



# Virginia Cooperative Extension

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## 2016 VIRGINIA ON-FARM WHEAT TEST PLOTS



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

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**Virginia Small Grains Board**

## INTRODUCTION

2015-16 was a tough year for wheat. Above normal temperatures in March resulted in wheat that was approaching the boot stage when a freeze hit on April 6<sup>th</sup>. Almost all fields were affected to some degree with some fields experiencing very significant tiller death. See figure 1. Some varieties were affected more than others. The freeze was followed by dry conditions and then very wet conditions in May. The result was a poor crop overall.



**Figure 1.** Wheat on a sandy soil type in King and Queen County on May 13<sup>th</sup>, suffered severe freeze injury. Most likely, sandier soil types allowed more radiational cooling, resulting in a colder microclimate in the wheat canopy and more injury.

The demonstration and research plot results discussed in this publication are a cooperative effort by seven Virginia Cooperative Extension agents, extension specialists from Virginia Tech, and a VCE summer intern. We are proud to present this year's on-farm small grain plot work to you. We hope the information in this publication will help farmers produce a profitable crop in 2017.

The field work and printing of this publication are supported by the Virginia Small Grains Check-Off Funds. The cooperators gratefully acknowledge this support. Any small grain producer or agri-business representatives who would like to receive 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](mailto:thbalder@vt.edu).

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

The authors wish to thank the many producers who participated in this project. Appreciation is extended to the seed, chemical, and fertilizer representatives who donated products and/or assisted with the field work and to MacKenzie Moore, 2016 Essex and Middlesex County VCE intern for her assistance with data compilation.

**DISCLAIMER:**

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## GENERAL SUMMARY

**A. VARIETY SELECTION:** Variety selection remains one of the most important components of wheat production. We planted five variety plots in 2015-16, but only three locations are reported here. The VSU location was lost due to wet weather, and the Virginia Beach location is not reported due to great variability in yields. Seventeen soft red winter and two hard red winter wheat varieties were replicated across the Middlesex and Westmoreland County locations. The yield per variety across the two locations ranged from 75.7 to 56.5 bushels per acre. Seventeen soft red winter wheat varieties were planted at the Chesapeake site. Yields ranged from 74.8 bushels per acre to 45.7 bushels per acre.

**B. FUSARIUM HEAD BLIGHT FUNGICIDE & GROWTH REGULATOR PLOTS:** Fusarium Head Blight (head scab) pressure under favorable weather conditions can dramatically reduce yield and test weight. As concerns over head scab and vomitoxin continue to increase, more farmers are treating small grains with fungicides to prevent scab infection. Two plots evaluating Prosaro fungicide at flowering were established in Middlesex and Westmoreland Counties. Over the two plots, the Prosaro treatment averaged 76.2 bushels per acre, while the check plots averaged 69.6. Test weight for the Prosaro treatment averaged 58.3 pounds per bushel, while the check treatment averaged 57.2 pounds per acre. In the Westmoreland plot, vomitoxin levels were no different between treatments, while levels in the check plots averaged 1.47 ppm and .76 ppm in the treated plots in the Middlesex plot.

Two plots evaluating increasing growth stage 30 nitrogen applications from 50 pounds per acre to 70 pounds per acre in addition to adding Palisade growth regulator were established in late March in Essex County. There was no difference in yield in one of the plots, while the increased nitrogen plus Palisade increased yields by 4 bushels per acre in the other plot. However, the increased yield given current wheat prices would not be enough to cover the cost of the Palisade and additional nitrogen. Lodging was not a major concern in either treatment in either plot, but the Palisade prevented all lodging. Averaged over both locations, the Palisade decreased plant height by 3.5 inches.

**C. TISSUE TESTING:** Tissue testing may be conducted to solve fertility issues or inquire about the fertility levels in the crop including macro and micronutrients. During the 2015-2016 small grains growing season, twenty-seven small grain tissue samples were submitted for analysis. Boron was deficient or low in every sample. Results for the 2016 tissue samples as well as a summary for tissue sample results from 2007-2016 are included at the end of this publication.

## 2016 Chesapeake Wheat Variety Plot

<b>Cooperators:</b>	Producer: Marvel Nicholas Extension: Watson Lawrence
<b>Previous Crop:</b>	Corn
<b>Soil Type:</b>	Chesapeake Fine Sandy Loam
<b>Tillage:</b>	Disk followed by disk with culti-packer
<b>Planting Date:</b>	October 29, 2015
<b>Fertilizer:</b>	October 27, 2015: 342 lbs. 14-9-25 + 5.7 lbs. Sulfur/A. broadcast March 18, 2016: 95 lbs. liquid N/A
<b>Crop Protection:</b>	March 18, 2016: Herbicide (½ oz. Harmony + ½ oz. Finesse/A) April 25, 2016: Fungicide & Insecticide (10 oz. Quilt + 1.8 oz./A Tombstone/Helios/A)
<b>Harvest Date:</b>	June 21, 2016

Variety	Test Weight (Lbs./Bu.)	Moisture (%)	Yield Bu./A @13.5%
Pioneer 26R59	53.6	11.7	74.82
Pioneer 26R41	55.5	11.8	67.20
Great Heart 930	57.9	12.0	64.90
Harrison	55.8	12.1	64.78
Great Heart 940	57.4	11.9	63.15
Great Heart 942	56.2	11.7	63.05
Pioneer 26R10	54.1	11.8	62.34
Oakes	57.6	12.3	61.36
Southern States 8340	57.4	12.2	59.90
Hilliard	56.7	12.3	59.22
Shirley	53.9	11.1	58.86
USG 3404	55.1	11.8	57.22
Southern States 8415	51.5	11.2	54.15
Dyna Gro 9552	53.4	11.0	53.54
Dyna Gro 9223	49.8	12.2	50.59
Southern States 8870	53.2	11.9	46.48
Viper	58.3	12.8	45.66

**Discussion:** Head Scab disease led to lower yields, dockage for low test weights and presence of vomitoxin. At the end of April and early May, we had almost two weeks of overcast, rainy weather with warm temperatures that was conducive for Head Scab. While yield is usually the biggest factor for choosing a variety, resistance to Head Scab was equally important this year because of its influence on test weight and presence of vomitoxin. No matter what the yield, it is difficult to overcome dockage of price at the market elevator. Variety resistance, coupled with applying an appropriate fungicide at heading, are the most influential tools for combating Head Scab. Using a protective foliar fungicide at flag leaf emergence mid-April, is effective tool for foliar disease protection. Protecting the wheat head at head emergence early May, is also effective for protection from head diseases. It is challenging making two separate fungicide applications with wheat prices what they are. It can also be difficult to delay a single fungicide application at head emergence, if foliar disease pressure is present at flag leaf emergence. The argument could be made this year that for a variety with little resistance to Head Scab, the need for a fungicide at head emergence was practically necessary because of weather conditions.

## 2016 Westmoreland County Wheat Variety Plot

<b>Cooperators:</b>	Producer: F.F. Chandler, Jr. Louis Chandler Extension: Stephanie Romelczyk, VCE – Westmoreland Keith Balderson, VCE – Essex Trent Jones, VCE – Northumberland/Lancaster MacKenzie Moore, VCE Intern
<b>Previous Crop:</b>	Corn
<b>Soil Type:</b>	Suffolk sandy loam
<b>Tillage:</b>	No-till
<b>Planting Date:</b>	November 4, 2015
<b>Fertilizer:</b>	40-60-80-8S in fall 40-0-0-9S in February 60-0-0-7.5S + 1 gal Black Label Zn in March
<b>Crop Protection:</b>	Burndown: 3 pts/A Gramoxone & 0.4 oz/A Finesse Cereal and Fallow 3 oz/A Quadris in March w/N application 7 oz/A Prosaro & 2 oz/A Tombstone in May
<b>Harvest Date:</b>	June 30, 2016

Variety	Test Weight (Lbs./Bu.)	Moisture (%)	Yield Bu./A @13.5%
Hubner H350	58	12.4	72.06
Southern Harvest 4300	55	12.0	69.66
DynaGro 9552	56	11.6	69.40
Great Heart 940	51	11.9	69.34
AgriMaxx 434	55	12.1	69.30
Pioneer 26R20	55	12.6	68.69
DynaGro 9522	55	12.9	68.41
Great Heart 942	55	14.4	67.87
USG 3404	55	14.2	67.73
Hilliard	54	13.6	66.44
Pioneer 26R10	54	12.6	66.20
AgriMaxx 444	53	12.5	65.05
Vision 45	54	13.2	63.79
Southern Harvest 4400	55	12.2	61.92
USG 3523	55	13.3	61.33
Southern States 8530	53	12.2	60.75
Featherstone 258	54	12.7	55.70
Featherstone 73	53	12.3	54.10
Hubner H400	55	12.9	53.65
Vision 50	55	13.2	49.89
Southern States 8513	54	12.6	48.47

**Discussion:** A cool, wet spring likely impacted yields. Only two varieties, Southern Harvest 4400 and Pioneer 26R10 were not lodged somewhat at harvest.

## 2016 Middlesex Wheat Variety Plot

<b>Cooperators:</b>	Producer: Jason Benton
	Extension: David Moore, VCE Keith Balderson, VCE MacKenzie Moore, VCE Intern
	Industry: Participating Companies
<b>Previous Crop:</b>	Corn
<b>Soil Type</b>	Suffolk Fine Sandy Loam
<b>Planting Date:</b>	November 3, 2015
<b>Tillage/Row Spacing</b>	No-Till in 7.5 inch rows
<b>Population:</b>	28-29 seeds per row foot (2 million seeds/A.)
<b>Fertilization:</b>	Pre-Plant-30-60-140-15s Topdress-December 18: 25-0-0 Topdress-February 22: 50-0-0-9s Topdress-March 29: 50-0-0-9s
<b>Crop Protection:</b>	October: Glyphosate + Qwikquat December: Lambda-Cy February: Finesse March: Starane Ultra May 9: Prosaro
<b>Harvest Date:</b>	June 27, 2016
<b>Harvest Equipment:</b>	AGCO Gleaner R-62

Brand	Variety	M%	TW	Yield 13.5%
Featherstone Farm	VA-258	13.0	57.4	75.7
Check (Shirley)		12.9	56	85.0
Featherstone Farm	VA-73	14.0	59.4	69.0
Check		12.9	56.5	83.4
Southern States	SS8513	13.8	59.2	70.3
Check		12.5	56	88.2
Southern States	SS8530	12.7	54.8	72.6
Check		12.8	56	90.6
Pioneer	P26R10	13.5	57.6	69.8
Check		13.2	56	83.2
Pioneer	P26R20	13.0	58	77.6
Check		13.0	56	85.6
Virginia Tech	Hilliard	13.3	58.5	82.3
Check		13.2	56	83.1
AgriMaxx	AgriMaxx 444	13.3	56.7	79.7
Check		12.9	56	87.1
AgriMaxx	AgriMaxx 434	13.1	56.7	75.3
Check		12.6	57	78.6
CPS/Dyna-Gro	DG9552	13.0	57.9	70.2
Check		13.2	56.8	84.0
CPS/Dyna-Gro	DG9522	13.2	57.1	74.2
Check		13.6	57	78.5



Great Heart Seed	GHT-942	13.4	57.1	74.3
Check		13.3	56	88.2
Great Heart Seed	GHT-940	13.5	58.8	78.9
Check		13.5	56	83.6
VIPG	Vision 50 (Hard)	12.7	58.7	63.1
Check		12.8	56	89.6
VIPG	Vision 45 (Hard)	12.7	55.9	75.1
Check		12.9	56	79.3
Southern Harvest	4300	13.4	55.7	81.7
Check		13.2	56	90.8
Southern Harvest	4400	13.4	56.4	82.3
Check		13.6	56	82.3
USG	3404	13.4	56.6	76.9
Check		13.3	56.2	89.5
USG	3523	13.4	57	72.5
<b>Plot Average</b>			<b>57.3</b>	<b>74.7</b>
<b>Check Average</b>			<b>56.3</b>	<b>85.0</b>

**Other Variety Information for Westmoreland and Middlesex Plots:**

Variety	Seed Treatment	Seed per #
VA-258	Untreated	13,081
VA-73	Dividend	13,180
SS 8513	Evergol Energy	13,802
SS 8530	Evergol Energy	14,822
Pioneer 26R10	Vibrance Extreme	11,500
Pioneer 26R20	Vibrance Extreme	11,500
Hilliard	Foothold + imidachloprid	14,381
AgriMaxx 444	Vibrance Extreme	10,400
AgriMaxx 434	Vibrance	11,900
Dyna-Gro 9552	Foothold Extra + Awaken	13,900
Dyna-Gro 9522	Foothold Extra + Awaken	12,900
Great Heart-942	Sedaxane + difenoconazole +mefenoxam	12,840
Great Heart-940	Sedaxane,difenconozoile,mefenoxam,imidacloprid	13,400
Vision 50	Tebuconazole, metalaxyl, imidachloprid	14,160
Vision 45	Ipconozole	12,850
Southern Harvest 4300	Vibrance Extreme + SymCoat	12,000
Southern Harvest 4400	Vibrance Extreme + SymCoat	10,400
USG 3404	Vizor 5Z (ipconazole, metalaxyl, imidacloprid, thiabendazole, Zinc)	13,539
USG 3523	Vizor 5Z	14,770

## SAMPLING INFORMATION FOR MIDDLESEX WHEAT COMPARISON VARIETIES

Variety	Damage %	Protein %	SDS	Fall #	VOM ppm	Total Discount	Yield/Discount Ratio
Check 1	2.50	9.9	45.4	376	0.81	87.45	9.7
VA-258	1.30	10.2	47.5	280	0.46	45.02	18.9
VA-73	2.30	10.7	52.5	343	0.18	219.47	3.9
SS 8513	5.20	10.9	57.5	348	0.0	131.95	6.5
SS 8530	2.10	11.2	52.5	343	0.26	254.42	3.3
Pioneer 26R10	5.30	11.5	56.3	361	0.70	125.27	6.8
Pioneer 26R20	3.80	10.8	48.2	401	0.68	56.04	15.2
Hilliard	0.50	10.6	50.0	326	0.37	14.82	57.6
AG-Maxx 444	1.00	10.3	47.1	306	0.43	81.41	10.4
AG-Maxx 434	1.00	11.4	69.8	311	0.42	66.79	12.7
DG 9552	0.50	10.8	50.4	277	0.39	18.53	45.9
DG 9522	1.70	10.2	47.1	301	0.46	59.70	14.2
GHT-942	2.00	10.5	49.1	320	0.22	56.04	15.2
Check 2	1.50	10.2	47.9	352	0.17	77.73	10.9
GHT-940	1.30	10.0	47.9	321	0.23	14.82	57.2
Vision 50	0.90	11.6	62.1	411	0.12	14.83	57.4
Vision 45	0.90	10.5	51.7	306	0.36	136.94	6.2
SH-4300	0.70	9.8	40.5	362	0.30	136.94	6.2
SH-4400	1.00	10.0	47.6	369	0.60	110.35	7.7
USG 3404	1.10	9.9	44.8	327	0.79	74.08	11.5
Check 3	1.20	9.8	44.0	329	0.80	103.11	8.5
USG 3523	1.70	9.8	43.1	341	0.42	48.68	17.3

**Discussion:** Many thanks to Old Dominion Grain, A Division of Mennell Milling for running the tests on all the samples. The quality of grain was really not all that bad and VOM numbers were not nearly as high as many folks thought going into harvest season. Test weights did drop as harvest season progressed.

Falling Number is a test more recently introduced into country elevators and mills. It gives an indication of the amount of sprout damage that has occurred within a wheat sample. Generally, a falling number value of 350 seconds or longer indicates a low enzyme activity and very sound wheat quality.

Protein content in wheat can vary by variety from about 9-15% and of course, the higher the better.

VOM levels tell the vomitoxin levels in wheat samples and determine if it is of quality for human or animal consumption. Generally, over 1 ppm is not considered acceptable for human consumption. VOM levels for animal consumption can go higher.

SDS numbers can range from single digits up to almost 70. It is a measure of baking quality of wheat cultivars. The higher the number the better.

In column 7, these are the total discounts figured for each variety on an entire 850 bushel load of wheat. Most discounts are due to low Test Weight and grain damage. There was very little if any discounts for moisture in these tests.

In column 8, I did some calculations to determine the yield to discount ratio per acre. It is fairly easy to see that the higher the ratio, the better your bottom line is with that variety. This ratio combines decent yields good quality. Several varieties, Hilliard, DG-9552, GHT-940, and Vision 50 had fewer discounts due to good test weight, low moisture and little to no damage. These may not have been the highest yielding varieties, but the

quality helped make up for it. **Below are the gross income per variety figured on 850 bushel load at \$4.36 per bushel with discounts taken out.**

Variety	Gross Income after Discounts on 850 bushels
Check 1-Shirley	\$3,618.61
VA-258	3,660.98
VA-73	3,486.53
SS8513	3,574.05
SS-8530	3,451.58
Pioneer 26R10	3,578.77
Pioneer 26R20	3,649.96
Hilliard	3,691.18
AG-Maxx 444	3,624.62
AG-Maxx 434	3,639.21
DG-9552	3,687.47
DG-9522	3,646.30
GHT-942	3,649.96
Check 2	3,628.27
GHT-940	3,691.18
Vision 50	3,691.18
Vision 45	3,569.06
SH-4300	3,569.06
SH-4400	3,595.65
USG 3404	3,631.92
Check 3	3,602.89
USG 3523	3,657.32

## 2016 Virginia Cooperative Extension On-Farm Wheat Variety Plot Yield Summary for Upper Coastal Plain (Bushels/Acre)

**Some varieties break dormancy and begin growing rapidly when temperatures warm in late winter/early spring and should not be planted early in order to avoid potential freeze damage. Be sure to consult your seed supplier when purchasing seed.**

Variety	Westmoreland	Middlesex	Average
Southern Harvest 4300	69.66	81.7	75.7
Hilliard	66.44	82.30	74.4
Great Heart 940	69.34	78.9	74.1
Pioneer 26R20	68.69	77.6	73.1
AgriMaxx444	65.05	79.70	72.4
USG 3404	67.73	76.9	72.3
AgriMaxx 434	69.30	75.3	72.3
Southern Harvest 4400	61.92	82.3	72.1
Dyna-Gro 9522	68.41	74.2	71.3
Great Heart 942	67.87	74.3	71.1
Dyna-Gro 9552	69.4	70.2	69.8
Vision 45	63.79	75.1	69.4
Pioneer 26R10	66.20	69.8	68.0
USG 3523	61.33	72.5	66.9
Southern States 8530	60.75	72.6	66.7
Featherstone 258	55.7	75.7	65.7
Featherstone 73	54.1	69.0	61.6
Southern States 8513	48.47	70.30	59.4
Vision 50	49.89	63.1	56.5

**2016 Virginia Cooperative Extension On-Farm Wheat Variety Plot Test Weight  
Summary for Upper Coastal Plain (pounds/bushel)**

<b>Variety</b>	<b>Westmoreland</b>	<b>Middlesex</b>	<b>Average</b>
Dyna-Gro 9552	56	57.9	56.95
Vision 50	55	58.7	56.85
Southern States 8513	54	59.2	56.6
Pioneer 26R20	55	58	56.5
Pioneer 26R20	55	58	56.5
Hilliard	54	58.5	56.25
Featherstone 73	53	59.4	56.2
Dyna-Gro 9522	55	57.1	56.05
Great Heart 942	55	57.1	56.05
USG 3523	55	57	56
Southern Harvest 4300	55	55.7	55.35
USG 3404	55	56.6	55.8
Pioneer 26R10	54	57.6	55.8
AgriMaxx 434	55	56.7	55.85
Southern Harvest 4400	55	56.4	55.7
Featherstone 258	54	57.4	55.7
Vision 45	54	55.9	54.95
Great Heart 940	51	58.8	54.9
AgriMaxx444	53	56.7	54.85
Southern States 8530	53	54.8	53.9

## 2016 Westmoreland County Evaluation of Prosaro Fungicide

**Cooperators:**                    **Producer:** Keith Balderson  
 Extension: Keith Balderson, VCE, Essex County  
 Industry: Curtis Packett, CPS, Mt. Holly

**Previous Crop:**                Corn  
**Soil Type:**                    Suffolk sandy loam  
**Tillage:**                      Continuous no-tillage for over 10 years, stalks bush hogged  
**Planting Date:**                October 18, 2015  
**Fertilizer:**                    35-90-90 per acre at planting  
    25-0-0-3 per acre in early December  
    90-0-0-22.5 on March 10<sup>th</sup>

**Crop Protection:**             Herbicides: Gramoxone—Burndown  
 Tombstone Insecticide applied in early December for aphids  
 Pre-emergence: Finesse Cereal and Fallow  
 Prosaro applied at late flowering for Head Scab Suppression  
 Tombstone Insecticide tank-mixed with Prosaro

**Treatment:**                    Prosaro vs. no Prosaro  
**Variety:**                      Dyna-Gro 9042  
**Harvest Date:**                June 22, 2016

Treatment	Test Weight) lbs./bu.*)	% Moistur e	Yield bu./A @13.5%
Without Prosaro 1		13.8	70.5
With Prosaro 1		14.5	75.6
With Prosaro 2		14.0	75.6
Without Prosaro 2		13.7	71.6
Ave. Without Prosaro	57.7	13.75	71.05
Ave. With Prosaro	58.6	14.25	75.6
LSD (0.10)		ns	3.5
With Prosaro and sprayer tracks**		14.2	63.7

\*One composite sample was taken for each treatment and analyzed for test weights

\*\*Total difference between the Prosaro with and without tracks is 11.9 bushels per acre. However, the actual loss is calculated as 20 percent since the harvested area included both sprayer tracks, the harvested area was 18 feet wide and the sprayer width was 90 feet. Therefore, the adjusted loss is 2.38 bushels per acre, which is in line with past findings.

**Discussion:** Fusarium head scab is a major concern for wheat producers. It reduces yield, seed quality, and can result in high levels of vomitoxin, which can result in large discounts or rejection of the grain. Extremely wet conditions during flowering caused concern that epidemic levels of scab and possibly vomitoxin could occur in the 2016 wheat crop. Overall there was some scab and vomitoxin but levels were not as bad as some people were anticipating. Although conditions were wet during flowering, dry conditions prevailed in April and conditions were also cool in May. This combination of factors may explain why the disease was not extremely bad.

In this plot, the addition of Prosaro increased yields by 4.5 bushels per acre and increased test weight by 1 pound per bushel. Vomitoxin was less than 1ppm in both treatments. With wheat prices at \$4.50 per acre and using discount and premium schedules used by one local elevator, the fungicide treatment (not calculating the loss to wheel tracks) would have increased **gross** income by \$25.10 per acre. Given current wheat prices, this would not be enough to pay for the treatment and loss of wheat due to sprayer tracks.

## 2016 Middlesex Prosaro Test

**Cooperators:**                      **Producer:** Jason Benton  
**Extension:** David Moore, VCE-Middlesex  
    MacKenzie Moore, VCE Intern

**Previous Crop:** Corn  
**Soil Type:** Suffolk Fine Sandy Loam  
**Tillage:** No-Till  
**Planting Date:** October 31, 2015  
**Variety:** Shirley  
**Fertilizer:** 30-60-120-15s-Fall  
    25-0-0 December  
    50-0-0-9s February  
    50-0-0-9s March

**Crop Protection:** Burndown: Glyphosate + Qwikquat  
    Lambda-Cy December  
    Finesse-February  
    Starane Ultra-March  
    Prosaro-May

**Treatment:** Replicated Strips with and without Prosaro-8 ounces/A.  
**Harvest Date:** June 23, 2016

Treatment	Test Weight (lbs./bu.)	% Moisture	Yield (bu./A @13.5%)
With Prosaro 1	57.8	12.3	78.0
Without Prosaro 1	56.4	11.9	66.8
With Prosaro 2	57.7	12.3	76.5
Without Prosaro 2	56.4	12.0	67.4
With Prosaro 3	58.3	12.3	75.9
Without Prosaro 3	57.0	12.0	69.7
Avg. with Prosaro	<b>57.9</b>	<b>12.3</b>	<b>76.8</b>
Avg. without Prosaro	<b>56.6</b>	<b>12.0</b>	<b>68.0</b>
LSD (0.10)	0.1	0.1	4.2

**Discussion:** For several years now, we have been comparing strips with and without Prosaro. This year was a heavy disease year and Shirley is a variety that is somewhat limited in its disease package. Each strip had wheel tracks in it. Jason drove through the untreated plots so as to give the equal advantage to the practices. There is more information on the following page that pertains to dockage and the net income from the treated versus the untreated plot. (We are using \$4.36/bu. as the assumed price and discounts and net income is based on a 850 bushel load.)

I have also included some of the other information gained through sampling done by Old Dominion Grain, a Division of Mennell Milling. Many thanks for their help!



<b>Treatment</b>	<b>Damage</b>	<b>Protein</b>	<b>SDS</b>	<b>Fall #</b>	<b>VOM</b>	<b>Net \$</b>
Treat 1	0.60	10.3	44.8	339	0.89	3,674.25
Control 1	1.60	10.8	48.6	389	1.60	3,602.89
Treat 2	1.00	10.5	46.9	334	0.64	3,666.86
Control 2	1.00	10.9	49.0	396	1.70	3,588.41
Treat 3	0.60	10.5	44.6	344	0.74	3,683.76
Control 3	0.80	11.1	51.0	393	1.10	3,646.30

**Discussion:** In replication 1, there was \$71.36 advantage, in a truck load, to using Prosaro. Rep 2 was \$78.45 and Rep 3 was \$37.46. That doesn't sound so bad until you calculate to per acre (assuming it takes 10-12 acres to fill a truck load) and it becomes more like \$4.00-8.00 per acre.

Look at other characteristics of the wheat samples and see differences where fungicide was added.

Use this and other on-farm replicated wheat plots when making planting decisions for 2016-17.

## 2016 Essex Palisade Growth Regulator Test Plot-1

**Cooperators:**           **Producer:** Hundley Brothers Farm  
**Extension:** Keith Balderson, VCE-Essex County  
                                   MacKenzie Moore, VCE Summer Intern  
**Previous Crop:** Corn  
**Soil Type:** Kempsville sandy loam  
**Planting Date:** October 16, 2015  
**Fertilizer:** 50-80-120-18 per acre Pre-plant  
                                   50-0-0-6 per acre 2/22/16  
                                   50-0-0-6 plus 3 qts. per acre Black Label Zn on 3/30/16  
                                   70-0-0-9 per acre on Palisade strips  
**Crop Protection:** Herbicides: Zidua and T-Square on 11/2/15  
                                   Fungicides: Fitness on 3/30/16 and Prosaro on 5/5/16  
                                   Insecticides: Tombstone on 5/5/16  
**Treatment:** Alternate strips with Palisade Growth Regulator @ 12 oz. per acre  
                                   on 3/31/16  
**Variety:** USG 3404  
**Harvest Date:** June 25, 2016

Treatment	Replication	% Moisture	Yield (bu./A @13.5%)
Check	1	15.3	88.7
Palisade	1	15.2	86.5
Check	2	15.3	86.7
Palisade	2	15.3	84.3
Check	3	15.3	83.7
Palisade	Not reported-nitrogen misapplication		
Ave. Check-3 reps.		15.3	86.4
Ave. Palisade-2 reps.		15.25	85.4
LSD (0.10)		ns	ns

### Discussion:

Plant lodging can be detrimental to the quality and yield of wheat grain. During the spring of 2012, a plant growth regulator, Palisade, was registered for use in the United States. The product curtails the plant's ability to produce a growth hormone resulting in thicker stems and shorter internodes. In this plot, the check treatment received 50 pounds of nitrogen per acre during growth stage 30, while the Palisade plots received 70 pounds per acre in an effort to increase yield. Check plots had a small amount of lodging, while the Palisade plots had virtually zero. Three wheat height measurements were made in each plot just prior to harvest, and Palisade reduced plant height by an average of 3.8 inches. There was no statistical difference in yields between the two treatments.

## 2016 Essex Palisade Growth Regulator Test Plot-2

<b>Cooperators:</b>	<b>Producer:</b>	Hundley Brothers Farm
	<b>Extension:</b>	Keith Balderson, VCE-Essex County MacKenzie Moore, VCE Summer Intern
<b>Previous Crop:</b>		Corn
<b>Soil Type:</b>		Kempsville sandy loam
<b>Planting Date:</b>		October 16, 2015
<b>Fertilizer:</b>		50-80-120-18 per acre Pre-plant 50-0-0-6 per acre 2/22/16 50-0-0-6 plus 3 qts. per acre black label Zn on 3/30/16 70-0-0-9 per acre on Palisade strips
<b>Crop Protection:</b>		Herbicides: Zidua and T-Square on 11/2/15 Fungicides: Fitness on 3/30/16 and Prosaro on 5/5/16 Insecticides: Tombstone on 5/5/16
<b>Treatment:</b>		Alternate strips with Palisade Growth Regulator @ 12 oz. per acre on 3/31/16
<b>Variety:</b>		Dyna-Gro 9171
<b>Harvest Date:</b>		June 27, 2016

Treatment	Replication	% Moisture	Yield (bu./A @13.5%)
Check	1	15.2	78.9
Palisade	1	15.2	82.2
Check	2	15.1	78.0
Palisade	2	15.2	84.4
Check	3	15.1	80.5
Palisade	3	15.1	83.0
Ave. Check		15.1	79.1
Ave. Palisade		15.1	83.2
LSD (0.10)		ns	3.5

### Discussion:

Plant lodging can be detrimental to the quality and yield of wheat grain. During the spring of 2012, a plant growth regulator, Palisade, was registered for use in the United States. The product curtails the plant's ability to produce a growth hormone resulting in thicker stems and shorter internodes. In this plot, the check treatment received 50 pounds of nitrogen per acre during growth stage 30, while the Palisade plots received 70 pounds per acre in an effort to increase yield. Check plots had a small amount of lodging, while the Palisade plots had virtually zero. Three wheat height measurements were made just prior to harvest, and Palisade reduced plant height by an average of 3.2 inches. The Palisade treatment combined with the increased nitrogen rate, increased yield, but the yield difference would not be enough to cover the additional cost given current wheat prices.

## 007-2016 Small Grain Tissue Sample Summary

### Wheat 2016

	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	1	0	0	6	0	1	0	0	2	0	5	0	0
High	4	2	6	16	0	15	0	0	1	2	6	0	0
Sufficient	16	25	21	6	27	11	27	0	22	25	16	27	27
Low	6	0	0	0	0	0	0	7	2	0	0	0	0
Deficient	0	0	0	0	0	0	0	20	0	0	0	0	0
Total	27	27	27	27	27	27	27	27	27	27	27	27	27

### Total Tissue Samples (2007-2016)

	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al	
Very High		34	12	16	74	1	4	1	1	2	29	118	36	1
High		64	64	87	77	0	74	1	5	31	74	85	47	11
Sufficient		174	226	259	216	243	252	358	142	272	227	166	259	345
Low		110	33	14	7	112	42	12	185	51	16	5	31	17
Deficient		24	38	3	1	19	4	1	40	18	28	0	1	0
Total		397	373	374	374	374	374	373	373	374	374	373	374	373