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# 2012 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 four 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. The 2011-12 small grain season was challenging. Wet conditions in the fall hampered planting and caused stand losses in some fields. Precipitation was well below normal and temperatures were well above normal for January through mid April. Dry conditions decreased tillering and overall growth of the crop. Widespread rainfall on April 22nd basically saved the crop. Some late season diseases developed in some fields. With July 2013 wheat futures prices currently trading over $8.00 per bushel, the outlook for the 2013 crop is very good. We hope the information in this publication will help farmers produce a profitable crop.

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 nineteenth 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 representative who donated products and/or assisted with the field work.

**DISCLAIMER:**

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## GENERAL SUMMARY

**A. VARIETY SELECTION:** Variety selection remains one of the most important components of wheat production. We planted wheat variety demonstration plots in five locations in eastern and central Virginia. The Middlesex, Westmoreland, and Va. State University locations included the same varieties. Yields were low at the Virginia State location. Average of the varieties over the Westmoreland and Middlesex locations ranged from 78 bushels per acre to 100 bushels per acre. The top four varieties averaged over those two locations were Dyna-Gro 9042 at 100 bushels per acre, Shirley at 96 bushels per acre, Beck's 113 at 92 bushels per acre and Merl at 90 bushels per acre. Wheat variety plots in Chesapeake and Southampton included the same varieties. Average of the varieties over those two locations ranged from 79 bushels per acre to 103.5 bushels per acre with top varieties being Dyna-Gro 9053, Southern States 560, Southern States 5205 Agripro Oakes, and Pioneer 26R20.

**B. SOIL FERTILITY PLOTS:** In a plot evaluating organic carbon applied at 1 qt. per acre in the fall and twice in the spring, we did not get a yield response. In a plot evaluating the effect of soil pH on wheat, low soil pH resulted in a yield loss of over 10 bushels per acre. In a plot evaluating an application of zinc at .25 per acre, we got no yield response to zinc.

**C. FUNGICIDE PLOTS:** In a plot evaluating a .5 rate of Headline fungicide applied in the second nitrogen application, there was no yield response with yields over 100 bushels per acre. In two plots evaluating Prosaro fungicide applied at flowering, the fungicide treated plots yielded 3.5 bushels per acre more than the untreated plots. In one plot the yield difference was statistically significant, while at the other location the yield difference was statistically significant. Prosaro also increased test weight at the Middlesex location where test weights were recorded. Head scab was not an issue at either location.

**D. TISSUE TESTING:** Twenty-nine tissue samples were analyzed for nutrient content during the spring of 2012 in the Middle Peninsula. Many of these samples were taken as a part of trouble-shooting barley and wheat production problems. Sulfur was deficient in 1 sample, while manganese was deficient in 2 samples. From 2007-2012, two hundred thirteen tissue samples were submitted for full analysis. Seventeen samples were deficient in sulfur, nine samples were deficient in magnesium, nine samples were deficient in zinc, and twenty-one samples were deficient in manganese.

**2012 Southampton County Wheat Variety Evaluation Plot**

**Cooperators:** Producer: Chance Crowder
Extension: Chris Drake, Southampton County Extension Agent, ANR

**Previous Crop:** Peanuts
**Soil Type:** Uchee Loamy Sand
**Tillage:** Disked, Planted w/ JD 1590 No-Till Drill on 7.5" spacing at 160#/acre
**Planting Date:** 11/25/11
**Fertilizer:** 300# 7-18-36 broadcast preplant, 25 gallons 24-0-0-3S on 2/25/12, 15 gallons 24-0-0-3S on 3/8, 10 gallons 24-0-0-3S on 3/28
**Crop Protection:** 3/8 – 0.75 oz. Harmony, 3/28 – 1.9 oz. Karate, 6.5 oz Quadris
**Harvest Date:** 6/11/12 with Case 1688 Axial Flow Combine with 15 ft. platform

| Variety | Test Weight (Lbs./Bu.) | Moisture (%) | Yield Bu./A @13.5% |
|---|---|---|---|
| Agripro Branson | 58.8 | 12.7 | 89.8 |
| DG Shirley | 60.1 | 12.2 | 81.2 |
| **DG 9053** | **57.4** | **12.2** | **113.1** |
| DG 9042 | 58.0 | 12.5 | 80.7 |
| **USG 3555** | **59.5** | **12.6** | **102.8** |
| Pioneer 26R22 | 59.8 | 12.5 | 76.0 |
| **Pioneer 26R20** | **60.6** | **12.3** | **103.2** |
| **SS 560** | **57.9** | **12.7** | **114.9** |
| **SS 5205** | **59.8** | **12.8** | **105.0** |
| Agripro Oakes | 59.9 | 12.9 | 95.1 |
| GreatHeart 940 | 60.8 | 12.7 | 66.1 |
| Agripro Cooper | 60.6 | 12.5 | 76.0 |
| | | | |
| AVG. ALL PLOTS | | | 92.0 |

**Discussion:** The wheat performed excellent for the most part despite the late planting date. The weather was warm following planting that led to an excellent stand and good tillering. It benefited from a warm winter and early spring. Timely April rains led to some outstanding yields with several varieties. The Shirley plot had some deer feeding damage and yields would have been in the range of the best performing varieties otherwise. We harvested 200 foot long by 15 foot wide plots out of the 300' x 30' plots that were planted. This was a great test showing several potentially high yielding varieties to choose from when making planting decisions in 2012.

## 2012 Chesapeake Wheat Variety Plot

**Cooperators:** Producer: Marvel Nicholas
Extension: Watson Lawrence - Chesapeake
**Previous Crop:** Corn
**Soil Type:** Chesapeake Fine Sandy Loam
**Tillage:** Disk followed by disk with culti-packer
**Planting Date:** October 27, 2011
**Fertilizer:** October: 8-13-33 @ 424 lbs./acre + 3.8 lbs. sulfur/acre
Late February: 32%Nitrogen @ 90 lbs. acre
**Crop Protection:** Herbicide: Harmony SG @ ¾ oz./acre
**Harvest Date:** June 20, 2012

| Variety | Test Weight (Lbs./Bu.) | Moisture (%) | Yield Bu./A@13.5% |
|---|---|---|---|
| Shirley | 54 | 14.4 | 94.78 |
| Dyna Gro 9042 | 59 | 14.3 | 94.55 |
| Dyna Gro 9053 | 55 | 13.6 | 93.61 |
| Oakes | 58 | 16.1 | 93.04 |
| Great Heart 940 | 60 | 14.9 | 92.37 |
| Southern States 5205 | 59 | 14.4 | 91.64 |
| USG 3555 | 58 | 15.4 | 91.20 |
| USG 3665 | 51 | 15.1 | 89.31 |
| Southern States 560 | 52 | 14.4 | 88.19 |
| Cooper | 58 | 14.5 | 87.99 |
| Pioneer 26R22 | 59 | 14.2 | 87.24 |
| Great Heart 933 | 55 | 13.7 | 86.81 |
| Pioneer 26R20 | 59 | 14.4 | 85.21 |
| Coker 9553 | 52 | 15.1 | 80.52 |

**Discussion:** We noticed in February the wheat crop was advancing physiologically ahead of normal. This was due to the unusually warm winter we experienced. There was some indecision whether to apply nitrogen in late February due to the fact we did not want to over advance the crop and cause freeze problems later if heads emerged too soon. But the crop was showing signs of needing nitrogen (yellowing) and dry field conditions presented an opportunity to get nitrogen on the crop. So nitrogen was applied about two weeks ahead of the normal calendar date to coincide with the advanced phase of the crop. This was a good decision because fields soon became wet in early March. The crop was already well tillered, but the early nitrogen probably increased tillers more to make this one of the best tillered crops in recent years. Powdery Mildew and other diseases did not present problems this spring. Cereal leaf beetles did not meet threshold in 2012 after large numbers were seen last year at this farm. Test weights were extremely variable even though there was plenty of rainfall in May when heads were maturing. The variety Shirley continues to be the best yielding variety for our area. Since Shirley was first planted in 2009, it has yielded first place twice and second place twice in my variety tests. All of the other varieties performed well this year also.

## 2012 Westmoreland County Wheat Variety Plot

**Cooperators:** Producer: F.F. Chandler, Jr.
Extension: Stephanie Romelczyk, ANR – Westmoreland
Agribusiness: Participating Companies; Curtis Packett and Rusty Green, CPS
**Previous Crop:** Corn
**Soil Type:** Kempsville loam; Suffolk sandy loam
**Tillage:** No-till
**Planting Date:** November 11, 2011
**Fertilizer:** 30-50-70 in fall
16-0-0-6 @ 250 lbs/A in late winter
24-0-0-3 @ 250 lbs/A in early spring
**Crop Protection:** Burndown: 3 pts/A Gramozone
0.4 oz/A Finesse
**Harvest Date:** June 22, 2012

| Variety | Test Weight (Lbs./Bu.) | Moisture (%) | Yield Bu./A @13.5%) |
|---|---|---|---|
| Beck's 113 | 58 | 11.4 | 77.91 |
| Beck's 135 | 57 | 12.3 | 74.06 |
| USG 3438 | 57 | 13.2 | 75.73 |
| USG 3251 | 56 | 12.1 | 69.64 |
| Dyna-Gro Shirley | 57 | 11.9 | 79.11 |
| Dyna-Gro 9042 | 58 | 12.2 | 83.78 |
| VCIA Jamestown | 58 | 11.7 | 66.49 |
| VCIA Merl | 58 | 11.9 | 74.99 |
| Great Heart 933 | 56 | 11.6 | 81.31 |
| Great Heart 940 | 58 | 11.6 | 71.85 |
| Agripro Coker Branson | 57 | 11.6 | 79.38 |
| Agripro Coker Oakes | 58 | 12.4 | 69.77 |
| Southern States 8340 | 57 | 11.5 | 76.59 |
| Southern States 8500 | 58 | 12.2 | 76.44 |

**Discussion:**
This wheat plot was planted somewhat late into heavy corn residue. Overall yields were relatively good. Use this and replicated data from the Small Grains in 2012 publication when selecting varieties to plant in 2012.

## Middlesex Wheat Variety Comparison

**Cooperator:** Producer: Jason Benton
Extension: David Moore, VCE-Middle Peninsula
Brittany Moring, Summer Intern
Industry: Participating Seed Companies

**Previous Crop:** Corn
**Soil Type:** Suffolk Fine Sandy Loam
**Check Variety:** Southern States 5205
**Planting Equipment:** Great Plains 1590 NT into corn shredded mulch
**Row Spacing:** 7 inches
**Fertilization:** Fall: 15-40-120-15s
Winter: 15-0-0-1s with insecticide
GS 25: 40-0-0-4s
GS 30: 60-0-0-7s
**Crop Protection:** Burndown: Glyphosate
Winter: Finesse, GS 25: Starane Ultra
Mid-March: Osprey, Flowering: Prosaro
**Harvest Date**: June 25, 2012
**Harvest Equipment:** AGCO R62

| Variety | M% | TW | Yield@13.5% | %Check |
|---|---|---|---|---|
| SS 8404 | 14.1 | 59 | 104.3 | 100 |
| Check (SS5205) | 14.3 | 60 | 104.4 | |
| SS 8500 | 14.0 | 59 | 92.3 | 90 |
| Check | 14.0 | 60 | 101.1 | |
| SS 8340 | 14.1 | 60 | 85.7 | 82 |
| Check | 14.0 | 60 | 107.1 | |
| Great Heart GHT-933 | 13.9 | 59 | 89.5 | 89 |
| Check | 14.1 | 60 | 93.0 | |
| Great Heart GHT-940 | 13.8 | 61 | 84.1 | 87 |
| Check | 13.8 | 60 | 100.2 | |
| Branson | 14.0 | 60 | 95.6 | 96 |
| Check | 13.8 | 59 | 98.5 | |
| Oakes | 14.4 | 60 | 85.8 | 81 |
| Check | 14.0 | 60 | 112.5 | |
| Beck's 135 | 13.9 | 60 | 100.2 | 93 |
| Check | 13.9 | 61 | 102.4 | |
| Beck's 113 | 13.7 | 60 | 105.8 | 99 |
| Check | 13.4 | 60 | 110.4 | |
| Dyna-Gro 9042 | 13.3 | 59 | 116.0 | 103 |
| Check | 13.4 | 60 | 115.2 | |
| Dyna-Gro Shirley | 13.4 | 59 | 113.0 | 98 |
| Check | 13.5 | 60 | 119.1 | |
| Merl | 13.5 | 60 | 105.0 | 97 |
| Check | 13.5 | 60 | 98.1 | |
| Jamestown | 13.5 | 61 | 112.1 | 110 |
| Check | 13.4 | 60 | 105.6 | |

| | | | | |
|---|---|---|---|---|
| USG 3251 | 13.7 | 60 | 106.6 | 102 |
| Check | 13.3 | 60 | 103.0 | |
| USG 3438 | 13.1 | 59 | 98.8 | 96 |
| Check | 13.3 | 60 | 103.4 | |
| Pioneer 26R20 | 13.4 | 60 | 93.2 | 95 |
| Check | 13.4 | 60 | 92.0 | |
| Pioneer 26R15 | 12.8 | 61 | 105.1 | 107 |

| Variety | Seed Treatment | Seeds/Lb. |
|---|---|---|
| Southern States 8404 | Proceed/Storcide | |
| Southern States 5205 | Proceed/Storcide | 11,690 |
| Southern States 8500 | Proceed/Storcide | 13,562 |
| Southern States 8340 | Proceed/Storcide | 12,803 |
| GHT 933 | Untreated | 16,900 |
| GHT-940 | Dividend Extreme | 14,600 |
| Branson | Dividend Extreme | 12,288 |
| Oakes | Dividend Extreme | 14,097 |
| Beck's 135 | Escalate | 11,690 |
| Beck's 113 | Escalate | 11,060 |
| Dyna-Gro 9042 | Dyna Shield-Awaken ST® | 10,200 |
| Dyna-Gro Shirley | Dyna Shield-Awaken ST® | 11,100 |
| Merl | Dividend Extreme | 12,750 |
| Jamestown | Dividend Extreme | 15,100 |
| USG 3251 | VISOR 5 | 10,910 |
| USG 3438 | VISOR 5 | 13,870 |
| Pioneer 26R20 | Dividend Extreme | 12,500 |
| Pioneer 26R15 | Dividend Extreme | 12,500 |

Escalate: Difenconazole, Metalaxyl, Dividend Extreme, Storcide

Proceed: Metalaxyl, Prothioconazole, Tebuconazole

Dyna-Shield: Gaucho, Metalaxyl, Raxil

Awaken ST®: A complex of zinc ammonium acetate with potash and balanced micronutrient seed treatment package including boron, copper, iron, manganese, molybdenum and zinc.

VISOR 5 Tebuconazole, Metalaxyl, Thiamethoxam, Imazalil (fungicide), Awaken ST®

**Discussion:** This was a very good plot. Early maturing varieties may have had an advantage when things turned hot and dry around early April this year. The plot area for each variety was 14 feet wide and approximately 700 feet in length. Use this and other Virginia Tech small grain variety information when making planting decisions for 2013.

## 2011/12 Virginia State University Small Grain Variety Comparison

**Cooperators:** Producer: Glenn F. Chappell
Glenn F. Chappell, II – Virginia State University
Glenn F. Chappell, III – Virginia State University
Scott Reiter – Virginia Cooperative Extension – Prince George
**Previous Crop:** Corn
**Soil Type:** Emporia Sandy loam
**Tillage:** No-Till
**Test/Plot Size:** 300 ft x 30 ft per variety
**Planting Equipment:** John Deere 1590 NT Drill
**Planting Date:** November 12, 2011
**Row Spacing:** 7.5 inches
**Variety:** Various
**Seeding Rate:** 25 seed/row ft
**Crop Protection:** Herbicides: 1.0 oz of Harmony Extra – Mar. 13, 2012
Fertilizer: 60 lbs of N – Feb. 1, 2012 & 50 lbs. of N Mar. 13, 2012
**Harvest Date:** June 25, 2012
**Harvest Equipment:** John Deere 6620

| Brand | Variety | Moisture (%) | Yield Bu/A |
|---|---|---|---|
| USG | 3251 | 14.2 | 40.1 |
| VCIA | Jamestown | 13.2 | 45.2 |
| Agripro | Oaks | 15.7 | 38.7 |
| Southern S. | 8500 | 14.1 | 45.9 |
| USG | 3438 | 13.1 | 41.2 |
| Southern S. | 8340 | 14.9 | 44.1 |
| Great Heart | 940 | 13.6 | 40.9 |
| Great Heart | 933 | 13.8 | 39.3 |
| Dyna-Gro | Shirley | 14.4 | 26.2 |
| Agripro | Branson | 12.9 | 29.1 |
| VCIA | Merl | 14.1 | 35.3 |
| Becks | 113 | 14.7 | 39.6 |
| Dyna-Gro | 9042 | 12.6 | 59.3 |
| Becks | 135 | 12.1 | 51.8 |

**Discussion:** Due to weather conditions the plot did not receive any fall nitrogen resulting in a low tiller production. Check varieties on either side of the plot were eliminated from the results due to wildlife damage. Compare these results with regional data to better choose wheat varieties.

**2012 Virginia Cooperative Extension On-Farm Wheat Variety Plot Yield Summary (bu/A @ 13.5%)**

| Variety | Middlesex | Westmoreland | Mdsx/Wmlnd Avg. | Chesapeake | Southampton | Chspke/S. Hampton Avg. | Total Avg |
|---|---|---|---|---|---|---|---|
| Beck's 113 | 106 | 78 | 92 | | | | |
| Beck's 135 | 100 | 74 | 87 | | | | |
| USG 3438 | 99 | 76 | 87.5 | | | | |
| USG 3251 | 107 | 70 | 88.5 | | | | |
| USG 3555 | | | | 91 | 103 | 97 | |
| USG 3665 | | | | 89 | | | |
| Dyna-Gro Shirley | 113 | 79 | 96 | 95 | 81 | 88 | 92 |
| Dyna-Gro 9042 | 116 | 84 | 100 | 95 | 81 | 88 | 94 |
| Dyna-Gro 9053 | | | | 94 | 113 | 103.5 | |
| VCIA Jamestown | 112 | 66 | 89 | | | | |
| VCIA Merl | 105 | 75 | 90 | | | | |
| Great Heart 933 | 90 | 81 | 85.5 | 87 | | | |
| Great Heart 940 | 84 | 72 | 78 | 92 | 66 | 79 | 78.5 |
| Agripro Branson | 96 | 79 | 87.5 | | 90 | | |
| Agripro Oakes | 86 | 70 | 78 | 93 | 95 | 94 | 86 |
| Agripro Cooper | | | | 88 | 76 | 82 | |
| Coker 9553 | | | | 81 | | | |
| Southern States 5205 | | | | 92 | 105 | 98.5 | |
| Southern States 560 | | | | 88 | 115 | 101.5 | |
| Southern States 8340 | 86 | 77 | 81.5 | | | | |
| Southern States 8404 | 104 | | | | | | |
| Southern States 8500 | 92 | 76 | 84 | | | | |
| Pioneer 26R15 | 105 | | | | | | |
| Pioneer 26R20 | 93 | | | 85 | 103 | 94 | |
| Pioneer 26R22 | | | | 87 | 76 | 81.5 | |
| Average | 100 | 76 | 87 | 90 | 92 | 91 | |

## 2012 Carbon Application Test

**Cooperators:** **Producer:** Robert Bland
**Extension:** Keith Balderson, Middle Peninsula
Daniel Bowie, Summer Intern

**Previous Crop:** Corn
**Tillage:** No-Till
**Planting Date:** 10/25/12
**Treatment:** Carbon applied at 1 qt. per acre in the fall and twice in the spring
Soil Amending Ingredients:
Organic Carbon . . . . . 1%
Humic Acid . . . . . 2%
Total Other Ingredients . . . . . 97%
**Variety:** Jamestown
**Harvest Date:** 6/11/12

| Treatment | | Test Weight lbs./bu. | % Moisture | Yield bu./A @13.5% |
|---|---|---|---|---|
| With C | 1 | 60 | 12.4% | 59.6 |
| Without C | 1 | 60 | 11.9% | 57.6 |
| With C | 2 | 61 | 12.3% | 71.5 |
| Without C | 2 | 61 | 11.6% | 72.3 |
| With C | 3 | 61 | 11.8% | 77.0 |
| Without C | 3 | 61 | 11.8% | 74.9 |
| Average with C | | 60.7 | 12.2% | 69.4 |
| Average without C | | 60.7 | 11.8% | 68.3 |

**Discussion:**
There is interest in using carbon as a supplement to current soil fertility programs. Carbon contributes to the formation of soil particles and plays an important role in the building of organic matter. Organic matter can assist with the water holding capacity of soils and the break-down of crop residue. In this plot 1 qt. per acre of a 1% liquid organic carbon and 2% humic acid product was applied at 1 qt. per acre in the fall and twice in the spring. There was no difference in yields.

## 2012 Effect of Low Soil pH on Wheat Yield Test

**Cooperators:** **Producer:** Keith Balderson
**Extension:** Keith Balderson, Middle Peninsula
Daniel Bowie, Summer Intern

**Previous Crop:** Corn
**Soil Type:** Kempsville sandy loam
**Tillage:** No-till
**Planting Date:** October 14, 2011
**Fertilizer:** 36-90-90 per acre preplant; 8-0-0-9 per acre in early December
February: 50-0-0-6 per acre; March: 50-0-0-6 per acre
**Crop Protection:** Burndown: Gramoxone Inteon
Early December: Finesse and Tombstone
**Variety:** Branson
**Harvest Date:** 6/08/12

| Treatment | % Moisture | Yield bu./A @13.5% |
|---|---|---|
| Good pH 1 | 12.3% | 87.4 |
| Bad pH 1 | 12.4% | 72.4 |
| | | |
| Good pH 2 | 12.4% | 85.0 |
| Bad pH 2 | 13.1% | 79.3 |
| | | |
| Average Good | 12.4% | 86.2 |
| Average Bad | 12.8% | 75.9 |

**Discussion:** With an abundance of "new" products available to use in crop production, we sometimes forget the importance of the "basics." Soil acidity remains one of the basics, and each year, extension agents find some fiends where crop yields are adversely affected by low soil pH. Low soil pH was found to be a problem in this seven acre field in November. There was a noticeable strip in the field where wheat growth was very poor. The crop did not emerge in some parts of the affected strip. A composite soil sample analyzed just prior to wheat planting showed a soil pH of 6.3. Samples taken from the good and bad areas of the field after the problem was discovered showed a soil pH of 4.4 from the bad area and 6.6 from the good area. At a soil pH of 4.4, Aluminum toxicity would be a major concern as shown by the pictures below. Two tons of lime per acre was applied to the bad area in January. This lime may have helped as yields from the bad area were actually better than we would have expected.

**Figure 1. Effect of aluminum toxicity on wheat roots caused by low soil pH.**

**Figure 2. Effect of low soil pH on wheat following heading**

## 2012 Effect of Zinc Application on Wheat Study

**Cooperators:** **Producer:** Keith Balderson
**Extension:** Keith Balderson, Middle Peninsula
Daniel Bowie, Summer Intern

**Previous Crop:** Corn
**Soil Type:** Kempsville sandy loam
**Tillage:** No-till
**Planting Date:** October 16, 2011
**Fertilizer:** 36-90-90 per acre preplant; 8-0-0-9 per acre in early December
February: 50-0-0-6 per acre; March: 50-0-0-6 per acre; .25 lb. per acre zinc applied in early February on test plots
**Crop Protection:** Burndown: Gramoxone Inteon
Early December: Finesse and Tombstone
**Variety:** USG 3251
**Harvest Date:** June 15, 2012

| Treatment | Test Weight (Lbs./Bushel) | % Moisture | Yield bu./A @13.5% |
|---|---|---|---|
| Zinc 1 | 58 | 16.0% | 64.7 |
| Check 1 | 58 | 16.6% | 61.7 |
| | | | |
| Zinc 2 | 58 | 15.9% | 63.2 |
| Check 2 | 59 | 14.9% | 62.4 |
| | | | |
| Zinc 3 | 56.5 | 15.1% | 61.3 |
| Check 3 | 58 | 15.5% | 61.0 |
| | | | |
| Average Zinc | 57.5 | 15.7% | 63.1 |
| Average Check | 58.3 | 15.7% | 61.7 |

**Discussion:** Zinc availability in soils is dependent upon, zinc soil test levels, phosphorous soil test levels, and soil pH. In general, higher soil pH levels and higher soil phosphorous test levels, decrease zinc availability. Soil test results from a soil sample from this part of the field taken prior to planting wheat indicated zinc was needed for the wheat crop. A soil test taken from the plot area prior to establishing the plot in early February indicated that zinc was not needed in the plot area. Yields in this plot were reduced in part to ALS resistant chickweed which was not controlled until Starane was applied in the second spring nitrogen application.

## 2012 Half-Rate Fungicide Study

**Cooperators:** **Producer:** Jason Benton
**Extension:** David Moore, VCE-Middlesex
Brittany Moring, Summer Intern

**Previous Crop:** Corn
**Soil Type:** Suffolk Fine Sandy Loam
**Tillage:** No-Till 1590 GP Drill
**Planting Date:** October 15, 2011
**Fertilizer:** Fall 15-40-150-15s
Winter: 15-0-0-1s
February: 40-0-0-4s; March 60-0-0-7s
**Crop Protection:** Burndown: Glyphosate
Winter: Finesse, February: Starane Ultra
Mid-March: Osprey, Flowering: Prosaro
**Treatment:** ½ rate (4 ounces) of Headline Fungicide with 2nd N Application
**Variety:** USG 3120
**Harvest Date:** June 26, 2012

| Treatment | Test Weight lbs./bu. | % Moisture | Yield bu./A @13.5% |
|---|---|---|---|
| With Headline 1 | 59 | 12.7 | 101.6 |
| Without Headline 1 | 60 | 12.9 | 100.4 |
| With Headline 2 | 60 | 12.8 | 98.5 |
| Without Headline 2 | 59 | 12.7 | 101.3 |
| With Headline 3 | 59 | 12.6 | 109.4 |
| Without Headline 3 | 59 | 12.6 | 114.7 |
| Avg. with Headline | 59 | 12.7 | 103.2 |
| Avg. without Headline | 59 | 12.7 | 105.5 |

**Discussion:**
Practices among wheat growers include applying one-half the rate of fungicides at GS 30 which is applied with the second application of nitrogen in the spring. In this test, that application made no significant difference in yield, moisture, or test weight. There were reports of early season powdery mildew, which caused many growers to apply this practice. In most instances, this half rate application gives very little residual protection. Money spent on fungicides would be better spent closer to the time of heading and grain fill.

Use these and other Virginia Tech on farm plot results when making small grain production decisions for 2012-13.

**2012 Middlesex Prosaro on Wheat Test**

**Cooperators:** **Producer:** Jason Benton
**Extension:** David Moore, VCE-Middle Peninsula
Brittany Moring, Summer Intern

**Previous Crop:** Corn
**Soil Type:** Suffolk Fine Sandy Loam
**Tillage:** No-Till
**Planting Date:** October 13, 2011
**Fertilizer:** Fall: 18-46-90**;** December: 25-0-0-3
Spring (1): 45-0-0; Spring (2): 50-0-0
**Crop Protection:** Burndown: Glyphosate
December: 2 ounces Warrior
Spring (1): Finesse @ 3/10 ounces
Early March: Osprey @ 4.75 ounces
Early May: Prosaro @ 8 ounces
**Treatment:** Dividend Extreme
**Variety:** USG 3251
**Harvest Date:** June 15, 2012

| Treatment | Test Weight lbs./bu. | % Moisture | Yield bu./A @13.5% |
|---|---|---|---|
| With Prosaro 1 | 62 | 14.4 | 118.4 |
| Without Prosaro 1 | 60 | 13.9 | 113.3 |
| With Prosaro 2 | 61 | 14.3 | 111.8 |
| Without Prosaro 2 | 60 | 14.1 | 112.1 |
| With Prosaro 3 | 61 | 14.2 | 109.6 |
| Without Prosaro 3 | 61 | 13.7 | 104.4 |
| Avg. with Prosaro | 61.3 | 14.3 | 113.3 |
| Avg. without Prosaro | 60.3 | 13.9 | 109.9 |
| **LSD (0.10)** | **ns** | **0.3** | **ns** |

**Discussion:** During most of the grain flowering period, Head Scab pressure was low. Late in the period, temperatures stayed cool, moisture and humidity were higher than normal and we had some situations where making the decision to spray a fungicide for head scab was difficult.

In this test, even though the difference is over 3 bushels, the increase is not significant due to replication number 2 where there was no difference in yield. Please keep in mind that in a lot of fields, the spray tracks will probably decrease yield by 2-3 bushels, making this application pretty much a wash.

In looking at the use of a fungicide for scab over the past 4-5 years, it appears that the worst that can happen with this is breakeven. The best has been a 9 bushel increase. In all those cases, however, there has been an

increase in test weight. Use this and other replicated information when making future head scab spray decisions.

**2012 New Kent Prosaro Plot**

**Cooperators:** Producer: Davis Produce
Extension: David M. Moore, VCE Middle Peninsula

**Previous Crop:** Corn
**Soil Type:** Pamunkey Loam
**Tillage:** No Till
**Planting Date:** October 17, 2011
**Fertilizer:** 30-80-80 Fall
45-0-0 Feb.; 60-0-0 March
**Crop Protection:** Glyphosate Burndown
2 oz. Dicamba Feb.; ¾ Oz.Harmony GT + insecticide-March
Osprey @ 4.75 ounces
**Treatment:** 8 ounces Prosaro on alternating strips at Flowering
**Variety:** USG 3251
**Harvest Date:** June 8, 2012

| Treatment | % Moisture | Yield bu./A @13.5% |
|---|---|---|
| With Prosaro 1 | 17.0 | 99.0 |
| Without Prosaro 1 | 16.1 | 95.2 |
| With Prosaro 2 | 18.5 | 96.7 |
| Without Prosaro 2 | 16.8 | 94.8 |
| With Prosaro 3 | 16.7 | 96.0 |
| Without Prosaro 3 | 15.1 | 94.4 |
| With Prosaro 4 | 17.4 | 100.9 |
| Without Prosaro 4 | 15.3 | 94.5 |
| With Prosaro 5 | 17.3 | 102.4 |
| Without Prosaro 5 | 17.5 | 98.2 |
| Avg. with Prosaro | 17.4 | 99.0 |
| Avg. without Prosaro | 16.2 | 95.4 |
| **LSD (0.10)** | **0.9** | **1.9** |

**Discussion:** Once again, the 3-4 bushels increase by using this product for Head Scab protection. This is about a breakeven performance depending on tracking in field. The use of tramlines and aerial application may improve the bottom line. Test weight differences were not apparent in this plot; however, a noticeable difference existed in moisture. This product, and others like it, has proven to be a good weapon against the severity of Head Scab. Use this and other replicated on farm results when making plans for the 2012-13 crop.

**Field Mouse Feeding on Wheat Stems**

A field of wheat in Westmoreland County exhibited areas in the field with scattered "white" heads in mid-May. The damage was in clumps. In some cases, stems of wheat were cut up in small pieces and left on the ground in the clumps. "Chewing" damage was evident on the stems of the plants with the dead heads, and the damage almost always occurred just above the top node of the wheat plant. This damage was most likely caused by field mice.

## 2007 - 2012 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 |

| Total Tissue Samples 2007-2012 Summary | N | S | P | K | Mg | Ca | Na | B | Zn | Mn | Fe | Cu | Al |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Very High | 25 | 12 | 16 | 68 | 1 | 3 | 1 | 1 | 0 | 27 | 107 | 36 | 0 |
| High | 31 | 50 | 51 | 45 | 0 | 37 | 1 | 2 | 21 | 67 | 59 | 45 | 7 |
| Sufficient | 76 | 114 | 141 | 99 | 106 | 134 | 202 | 83 | 142 | 87 | 47 | 105 | 198 |
| Low | 93 | 20 | 5 | 1 | 97 | 38 | 9 | 109 | 41 | 11 | 0 | 26 | 7 |
| Deficient | 14 | 17 | 0 | 0 | 9 | 1 | 0 | 18 | 9 | 21 | 0 | 1 | 1 |
| Total | 239 | 213 | 213 | 213 | 213 | 213 | 213 | 213 | 213 | 213 | 213 | 213 | 213 |