Southern Coastal Plains
Small Grains Extension Program
2009-10 Test Report

NC State University

North Carolina Cooperative Extension Service

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Introduction

The Southern Coastal Plains Small Grains Program was developed through cooperation of N. C. State University and the N. C. Small Grain Growers Association to address the needs of growers in Southeastern North Carolina who produce small grains. Growers in the area were surveyed through informal conversation to determine their small grain needs. After discussion with these growers, the following issues were determined to be the most immediate needs: varieties suited for the area, usefulness of seed treatments, use of early fungicide and insecticide applications, intensively managed wheat, consistency of no-till, planting dates, cereal leaf beetle, disease control for the area, and hessian fly. With these issues in mind, tests were developed to address these needs as efficiently as possible considering the infancy of this program. The tests were planted at the Boarder Belt Tobacco Research Station in Whiteville, and on four farms in Robeson county.

Boarder Belt Tobacco Research Station: Seven experiments were planted at this location, 1) a wheat variety test with 35 varieties, 2) a comparison of bin-run seed vs. certified seed treated with two standard fungicidal seed treatments and untreated, 3) a test of fungicide effectiveness, 4) a special fungicide test designed for head scab control, 5) a demonstration of new hard wheat varieties developed for North Carolina, 6) a demonstration of different Spring N-management systems, and 7) a planting date – seeding rate study. The majority of these tests were planted just prior to the hard rains that started in November, and soil erosion and/or flooding caused the loss of all of these studies.

James and Carey Brixey Farms of Lumberton: The Brixey location followed corn and was disked once and planted, so it should be considered, for practical purposes, to be a minimum tillage situation. All tests were replicated four times with a randomized complete block design. Planting was done by separating the grower's drill into seven-foot sections on November 9th. Consequently, plots or strips were seven feet wide by 100 feet long. Some additional tests were developed after planting by utilizing wheat already planted by the grower. Seven tests or demonstrations were conducted on this farm.

1) *Wheat Variety and Disease Resistance Demonstration*: Twelve varieties were selected based on their disease resistance and yield characteristics. These varieties (Dyna-Gro Dominion, Dyna-Gro Shirley, Roane, SS520, SS 8308, USG 3209, USG 3555, Coker 9436, Coker Oakes, Pioneer 26R12, Pioneer 26R15, Pioneer 26R22) were evaluated for disease resistance, test weight, and yield.

2) *Seed Treatment Demonstration*: Growers have questioned the need to apply a seed treatment and whether there is economic benefit to doing so. Variety USG 3592 was treated with Dividend Extreme (Syngenta), Proceed MD (Bayer), and untreated.

3) *East Coast Foliar Pesticide System*: Many producers we talked with expressed concern over whether to apply fungicides and insecticides at top-dress, or to apply them based on a need, or threshold. To test this, the variety plots were divided into two equal sections. The East Coast Foliar treatment was applied to half of the plots and the other half of the plots were treated based on a threshold level for both diseases and insects. Visual ratings were made before the fungicide or insecticide was applied and also between the first and second applications of fungicide. Rates and timing of application were based on Syngenta's East Coast Foliar Program which are to apply a fungicide and insecticide at top-dress (Quilt at 7 oz/acre, Karate at 1.92 oz/acre, and Induce at 1 pt/100 gal) , followed with a second fungicide prior to heading (Quilt at 14 oz/acre, and Induce at 1 pt/100 gal), and a second insecticide if needed.

4) *Scab Fungicide Test With V-Tribute:* Scab has caused severe economic problems in the past for North Carolina wheat producers. Two special fungicides labeled specifically for head scab were tested on wheat variety V-Tribute. Plots were inoculated with scabby corn seed prior to heading to simulate a scab infection. Plots were sprayed with Caramba at 15 oz/acre or Prosaro at 7.5 oz/acre just after heading, or left untreated.

5) *Scab Fungicide Test With USG 3592:* This test was identical to #4 above but with *USG 3592* (a more susceptible variety) and without the Caramba treatment.

6) *Cereal Leaf Beetle Insecticide Residual Test:* Cereal Leaf Beetle are always of economic concern to growers, but are also sporadic in how infestation occurs. This test was conducted by Dr. Dominic Reisig as part of a statewide study of insecticide residual control of CLB. The following insecticides were applied at top-dress time: Warrior II at 1.92 oz/A, Baythroid XL at 2.8 oz/A, Sevin, Tracer, Mustang Max, and Endigo ZC. These insecticides were compared to an untreated control.

7) *Soil Borne Wheat Mosaic Virus Resistance/Tolerance Demonstration:* Shortly after the top-dress application, variety differences were noted by a yellowed and stunted appearance. Plant samples were taken and sent to the Plant Disease and Insect Clinic at N. C. State University. The problem was determined by plant pathologist, Dr. Christina Cowger, to be Soil Borne Mosaic Virus. Dr. Cowger came to the site and rated all the varieties for resistance to this disease.

Smith and Barkley Farms of Fairmont: The Smith and Barkley location was no-till planted into standing corn stalks on November 9th. Planting was done by separating the grower's drill into 10-foot sections. Consequently, plots or strips were 10 feet wide by 150 feet long. Seeding rate was 150 lbs/acre. The *Wheat Variety and Disease Resistance Demonstration,* and the *Seed Treatment Demonstration* described above were placed on this farm. Additionally, the *East Coast Foliar Pesticide System* was put on this farm, but only the fungicidal part of the system (Quilt at 7 oz/acre at top-dress followed by Quilt at 14 oz/acre prior to heading) was tested.

Nick Evans Farms of Marietta: These were conventionally-tilled tests planted behind corn with a seeding rate of 120 lbs/acre planted on November 5th. Planting was done by separating the grower's drill into 10-foot sections. Consequently, plots or strips were 10 feet wide by 150 feet long. The *Wheat Variety and Disease Resistance Demonstration,* and the *Seed Treatment Demonstration* described above were placed on this farm.

Powers Farm of Lumberton: These were no-till tests behinds corn with a seeding rate of 150 lbs/acre. Planting was done by separating the grower's drill into 7-foot sections. Consequently, plots or strips were seven feet wide by 100 feet long. The *Wheat Variety and*

Disease Resistance Demonstration, and the *Seed Treatment Demonstration* described above were placed on this farm. Rain delayed planting on this farm until December 8th, and problems with stand establishment and loss resulted in these tests not being harvested.

Wheat Variety Performance – James and Carey Brixey Farms

Previous Crop:	Conventional corn
Planted:	November 9, 2009, at 120 lb seed per acre.
Soil Type:	Goldsboro and Rains
Tillage:	Minimum till
Fertilizers:	Winter: 300 lbs 12-16-16 applied in December Spring: 100 units of 30% with Blackjack M
Herbicides:	January: Harmony 0.5 oz
Insecticides:	none
Fungicides:	none
Harvested:	June 7, 2010

Stand Establishment: We planted all varieties at 120 lb per acre because that is the standard rate used by these growers. When planting is timely, the ideal planting rate should result in 20 to 25 plants per square foot. Plant density was measured before tillering began, and we were successful in achieving this plant density for all varieties except SS 520 (Figure 1). Southern States 520 is a large seeded variety and planting at 120 lb seed per acre was not a high enough seeding rate to achieve the desired plant stand for this variety. Pioneer 26R15 was probably planted at a seeding rate higher than needed.

Foliar Diseases and Insect Pests: Disease ratings were made at top-dress time and again prior to heading. No visual foliar disease problems were present due to extremely dry conditions during late-March and throughout April. Cereal leaf beetle levels were extremely low.

Soilborne Wheat Mosaic Virus, however, was high at this location. This virus is present in many fields across North Carolina. It goes unnoticed because many varieties compensate and overcome the virus, but some varieties can be reduced in yield without producers realizing the loss. The presence of Soil Borne Mosaic in the field gave us an excellent opportunity to rate the tolerance of these varieties.

What is Soilborne? Soilborne wheat mosaic virus is spread by a soil dwelling fungus that feeds on the roots of wheat seedlings shortly after planting. Symptoms appear as yellowing and stunted plants usually around top-dress time in early Spring (Photos 1 and 2).

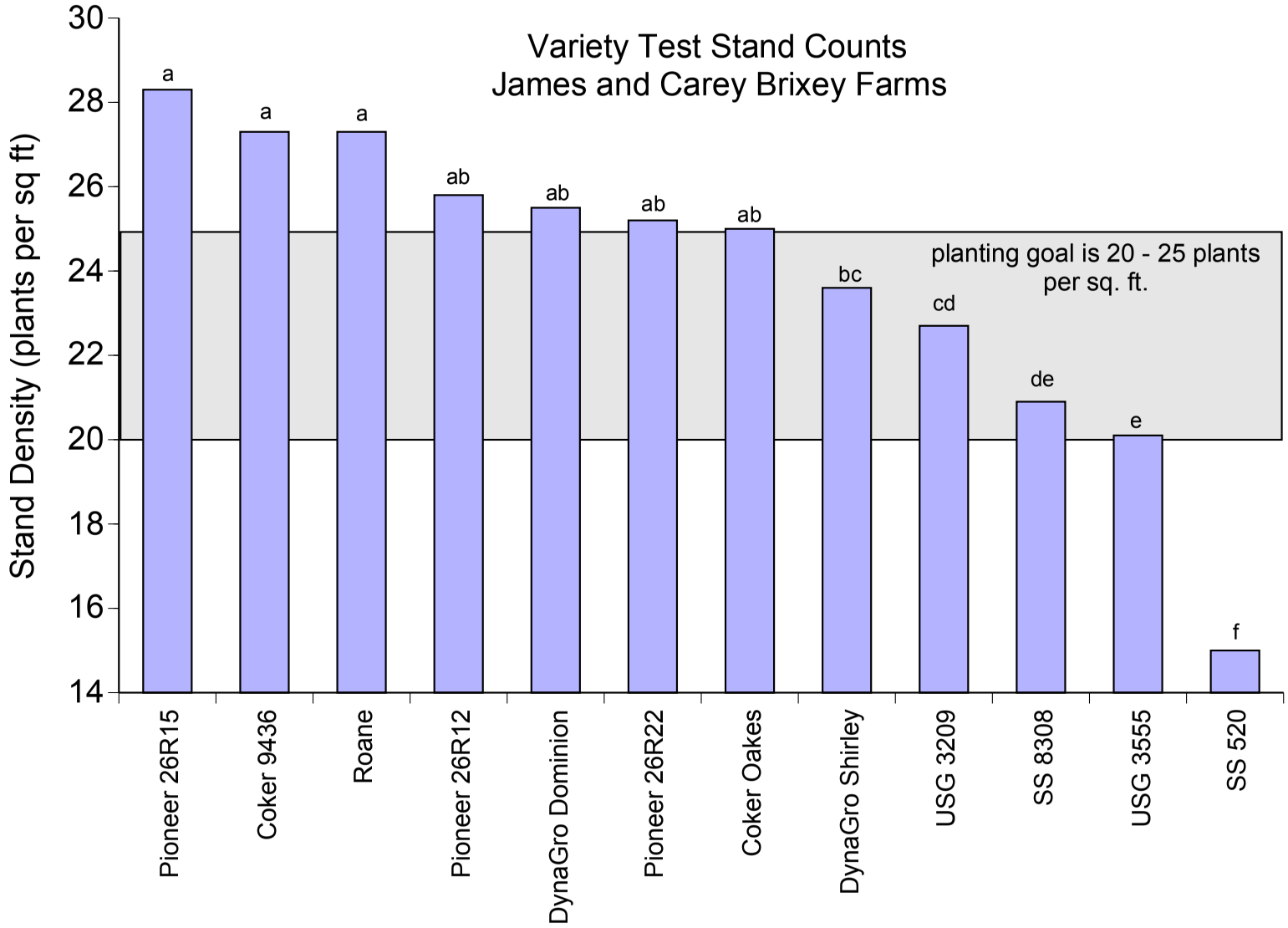

Figure 1: Variety test plant density prior to tillering. Varieties labeled with the same letter are not statistically different from each other.

Photo 1. Soilborne wheat mosaic virus.

Photo 2. Soilborne wheat mosaic virus. The variety on the left is V-Tribute, which is susceptible to soilborne. The variety on the right is Roane, which is resistant. Variety resistance is the only management option when soilborne is present in a field.

The symptoms are very similar to nitrogen or sulfur deficiencies and often seem to improve as the weather warms. Even if symptoms disappear, yield reductions can still occur. Once this disease is present in a field, it will be there indefinitely. There are no fungicides or pesticides that can be used to control soilborne. However, as Figure 2 shows, some varieties are very resistant to it. Growers who have soilborne in a field, should always select wheat varieties that are rated as “resistant” or “moderately resistant” to this disease to avoid future yield loss.

There were some very significant differences in tolerance levels between varieties (Figure 2). Coker Oakes and SS 520 were affected the worst by the virus which also translated into a lower yield at this location. The stunting from the virus coupled with extremely stressful

conditions from dry weather during the month of April translated into significant losses for the varieties affected the most by the virus. This information should help growers be more aware of the virus and the importance of selecting a variety with some tolerance or resistance to the disease if it is present in their field.

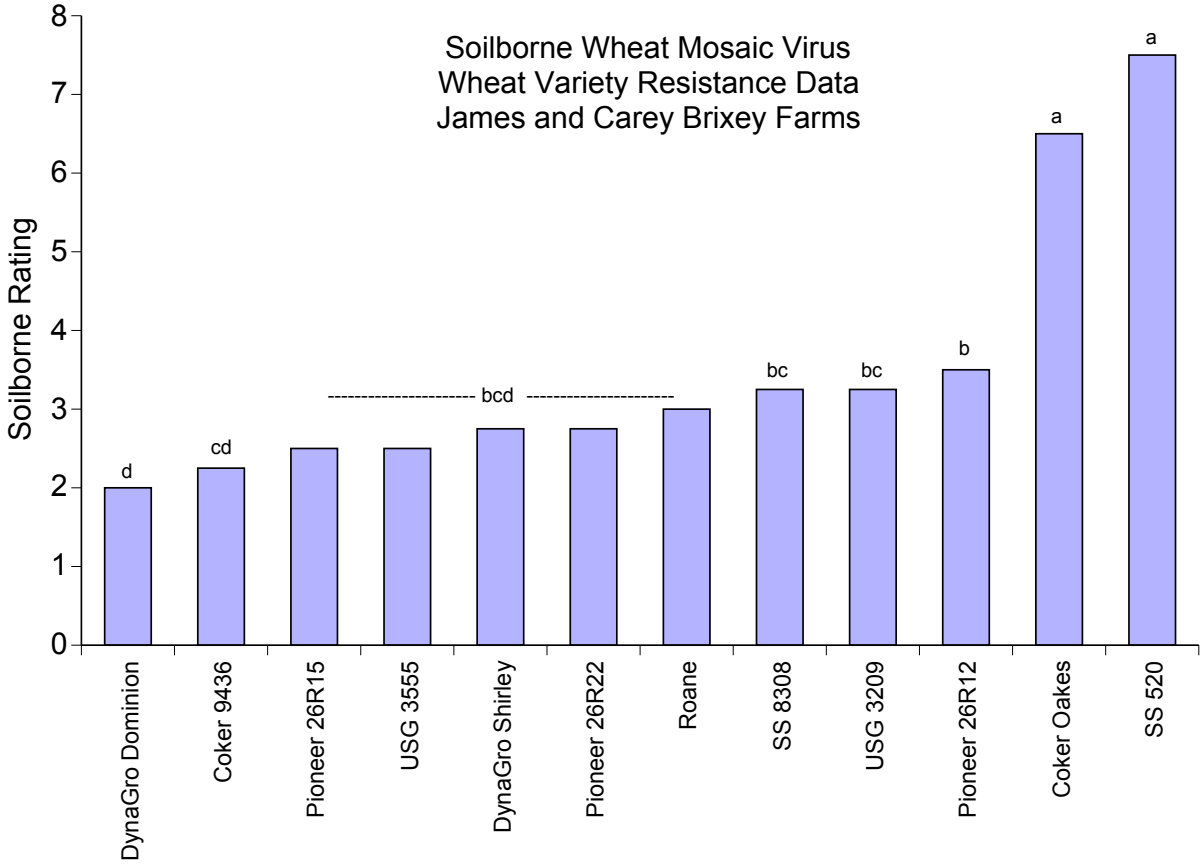

Figure 2. Soilborne wheat mosaic virus ratings in the variety test. These are visual estimates of the damage caused by this disease. "0" indicates no disease present. "9" indicates severe damage to over 90% of the plants. Consequently, higher ratings indicate more severe infections. DynaGro Dominion and Coker 9436 were the most resistant. Coker Oakes and SS 520 were the most susceptible varieties. Varieties labeled with the same letter are not statistically different from each other.

Variety Yield and Test Weight: There were large variety differences for yield (Figure 3) and test weight (Table 2) at this location.

Southern States 520 and Coker Oakes are both known for their high yield potential. Notice, however, that at this location where they were infected with Soilborne they had the lowest yields. The impact of Soilborne on a susceptible variety is further demonstrated in Photo 3 that shows the stunting in SS 520 at this location, compared to the same variety at the Smith and Barkley farm where there was not any Soilborne. This is a good example, of why it is important to plant susceptible varieties only in fields that are free of this disease.

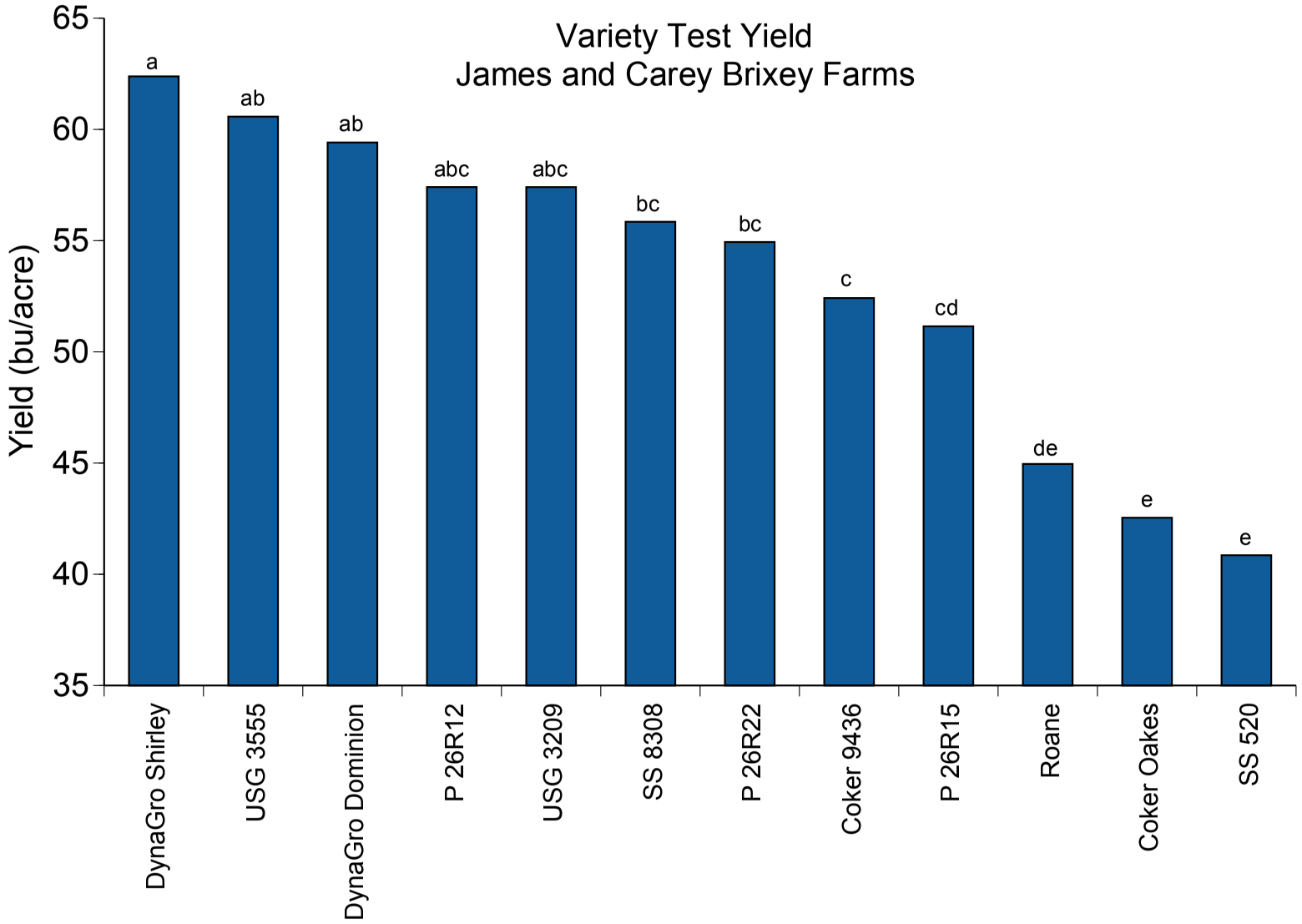

Figure 3: Variety test yield results. Varieties labeled with the same letter are not statistically different from each other.

Photo 3: Above - Variety SS 520 at the James and Carey Brixey Farm with stunting and thin stand at heading due to Soilborne wheat mosaic virus. Below - Picture taken on the same day of SS 520 at the Smith and Barkley Farm that was free of Soilborne.

Wheat Variety Performance – Smith and Barkley Farms

Previous Crop:	No-till corn
Planted:	November 9, 2009
Soil Type:	Norfolk and Goldsboro
Tillage:	No-till in corn stalks
Fertilizers:	Preplant: 207 lbs 14.5-0-31.59-5.75(S) + micronutrients
	Mid-February: 13 gal 30% + 5 gal Ammonium Sulfate
	Mid-March: 10 gal 28S
Herbicides:	Mid-February: Nimble 0.5 oz
Insecticides:	March 19th: Karate 1.6 oz
Fungicides:	None
Harvested:	June 7, 2010

Stand Establishment: When planting is timely, the ideal planting rate should result in 20 to 25 plants per square foot. Plant density was measured before tillering began (Figure 4). Southern States 520 was clearly under-seeded at 150 lb per acre. Pioneer 26R15, and DynaGro Dominion were probably planted at seeding rates higher than needed.

Foliar Diseases and Insect Pests: Disease ratings were made at top-dress time and again prior to heading. No visual foliar disease problems were present due to extremely dry conditions during late-March and throughout April. Cereal leaf beetle levels were extremely low.

Variety Yield and Test Weight: There were large variety differences for yield (Figure 5) and test weight (Table 2) at this location.

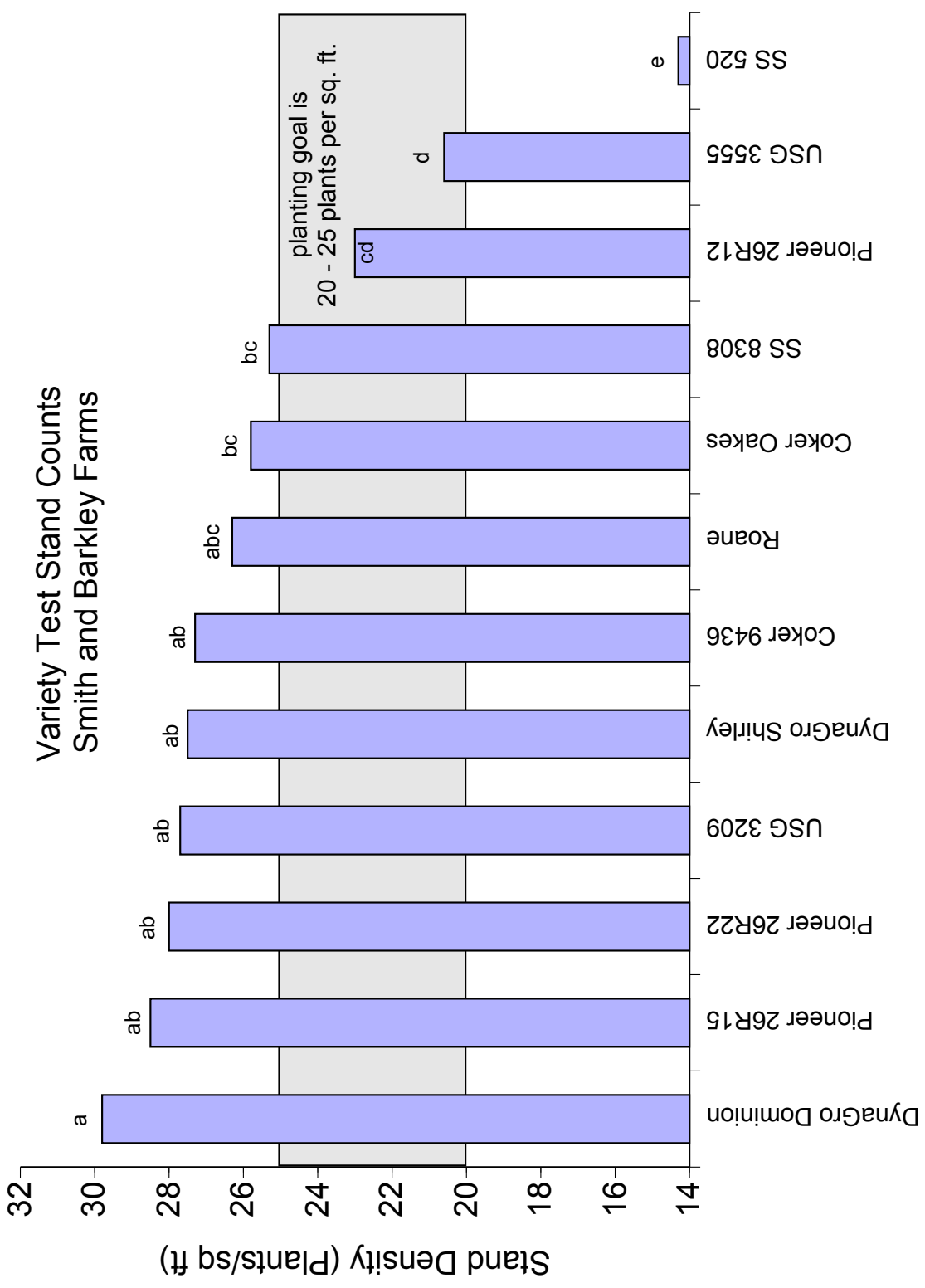

Figure 4: Variety test plant density prior to tillering. Varieties labeled with the same letter are not statistically different from each other.

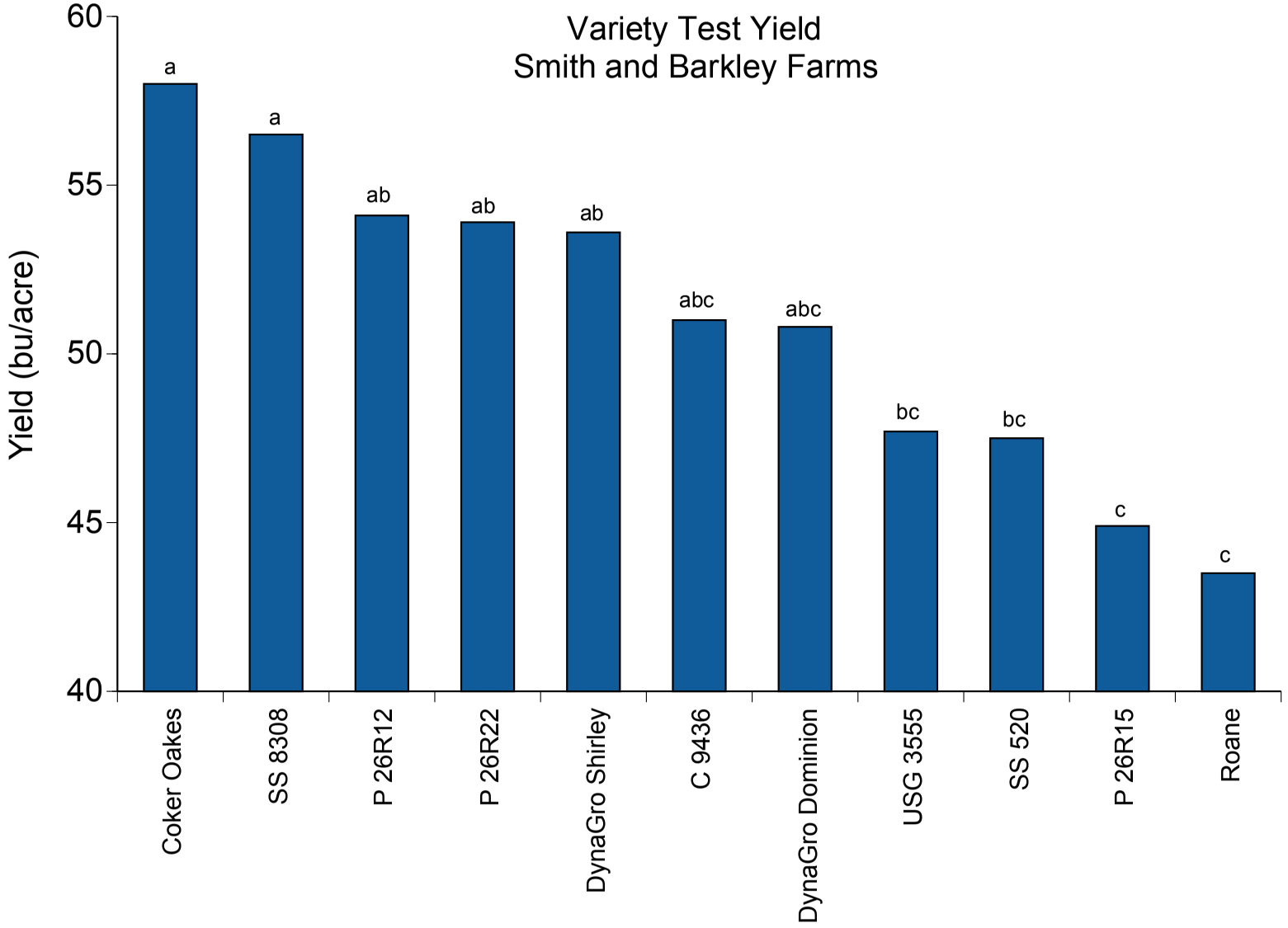

Figure 5: Variety test yield results. Varieties labeled with the same letter are not statistically different from each other.

Wheat Variety Performance – Nick Evans Farms

Previous Crop:	Conventional corn
Planted:	November 5, 2009
Soil Type:	Norfolk
Tillage:	Conventional
Fertilizers:	Pre-Plant: 1.5T poultry litter 54-54-54 actual N-P-K Mid-February: 200 lbs urea + Ammonium Sulfate + 15 lbs S = 76 lbs N topdress
Herbicides:	3rd week in Feb: Nimble 0.5 oz
Insecticides:	None
Fungicides:	None
Harvested:	June 8, 2010

Stand Establishment: Severe rain caused flooding and stand establishment was reduced.

Foliar Diseases and Insect Pests: Disease ratings were made at top-dress time and again prior to heading. No visual foliar disease problems were present due to extremely dry conditions during late-March and throughout April. Cereal leaf beetle levels were extremely low.

Variety Yield and Test Weight: There were large yield (Figure 6) and test weight (Table 2) differences at this location.

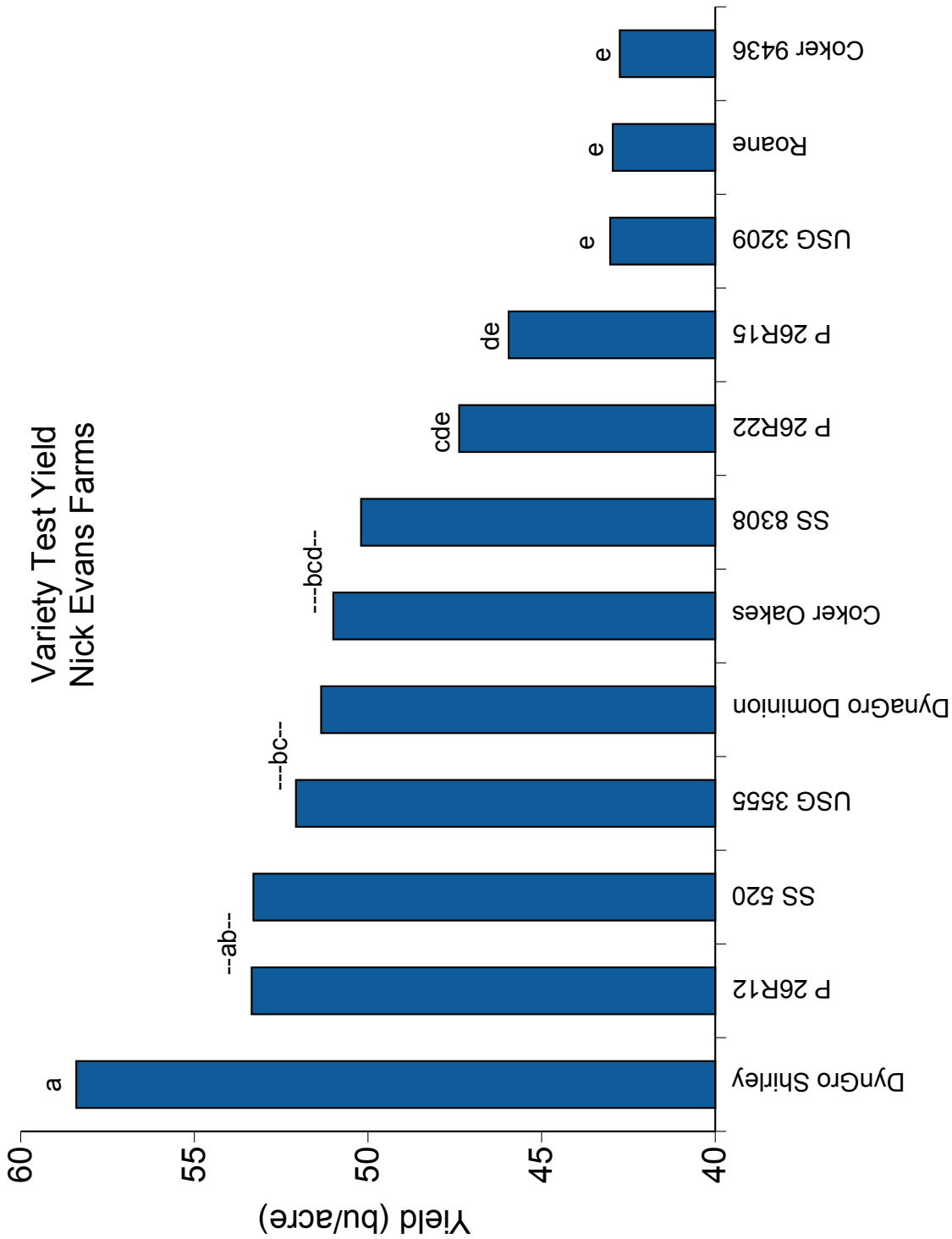

Figure 6: Variety test yields. Varieties labeled with the same letter are not statistically different from each other.

Wheat Variety Performance Combined Over Locations

Yield and test weight data for all three variety tests are shown in Table 1 and 2.

Table 1: Variety Yield Combined Across All Three Locations

Variety	Brixey	Smith & Barkley	Evans	Average
Shirley	63.2	53.6	58.4	**58.4**
P 26R12	55.9	54.1	53.4	**54.4**
SS 8308	54.8	56.5	50.2	**53.8**
DynaGro Dominion	58.8	50.8	51.4	**53.6**
USG 3555	59.9	47.7	52.1	**53.2**
P 26R22	55.5	53.9	47.4	**52.3**
Coker Oakes	42.9	59.5	51.0	**51.1**
Coker 9436	53.7	51.0	42.8	**49.1**
USG 3209	58.7		43.0	**50.9**
SS 520	41.5	47.5	53.3	**47.4**
P 26R15	50.4	44.9	46.0	**47.1**
Roane	44.7	43.5	43.0	**43.7**

Table 2: Variety Test Weight Combined Across All Three Locations

Variety	Brixey	Smith & Barkley	Evans	Average
Coker Oakes	55.9	58.0	56.4	**56.8**
Roane	55.1	58.6	54.5	**56.1**
P 26R12	55.4	57.8	54.8	**56.0**
DynaGro Dominion	53.9	57.2	52.6	**54.5**
SS 8308	53.8	57.2	52.4	**54.4**
USG 3209	54.3	57.0	51.5	**54.3**
USG 3555	52.8	55.7	53.0	**53.8**
DynaGro Shirley	53.4	54.8	53.3	**53.8**
SS 520	51.9	54.7	53.2	**53.3**
P 26R15	52.6	55.2	51.7	**53.2**
P 26R22	51.2	55.7	50.5	**52.5**
Coker 9436	51.9	53.8	50.1	**51.9**

2010 Statewide Wheat Variety Performance & Recommendations

Our statewide wheat recommendations are based on variety tests around North Carolina conducted in the 2008-09 and 2009-10 growing seasons. These included tests by the NC Small Grains Official Variety Testing Program (OVT)[1], Gaylon Ambrose[2] (Beaufort County Cooperative Extension), and Georgia Love[3] (Small Grains Extension Associate, Robeson County). Our variety rankings are not always the same as those reported for the OVT, because 1) we use additional tests not available to the OVT, 2) we may exclude low yielding locations used in the OVT, and 3) we examine both variety yield and stability of performance across years and regions. Variety yield performance is reported in Table 3.

Recommendations for very early planting: We have been testing a system for planting wheat before soybean harvest. This is ideal for growers who plan wheat following corn and would like to finish planting before starting soybean harvest. This means planting 10 days to two weeks earlier than would normally be considered appropriate for wheat. The system we have tested consists of 1) planting at a 2/3 normal seeding rate, 2) planting only seed treated with either GauchoXT or Cruiser/Dividend, 3) planting about September 29th in the Piedmont, around October 8th in the Coastal Plains, and about October 10th in the Tidewater, and 4) most importantly ***only planting late heading varieties***. Two year variety performance at Salisbury North Carolina for this system are shown in Table 4.

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[1] We used OVT data from the following locations: Lenoir county 2009, Beaufort county 2009 and 2010, Perquimans county 2009, Rowan county 2009 and 2010.

[2] We used data from Beaufort county tests conducted by Gaylon Ambrose in 2009 and 2010.

[3] We used data from three Robeson county tests conducted in 2010 by Georgia Love.

Table 3. 2010 Statewide Wheat Variety Performance & Recommendations

Wheat Variety[1]	Heading Date	Pest Resistance To[3]:								
		Powdery Mildew	Leaf Rust	SNB[2]	Hessian Fly Biotype-L	Barley Yellow Dwarf	Soilborne Wheat Mosaic	Wheat Spindle Streak	Head Scab	Stripe Rust
Above Average Yielding										
DG Dominion	medium	R	R	MR	fair-poor	S	R	MS	MR	MR
DG Shirley	late	R	R	MS	fair	MR	MR	R	MR	S
DG V9723	medium	MR	MS	MR	fair	MS	-	MR	MR	-
Oakes	medium	S	MR	MS	fair	MS	S	MS	MR	-
P 26R12	late	MR	MR	MS	good	MR	MR	MR	S	MS
P 26R22	medium	MS	MS	MS	fair-poor	MS	MR	-	MS	R
Progeny 185	medium	S	MS	MR	poor	MS	-	MR	MR	S
SS 8641	med-early	R	R	MS	fair-poor	MS	MR	MS	S	MR
USG 3342	medium	MR	R	MS	-	S	MR	R	MR	-
USG 3592	medium	MS	R	MS	fair	MS	MR	R	S	MS
Above Average But Less Consistent Yielders										
AGS 2035	med-early	MS	R	S	good	S	MR	MS	S	MR
DG Baldwin	medium	MS	R	MS	good	MS	MR	R	MS	MR
P 26R20	late	MR	R	MR	good-fair	S	-	-	MS	-
SS 5205	med-early	MS	MR	MS	poor	MR	-	MR	MR	R
USG 3409	medium	MR	S	MS	-	MS	-	-	MS	-
USG 3665	late	MR	MS	MS	good-fair	S	S	R	MR	MS
Average Yielding										
C 9436	late	MR	MS	MS	good-fair	S	MR	S	MR	MS
DG V9713	late	S	MS	MR	poor	MS	MR	MR	MR	-
Jamestown	early	MR	MS	S	fair	MR	MS	MS	MR	MR
Merl	late	R	MS	MS	-	S	-	R	S	-
NC Cape Fear	med-early	R	MR	MS	fair	MR	-	R	MS	S
NC Yadkin	late	R	MS	MS	fair	MR	-	R	MR	MS
P 25R32	late	MR	MS	MR	good-fair	S	-	-	MR	-
Progeny 166	late	S	R	MS	-	S	R	S	MR	R
SS 520	early	MR	MS	S	poor	MS	S	R	S	S
SS 8302	late	S	S	MS	fair	MS	MS	MR	MR	R
SS 8404	medium	S	MS	MS	fair-poor	MS	MR	S	MS	S
USG 3555	med-early	R	S	MS	fair-poor	MR	MR	R	MR	R
USG 3725	late	MS	MS	MS	poor	MS	-	MR	S	-
Below Average Yielding										
AGS2026	early	MS	R	S	good	MR	MR	-	S	R
AGS2031		MS	MR	MR	poor	MS	MR		MS	MR
Branson	late	R	S	MR	good-fair	MS	MS	R	MS	MR
C 9553	med-early	MR	S	MS	fair-poor	MS	MR	MS	MS	MR
C 9804	medium	MR	S	-	poor	MS	-	MS	S	-
DG 9922	late	R	R	MR	poor	S	-	R	MS	-

continued on next page

1. Listed alphabetically within each yield group: AGS = AgSouth Genetics; C = Coker; DG = Dyna-Gro; P = Pioneer; SS = Southern States; USG = UniSouth Genetics.
2. SNB stands for Stagonospora nodorum blotch.
3. S, MS, MR, & R stand for Susceptible, Moderately Susceptible, Moderately Resistant, & Resistant respectively.

Table 3. Continued...

Wheat Variety[1]	Heading Date	Pest Resistance To[3]:								
		Powdery Mildew	Leaf Rust	SNB[2]	Hessian Fly Biotype-L	Barley Yellow Dwarf	Soilborne Wheat Mosaic	Wheat Spindle Streak	Head Scab	Stripe Rust
Below Average Yielding Continued										
Magnolia	med-early	S	MS	S	fair	S	R	MS	MR	MR
McCormick	medium	MS	S	MR	-	MR	MR	R	MR	MS
NC Neuse	late	R	MR	MR	good	MS	MR	MS	MR	MS
Panola	med-early	MR	S	S	poor	S	MR	MS	S	R
P 26R15	late	MR	MS	MR	good-fair	S	MR	R	MR	MR
P 26R31	med-early	MR	S	-	fair-poor	S	MS	MS	MS	-
Progeny 117	med-early	S	S	-	poor	S	-	R	MR	-
Progeny 125										
Roane	late	S	MS	MR	fair	MR	MR	R	MR	MS
SS 560	medium	MR	S	MS	poor	S	MS	R	MS	MS
SS 8309	late	MR	MS	MS	poor	MR	S	R	MR	S
SS MPV57	medium	S	MR	S	poor	MS	MR	R	MR	-
Terral TVX8581	medium	MR	S	MS	-	MS	MR	-	MS	-
Terral TV8589	late	MR	S	MS	-	S	-	-	MR	-
Terral TVX8861										
USG 3201										
USG 3209	med-early	MS	S	S	poor	MS	MR	R	MS	MS
USG 3438										

1. Listed alphabetically within each yield group: AGS = AgSouth Genetics; C = Coker; DG = Dyna-Gro; P = Pioneer; SS = Southern States; USG = UniSouth Genetics.
2. SNB stands for Stagonospora nodorum blotch.
3. S, MS, MR, & R stand for Susceptible, Moderately Susceptible, Moderately Resistant, & Resistant respectively.

Table 4. Very-early-planting variety test results from Salisbury NC. Tests planted on Sept. 29th in both years using reduced seeding rates, GauchoXT, and only late heading varieties.

Wheat Variety	2009-10 Yield (bu/acre)	2008-09 Yield (bu/acre)
DG Shirley	102.8	
P 26R12	99.7	106.1
SS 8302	97.1	102.6
Merl	92.9	
USG 3665	92.2	102.4
USG 3725	91.1	
DG V9713	90	99.5
NC Neuse	87.5	86.4
C 9436	86.9	85.5
Roane	85.8	93.5
P 26R15	82.4	99

Fungicidal Seed Treatment Tests

Growers have questioned the need to apply a seed treatment and whether there is economic benefit to doing so. Variety USG 3592 was treated with Dividend Extreme (Syngenta), Proceed MD (Bayer), and untreated at all on-farm locations (Figure 7). All production practices were identical to the variety tests described above. The planting season and following weeks were unusually cold and wet. These were ideal conditions to expect a fungicidal seed treatment to improve germination and initial stand density.

At each location the fungicidal seed treatments improved germination and initial plant stand (Figure 7 Top). The untreated plots (**GREY bars**) had the lowest number of plants per square foot, and Dividend Extreme (**RED bars**) or Proceed MD (**GREEN bars**) had the highest germination and seedling emergence. This was true at all three farms.

The improved stand, however, did not carry forward to higher yields (Figure 7 Middle). YIelds at all three farms were not different between the three treatments. Yields for each seed treatment are shown in detail, and combined across farms in Table 3.

Table 3: Fungicidal Seed Treatment Yields Combined Across All Three Locations

Treatment	Brixey (bu/acre)	Smith & Barkley (bu/acre)	Evans (bu/acre)	Average (bu/acre)
Untreated	69.2	65.6	50.3	**61.7 a**
Dividend Extreme	67.2	61.3	51.0	**59.8 a**
Proceed	63.5	63.1	51.7	**59.4 a**

Average yields followed by the same letter do not differ statistically.

At two locations there were no differences in test weight between the seed treatments (Figure 7 Bottom). At the Brixey Farm one of the seed treatments had a lower test weight than the untreated control.

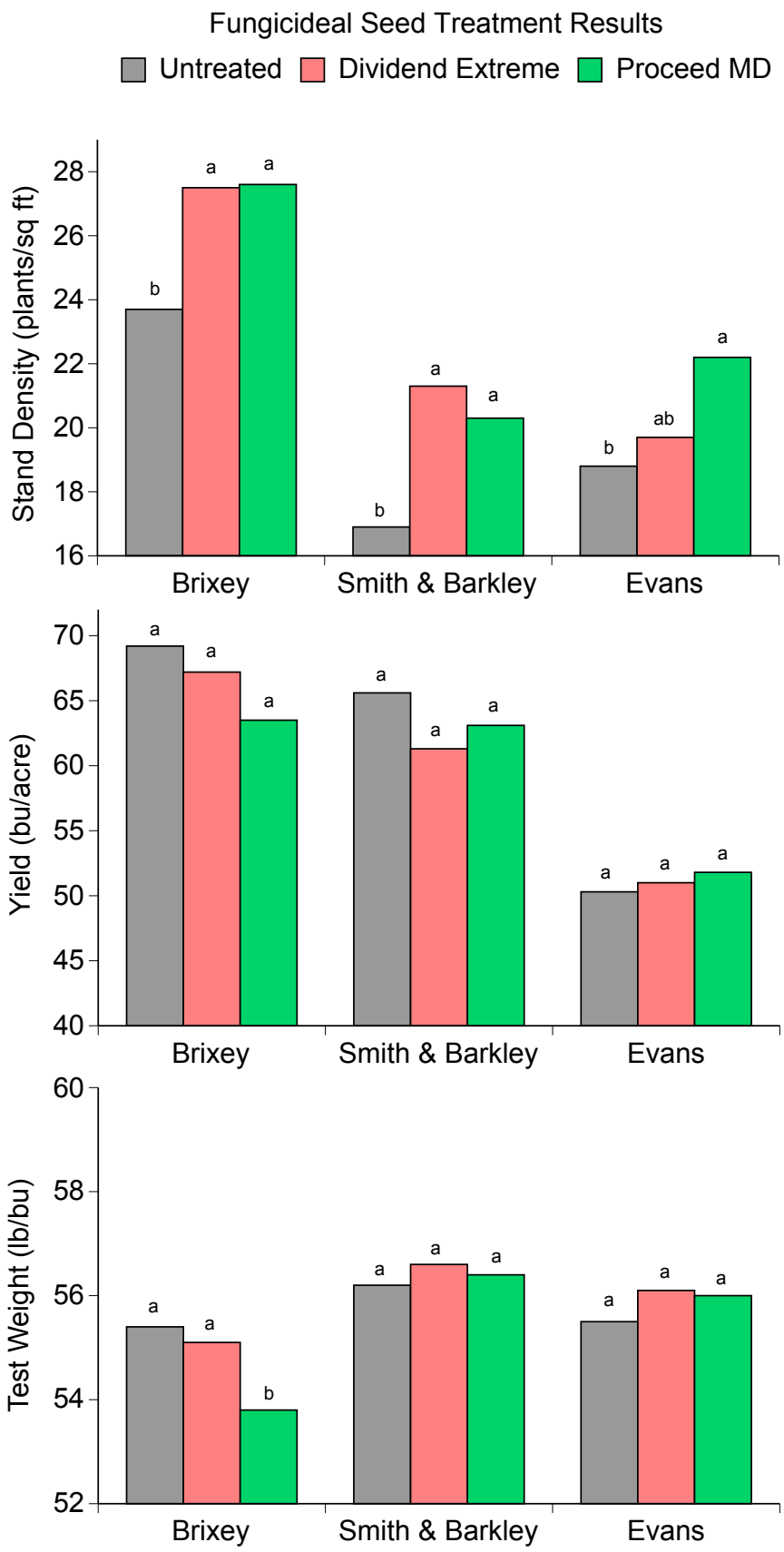

Figure 7. Fungicidal seed treatment results on 3 farms; initial plant stand (top), yield (middle), and test-weight (bottom). Treatments on a given farm labeled with the same letter are not statistically different from each other.

East Coast Foliar Pesticide System – James and Carey Brixey Farm

Previous Crop:	Conventional corn
Planted:	November 9, 2009, at 120 lb seed per acre.
Soil Type:	Goldsboro and Rains
Tillage:	Minimum till
Fertilizers:	Winter: 300 lbs 12-16-16 applied in December
	Spring: 100 units of 30% with Blackjack M
Herbicides:	January: Harmony 0.5 oz
Insecticides:	see below
Fungicides:	see below
Harvested:	June 7, 2010

Many producers we talked with expressed concern over whether to apply fungicides and insecticides at top-dress, or to apply them based on a need, or threshold. To test this, the variety test plots on the James and Carey Brixey Farm were divided into two equal sections. The East Coast Foliar program was applied to half of the plots and the other half of the plots were treated based on a threshold level for both diseases and insects. This resulted in treatment blocks that were 30 feet wide and 108 feet long. Pesticide rates and timing of application were based on Syngenta's East Coast Foliar Program which are to apply a fungicide and insecticide at top-dress (Quilt at 7 oz/acre, Karate at 1.92 oz/acre, and Induce at 1 pt/100 gal), followed with a second fungicide prior to heading (Quilt at 14 oz/acre, and Induce at 1 pt/100 gal), and a second insecticide if needed.

Visual ratings of foliar diseases and insect pests were made before the fungicide or insecticide was applied and also between the first and second applications of fungicide. Insect and foliar disease pressure never built up in the untreated plots, so no fungicides or insecticides were applied in that treatment.

There no significant differences between Syngenta's East Coast Foliar Program and the unsprayed treatments for any of the 12 varieties at the Brixey Farm (Figure 8). The average yield of the East Coast Foliar Program was 53.3 bushels per acre. The average yield for the unsprayed varieties was also 53.3 bushels per acre. There were also no differences in average test-weight between the two treatments.

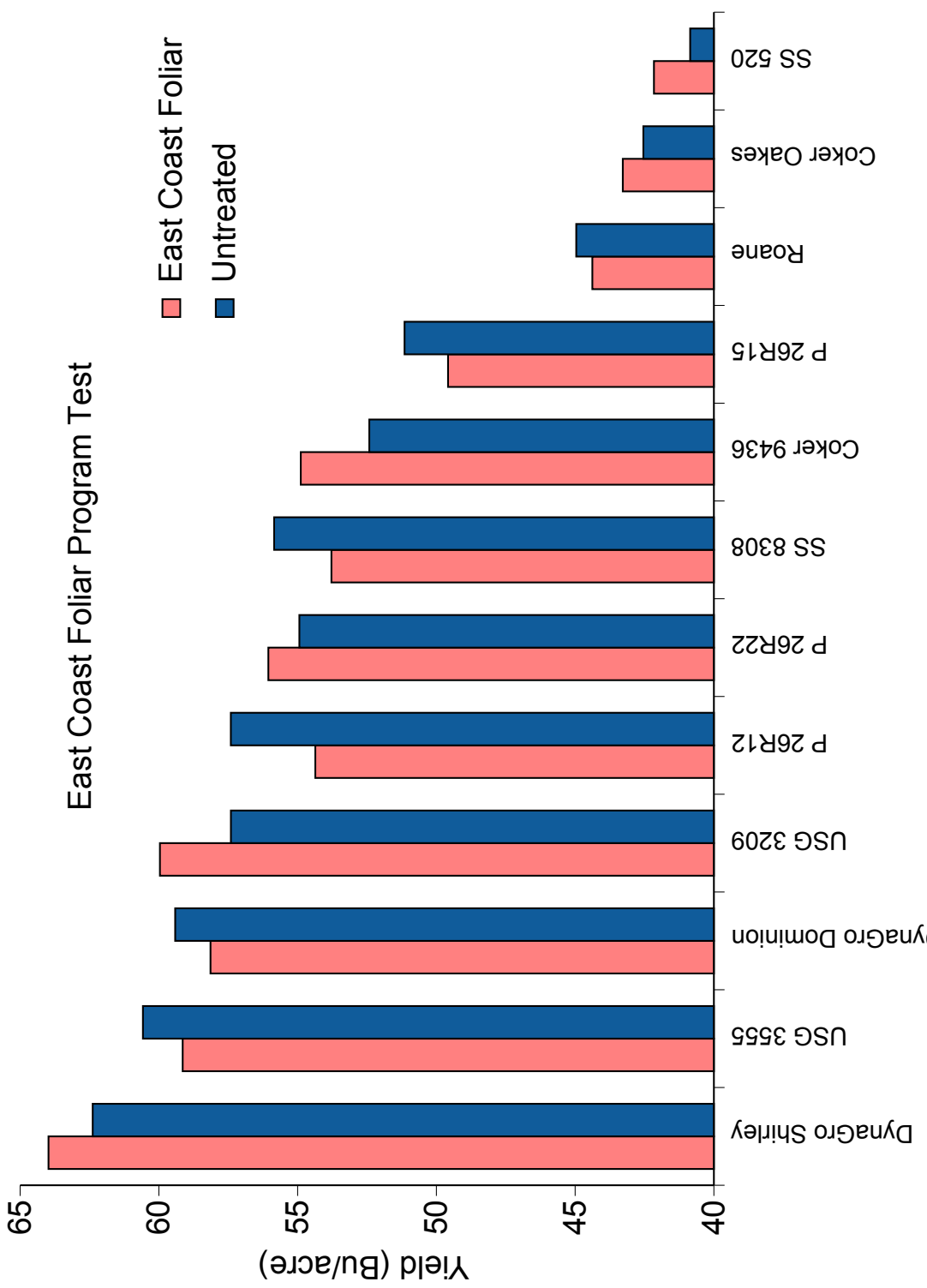

Figure 8. Yield for 12 varieties untreated (**BLUE**) and treated with the East Coast Foliar System (**RED**). There were no significant differences in yield for any of the 12 varieties between treatments.

Split Fungicide Test – Smith & Barkley Farms

Previous Crop:	No-till corn
Planted:	November 9, 2009
Soil Type:	Norfolk and Goldsboro
Tillage:	No-till in corn stalks
Fertilizers:	Preplant: 207 lbs 14.5-0-31.59-5.75(S) + micronutrients Mid-February: 13 gal 30% + 5 gal Ammonium Sulfate Mid-March: 10 gal 28S
Herbicides:	Mid-February: Nimble 0.5 oz
Insecticides:	March 19th: Karate 1.6 oz
Fungicides:	see below
Harvested:	June 7, 2010

This was similar to the East Coast Foliar System test at the Brixey farm, except that only the split fungicide was tested. The variety plots were divided into two equal sections. This resulted in treatment blocks that were 30 feet wide and 132 feet long. The split fungicide was applied at top-dress (Quilt at 7 oz/acre, and Induce at 1 pt/100 gal), and again prior to heading (Quilt at 14 oz/acre, and Induce at 1 pt/100 gal). The untreated plots were not treated with a fungicide.

Visual ratings of foliar diseases were made before the fungicide was applied and between the first and second applications. Insect and foliar disease pressure never built up in the untreated plots.

There were significant differences between the split fungicide and unsprayed treatments for two varieties at this farm (Figure 9). DynaGro Dominion (6.2 bushels per acre) and Roane (8.8 bushels per acre) were significantly higher in yield where two fungicide applications were made. When looking at Figure 9, some of the other varieties look like there are differences between treatments. For example Coker Oakes appears to have a higher yield in the unsprayed treatment and SS 520 looks like it has higher yield in the fungicide treatment. But all these differences are small and not statistically significant. That means that these differences were most likely due to soil variability across the field and not to our treatments. This was a no-till field planted into standing corn stalks and overall, variability in the Smith &

Barkley location was extreme. On average there were no significant differences in yield between the fungicide and unsprayed treatments.

Fungicides at this location had no effect on test weight, but there were significant differences in test-weight between varieties (see Table 2).

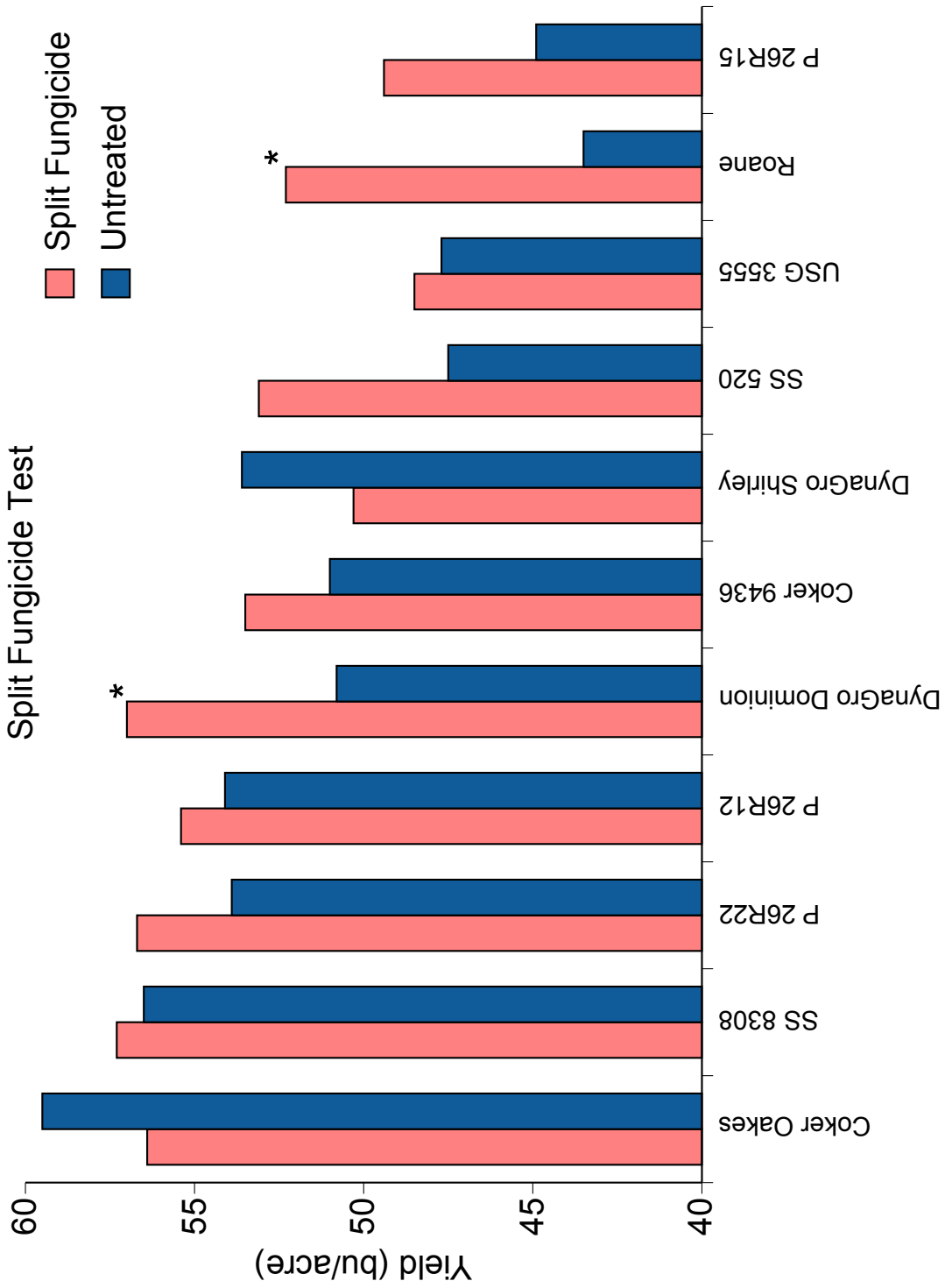

Figure 9. Yield for 11 varieties untreated (**BLUE**) and treated with split fungicide (**RED**). The two varieties indicated with a "*" are the only ones that had statistically higher yield with the fungicide treatment.

Scab Fungicide Test USG 3592 – James and Carey Brixey Farms

Previous Crop:	Conventional corn
Planted:	November 9, 2009, at 120 lb seed per acre.
Soil Type:	Goldsboro and Rains
Tillage:	Minimum till
Fertilizers:	Winter: 300 lbs 12-16-16 applied in December Spring: 100 units of 30% with Blackjack M
Herbicides:	January: Harmony 0.5 oz
Insecticides:	none
Fungicides:	see below
Harvested:	June 7, 2010

Scab has caused severe economic problems in the past for North Carolina wheat producers. A special fungicide labeled specifically for head scab was tested on wheat variety V-Tribute. Plots were inoculated with scabby corn seed prior to heading to simulate a scab infection. Plots were sprayed with Prosaro at 7.5 oz/acre just after heading, or left untreated.

Due to extremely dry conditions and lack of a scab infection, fungicide application of Prosaro was not significant when compared to the untreated check for yield or test-weight (Table 4).

Table 4: Effect of Prosaro applied at heading to USG 3592

Treatment	Yield (bu/acre)	Test-Weight (lb/bu)
Prosaro	66.1	54.1
Untreated	64.0	54.3

Scab Fungicide Test V-Tribute – James and Carey Brixey Farms

Previous Crop:	Conventional corn
Planted:	November 9, 2009, at 120 lb seed per acre.
Soil Type:	Goldsboro and Rains
Tillage:	Minimum till
Fertilizers:	Winter: 300 lbs 12-16-16 applied in December Spring: 100 units of 30% with Blackjack M
Herbicides:	January: Harmony 0.5 oz
Insecticides:	none
Fungicides:	see below
Harvested:	June 7, 2010

Scab has caused severe economic problems in the past for North Carolina wheat producers. Two special fungicides labeled specifically for head scab were tested on wheat variety V-Tribute. Plots were inoculated with scabby corn seed prior to heading to simulate a scab infection. Plots were sprayed with Caramba at 15 oz/acre or Prosaro at 7.5 oz/acre just after heading, or left untreated.

Due to extremely dry conditions and lack of a scab infection, fungicide applications were not significant when compared to the untreated check for yield or test-weight (Table 5).

Table 5: Effect of Prosaro applied at heading to V-Tribute

Treatment	Yield (bu/acre)	Test-Weight (lb/bu)
Caramba	62.5	55.0
Prosaro	60.0	54.9
Untreated	64.6	56.0

Cereal Leaf Beetle Insecticide Test – James and Carey Brixey Farms

Previous Crop:	Conventional corn
Planted:	November 9, 2009, at 120 lb seed per acre.
Soil Type:	Goldsboro and Rains
Tillage:	Minimum till
Fertilizers:	Winter: 300 lbs 12-16-16 applied in December Spring: 100 units of 30% with Blackjack M
Herbicides:	January: Harmony 0.5 oz
Insecticides:	see below
Fungicides:	none
Harvested:	June 7, 2010

Cereal Leaf Beetle are always of economic concern to growers, but are also sporadic in how infestation occurs. This test was conducted by Dr. Dominic Reisig as part of a statewide study of insecticide residual control of CLB. The following insecticides were applied at top-dress time: Warrior II, Baythroid XL, Sevin, Tracer, Mustang Max, and Endigo ZC. These insecticides were compared to an untreated control. Results are shown in Table 6.

Table 6: Effect of insecticide applications at top-dress time

Treatment	Yield[1] (bu/acre)	Test-Weight[2] (lb/bu)
Baythoid	55.0 a	57.1 a
Tracer	50.7 a	56.7 a
Sevin	49.8 a	56.8 a
Endigo	49.5 a	56.4 a
Untreated	49.0 a	57.0 a
Warrior II	48.5 a	57.8 a
Mustang Max	48.1 a	55.7 a

[1] Yield values followed by the same letter are not statistically different.

[2] Test weight values followed by the same letter are not statistically different.

There was a lot of variability in the data for this test. All treatments were statistically the same for yield, but Baythroid was numerically a little better. However, Warrior II and Mustang Max were actually numerically worse than the control. These differences could be associated with soil type variability and the condition of the wheat changing from plot to plot. The bottom line is, CLB did not reach threshold levels and insecticide applications did not increase yield or test weight.

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