ON-FARM WHEAT TEST

Virginia Tech On-farm Wheat Test Plot Results

Eastern Virginia

July 2006

A Summary of Replicated Research and Demonstration Plots Conducted by Virginia Cooperative Extension in Cooperation with Local Producers and Agribusinesses

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Introduction

The demonstration and research plot results discussed in this publication are a cooperative effort by seven Virginia Cooperative Extension agents, several Extension specialists from Virginia Tech, area producers, and agribusinesses. We are extremely proud to present this year's on-farm wheat-plot work to you. Following extremely dry conditions in March, the 2006 crop turned out to be very good. Wheat is undoubtedly a dry-weather crop. Due to the cool and relatively dry weather conditions in May, the grain fill period was longer than usual and therefore, yields were very good and test weights were excellent. Rains in late June and early July delayed harvest of some plots, but quality held up relatively well. With wheat prices for 2007 and 2008 over $4.00 per bushel, producers will be entering the 2007 wheat production year with renewed enthusiasm about wheat production in Virginia.

The field work and printing of this publication are supported by the Virginia Small Grains Check-Off Funds. The cooperators greatfully acknowledge this support. The authors wish to thank the many producers who participated in this project and the seed, chemical, and fertilizer representatives who donated products and/or assisted with the field work. Any small-grain producer who would like a copy of this report should contact his/her local Extension agent, who can request a copy from Keith Balderson in Essex County at 804-443-3551 or thbalder@vt.edu.

This is the fourteenth year of this multi-county project. Further work is planned for the upcoming growing season.

General Summary

A. **VARIETY SELECTION:** Variety selection remains one of the most important components of wheat production. In our variety plots, yields and test-weight values varied considerably between varieties. The best source of information available for selecting small-grain varieties is Virginia Cooperative Extension publication "Small Grains for 2006." The timely harvest of wheat is of utmost importance as test weights and overall grain quality fell when plots were harvested following heavy rains in late June/early July.

B. **TILLAGE PLOT:** In a plot comparing ripping to discing and straight no-till following cotton harvest, ripping increased yields 4 to 5 bushels per acre.

C. **CROP PROTECTION PLOTS:** In two wheat seed-treatment demonstration plots with little powdery mildew or barley yellow dwarf pressure, we did not see significant yield differences. A late fall Warrior treatment tended to increase yields in all of the treatments in one of the seed treatment plots. Disease pressure was relatively low this year due to the dry conditions in the early spring. The application of foliar fungicides did not increase yields over the untreated check in a plot evaluating foliar fungicides.

D. **GREENSEEKER PLOTS:** The RT GreenSeeker is a high-tech system that senses color variations by reading chlorophyll levels in the plant tissue. In wheat, we are evaluating the use of this technology in determining the growth stage 30 nitrogen application rate compared to the standard practice of using tissue testing to determine the nitrogen rate. Across six locations, the standard tissue sample test at growth stage 30 yielded 88 bushels per acre, while the GreenSeeker system applied significantly less nitrogen (about 15 percent) and yielded 87 bushels per acre. With the increasing cost of nitrogen and push for improved water quality, this type of on-the-go nitrogen application rate adjustment may be farmer friendly and affordable in the near future.

E. **PELLETIZED POULTRY LITTER PLOT:** With the increasing cost of nitrogen and potash, farmers are looking at alternative fertilizer sources to help decrease production expenses. In this plot comparing commercial fertilizer with pelletized poultry litter, both treatments yielded over 100 bushels per acre, but the commercial fertilizer treatment tended to yield higher. Given the economics of the pelletized litter and the commercial fertilizer, the commercial fertilizer was more profitable in this plot.

Wheat Variety Plots
Middlesex Wheat Variety Comparison Plots

Cooperators: Producer: Jason Benton
Extension: David Moore, Middlesex
Agribusiness: Participating Seed Dealers

Soil Type: Suffolk Fine Sandy Loam
Previous Crop: Corn
Planting Date: October 23, 2005
Land Preparation: No-till in 7.5-inch rows (stalks shredded)
Fertilization: 30-70-100 - planting; 50-70 lb N - spring split
Crop Protection: Glyphosate Burn; 2.0 oz Warrior - fall; Harmony 0.5 oz. - spring
Check Variety: Pioneer 26R31
Harvest Date: June 19, 2006

Variety/ Seed Treatment[1]	Test Weight (lb)	Moisture (%)	Yield (bu./A @ 13.5%)	Check (%)
Check/RT	60	12.8	85.8	
Featherstone 176/RT	60	12.7	93.0	105%
Check	60	12.7	91.3	
McCormick/RT	62	12.9	78.6	90.1%
Check	59	12.6	83.1	
Sisson/RT	60	12.7	92.7	104.6%
Check	59	12.8	94.0	
Hubner 32/DX	61	12.6	92.7	97.1%
Check	60	12.5	96.8	
Hubner 50/DX	62	12.4	92.9	99.0%
Check	62	12.4	90.8	
Pioneer 26R15/U	61	12.4	90.8	95.6%
Check	61	12.4	99.1	
USG 3592/DX	61	12.6	96.1	101.6%
Pioneer 26R31/U	60	12.5	90.1	
Vigoro 9510/DX	60	12.3	97.6	103.9%
Check	60	12.2	97.7	
USG 3209/DX	60	12.2	110.4	114.3%
Check	60	12.4	95.5	
SS MVP 57/RT	60	12.5	93.4	97.7%
Check	60	12.5	96.0	
Tribute/DX	61	12.7	105.1	103.8%
Check	60	12.6	106.5	
SS 8302/RT	60	12.8	95.7	94.7%
Check	60	12.9	95.6	
Vigoro 9412/DX	60	12.7	84.6	88.2%
Check	60	12.1	96.2	
Renwood 3706/DX	59	12.4	91.4	98.8%
Check	60	12.5	88.7	
Renwood 3260/RMD	60	12.8	84.0	94.7%

[1]Treatment Codes: RT = Raxil Thiram, DX = Dividend Extreme, U = Untreated

Discussion: Yields were very good in this plot. Some head scab was noted just prior to harvest, but there was nothing significant. Timely harvest following a cool May resulted in very good test weights.

Chesapeake Wheat Variety Comparison Plots

Cooperators: Producer: G. C. Nicholas, Jr.
Extension: Watson Lawrence, Chesapeake
Soil Type: Chesapeake fine sandy loam
Previous Crop: Alfalfa
Planting Date: October 31, 2005
Land Preparation: Disk, switch plow, disk, and culti-packer
Fertilization: 400 lb 5-15-20 preplant - October 2005; 90 lb N (30%) - March 15, 2006
Crop Protection: 0.6 oz. Harmony Extra with liquid N - March
Harvest Date: June 22, 2006

Variety/ Seed Treatment[1]	Test Weight (lb)	Moisture (%)	Yield (bu./A @ 13.5%)	Lodging Rating[2]
Tribute/DE	61	14.4	109.10	2
Pioneer 26R15/U	59	13.9	106.42	1
Vigoro 9510/DE	56	14.6	105.91	1
McIntosh/DE	58	13.5	104.93	5
SS MPV57/RT	59	14.6	100.72	2
McCormick/U	58	15.0	100.56	1
Pioneer 26R31/U	58	13.7	100.20	2

[1]Treatment Codes: RT = Raxil Thiram, DX = Dividend Extreme, U = Untreated
[2]Lodging rating: 1 = none to 5 = severe

Discussion: 2007 was an exceptional year for wheat production. There were few pest problems. Cereal leaf beetles were not a significant pest this year. Rainfall was adequate, but did not promote disease problems. Weed control was excellent. Ryegrass continues to be a problem for some farms, but not at this location. Standability was good for most varieties. Lodging was a problem for McIntosh, but it still yielded well. Most noticeable characteristic for wheat this year was plant height. Wheat was very short, probably due to to limited early-season rainfall, yet yields and test weights were excellent. The past two years have seen heavy rain and high humidity in June which limited days for harvest. Most farmers made good use of blue-sky days and harvested most of their wheat acreage in a timely manner. This is important with some grain elevators' option to not purchase wheat with a test weight below 56 pounds per bushel. Market opportunities for next year have prompted some farmers to book wheat ahead and make it part of their rotational system or to plant more acres for 2007.

Westmoreland Wheat Variety Comparison Plot

Cooperators: Producer: F.F. Chandler, Jr.
Extension: Sam Johnson, Westmoreland
Andy Beahm, summer intern
Agribusiness: Rusty Green
Royster Clark
Soil Type: Kempsville loam
Planting Date: October 31, 2005
Land Preparation: No-till, IH 5000 no-till drill, 7.5-inch rows, 34 seeds/ft
Fertilization: 40-50-70 - planting; 90 lb N - spring split
Crop Protection: Harmony Extra; 2 oz. Warrior with 2nd N application
Harvest Date: July 5, 2006

Variety/ Seed Treatment[1]	Test Weight (lb)	Moisture (%)	Yield (bu/A@ 13.5%)	Check (%)[2]
Check-Tribute/DX	57.9	14.6	88.82	103%
Pioneer 26R31/U	56.8	13.9	91.39	106%
SS 8302/RT	56.7	14.1	87.90	102%
Featherstone 176/RT	56.2	14.1	72.94	85%
Sisson/RT	56.3	13.9	80.15	93%
Hubner 50/DX	55.4	13.8	83.04	96%
Check-Tribute/DX	57.6	14.2	85.45	99%
McCormick/RT	57.6	14.1	80.43	93%
Pioneer 26R15/U	55.9	13.7	87.81	102%
Hubner 32/DX	56.8	14.0	85.64	99%
USG 3592/DX	56.4	13.8	79.78	93%
SS MPV 57/RT	54.8	13.9	78.29	91%
Check-Tribute/DX	57.5	14.3	80.71	94%
Renwood 3706/DX	57.1	13.4	78.27	91%
Vigoro 9412/DX	56.8	13.9	82.95	96%
Renwood 3260/RMD	57.1	13.5	74.44	87%
USG 3209/DX	56.1	13.9	86.21	100%
Vigoro 9510/DX	55.6	13.2	88.79	103%
Check-Tribute/DX	58.1	14.2	89.16	104%

[1]Treatment Code: RT = Raxil Thiram, RMD = Raxil MD Extra, DX = Dividend Extreme, U = Untreated
[2]Check Average: 86.04 bu./acre (percent check above is of the average)

Discussion: The July 5 harvest followed a two-week wet spell and several heavy rains that took a toll on the test weights. Yields, however, were quite good. Most varieties were still standing well. The only significant lodging was in Pioneer 26R31 at approximately 15 percent. There was some variation in check yields across the plot ranging from 81 to 89 bushels per acre. These are strip plots. Growers should consider aggregate summaries of all Extension plots in eastern Virginia.

Westmoreland Wheat Variety Demonstration Plot

Cooperators: Producer: Keith and C.O. Balderson
Extension: Keith Balderson, Essex
Sam Johnson, Westmoreland
Agribusiness: Participating Seed Dealers
Soil Type: Kempsville sandy loam
Previous Crop: Corn
Planting Date: October 15, 2005
Land Preparation: No-till in 7.0-inch rows (stalks shredded)
Fertilization: 30-90-90 at planting to 100-0-0-12 on March 3,2006
Crop Protection: Gramoxone, Burndown applied in liquid fertilizer
0.5 oz Harmony/acre - March 3, 2006
Harvest Date: June 21, 2006

Variety/ Seed Treatment[1]	Test Weight (lb)	Moisture (%)	Yield (bu/A @ 13.5%)
Pioneer 2643/RT	60	12.7	71.5
Sisson/RT	60	12.5	91.9
Hubner 50/DX	59	12.5	74.3
Featherstone 176/RT	60	12.5	89.1
Tribute/DX	62	13.8	74.3
Pioneer 26R31/U	59	12.3	67.0
Renwood 3706/DX	60.5	12.7	80.8
McCormick/RT	63	13.0	73.3
Hubner 32/DX	60	13.1	84.7
Vigoro 9510	60	12.3	83.0
USG 3209/DX 21 feet	60	12.5	83.3
USG 3592/DX 21 feet	60	12.7	83.6
Pioneer 26R15/U	60	13.1	75.0
Renwood 3260/RMD	60	12.9	73.7

[1]Treatment Code: RT = Raxil Thiram, RMD = Raxil MD Extra, DX = Dividend Extreme, U = Untreated

Discussion: Yields and seed quality in this plot were very good. There was some barley yellow dwarf in the plot, and this disease probably decreased yields by a few bushels per acre. Scab ratings were taken about 2 weeks prior to harvest and all of the varieties were rated at 2 percent or less scab infection. Yields varied just over 20 bushels per acre from the highest to the lowest yielding variety. Pioneer 2643, a variety no longer available commercially, was planted to compare an older variety to newer varieties.

2005-06 Prince George/Dinwiddie
Wheat Variety Trial

Cooperators: Producer: Glenn F. Chappell
Extension: Glenn F. Chappell II
Soil Type: Emporia sandy loam
Planting Date: November 9, 2005
Land Preparation: JD 1590 no-till drill
Fertilization: 50-50-50 preplant
60-0-0 February 23, 2006
50-0-0 March 30, 2006
Crop Protection: 2.0 oz Warrior, 4.0 oz Tilt, and 0.5 oz Harmony Extra - March 30, 2006
Harvest Date: July 12, 2006

Treatment	Test Weight (lb)	Moisture (%)	Yield (bu/A @ 13.5%)	% of Plot Average
Tribute	58	13.7	69.35	121
P 26R31	55	13.9	60.22	105
USG 3209	57	13.4	62.40	109
FFR 8302	57	13.4	64.24	112
FS 176	56	13.6	48.53	85
USG 3592	56	14.2	67.28	117
FFR 520	55	13.2	42.31	74
V 9510	55	12.2	66.99	117
USG 3137	55	13.7	54.87	96
Sisson	56	13.1	58.02	101
V 9412	57	14.4	58.96	103
H 32	57	15.0	65.76	115
McCormick	57	13.8	56.63	99
H 50	55	12.0	55.95	98
P 26R12	57	14.5	48.02	84
H EX905	56	14.6	56.56	99
P 26R15	56	14.3	58.27	102
Renwood 3706	57	14.3	40.11	70
FFR MPV57	56	13.5	53.47	93
Plot Average:			**57.26**	

Discussion: Grain growth was poor due to dry conditions during much of the growing season. The plot received ~5 inches of rain after the grain was mature and ready for harvest. Test weights were determined in the field using a Seedburo hand-type density tester and rounded to the nearest pound.

2006 New Kent Wheat Variety Strip Trial

Cooperators: Producers: Boogie and Wayne Davis, L.C. Davis Sons Farm
Extension: Paul Davis, New Kent/Charles City
Soil Type: Altavista, fine sandy loam
Previous Crop: No-till corn
Planting Date: October 12, 2005
Variety: See below
Tillage: No-till into corn stalks
Fertilization: 30-40-100 - October 13, 2005
45 lb N - February 8, 2006
65 lb N - March 25, 2006
Herbicides: Osprey @ 4.75 oz + Harmony Extra @ 0.4 oz - January 13, 2006
Clarity @ 2.0 oz + Harmony GT @ 0.3 oz - March 25, 2006
Insecticides: Warrior @ 2.56 - January 13, 2006
Harvest Date: June 20, 2006

Cultivar	Yield (bu/Ac)	Test Weight (lbs)	Moisture (%)
Tribute	98.1	60.0	17.5
Vigoro 9510	109.6	58.0	14.9
Vigoro 9412	95.6	58.0	15.7
Renwood 3706	96.8	59.0	15.3
Renwood 3260	89.5	58.0	15.2
Southern States N 57	90.8	57.0	16.0
Southern States 8302	100.2	58.5	14.8
Southern States 520	93.3	58.0	15.3
Hubner EX 905	99.9	58.0	15.2
Hubner H 32	97.5	59.5	13.9
Hubner H 50	99.7	57.5	13.8
USG 3592	96.0	59.0	14.6
USG 3209	98.6	58.5	14.1
USG 3137	92.5	58.0	13.3
Pioneer 26R12	100.2	59.0	14.0
Pioneer 26R31	100.6	58.0	13.7
Pioneer 26R15	96.7	57.5	14.2
Featherstone 176	01.5	58.0	14.5
Sisson	99.0	59.0	14.0
Tribute	96.8	60.0	15.0
Averages	97.6	58.4	14.8

Discussion: Researchers learned that a dry February (1.3 inches of rain) and March (0.1 inch of rain) does not negatively effect wheat yields or quality. The straw was short but yields and standability were excellent. Vigoro 9510 at 110 bushels per acre was 12 bushels better than the plot average of 98 bushels per acre. Seven varieties topped 100 bushels per acre. However, producers should compare these results with other plots in their area before ordering their wheat seed for the fall 2006 planting.

2006 On-Farm Wheat Variety Plot Yield Summary

Variety	Chesa-peake	Middle-sex	New Kent	Prince George	Westmore-land 1	Westmore-land 2	Variety Averages
Featherstone 176		93	102	49	89	73	81
Hubner 32		93	98	66	85	86	86
Hubner 50		93	100	56	74	83	81
Hubner EX 905			100	57			
McIntosh	105						
McCormick	101	79		57	73	80	78
Sisson		93	99	58	92	80	84
Pioneer 26R12			100	48			
Pioneer 26R31	100	90	101	60	67	91	85
Pioneer 26R15	106	91	97	58	75	88	86
Renwood 3706		91	97	40	81	78	77
Renwood 3260		84	90		74	74	81
Southern States 8302		96	100	64		88	87
Southern States 520			93	42			
Southern StatesMPV57	101	93	91	53		78	83
USG 3592		96	96	67	84	80	85
USG 3209		110	99	62	83	86	88
USG 3137			93	55			
Tribute	109	105	98	69	74		91
Vigoro 9510	106	98	110	67	83	89	91
Vigoro 9412		85	96	59		83	81
Location Average:	104	93	98	57	80	82	

A variety must be entered in at least 4 locations for an average yield to be reported. See the individual plot results in this booklet for additional information. Some of the plots used check varieties. Yields of check varieties are not reported here.

Wheat Tillage Plot

Evaluation of Three Tillage Systems in Wheat

Cooperators: Bruce Whitley, Farm Operator
Clifton Dixon, Owner/Developer of PATS
Wes Alexander, Extension agent, Southampton
Cyndi Estienne, Extension agent, Greensville/Emporia
Glenn Chappell, Extension agent, Prince George
Wade Thomason, Extension specialist, Crop and Soil Environmental Sciences

Soil Type: Fine sandy loam
Variety: USG 3209
Planting Date: November 9, 2005
Seeding Rate: 140 lb/acre
Equipment: Drill JD 1990 30-ft
Row Width: 7-inch
Fertilization: 25 lb N, 25 lb P, 80 lb K - November 8, 2005
60 lb N - March
60 lb N - April
Crop Protection: Dividend Extreme Seed Treatment
Replications: Four
Harvest Date: June 19, 2006

Treatment		Grain Yield (bu/A)	Test Weight (lb/bu)	Moisture (%)
1)	Mow cotton stalks, disc, drill wheat	99.9	59.3	12.0
2)	Mow cotton stalks, no-till drill wheat	98.3	59.5	11.8
3)	Mow cotton stalks, Rip 36-inch in center of old cotton rows, no-till drill wheat	104.1	59.4	11.8
LSD (0.05)		3.3	NS	NS

Discussion: Treatment 3, which included deep tillage, yielded significantly more than the other two treatments. No differences in test weight or grain moisture were found. The objectives of this trial were to: 1) compare traditional discing, no-till, and deep tillage effects on wheat yield following cotton; 2) compare the economics of all three treatments; and 3) compare the effect of tillage on double-cropped soybean yields. Treatment effects on soybean yields will be known at the end of this season.

2006 Wheat Seed Treatment Plots

New Kent Seed Treatments

Cooperators:	Producers:	Boogie and Wayne Davis, L.C. Davis Sons Farm
	Extension:	Paul Davis, New Kent/Charles City
		Jim Wallace, Colonial SWCD
	Agribusiness:	David Hula, Renwood Farms
Soil Type:	Altavista, fine sandy loam	
Previous Crop:	Corn	
Planting Date:	October 21, 2005	
Tillage:	No-till into corn stalks	
Row Spacing:	7.5-inch	
Variety:	Renwood 3260	
Fertilization:	30-40-100 - October 13, 2005	
	45 lb N - February 8, 2006	
	65 lb N - March 25, 2006	
Herbicides:	Osprey at 4.75 oz - January 13, 2006	
	Harmony Extra 0.4 oz - January 13, 2006	
Fungicides:	None	
Insecticides:	Warrior at 2.56 - January 13, 2006 (see treatments)	
Harvest Date:	June 30, 2006	

Treatments	Rep1	Rep2	Rep3	Rep4	Avg
Untreated + Warrior					89.5
Dividend Extreme + Gaucho	84.5	90.7	96.7	96.3	92.1
Dividend Extreme + Gaucho + Warrior	80.6	95.8	101.0	102.6	95.0
Baytan	86.0	84.6	95.3	97.4	90.8
Baytan + Warrior	78.8	95.4	109.4	105.5	97.3
Raxil	85.1	93.2	97.3	93.8	92.4
Raxil + Warrior	83.7	94.6	101.7	97.6	94.4

Discussion: This growing season extremely dry in Feb. (1.3 inches of rain) and March (0.1 inch of rain) which helped reduce the infection and spread of most wheat diseases. Due to the low disease pressure, there were no significant yield increases with the different seed fungicide treatments. There was a 4-bushel-per-acre advantage to the early winter, “Christmas Time,” application of a foliar insecticide treatment. Seed treatments are good insurance against all winter weather conditions – wet or dry.

Prince George Wheat Seed Treatments

Cooperators: Producer: Glenn F. Chappell
Extension: Glenn F. Chappell II
Agribusiness: Renwood Farms
Soil Type: Emporia sandy loam
Previous Crop: Corn
Planting Date: November 8, 2005
Tillage/equipment: JD 1590 no-till drill
Fertilization: 50-50-50 - preplant
60-0-0 - February 23, 2006
50-0-0 - March 30, 2006
Crop Protection: 2.0 oz Warrior
4.0 oz Tilt
0.5 oz Harmondy Extra
Variety: Renwood 3260 (13,010 seed/lb)
Harvest Date: July 9, 2006

Treatment	Test Weight (lb)	Moisture (%)	Yield (bu/A @ 13.5%)
Dividend Ext/Gaucho/Raxil/Reldan	57.5	13.8	54.2
Raxil MD Extra	57.5	14.6	56.4
Dividend Ext./Reldan	57.5	14.7	48.8
Baytan/Reldan	57.5	14.5	47.7

Discussion: Grain growth was poor due to dry conditions. There was no significant insect or disease pressure.

Late-season Wheat Foliar Fungicide Treatment Plots

2006 New Kent Late-season Wheat Foliar Fungicide Treatment Study

Cooperators: Producers: Boogie and Wayne Davis, L.C. Davis and Sons
Extension: Paul Davis, New Kent/Charles City
Soil Type: Altavista, fine sandy loam
Previous Crop:
Planting Date: October 21, 2005
Variety: McCormick
Land Preparation: No-till into corn stalks
Row Spacing: 7.5-inch
Fertilization: 30-40-100 - October 13, 2006
45 lb N - February 8, 2006
65 lb N - March 25, 2006
Herbicides: Osprey at 4.75 oz + Harmony Extra at 0.4 oz - January 13, 2006
Clarity at 2 oz + Harmony GT at 0.3 oz - March 25, 2006
Fungicides: Applied at early flowering (see treatments) - May 5, 2006
Insecticides: Warrior at 2.56 - January 13, 2006
Growth Regulators: None
Harvest Date: June 29, 2006

Treatment	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Bu Avg[1]	Test Weight Avg
Untreated	71	76	99	100	106	109	93.5 ab	61.2
Tilt @ 4 oz	69	79	105	94	94	95	89.3 b	61.7
Folicur @ 4 oz	72	76	103	104	117	93	94.2 a	61.7
Headline @ 8 oz	79	73	107	92	94	106	91.8 ab	62.1
Stratego @ 10 oz	70	72	110	98	105	10	93.3 ab	61.8

[1]Treatments followed by the same letters are not statistically different.

Discussion: Folicur was significantly better than Tilt, but not Headline, Stratego, or untreated. Investigators were looking to see if these fungicides had any control over head scab. Due to the low scab or wheat-disease pressure, they saw no advantage to this late-season foliar fungicide application.

GreenSeeker Plots

2006 GreenSeeker Wheat Studies

Project Leader: Steve Phillips, Extension Soil Fertility Specialist, Eastern Shore AREC
Coordinators: Paul Davis, Extension New Kent and Charles City Counties
Brian Noyes and Jim Wallace, Colonial SWCD
Background: Plots were established in 6 locations. A summary of the results is reported elsewhere in this publication. Following is detailed information for 2 sites.

Location: **New Kent-Wesley**
Standard: Nitrogen rate based on a tissue sample at Growth Stage 30 (standard Virginia recommendation.) At this site, the recommendation was 70 pounds of nitrogen per acre.
Greenseeker: Variable nitrogen rates determined by using GreenSeeker (Va. Algorithm). At this site, the rate was 45-70 lb N/A.
Numerical Rates: Predetermined nitrogen rates applied as pounds of nitrogen per acre.
Variety: Tribute
Planting Date: October 21, 2005
Soil Types: Altavista and Bojac
Tillage: No-till into corn stalks
Fertilization: 30-40-100/acre - October 13, 2005
50-0-0-6/acre - February 8, 2006
70lb N/acre on the standard plots - March 27, 2006
(based on GS 30 tissue sample.)
45-70 lb N/acre on GreenSeeker Plots - March 27, 2006
Herbicides: 4.75 oz Osprey and 0.4 oz Harmony Extra/acre - January 13, 2006
Insecticides: Warrior at 2.56 oz/acre - January 13, 2006
Harvest Date: June 21, 2006

	Yield (bu/A)			
Numerical N Rates (lbs/A)	Rep1	Rep2	Rep3	Average
0	89	72	85	82
40	109	108	104	107
80	89	100	112	100
120	91	106	102	100

	Yield (bu/A)						
Treatments	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Average
Standard	103	99	114	111	104	106	106
GreenSeeker	100	98	107	106	104	105	103

Lodging[1]	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Average
Standard	4	4	3	2	3	3	3.2
GreenSeeker	1	2	1	1	1	0	1.0

[1] 0 = Standing Straight Up; 5 = Flat on the ground

Location: **New Kent-Graveyard**
Standard: Nitrogen rate based on a tissue sample at Growth Stage 30 (standard Virginia recommendation). At this site, the recommendation was 75 lb N/A.
GreenSeeker: Variable nitrogen rates determined by using GreenSeeker (Va. Algorithm). At this site, the rate was 55-75 klb N/acre.
Numerical Rates: Predetermined N rates applied as lb N/acre.
Variety: Renwood 3260
Soil Type: State and Altavista fine sandy loams
Previous Crop: Corn
Planting Date: October 19, 2005
Tillage: No-till into corn stalks.
Fertilization: 30-40-100 - October 13, 2005
45-0-0-5 - February 10, 2006
75 lb N/acre on the standard plots - March 27, 2006
(based on GS 30 tissue sample.)
55-75 lb N/acre on GreenSeeker plots
Herbicides: 4.75 oz Osprey and 0.4 oz Harmony Extra/acre - January 16, 2006
2.0 oz Clarity and 0.3 oz Harmony Extra/acre - April 3, 2006
Insecticides: 2.56 oz Warrior/acre - January 16, 2006, and April 3, 2006
Fungicides: 3 oz Headline/acre - April 3, 2006
Harvest Date: June 29, 2006

Numerical N Rates (lb/A)	Yield (bu/A)			
	Rep1	Rep2	Rep3	Average
0	49	43	52	48
40	80	82	81 (60 lb)	81
80	69	83	82 (70 lb)	7
120	74	81	69	75

	Yield (bu/A)						
Treatments	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Average
Standard	72	85	85	85	84	81	81.5
GreenSeeker	67	79	79	82	78	78	77.2

Summary

Growth Stage 30 Nitrogen Treatments Yields (bushels per acre)

Standard Treatment

Location	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Average
Graveyard	72	85	85	85	84	81	82
Wesley	103	99	114	111	104	106	106
Black's	82	94	82	85	86	85	86
Browning	69	70	75	73	77	70	72
Windy Knoll	79	89	91	95	95	90	90
Montague	86	91	89	92	92	98	91
Average All							88

GreenSeeker Treatment

Location	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Average
Graveyard	67	79	79	82	78	78	77
Wesley	100	98	107	106	104	105	103
Black's	74	94	83	92	80	87	85
Browning	79	72	78	74	68	66	73
Windy Knol	85	92	95	94	93	94	92
Montague	88	84	95	83	83	104	90
Average All							87

0 lb N/A applied at GS 30

Location	Rep1	Rep2	Rep3	Average
Graveyard	49	43	52	48
Wesley	89	72	85	82
Black's	48	43	46	46
Browning	67	53	43	54
Windy Knoll	63	55	63	60
Montague		54	44	49

Discussion: The RT GreenSeeker is a high-tech system that senses color variations by reading chlorophyll levels in plant tissue. Based on the reading of the six sensors, the system tells the sprayer's flow-rate control system to apply more nitrogen to areas of the field with the greater yield potential and less nitrogen to weaker areas of the field while driving over the crop. The plant nitrogen needs are based on Virginia's Intensive Wheat Management Program developed by Mark Alley and Dan Brann. All these field studies and tissue and soil laboratory analyses are in the mathematical equation logged into a handheld computer that controls the flow-rate system on the sprayer. As results show, Steve Phillips has the GreenSeeker system in tune with the nitrogen needs of Virginia's wheat crop. Across six locations, the standard tissue sample test at growth stage 30 yielded 88 bushels per acre, while the GreenSeeker system applied significantly less nitrogen (about 15 percent) and yielded 87 bushels per acre. With the increasing cost of nitrogen and the push for improved water quality, this type of on-the-go nitrogen application rate-adjustment application system should be farmer friendly and affordable in the near future.

Pelletized Poultry Litter on Wheat Plot

Cooperators: Producer: James and Calvin Haile
Extension: Keith Balderson, Essex County
Agribusiness: Rob Waring and Donald Ray Bareford, Southern States Coop. Tappahannock
Soil Type: Pamunkey and Tetotum loam
Previous Crop: Corn
Planting Date: October 20, 2005
Variety: Sisson
Tillage: No-tillage into chopped corn stalks
Fertilization: 40-20-30/A applied as litter on the litter plots prior to planting
42-20-30/A applied as commercial fertilizer on the commercial fertilizer plots - January 15, 2006
40-60-80 applied to all plots - January 15, 2006
55 lb N/acre - February
45 lb N/acre - March
Crop Protection:
Harvest Date: June 30, 2005

Treatment	Rep.	Test Weight (lb)	Moisture (%)	Yield (bu/A @ 13.5%)
Litter	1	57	13.2	107.2
Com. Fertilizer	1	57	13.0	118.1
Litter	2	57	13.5	100.4
Com. Fertilizer	2	57	12.8	102.0
Averages:				
Litter		57	13.3	103.8
Com. Fertilizer		57	12.9	110.0

Discussion: With increased nitrogen and potash expenses, farmers are looking at alternative fertilizer sources to help decrease production expenses. In this plot, the commercial fertilizer plots tended to yield higher than the litter plots. The plan was to fertilize the commercial fertilizer plots with the same nutrients as the litter plots received just prior to planting earlier than January 15, but this did not get done. Tissue samples taken at growth stage 30, just prior to jointing, showed a nitrogen reading of 3.99 percent in the commercial fertilizer plots, and 3.34 percent in the litter plots. Just after heading, the nitrogen reading was 4.02 percent in the commercial fertilizer plots and 3.86 percent in the litter plots. The nitrogen readings were the only real differences noted in either set of tissue samples. Given the economics of the pelletized litter and the commercial fertilizer, the commercial fertilizer was more profitable in these plots. Growers should continue to evaluate alternative nutrient sources, but they should do their homework before full-scale adoption of any of these materials.

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