft. x 455 ft.

Averages of replicated plots do not show any advantage to the RR gene. No Roundup was used for weed control. In this example, the added costs of RR seed would not warrant the use of this trait unless it was for weed control.

Averages for replicated plots do show a significant difference when the RR/Bt gene is present. The next question: is this due to advantage of corn borer protection or is this due to a synergistic effect of the combination of these genes into a stacked variety? There was no evidence of corn borer damage in this location which brings into play some question whether corn borer protection contributed to the yield advantage.

From a financial perspective, a difference of 10.7 bu/Ac is shown comparing the Augusta 3387 and the Augusta 5244 RR/Bt. A bag of corn seed planting three acres increasing yields 10.7 bu/acre accounts for 32.1 bushels more corn per bag of seed. At $3.00/bushel, this increased income of $96.30/bag is well worth the increased cost of seed.

No final answer to the question of comparative advantage of using a stacked gene can be concluded from this comparison. However, the reason for the yield advantage of the stacked gene remains unanswered. This comparison does not refute the argument of a synergistic effect of stacked genes, but it neither closed the door on that argument by disproving such a claim. More conclusive testing and research would be needed.

2004 Corn Plant Population Plot

Essex County

Cooperators: **Producer:** Cloverfield Farm
Extension: Keith Balderson, VCE, Essex County
Previous Crop: Corn
Soil Type: Tetotum loam
Planting Date: April 29, 2004
Corn Hybrid: Pioneer 34B23 with Poncho 250
Fertilization: **Broadcast:** 1.25 tons/A pelleted bio-solids
Starter: 10 gallons per acre 18-18-0 plus micros
Sidedress: 140 lbs. nitrogen per acre
Crop Protection: Gramoxone, Lumax, Princep
Harvest Date: September 17, 2004

Treatment	Rep.	% Moisture	Yield (bu/Ac @15.5%)
24,000	1	19.8	186
28,000	1	20.2	195
32,000	1	20.4	185
24,000	2	20.5	181
28,000	2	19.6	184
32,000	2	19.0	186
24,000	3	19.3	185
28,000	3	20.1	186
32,000	3	20.1	184
36,000	1	19.5	175
Averages:			
24,000		19.9	184
28,000		20.0	188
32,000		19.8	185

Discussion:

There is increased interest in increasing corn planting rates to increase yields. Random population checks were made in the plot when corn was knee high. The average populations were as follows: 24,000 was 24,250; 28,000 was 26,500 and 32,000 was 30,250. Increasing the population did not increase yields. Lodging was more evident in the 28,000 and 32,000 treatments. Lodging was much more evident in the one 36,000 treatment. The limiting factor in this field probably was leaf diseases. This was no-till corn following corn and the Hundley's noted relatively heavy foliar disease pressure after the corn tasseled.

2005 **PUBLICATION 424-038**

www.ext.vt.edu

VT/0105//500//424038