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2014 VIRGINIA ON-FARM SMALL GRAIN 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

The demonstration and research plot results discussed in this publication are a cooperative effort by six Virginia Cooperative Extension agents, extension specialists from Virginia Tech, and an assistant professor at the Virginia State University School of Agriculture. 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 2015.

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 agribusiness personnel who would like to receive of 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 twenty-first 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 Robbie Longest, 2014 Essex and Westmoreland County VCE intern for his 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. Five wheat variety plots were planted in eastern Virginia. Three plots were located in the central and upper coastal plain at Virginia State University and Westmoreland and Middlesex Counties. The average yield per variety across these three locations ranged from 87.23 to 75.1 bushels per acre. There were also two plots located in Chesapeake and Virginia Beach which were identical to each other. Average yields across these two locations ranged from 99.42 to 75.48 bushels per acre. In addition to yield, producers should also consider test weight, disease resistance, standability, and the presence of "beards" if deer pressure is a concern. The best resource for wheat variety selection is the Virginia Cooperative Extension publication, **Small Grains for 2014**, which is posted on the Virginia Cooperative Extension website.

B. VERTICAL TILLAGE: Under continuous no-till systems, crop residue continues to remain a concern when planting season begins. Good seed to soil contact is crucial in initiating seed germination and insuring a solid stand within a field. Some farmers have adopted vertical tillage which is a way of residue incorporation with minimal soil disturbance. During the 2013-2014 growing season, one plot focused on the use of a Turbo Till. The results showed minimal differences in yield with a higher average of tillers in the tilled plots.

C. FOLIAR FUNGICIDE & GROWTH REGULATOR PLOTS: There was only one foliar fungicide plot during the 2013-2014 growing season which looked at the application of *Prosaro* at flowering. Scab pressure under favorable conditions can dramatically influence yield and test weight. This plot noticed about a four bushel difference in yield with lower levels of vomitoxin in the treated wheat. There were two wheat plots and one barley plot that received an application of the growth regulator *Palisade*. Increased rates of nitrogen applications to increase yield may lead to decreased straw strength and lodging later in the growing season which is unfavorable. Growth regulators were applied to minimize lodging, but there was little difference in yield and test weight, making the applications not profitable.

D. SPRAYER TRACKS PLOT: Throughout a typical small grains growing season, a spray rig may drive over the crop an average of four times. Late season applications affect yield loss the most. Throughout the years of 2011-2014, three plots have assessed yield loss with one having been conducted this past growing season. The 2014 results showed an average loss of 3.68 bushels per acre. With wheat prices between $5.00 and $6.00, this would equal between approximately a $18.40-$22.08 loss per acre. Factors such as growth stage, sprayer size, and field conditions affect the impact.

E. 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 2013-2014 small grains growing season, 35 samples were submitted for analysis. Deficiencies in these samples included: 4 sulfur, 3 magnesium, 2 boron, and 2 manganese. Since 2007, there have been 315 samples submitted for full analysis, and 26 solely looking at nitrogen levels. Complete results of the tissue analysis results year by year since 2007 can be found in the section in this publication labeled 2007-2014 Small Grain Tissue Sample Summary.

2013/14 Virginia State University Small Grain Variety Comparison

Cooperators: Producer: Glenn F. Chappell, III
Glenn F. Chappell, II – Virginia State University
Scott Reiter – Virginia Cooperative Extension – Prince George
Previous Crop: Corn
Soil Type: Emporia Sandy loam
Tillage: No-Till
Test/Plot Size: 480 ft. x 15 ft. per variety
Planting Equipment: John Deere 1590 NT Drill
Planting Date: October 25, 2013
Row Spacing: 7.5 inches
Variety: Various
Seeding Rate: 20 seed/row ft.
Crop Protection: Herbicides: 1pt./A Gramoxone Inteon - October 15, 2013; 0.5 oz./A of Harmony Extra – April 11, 2014
Fungicides: 4.0 oz./A of Folicur 3.6 – April 11, 2014
Insecticides: 1.28 oz./A of Karate Z – April 11, 2014
Fertilizer: 40 lbs./A of N – October 15, 2013; 60 lbs./A of N February 3, 2014; 30 lbs./A of N April 11, 2014
Harvest Date: July 2, 2014
Harvest Equipment: John Deere 6620

Brand	Variety	H_2O (%)	Test wt.	Yield Bu/A	% of Check**
Dyna-Gro	9042*	11.5	55.5	75.3	------
Dyna-Gro	9223	11.3	56.0	76.5	104.0
Pioneer	26R20	11.3	54.0	77.0	104.7
Pioneer	26R10	11.3	57.0	71.9	97.6
Southern S.	5205	11.2	56.0	82.8	112.5
USG	3612	11.3	57.0	78.6	106.8
VCIA	Jamestown	11.4	53.0	77.5	105.3
Southern S.	8870	11.6	58.0	78.8	107.1
USG	3251	11.6	57.5	70.1	95.2
VCIA	Merl	11.4	56.0	79.5	108.1
Dyna-Gro	9042*	11.3	55.5	71.9	-----

*Check Variety
**% of Check is calculated by dividing the individual variety yield by the mean of the two checks located on either side of the variety plot.
Discussion: Compare these results with regional data to choose varieties that match your production conditions. Test weights were low probably due to the moderate late season scab pressure and the lack of a corresponding fungicide application. The GS 25 nitrogen application was based on tiller counts and the GS 30 nitrogen application was based on tissue testing.

2014 Westmoreland County Wheat Variety Plot

Cooperators: Producer: F.F. Chandler, Jr.
Extension: Stephanie Romelczyk, VCE – Westmoreland
Keith Balderson, VCE – Essex
Robbie Longest, VCE Intern
Agribusiness: Participating Companies; Curtis Packett and Rusty Green, CPS

Previous Crop: Corn
Soil Type: Suffolk sandy loam
Tillage: No-till
Planting Date: November 5, 2013
Fertilizer: Fall: 40-80-80 per acre
January 1, 2014: 313 lbs. per acre 16-0-0-6
March 22, 2014: 250 lbs. per acre 20-0-0-4 and Agrotain and Accomplish
Crop Protection: Burndown Herbicide: Gramoxone @ pts. per acre
Pre: Finesse at .4 oz per acre
Post: Starane on April 12, 2014
Fungicides: Quadris @ 3 oz. per acre on March 22, 2014 and Prosaro @ 7 oz. per acre at flowering
Insecticides: 2 oz. per acre Tombstone with the Prosaro

Harvest Date: July 1, 2014

Variety	Test Weight (Lbs./Bu.)	Moisture (%)	Yield Bu./A @13.5%)
Southern States 5205	60	12.8	66.59
Southern States 8870	56	12.5	78.32
Pioneer 26R20	60	12.2	80.43
Pioneer 26R10	58	12.5	83.70
USG 3612	57	12.8	81.64
USG 3251	59	12.6	80.86
DynaGro 9223	58	12.5	82.40
DynaGro 9042	59	12.4	81.85
Great Heart 940	61	12.6	80.62
Great Heart 933	59	12.3	82.45
Southern Harvest 3200	60	12.9	75.63
VCIA Merl	61	12.8	76.20
VCIA Jamestown	62	12.7	68.81

Discussion: Use this and other Virginia Tech variety information for 2015.

2014 Middlesex County Wheat Variety Plot

Cooperators: Producer: Jason Benton
Extension: David Moore, VCE-Middlesex
Dorothy Baker, VCE-Summer Intern

Previous Crop: Corn
Soil Type: Suffolk Fine Sandy Loam
Tillage: No Till into shredded stalks
Planting Date: October 28, 2013
Fertilizer: 23-60-100-3s Broadcast
30-0-0-0-3s December
40-0-0-4s-February
60-0-0-6s-March
Crop Protection: Glyphosate Burndown
Warrior + Finesse-December
Osprey and PowerFlex-March; Prosaro-May
Harvest Date: June 30, 2014

Variety	Test Weight	M%	Yield@13.5%)
USG 3612	59	12.5	86.4
Check (P26R10)	60	13.1	92.7
USG 3251	60	13.4	84.9
Check	59	13.4	92.1
Merl	61	13.5	87.3
Check	60	13.4	92.1
Jamestown	62	13.5	79.0
Check	58.5	13.4	99.5
Dyna-Gro 9171	59	13.4	82.0
Check	59.5	13.3	93.9
Dyna-Gro 9012	61	13.4	84.5
Check	59	13.1	87.4
USG 3120	62	13.0	80.1
Check	60	13.3	91.4
Dyna-Gro 9042	59	13.5	86.7
Check	59	13.4	98.0
Check	60	13.1	100.4
Dyna-Gro 9223	59	13.7	102.8
Check	59.5	13.4	100.2
SS5205	60.5	13.3	99.6
Check	59	13.9	96.3
SS8870	60	13.9	91.0
Check	59.5	13.7	101.4
Pioneer 26R20	59	13.7	94.4
Check	59	13.7	100.6
Pioneer 26R10	60	13.8	100.6

Check	59	13.8	101.4
Southern Harvest	60	13.5	99.8

Discussion: Use this and other Virginia Tech variety information for 2015.

Seed Size and Treatment Information for Variety Plots in Westmoreland, Middlesex, and Virginia State

Variety	**(seed/lb.)**	**Seed Treatments**
USG 3612	10,050	Vizor5Z
USG 3251	11,448	Vizor5Z + Kickstand
Merl	11,569	Tebuconazole, Metalaxyl, Thiabendazole
Jamestown	12,930	Tebuconazole, Metalaxyl, Thiabendazole
DG 9171	14,000	Foothold Extra + Awaken
DG 9012	11,100	Foothold Extra + Awaken
USG 3120	10,400	Vizor5Z
DG 9042	10,300	Foothold Extra + Awaken
Shirley		Foothold Extra + Awaken
DG 9223	11,650	Foothold Extra + Awaken
SS 5205	12,145	Prothioconazole, Penflufen, Metalaxyl, Chlorpyrifos Methyl, Deltamethrin
SS 8870	14,100	(same as above SS 5205)
Pio. 26R20	12,500	Vibrance Extreme
Pio. 26R10	11,000	Vibrance Extreme

Vizor5Z: Metalaxyl, Tebuconazole, Imazalil, Thiabendazole, Imidacloprid, Zinc
Kickstand: Indole3-butyric acid (Rooting hormone in the *Auxin* family)
Foothold Extra: Imidacloprid, Tebuconazole, Metalaxyl
Awaken: Nutritional seed treatment (6-0-1) with Zn, Cu, Mn, B, Fe, Mo
Vibrance Extreme: Sedaxane, Difenoconazole, Mefenoxam

2014 Chesapeake Wheat Variety Plot

Cooperators: Producer: Marvel Nicholas
Extension: Watson Lawrence-Chesapeake
Agribusinesses: Crop Production Service-Shawboro; Great Heart Seed; Pioneer Seed; Southern States, Chesapeake; White Hat Seed, Hertford, NC
Previous Crop: Corn
Soil Type: Chesapeake Fine Sandy Loam
Tillage: Disk followed by disk with culti-packer
Planting Date: November 1, 2013
Fertilizer: Preplant: 375 lbs./A 16.2N - 8.8P - 23.5K + 5.9 lbs. Sulfur
32% Liquid Nitrogen top-dress @ 90 lbs./A
Crop Protection: April 4th: ¾ oz./A Harmony + 4 oz./A Salvo (2,4-D)
Harvest Date: June 26, 2014

Variety	Test Weight (lbs./bu.)	Moisture (%)	Yield bu./A @13.5%
Pioneer 26R10	55.9	15.0	100.9
Pioneer 26R41	57.2	14.7	95.40
Pioneer 26R20	57.2	14.6	94.63
Great Heart 933	55.8	14.4	94.60
Agripro Oakes	58.5	16.2	94.45
Dyna Gro 9171	56.2	14.0	92.90
USG 3409	56.3	15.5	91.38
Great Heart 940	57.8	15.2	89.85
Agripro SY Harrison	55.3	16.6	89.60
Great Heart 934	55.1	15.1	89.10
Shirley	56.5	14.0	88.50
Pioneer 26R53	57.7	14.8	86.77
Dyna Gro 9373	55.7	14.6	86.69
Southern States 5205	55.7	16.2	84.63
USG 3555	55.5	14.9	83.06
USG 3120	55.2	14.5	82.49
Southern States 520	53.1	16.6	79.45
Southern States 8412	54.0	16.3	78.30
Yorktown	56.3	14.3	76.85
Dyna Gro 9042	55.9	14.2	67.96

Discussion: This test had few pest problems. No insecticide was needed and Harmony plus 2,4-D did a good job of controlling weeds. Some head scab was present; no fungicide was applied at heading. Lodging was minimal and overall an excellent yielding plot.

2014 Virginia Beach Wheat Variety Plot

Cooperators: Producer: Russell H. Malbone
Extension: Roy D. Flanagan III
Previous Crop: No till Field Corn
Soil Type: Predominantly Nimmo Loam and Dragston Fine Sandy Loam
Tillage: Conventional Tillage, Disked 2X, Field Cultivator 2X
Planting Date: November 21, 2013
Fertilizer: Topdressed with 250lbs of 46-0-0
Crop Protection: No fungicide
No insecticide
No herbicide
Harvest Date: July 5, 2014

Variety	Test Weight (Lbs./Bu.)	Moisture (%)	Yield Bu./A @13.5%)
—Check	**62**	**13.2**	**85.44**
Pioneer 26R10	60	12.6	97.93
Pioneer 26R20	62	13.6	93.54
SS 5205	61	13.1	90.1
Agripro SY Harrison	62	13.1	87.71
SS 520	61	13.1	85.32
Dyna Gro 9042	60	12.9	83
Agripro Oakes	62	13.6	80.86
Pioneer 26R41	62	13.3	80.81
Great Heart 933	60	13.3	80.35
SS 8412	61	13.3	79.9
Great Heart 934	60	12.6	79.63
USG 3555	62	13.4	77.87
Great Heart 940	61	13.4	75.49
Yorktown	61	13.3	74.78
Pioneer 26R53	61	13.3	73.19
USG 3409	62	13.1	72.56
USG 3120	62	13.2	69.29
Shirley	58	12.5	66.89
Dyna Gro 9373	60	13.2	65.38
Average	**61**	**13.16**	**80.00**

Discussion: Use this and other Virginia Tech variety information for 2015.

2014 Virginia Cooperative Extension On-Farm Wheat Variety Plot Yield Summary for Central and Upper Coastal Plain (bushels/acre)

Variety	Virginia State	Westmoreland	Middlesex	Average	Rank
Pioneer 26R10	71.9	83.7	100.6	**85.4**	2
Pioneer 26R20	77	80.43	94.4	**83.94**	3
Great Heart 933	-	82.45	-	-	
Great Heart 940	-	80.62	-	-	
Dyna-Gro 9171*	-	-	82	-	
Dyna-Gro 9042	73.6	81.85	86.7	**80.72**	8
Dyna-Gro 9012*	-	-	84.5	-	
Dyna-Gro 9223	76.5	82.4	102.8	**87.23**	1
USG 3120*	-	-	80.1	-	
USG 3612	78.6	81.64	86.4	**82.21**	6
USG 3251	70.1	80.86	84.9	**78.62**	9
Southern States 5205	82.8	66.59	99.6	**83**	4
Southern States 8870	78.8	78.32	91	**82.71**	5
VCIA Merl	79.5	76.2	87.3	**81**	7
VCIA Jamestown	77.5	68.81	79	**75.1**	10
Southern Harvest 3200	-	75.63	99.8	-	
Average	**76.63**	**78.42**	**89.94**		

*Dyna-Gro 9171, Dyna-Gro 9012, and USG 3120 were entered as "early" varieties at the Middlesex location only.

2014 Virginia Cooperative Extension On-Farm Wheat Variety Plot Test Weight Summary for Central and Upper Coastal Plain (lbs./bu)

Variety	Virginia State	Westmoreland	Middlesex	Average	Rank
Pioneer 26R10	57	58	60	**58.3**	4
Pioneer 26R20	54	60	59	**57.7**	7
Great Heart 933	-	59	-		
Great Heart 940	-	61	-		
Dyna-Gro 9171*	-	-	59		
Dyna-Gro 9042	55.5	59	59	**57.8**	6
Dyna-Gro 9012*	-	-	61		
Dyna-Gro 9223	56	58	59	**57.7**	7
USG 3120*	-	-	62		
USG 3612	57	57	59	**57.7**	7
USG 3251	57.5	59	60	**58.8**	3
Southern States 5205	56	60	60.5	**58.8**	3
Southern States 8870	58	56	60	**58**	5
VCIA Merl	56	61	61	**59.3**	1
VCIA Jamestown	53	62	62	**59**	2
Southern Harvest 3200	-	60	60		
Average	**56**	**59.2**	**60.1**		

Dyna-Gro 9171, Dyna-Gro 9012, and USG 3120 were entered as additional “early” varieties in the Middlesex location only.

2014 Virginia Cooperative Extension On-Farm Wheat Variety Plot Yield Summary for Chesapeake and Virginia Beach (bushels/acre)

Variety	Chesapeake	Virginia Beach	Average	Rank
Pioneer 26R10	100.9	97.93	**99.42**	1
Pioneer 26R41	95.4	80.81	**88.11**	4
Pioneer 26R20	94.63	93.54	**94.09**	2
Pioneer 26R53	86.77	73.19	**79.98**	13
Great Heart 933	94.6	80.35	**87.48**	6
Great Heart 940	89.85	75.49	**82.67**	9
Great Heart 934	89.1	79.63	**84.37**	8
Dyna-Gro 9171	92.9	-	**-**	-
Dyna-Gro 9373	86.69	65.38	**76.04**	16
Dyna-Gro 9042	67.96	83	**75.48**	19
Dyna-Gro Yorktown	76.85	74.78	**75.82**	18
Dyna-Gro Shirley	88.5	66.89	**77.7**	15
USG 3409	91.38	72.56	**81.97**	11
USG 3555	83.06	77.87	**80.47**	12
USG 3120	82.49	69.29	**75.89**	17
Southern States 5205	84.63	90.1	**87.37**	7
Southern States 520	79.45	85.32	**82.39**	10
Southern States 8412	78.3	79.9	**79.1**	14
Agripro Oakes	94.45	80.86	**87.66**	5
Agripro SY Harrison	89.6	87.71	**88.66**	3
Average	**87.38**	**79.72**		

2014 Virginia Cooperative Extension On-Farm Wheat Variety Plot Test Weight Summary for Chesapeake and Virginia Beach (lbs./bu)

Variety	Chesapeake	Virginia Beach	Average	Rank
Pioneer 26R10	55.9	60	**58**	9
Pioneer 26R41	57.2	62	**59.6**	2
Pioneer 26R20	57.2	62	**59.6**	2
Pioneer 26R53	57.7	61	**59.4**	3
Great Heart 933	55.8	60	**57.9**	10
Great Heart 940	57.8	61	**59.4**	3
Great Heart 934	55.1	60	**57.6**	11
Dyna-Gro 9171	56.2	-	**-**	
Dyna-Gro 9373	55.7	60	**57.9**	10
Dyna-Gro 9042	55.9	60	**58**	9
Dyna-Gro Yorktown	56.3	61	**58.7**	6
Dyna-Gro Shirley	56.5	58	**57.3**	13
USG 3409	56.3	62	**59.2**	4
USG 3555	55.5	62	**58.8**	5
USG 3120	55.2	62	**58.6**	7
Southern States 5205	55.7	61	**58.4**	8
Southern States 520	53.1	61	**57.1**	14
Southern States 8412	54	61	**57.5**	12
Agripro Oakes	58.5	62	**60.3**	1
Agripro SY Harrison	55.3	62	**58.7**	6
Average	**56**	**60.9**		

2014 Turbo Till Wheat Plot

Cooperators: Producer: Calvin Haile
Extension: Keith Balderson; VCE, Middle Peninsula
Previous Crop: Corn
Soil Type(s): Tetotum loam
Tillage: No-till
Planting Date: October 21, 2014
Fertilizer: Total: 140-60-60-35S; fall fertilizer and split spring nitrogen
Crop Protection: Burndown Herbicide: Gramoxone and 2,4-D
Herbicides: Powerflex and Harmony Extra
Fungicide: Stratego YLD in second spring N application
Treatment: Strips of Turbo Till vs. stalk chopping header
Harvest Date: June 30, 2014

Treatment	*Tillers/ft.²	Yield (Bu./A @13.5%)
Check (1)	59	87.57
Turbo Till (1)	91	90.69
Check (2)	80	90.69
Turbo Till (2)	67	94.34
Check (3)	91	94.79
Turbo Till (3)	98	92.62
Average Check	76.67	91.02
Average Turbo Till	85.33	92.55
LSD (0.10)	NS	NS

* Tiller counts were taken on March 11, 2014 and the reported tillers/ft² is the average of two counts taken that day from each plot.

Discussion: Under continuous no-till systems, crop residue continues to remain a concern when planting season begins. Good seed to soil contact is crucial in initiating seed germination and insuring a solid stand within a field. Some farmers have adopted vertical tillage which is a way of residue incorporation with minimal soil disturbance. In this plot, vertical tillage prior to planting did not increase yields.

2014 Middlesex Prosaro Fungicide Test

Cooperators: **Producer:** Jason Benton
Extension: David Moore, VCE-Middlesex
Dorothy Baker, VCE Summer Intern

Previous Crop: Corn
Soil Type: Suffolk Fine Sandy Loam
Tillage: No Till into Shredded Corn Stalks
Planting Date: October 24, 2013
Fertilizer: 27-60-110-5s Broadcast
30-0-0-3s December
40-0-0-4s February
60-0-0-6s March
Crop Protection: Glyphosate Burndown
Warrior + Finesse December
Osprey-March
PowerFlex March
Prosaro-May
Treatment: Alternating strips with and without Prosaro
Variety: Shirley
Harvest Date: June 25, 2014

Treatment	Test Weight lbs./bu.	% Moisture	Yield bu./A @13.5%
With Prosaro 1	58.5	14.2	97.6
Without Prosaro 1	58.5	14.2	93.5
With Prosaro 2	59	14.5	98.2
Without Prosaro 2	59	14.4	93.8
With Prosaro 3	59.5	14.6	97.2
Without Prosaro 3	58.5	14.5	89.6
Avg. with Prosaro	58.7*	14.8*	97.7
Avg. without Prosaro	57.6*	13.8*	92.3
LSD (0.10)	NS	NS	3.3

* Mennel Milling numbers

Discussion:
Each year, depending on rain and wind events at flowering and variety resistance, results from treating for FHB (head scab) can be varied. This year consistent yield results showed a 4+ yield advantage to applying Prosaro at flowing. Mennel Milling ran test weight, vomitoxin and falling numbers for the compiled samples of the two treatments.

Vomitoxin numbers for the untreated sample was 1.3. Numbers for the treated sample were undetectable. Falling numbers, which measure the baking quality of the wheat, and are an indicator of sprout damage and enzyme activity levels, showed 348 for the untreated and 388 for the treated. (Both are acceptable levels). Use this and other Virginia Tech replicated plot result information when making planting decisions for 2014-2015.

2014 Growth Regulator Plot 1

Cooperators: Producer: Robert Bland IV
Extension: David Moore, VCE-Middlesex
Dorothy Baker, VCE Intern
Previous Crop: Corn
Soil Type: Suffolk Fine Sandy Loam
Tillage: No-Till following Turbo-Chopper
Planting Date: November 3, 2013
Fertilizer: 21-46-90 12s (Broadcast) December
40lb N/A with 28-0-0-5s February; 55lb N/A with 28-0-0-5s April
Crop Protection: Palisade and Smart Trio (April)
Warrior and Prosaro (May)
Treatment: Alternating strips with and without Palisade Growth Regulator
Variety: USG 3120
Harvest Date: June 23, 2014

Treatment	Test Weight	% Moisture	Yield A @13.5%
With Palisade 1	60	17.1%	69.40
Without Palisade 1	60	17.0%	66.55
With Palisade 2	59.5	16.8%	64.53
Without Palisade 2	59.5	16.5%	62.53
With Palisade 3	59.5	16.5%	68.84
Without Palisade 3	59.5	16.7%	68.18
Avg. with Palisade	59.7	16.8	67.6
Avg. without Palisade	59.7	16.7	65.8
LSD (0.10)	NS	NS	NS

Discussion:
Palisade is fairly new growth regulator that offers a wider window of application time for barley and wheat producers. It can be applied with March-April nitrogen application and up to flag leaf. The cost of application is about $10-12.00 per acre for product and application rate is minimal if it can be applied when going over field anyway. So we're talking about $12-14 per acre. In this test, there was less than a two bushel difference, so statistically not worth it.

Bear in mind, the true reason for using the product is to push yields by pushing nitrogen rates. This product can help prevent lodging in intensively grown small grain situations. The use of this product as a blanket treatment trying to increase yields is of little value. Use this and other Virginia Tech on-farm replicated research when making production decisions for 2015.

2014 Growth Regulator Plot II

Cooperators: Producer: Jason Benton
Extension: David Moore, VCE-Middlesex
Dorothy Baker, VCE-Intern

Previous Crop: Corn
Soil Type: Suffolk Fine Sandy Loam
Planting Date: October 20, 2013
Fertilizer: Broadcast: 35-50-110 at planting
30-0-0-4s December
40-0-0-6s February
60-0-0-9s-March

Crop Protection: Gramoxone Burndown
Warrior and Finesse in December
Osprey between 1st and 2nd shot N
Powerflex with 2nd Shot N
Prosaro at Flowering

Treatment: Alternating strips with and without Palisade
Variety: Dyna-Gro 9042
Harvest Date: June 30, 2014

Treatment	Test Weight	% M	Yield @13.5%
With Palisade 1	60	12.7	91.6
Without Palisade 1	59.5	12.7	93.4
With Palisade 2	60	12.9	98.7
Without Palisade 2	59.5	12.7	91.1
With Palisade 3	60	12.8	97.8
Without Palisade 3	59	12.8	95.1
Avg. with Palisade	60	12.8	96.0
Avg. without Palisade	59.3	12.7	93.2
LSD (0.10)	0.5	NS	NS

Discussion:
Palisade is fairly new growth regulator that offers a wider window of application time for barley and wheat producers. It can be applied with March-April nitrogen application and up to flag leaf. The cost of application is about $10-12.00 per acre for product and application rate is minimal if it can be applied when going over field anyway. So we're talking about $12-14 per acre. In this test, there was less than a three bushel difference and also some variation, so statistically not worth it.

Bear in mind, the true reason for using the product is to push yields by pushing nitrogen rates. This product can help prevent lodging in intensively grown small grain situations. The use of this product as a blanket treatment trying to increase yields is of little value.

Use this and other Virginia Tech on-farm replicated research when making production decisions for 2015.

2014 Richmond County Barley Growth Regulator Trial

Cooperators: Producer: Midway Farms
Extension: Keith Balderson; VCE, Middle Peninsula
Previous Crop: Corn
Soil Type(s): Emporia loam, Suffolk sandy loam
Tillage: No-till
Planting Date: October 17, 2013
Fertilizer: Fall: 40-60-0 per acre (Potash applied prior to previous corn crop)
Mid January: 20-0-0-3 per acre
Early March: 50-0-0-6 per acre
Early April: 30-0-0-3 on Check Plots 60-0-0-6 on Palisade Plots
Treatment: Palisade applied at 12 ounces per acre on April 10th
Harvest Date: 6/9/2014

Treatment		Test Weight (Lbs./Bu.)	Moisture (%)	Yield Bu./A @13.5%)
Palisade + N	(1)			72.9
Check	(1)			72.0
Check	(2)			72.4
Palisade + N	(2)			79.8
Palisade + N	(3)			79.4
Check	(3)			73.1
Average Palisade + N		41.8*	11.8*	77.4
Average Check		42.4	11.7	72.5
LSD (0.10)				NS

* Test weight and percent moisture were taken from an aggregate from all replications for each treatment.

Discussion: Palisade is fairly new growth regulator that offers a wider window of application time for barley and wheat producers. In high yielding barley, lodging can be a concern, and using increased nitrogen rates and Palisade might offer the opportunity to increase barley yields. In this plot the growth stage 30 nitrogen application rate was increased by 30 pounds per acre, and Palisade was applied a few days later. The Palisade tended to increase yields, but the increase was not statistically significant nor was the increase enough to pay for the Palisade and extra nitrogen. Hail hit this field just prior to Memorial Day, resulting in lower yields.

2014 Westmoreland County Sprayer Track Yield Loss Plot

Cooperators: Producer: Keith Balderson
Extension: Keith Balderson, VCE, Middle Peninsula
Stephanie Romelczyk, VCE, Westmoreland County
Robbie Longest, VCE Summer Intern

Previous Crop: Corn
Soil Type(s): Suffolk sandy loam
Tillage: No-till; corn stalks bush hogged prior to planting
Planting Date: October 12, 2013
Fall Fertilizer: 30-90-90 per acre
Topdress: 50-0-0-12.5 per acre in February and 50-0-0-6 per acre in early April

Herbicides: Burndown: Gramoxone
Pre: Finesse
Post: Starane and Banvel
Fungicide: Caramba at early flowering
Insecticide: Tombstone at early flowering
Harvest Date: June 19, 2014

Treatment	Test Weight (Lbs./Bu.)	Moisture (%)	Yield Bu./A @13.5%)
Tracks (1)			72.7
Check (1)			96.4
Tracks (2)			68.6
Check (2)			85.3
Tracks (3)			69.7
Check (3)			84.5
Average Tracks	59.1*	13.1*	70.3
Average Check	59.2	13.1	88.7
Difference			(18.4)
Adjusted Difference			**(3.68)**

*Test weight and % moisture were taken from an aggregate sample for all replications from each treatment.

Discussion:

Back in the 1990's, there was interest in tramlines. Producers were beginning to accept split application of nitrogen and other intensive management practices. Maybe it is time to re-visit that idea.

In this plot, there is an adjusted difference in sprayer tracks and no tracks. The spray applicator covered 90 feet and the combine header covered 18 feet during harvest. **Therefore the average yield difference of 18.4 bushels per acre would actually be 20% of 18.4 bushels per acre, or approximately 3.68 bushels per acre.**

Use this and other small grains information when making production decisions for 2014-15.

2007 - 2014 Small Grain Tissue Sample Summary

Totals-2007	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	0	0	0	2	0	0	0	0	0	1	5	0	0
High	0	0	3	2	0	0	0	0	0	1	5	0	2
Sufficient	0	10	7	6	1	7	10	8	4	7	0	6	8
Low	8	0	0	0	9	2	0	2	2	1	0	4	0
Deficient	2	0	0	0	0	1	0	0	4	0	0	0	0
Total	10	10	10	10	10	10	10	10	10	10	10	10	10

Totals-2008	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	4	12	3	36	0	2	0	0	0	23	59	32	0
High	4	32	20	29	0	20	1	1	8	50	41	28	3
Sufficient	24	46	77	35	22	53	100	38	64	15	1	34	98
Low	71	4	1	1	71	26	0	56	26	5	0	7	0
Deficient	8	7	0	0	8	0	0	6	3	8	0	0	0
Total	111	101	101	101	101	101	101	101	101	101	101	101	101

Totals-2009	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	0	0	0	7	0	0	0	0	0	1	13	0	0
High	4	7	3	7	0	3	0	0	5	9	6	7	0
Sufficient	8	11	15	5	14	15	19	10	12	7	0	6	19
Low	7	1	1	0	5	1	0	9	2	0	0	6	0
Deficient	0	0	0	0	0	0	0	0	0	2	0	0	0
Total	19	19	19	19	19	19	19	19	19	19	19	19	19

Totals-2010	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	20	0	13	19	1	1	0	0	0	2	23	4	0
High	2	9	6	3	0	1	0	1	7	4	7	9	0
Sufficient	5	11	11	8	22	21	22	8	13	13	0	14	29
Low	3	2	0	0	6	7	8	13	8	3	0	3	1
Deficient	0	8	0	0	1	0	0	8	2	8	0	0	0
Total	30	30	30	30	30	30	30	30	30	30	30	30	30

Totals-2011	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Barley													
Very High	0	0	0	4	0	0	0	0	0	0	3	0	0
High	2	2	3	0	0	4	0	0	1	2	0	0	0
Sufficient	2	3	2	1	5	1	5	1	3	2	2	3	5
Low	2	0	0	0	0	0	0	2	1	0	0	1	0
Deficient	0	0	0	0	0	0	0	2	0	1	0	1	0
Total	6	5	5	5	5	5	5	5	5	5	5	5	5
Wheat													
Very High	0	0	0	0	0	0	0	0	0	0	3	0	0
High	12	0	10	1	0	0	0	0	0	0	0	0	2
Sufficient	22	13	9	18	17	18	19	4	18	17	16	14	17
Low	0	6	0	0	2	1	0	13	1	1	0	5	0
Deficient	0	0	0	0	0	0	0	2	0	1	0	0	0
Total	34	19	19	19	19	19	19	19	19	19	19	19	19

Totals-2012	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Barley													
Very High	0	0	0	0	0	0	0	0	0	0	0	0	0
High	2	0	0	0	0	3	0	0	0	1	0	0	0
Sufficient	1	3	5	5	4	1	4	5	5	4	5	5	4
Low	0	1	0	0	1	1	1	0	0	0	0	0	0
Deficient	2	1	0	0	0	0	0	0	0	0	0	0	1
Total	5	5	5	5	5	5	5	5	5	5	5	5	5
Wheat													
Very High	1	0	0	0	0	0	1	1	0	0	1	0	0
High	5	0	6	3	0	6	0	0	0	0	0	1	0
Sufficient	14	17	15	21	21	18	23	9	23	22	23	23	18
Low	2	6	3	0	3	0	0	14	1	1	0	0	6
Deficient	2	1	0	0	0	0	0	0	0	1	0	0	0
Total	24	24	24	24	24	24	24	24	24	24	24	24	24

Totals-2013	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	2	0	0	0	0	0	0	0	0	2	0	0	0
High	3	1	3	0	0	3	0	0	0	0	5	0	0
Sufficient	51	46	60	65	53	58	67	28	55	60	62	65	67
Low	1	4	1	1	8	4	0	38	3	0	0	1	0
Deficient	10	16	3	1	6	2	0	1	9	5	0	1	0
Total	67	67	67	67	67	67	67	67	67	67	67	67	67

Totals-2014	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	4	0	0	0	0	0	0	0	0	0	6	0	1
High	18	1	8	6	0	9	0	2	0	0	5	0	3
Sufficient	13	29	27	29	32	26	35	26	35	33	24	35	31
Low	0	1	0	0	0	0	0	5	0	0	0	0	0
Deficient	0	4	0	0	3	0	0	2	0	2	0	0	0
Total	35	35	35	35	35	35	35	35	35	35	35	35	35

Total Tissue Samples (2007-2014)	N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al
Very High	31	12	16	68	1	3	1	1	0	29	113	36	1
High	52	52	62	51	0	49	1	4	21	67	69	45	10
Sufficient	140	189	228	193	191	218	304	137	232	180	133	205	296
Low	94	25	6	2	105	42	9	152	44	11	0	27	7
Deficient	24	37	3	1	18	3	0	21	18	28	0	2	1
Total	341	315	315	315	315	315	315	315	315	315	315	315	315