
NORTH CAROLINA Measured Crop Performance Small Grains 2015



North Carolina State University
College of Agriculture and Life Sciences
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Steve Lommel, Director of Research

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*North Carolina
Measured Crop
Performance*

*Small Grains
2015*

Official Variety Testing Program

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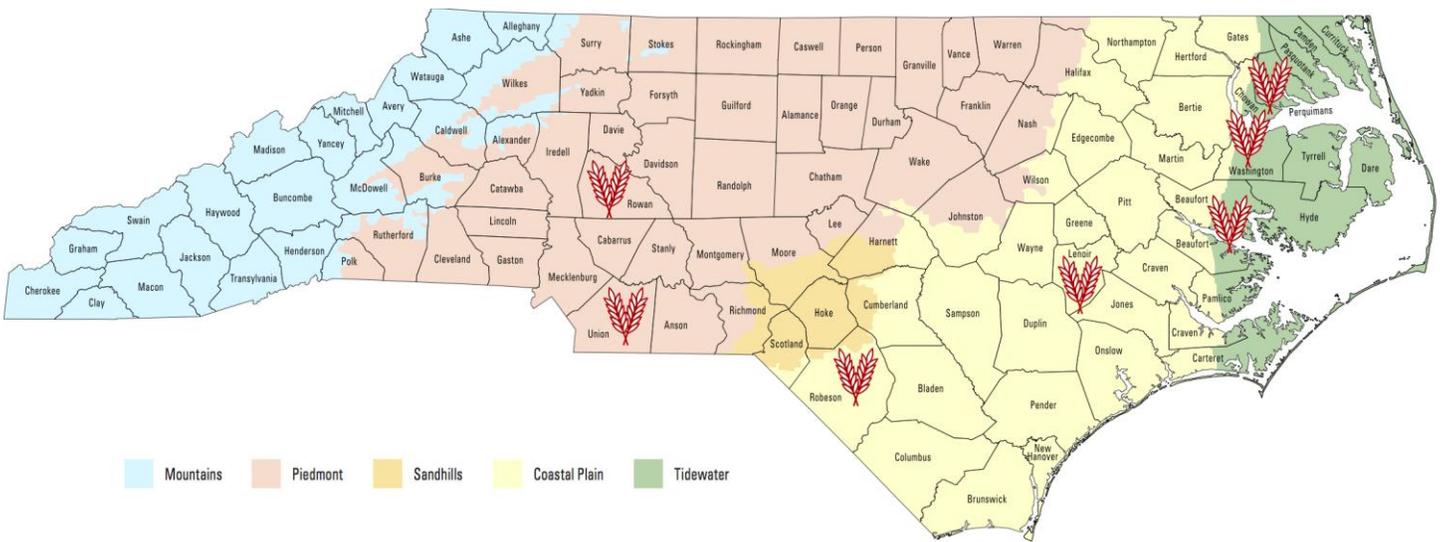


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INTRODUCTION

Across the state, North Carolina growers planted 33,000 acres of oats and 830,000 acres of wheat during the fall of 2014. With the large number of commercially available and prospective varieties of oats and wheat, it becomes difficult for growers to select a superior variety suited for their particular area of the state. To make this decision, the grower needs up-to-date, unbiased, reliable information. The Official Variety Testing Program, in collaboration with the small grain specialists¹ at North Carolina State University, seeks to provide that information through this report.

During the 2014-15 season, the Official Variety Testing Program conducted small grain trials at seven locations across the state. Performance information is presented here. Multiple-year performance data is presented for varieties entered in the previous year or two.

EXPERIMENTAL PROCEDURE

Entries: Commercial varieties and experimental lines developed by private and public agencies are included in these tests. Any individual or firm is welcome to submit entries to the Official Variety Testing Program. An entry fee is charged for all private entries. During the 2014-2015 growing season, 13 oat entries (7 commercial varieties and 6 experimental lines) and 92 wheat entries (52 commercial varieties and 40 experimental lines) were tested in North Carolina. All entries are listed by sponsor in Table 1.

Seed Treatment: Applicants provided the seed to conduct the statewide trials. For the 2014-15 season, all entries were submitted to OVT as untreated seed, and subsequently treated by OVT with Rancona Pinnacle (active ingredients: ipconazole and metalaxyl). This systemic fungicide was selected because it protects against seed rots, damping off, seedling blight, crown rot and early season root rot caused by *Penicillium*, *Aspergillus*, seed- and soil-borne *Fusarium*, *Pythium* and *Cochliobolus sativus* and *Rhizoctonia*. This fungicide was also selected because it does not protect against powdery mildew caused by *Blumeria graminis* f. sp. *Triticici* or leaf rust caused by *Puccinia triticina*. This method guarantees uniform seed treatment across all varieties, thereby allowing OVT to test genetic resistance to various insect and disease pests (see Tables 4 and 5).

Trials: Given the number of wheat entries, commercially available varieties and experimental lines were planted in separate trials. Five commercial varieties (denoted by ‡) were included as checks in the experimental trials. Both trials were planted in the same field at each location. In order to provide pest resistance information on these varieties, OVT did not apply pesticides to these trials, with the exception of spraying for cereal leaf beetle in the spring.

¹Drs. Christina Cowger and Paul Murphy contributed wheat variety characteristics.

There has been a trend to manage wheat more intensively. In order to provide information to growers that reflect varietal performance using more inputs, OVT conducted additional trials for the commercially available varieties at two locations, one in the Coastal Plain (Lenoir county) and one in the Piedmont (Rowan county). These trials included all the entries of the commercial trials. These trials received an insecticidal application in the fall to protect against Hessian Fly. These trials also received a fungicide during flowering to protect against *Fusarium* head blight, commonly known as head scab.

Locations: Oat trials were conducted at three North Carolina Department of Agriculture Research Stations across the state; one trial in each of the Tidewater, Coastal Plain and Piedmont regions. Commercial and experimental wheat trials were conducted at seven locations across the state. Wheat locations include the three NCDA&CS Research Stations, as well as, four private farms. Our cooperators, along with their location, are listed in the Acknowledgments section. OVT is very appreciative of the wheat producers offering to host an OVT trial at their farm and their County Extension Agents. OVT trials would not be possible if it were not for the collaborative nature of these individuals.

Field Plot Design: A unique randomized, complete block design, with five replications per entry, was used at each location. Each plot consisted of eight rows, 7.5 inches apart, with 2.5 feet between adjoining plots. Plots were planted as 28 feet long, and end trimmed to establish a uniform plot length of 22 feet.

Crop Management: Cultural practices, such as seedbed preparation, planting date, fertilization and weed management were in accord with good farming practices and were uniform for all entries at a given location (Table 2). Prior to planting each test, soil samples were obtained from the test field and fertility applications were made accordingly (Table 3). Seeding rate was 23 seed per row-foot.

In order to provide pest resistance information (Tables 4 and 5), the Commercial and Experimental wheat trials were only sprayed for cereal leaf beetle, where necessary. As mentioned above, the trials that received additional pest management were sprayed in the fall for Hessian fly, and in the spring for head scab. Protection against head scab is most effective when sprayed at mid-flower, Zadok's growth stage 64. Given the various maturities, not all plots were at mid-flower at the same time. Therefore, flowering was assessed on a plot-by-plot basis, and sprayed accordingly. All plots received one application of Prosaro, when they were between Zadok's growth stages 62 – 68. Yields for this trial in Rowan are reported in Table 13.

SEASONAL CONDITIONS

The 2014-2015 growing season began with on-time small grain plantings for the OVT program (Table 2). Weather data is provided at the end of the report. Precipitation and temperatures are provided on a

weekly basis to provide detail of the 2014-2015 growing season (Figure 1-3a). This data is also presented on a monthly basis to place this season's weather in comparison to the 30-year weather data (Figures 1-3b and c).

The fall and winter experienced average to below-average temperatures, and average to above-average rainfall. February temperatures were below-average. Due to these colder temperatures, the North Carolina wheat crop was maturing seven to ten days behind normal. A spring freeze occurred on March 29 after the crop had transitioned from vegetative to reproductive growth, when the crop is more susceptible to freeze damage. Rowan County experienced several hours at 20°F, and some locations will have yield loss due to freeze damage; however, OVT trials at the Piedmont Research Station evidenced very minimal freeze damage, less than one percent.

DATA

Plant height: Average height of fully matured plants was measured from ground level to tip of wheat heads on three replications of all varieties at all locations. Values are reported in the individual location tables, as location averages (Tables 8 – 14).

Lodging: Ratings were recorded prior to plot harvest. These values are reported in the individual location tables, as location averages (Tables 8 – 14). Lodging data does not necessarily correlate to harvest yield, as harvest equipment can capture most of the lodged crop. Lodging ratings are recorded on a percent basis, of crop leaning or lodged more than 45° from the ground.

Heading date: Varieties head out at different times. This data can be useful when selecting varieties, both to extend the planting window and mitigate risk of spring freeze damage. Medium and late heading varieties perform best when planted at the start of season, while early heading varieties produce higher yields when planted later in the fall. Early heading varieties are most susceptible to yield loss if a late-spring freeze occurs, while late heading varieties are most likely to avoid damage. Heading date has minimal impact come harvest. Refer to the NC Small Grain Production Guide: <http://www.smallgrains.ncsu.edu/production-guide.html> for more information. Head type and maturity for wheat entries are reported in Tables 4 and 5, which also provide information on genetic insect and disease resistance.

Yield: Commercial and experimental entries are reported in separate tables since they were planted in separate tests. Yields were adjusted to 13.5% moisture, and reported as bushels per acre based on 60 pounds of wheat per bushel.

Yield and test weight are reported as a mean value on both a statewide and individual location basis. Individual location data are reported based on yield rank from highest to lowest (Tables 8 – 14). Statewide data are available for current year, as well as, 2 and 3-year data (Tables 6 and 7). In calculating statewide

yields, the means for each variety were weighted according to trial precision at each location. Statewide yield mean is a weighted average of means from each environment, where the weight for each trial is inversely proportional to the average variance of variety means at that trial. These values are reported as **Trial Weight** in the tables with individual location data. As statewide means are weighted, two and three-year means may not appear to equal the average of the yearly means. Multi-year data is a better predictor of variety performance than single year or single environment data. Therefore, yield is reported for multiple year performance in addition to current year variety performance.

Test Weight: This measures grain density as pounds per bushel, while taking grain moisture into account. This information is collected at harvest along with plot yield. These data are reported as averages for individual locations, as well as, statewide averages.

COMPARING VARIETIES

Performance of a variety cannot be determined with absolute precision. Even though the tests are conducted in a uniform manner, uncontrollable variability exists among experimental plots due to environmental differences in soil, fertility, moisture, insects, diseases, and other sources of variation. Because this variability exists, statistics are used as a tool to examine differences among varieties. A statistical method of spatial analysis has been used to allow for similarities between neighboring plots based on their location in the field in order to adjust for the unknown environmental variation (Brownie et al., 1993). The particular spatial model allows for correlations that decrease exponentially as distance between plots increases in both row and column directions.

Coefficient of variation (**CV**) is a relative assessment of trial variability. It measures experimental error caused by variation in management practices and immeasurable factors in the environment as a percent of mean yield for the trial. Lower values generally indicate less variation, hence, a more reliable trial (though high mean yields also tend to produce lower CV).

The average standard error of the mean (**avg SEM**) is listed as a general indicator of trial precision since it measures how well a true variety mean was estimated. Lower values indicate greater trial precision. Avg SEM is calculated as the square root of the average variance of a variety mean. All reported trials meet an established criterion for precision by having an average value of the standard error of a difference between variety means (avg SEDiff) below a threshold value. Avg SEDiff is calculated as the square root of the average variance of a difference between two variety means. Threshold SEDiff values are based on OVT data from 1990 - 2013, and are calculated as the value twice as large as that predicted from the historical data following Bowman and Rawlings (1995).

In assessing variety performance, the Variety **F-value** reflects the magnitude of variation due to differences between varieties. Specifically, the F value for the variety effect indicates the strength of real yield differences. The size of difference between two varieties, which may have been due to chance variation, is listed at the bottom of each table as the average least significant difference (**avg LSD**). Varieties whose yields differ by less than the average LSD are not statistically different. Those varieties that are not different from the highest observed yield are denoted in the tables with an asterisk (*). The LSD for comparisons among variety means is applied at the 10% level, which indicates 90% confidence that yield differences are not due to chance variation. The degrees of freedom associated with the LSD (**df LSD**) are also reported in the tables.

Variety performance may appear inconsistent among locations within an area or among years at a particular location. Enough year-to-year variation in weather occurs to make single-year data less predictable than multiple-year data. Research has shown that multiple-year means across locations provide the best prediction of varietal performance. Thus it is important to examine results from more than one location and more than one year to obtain a more accurate picture of relative variety performance. Growers should closely examine 2- and 3-year statewide means (Tables 6 and 7) provided in this report.

New varieties are being introduced each year and these varieties are potentially higher yielding than the current varieties. It is suggested that growers plant new varieties on a smaller number of acres to determine if it is adapted to their farm. Other agronomic characteristics may be as equally important as yield. All available data regarding agronomic and pathologic characteristics of the wheat varieties are found in Tables 4 and 5. Yield and characteristic information presented in this report should be used in conjunction with other available information and personal experience when selecting varieties.

Research conducted at North Carolina State University and several other universities has consistently shown a significant yield advantage where professionally grown/certified seed is used rather than farmer-saved seed. These tests were planted with professionally grown/certified seed provided by the sponsoring agencies. Farmers who use inferior seed sources can expect accompanying decreases in performance.

RESULTS AND DISCUSSION

Oats: Unfortunately, due to the growing season, no yield data is available this season. The Washington trial evidenced severe lodging. The Lenoir trials experienced continually wet soils through the winter and early spring. The Rowan trial was harvested; however, statistical analysis of the yield data indicated poor precision at measuring true varietal yield (see **Comparing Varieties** section for more detail).

Wheat: Characteristics are reported in Table 4 for commercial varieties and Table 5 for experimental lines. Data is reported for four of the seven OVT locations. The Lenoir County trials were omitted due to continually wet field conditions through the winter and early spring, as well as a few days of standing water after five inches of rain in early May. The extreme moisture conditions this season greatly affected yield potential. Trials at Union and Washington counties were also omitted due to severe lodging which prevented an accurate and uncontaminated plot harvest. Trials of experimental wheat lines were conducted at both Beaufort and Robeson, but are not reported. The Robeson data was omitted from the dataset due to a lack of confidence in measuring true variety performance (see **Comparing Varieties** section for more detail). At Beaufort, mechanical problems with the combine's weigh system prevented an accurate harvest.

Statewide yield and test weight are presented as mean values for current year and multiple year performance in Tables 6 and 7, followed by performance at individual locations for the current season (Tables 8 – 14). Multi-year data across locations provide the best predictors of performance. Overall, the data shows it was an above-average year for small grain production in North Carolina.

Table 1. Information on small grain entries in the 2015 North Carolina Official Variety Trials

Brand	Entries	Sponsoring Agency and Contact Information
AGSouth Genetics	AGS 2027	AG South Genetics Jimmy Clements - jclements@agsouthgenetics.com Box 72246 Albany, GA 31708 229.881.2700
AgriMAXX	413 415 427 434 444 446 Exp 1450 ¶ Exp 1555 ¶	AgriMAXX Dale Wehmeyer - dale@agrimaxxwheat.com 7167 Highbanks Road Mascoutah, IL 62258 855.629.9432
Armor	Havoc ARX 1325 ¶ ARX 1327 ¶ ARX 1433 ¶ ARX 1441 ¶ ARX 1412 ¶ ARX 1413 ¶ ARX 1418 ¶	Armor Seed Chris Ouzts - chrisouzts@armorseed.com 183 S. Pennsylvania Avenue Waldenburg AR 72475 662.719.3157
Doebler's	XP1005DB ¶ XP1007DB ¶	Doebler's PA Hybrids Inc. J McClelland - jmcclelland@doeblers.com 202 Tiadaghton Ave Jersey Shore, PA 17740 570.753.3210
Dyna-Gro	Savoy Shirley 9223 9522 9552 WX14611 ¶ WX15733 ¶	Crop Production Services Rick Strecker - rick.strecker@cpsagu.com 163 Upton Road Camden, NC 27921 252.339.2615
Featherstone	Featherstone 73 Featherstone VA-258	Featherstone Seed Inc Colin Whittington - colin@featherstoneseed.com 13941 Genito Road Amelia, VA 23002 804.370.7210
GA	GA-03564-12E6 ¶ GA-04417-12E33 ¶ GA-04434-12LE28 ¶	University of Georgia Dr. Jerry Johnson - jjohnso@uga.edu 1109 Experiment St Griffin, GA 30223 770.228.7345

¶ Experimental line

Table 1 (cont'd). Information on small grain entries in the 2015 North Carolina Official Variety Trials

Brand	Entries		Sponsoring Agency and Contact Information
Gerard	Gerard 224 Gerard 229	Oat	Gerard Seed Company Walt Gerard - gerardseed@embarqmail.com 1041 E. 4 th Street Washington, NC 27889 252.946.8123
Harvey's	AP 1871E AP 1882E		Harvey Fertilizer and Gas Wes Ward - w.ward@lharveys.com 303 Bohannon Road Kinston, NC 28501 252.523.9090
Horizon	201 270 306	Oat	Plantation Seed Conditioners, Inc. Blake Shepard - bshepard@plantationseed.com 1113 Pretoria Road Newton, GA 39870 229.734.5466
Limagrain Cereal Seeds	LCS 2347 LCS 2214 LCS NEWS		Limagrain Cereal Seeds David Lane - david.lane@limagrain.com 7707 Jackson Pond Drive Charlotte, NC 28273 704.770.7553
NC	NC Yadkin NC09-20986 ¶ NC10-23663 ¶ NC10-23720 ¶ NC 8170-4-3 ¶ NC11-21982 ¶ NC11-23321 ¶ NC11-22289 ¶ NC11-21899 ¶ NC09-4274N ¶ NC09-4503N ¶ NC11-1798y ¶ NC12-3578 ¶ NC12-3742 ¶ NC12-3963 ¶	Oat	North Carolina State University Dr. Paul Murphy - paul_murphy@ncsu.edu Department of Crop Science Box 7629 Raleigh, NC 27695 919.610.0100
NC	Rodgers	Oat	NC Foundation Seed Dr. Daryl Bowman - ncfspi@nc.rr.com 8220 Riley Hill Road Zebulon, NC 27597 919.269.5592

¶ Experimental line

Table 1 (cont'd). Information on small grain entries in the 2015 North Carolina Official Variety Trials

Brand	Entries		Sponsoring Agency and Contact Information
Pioneer	25R32 26R10 26R20 26R53 XW13T ¶ XW13W ¶		DuPont Pioneer George Stabler - george.stabler@pioneer.com 59 Grief Parkway, Suite 200 Delaware, OH 43015 803.308.1003
Progeny	P 117 P 410 P 870 P 357 PGX 13-6 ¶		Progeny Ag Products John Rocconi - johnr@progenyag.com 1529 Hwy 193 Wynne, AR 72396 (870) 238-2079
SC	SCLA 99049D-E1-J1 ¶ SCTX 98-27H1 ¶ WO 10025H2 ¶ WO 10025T1 ¶ Graham	Oat	Clemson University Brad Stancil - bstanci@clermson.edu 179 Old Cherry Road Clemson, SC 29634 864.933.2659
Southern Harvest	555 3200 4300 4400		Meherrin/Southern Harvest Will Tankard - wtankard@meherrinag.com 4020 Wake Forest Road Raleigh, NC 27609 252.945.2508
Southern States	SS 8500 SS 8340 SS 8404 SS 8360 SS 520 SS EXP 8513 ¶ SS EXP 8530 ¶ SS EXP 8629 ¶		Southern States Coop. Jason Hinton - jason.hinton@sscoop.com 129 Strickland Hinton Road Zebulon, NC 27597 804.291.6785
Syngenta	Oakes SY 9978 SY Cypress SY Harrison SY Viper		Syngenta Seeds, Inc Ryan Heiniger - ryan.heiniger@syngenta.com 8337 Hwy 903 N Ayden, NC 28513 252.814.5425

¶ Experimental line

Table 1 (cont'd). Information on small grain entries in the 2015 North Carolina Official Variety Trials

Brand	Entries	Sponsoring Agency and Contact Information
UniSouth Genetics	USG 3201 USG 3251 USG 3120 USG 3993 USG 3833 USG 3612 USG 3523 USG 3404 USG 3895 USG 3756	UniSouth Genetics Stacy Burwick - sburwick@usgseed.com 3205-C Highway 46 South Dickson, TN 37055 800.505.3133
VA	Hilliard VA10W-119 ¶¶ VA10W-96 ¶¶ VA11W-106 ¶¶ VA11W-230 ¶¶	Virginia Tech University/ Virginia Crop Improvement Association Robin Markham - rmarkham@vt.edu 2229 Menokin Road Warsaw, VA 22572 804.333.3485

¶¶ Experimental line

Table 2. Cultural practices for North Carolina small grain tests during the 2014 - 2015 season.

County	Soil Type	Previous Crop	Planting Date	Fall Fertility		Topdress		Pesticide	Harvest Date
				Rate	Grade	Rate	Grade		
Beaufort	Goldsboro loamy sand	Tobacco	4-Nov	-	-	40 gal	30% UAN	4.75 oz/A Osprey 16.4 oz/A Axial 0.6 oz/A Harmony Extra 3.2 oz/A Tombstone	12-Jun
Perquimans	Roanoke loam	Corn	3-Nov	200 lbs	6-18-28	44 gal	24S	4.75 oz/A Osprey 0.6 oz/A Harmony Extra	23-Jun
Robeson	Goldsboro loamy sand	Corn	11-Nov	242 lb	14-16-25	48 gal	24S	0.9 oz/A Harmony Extra	11-Jun
Rowan (all trials)	Davidson clay loam	Soybean	20-Oct	300 lbs	11-23-23	235 lbs	34-0-0	0.4 oz/A Finesse 0.75 oz/A Harmony Extra	17-Jun
Rowan (managed trial)								1.5 oz/A Warrior 8.2 oz/A Prosaro	

Table 3. Soil test results for small grain test sites in North Carolina during the 2014-2015 season.

County	HM (%)	W-V	CEC	BS (%)	Ac	pH	P-I	K-I	Ca (%)	Mg (%)	Mn-I	Zn-I	Cu-I
Beaufort	1.43	1.11	5.2	59	2.1	5.2	165	72	44	8	77	84	63
Perquimans	0.46	0.93	5.7	69	1.8	5.2	67	43	47	18	91	90	70
Rowan	0.27	1.01	7.5	80	1.5	5.7	77	40	52	26	964	123	179

Soil test results not available for Robeson location.

Table 4. Characteristics of COMMERCIAL WHEAT varieties across North Carolina performance trials.

Commercial Wheat Variety	Maturity	Head Type ¹	Pest Resistance To ²									
			Powdery Mildew ³	Leaf Rust	SNB ⁴	Tan Spot	Stripe Rust	FHB ⁵	Soilborne Wheat Mosaic	Wheat Spindle Streak	Barley Yellow Dwarf	Hessian Fly ⁶ Biotype-L
AgriMAXX 413	Med	A	MS	MS	S	MR		MS	MS	MR		P
AgriMAXX 415	Med	A	MS	MR	MR	MR		MR	MS	MR		F
AgriMAXX 427	Med	S	MR	S	MR	MS		MS	MR	MS		P
AgriMAXX 434	Med	A	MS	S	S	MR		MS	MS	MR		G
AgriMAXX 444	Late	A	MS	R	MR	MR		MR	MS	R		P
AgriMAXX 446	Late	A	MS		S			S	S			E
AGSouth AGS 2027	Early	AP	MR	R	S	MS		MS	MS			G
Armor Havoc	Med	A	MR		MS			MR	MS			
Dyna-Gro 9223	Med	AP	MS	S	MR	S		MS	MS	MR		P
Dyna-Gro 9522	Late	A	MR		MS			MR	MR			
Dyna-Gro 9552	Late	A	MS		MS			MS	MS			
Dyna-Gro Savoy	Early	AP	MR		S			MS	MS			G
Dyna-Gro Shirley	Late	AP	R	MR	MR			S	MR	MR	MR	P
Featherstone 73	Late	AP	MR		MR			MR	MS			G
Featherstone VA-258	Med	AP	MR	R	MR	S		S	MR	MR	S	P
Harvey's AP 1871E	Late	A	MR		S			MS	MS			
Harvey's AP 1882E	Late	A	MR		MR			MR	R			
Limagrain Cereal LCS 2214	Med	AP	MR		S			S	MS			
Limagrain Cereal LCS 2347	Late	AP	MS		MR			MR	MS			
Limagrain Cereal LCS NEWS	Med	AP	MR		MR			MR	S			
NC Yadkin	Late	AP	R	MR	MR	S	MS	MR	MR	R	MS	P
Pioneer 25R32	Late	A	MR	MS	MR	MR		MR	MR	R	MS	G
Pioneer 26R10	Late	A	MS	MS	MR	MR		MS	MR	R	MS	E
Pioneer 26R20	Late	A	MR	MR	MR	MR		S	R	MR	S	G
Pioneer 26R53	Med	A	MS	MS	S	MS		MS	MS	MR	MS	F
Progeny P 117	Med	AP	S	S	S	S		MS	S	MS	MS	P
Progeny P 357	Late	A	S	S	MR	MR		MS	R	R	MR	F
Progeny P 410	Late	AP	MS		MR			MR	MS			
Progeny P 870	Med	A	MR	MS	MS	MR		S	MR	MR	MR	P
Southern Harvest 3200	Med	AP	R		MR			MR	MS			
Southern Harvest 4300	Late	A	MS		MR			MR	MS			
Southern Harvest 4400	Late	AP	MS		S			MS	MS			
Southern Harvest 555	Med	AP	MR		MS			S	MS			
Southern States SS 520	Early	AP	MR		S			S	S			
Southern States SS 8340	Med	A	MS	MS	MR	MS		MR	MR	MR	MS	P
Southern States SS 8360	Late	A	MS		MS			MS	S			E
Southern States SS 8404	Med	A	MR	R	MS	MS	S	S	S	MS	MR	F
Southern States SS 8500	Late	A	MS	MR	MR	S		S	MS	MR	MR	F
Syngenta Oakes	Med	AP	S	MS	MR	MS		MR	S	MS	MS	P
Syngenta SY 9978	Med	A	R	MS	MR	MS		S	S	MR	MR	E
Syngenta SY Cypress	Early	A	MR		S			MS	MS			
Syngenta SY Harrison	Med	A	S	S	MR	MR		MR	MS	MR	MR	P
USG 3120	Early	A	R	R	S	S		S	MS	S	MR	G
USG 3201	Med	AL	MS	MR	MS	MS		MS	MR	MR	MR	F
USG 3251	Late	A	MS	MS	MR	MR		S	MR	MR		F
USG 3404	Late	A	MS	MS	MR	MR		MR	MS	R		E
USG 3523	Late	A	MS	S	MR	MR		MR	MR	MR		G
USG 3612	Med	S	MS		MR			MS	MR			F
USG 3756	Med	A	MS		MR			MR	MS			
USG 3833	Late	S	S		MR			MS	MR			G
USG 3895	Med	A	S		MR			MS	MS			
USG 3993	Med	AP	MR	MR	MR	MR		MR	MR	MR		F

¹ A = awned, AL = awnletted, AP = apically awnletted and S = smooth

² Based on all available information. Contributors include: Drs. Christina Cowger, Paul Murphy and Carrie Brinton

³ R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible and S = Susceptible

⁴ Stagonospora nodorum blotch

⁵ Fusarium Head Blight

⁶ E = Excellent, G = Good, F = Fair and P = Poor

Funding for pest resistance evaluation is provided in part by the NC Small Grain Growers Association

Table 5. Characteristics of EXPERIMENTAL WHEAT lines across North Carolina performance trials.

Experimental Wheat Variety	Maturity	Pest Resistance To ¹						
		Powdery Mildew ²	Leaf Rust	SNB ³	Tan Spot	FHB ⁴	Soilborne Wheat Mosaic	Hessian Fly ⁵ Biotype-L
AgriMAXX Exp 1450	Late	MR		MR		MR	R	F
AgriMAXX Exp 1555	Late	S		MR		MS	MS	
Armor ARX 1325	Late	S		MR		MS	R	
Armor ARX 1327	Med	MR		MR		MS	MS	
Armor ARX 1412	Early	MR		MR		MR	MS	
Armor ARX 1413	Early	MR		MR		MR	MS	
Armor ARX 1418	Early	MR		MS		MR	MS	
Armor ARX 1433	Late	MR		MR		MS	MR	
Armor ARX 1441	Med	MS		MR		S	S	
Doebler's XP1005DB				MR		MS	S	
Doebler's XP1007DB				MR		MS	MS	
Dyna-Gro WX14611	Med	MR		MS		MR	MS	
Dyna-Gro WX15733	Late	MR		MR		MR	MR	
GA-03564-12E6	Early	R		MR		MS	MR	
GA-04417-12E33	Early	R		MS		S	MS	
GA-04434-12LE28	Med	R		S		S	MS	
Hilliard	Late	R		MR		MS	MS	
NC 8170-4-3	Med	R		MS		MS	MS	F
NC09-20986	Med	MR		MR		MR	S	E
NC10-23663	Med	MR		MR		S	MS	P
NC10-23720	Early	MR		MR		MS	MS	G
NC11-21899	Med	R		MR		S	MR	
NC11-21982	Med	R		MR		S	MS	
NC11-22289	Early	R		MR		MR	MS	
NC11-23321	Med	R		MR		S	MS	
Pioneer XW13T	Med	MR		MR		S	MS	
Pioneer XW13W	Late	S		MR		MS	MS	
Progeny PGX 13-6	Late	S		MR		MR	MR	
SCLA 99049D-E1-J1	Med	MS		MR		MS	MR	
SCTX 98-27H1				S		MS	MR	
Southern States SS EXP 8513	Early	R		MR		S	MS	
Southern States SS EXP 8530	Med	MR		S		MS	MR	
Southern States SS EXP 8629	Early	MR		S		S	MS	
Syngenta SY Viper	Late	MS		MR		MS	S	
VA10W-119	Early	MR	MR	MS	MS	S	MS	E
VA10W-96	Early	R		S		MR	MS	
VA11W-106	Late	MS		MR		MR	MS	
VA11W-230	Med	R		MR		MR	S	
WO 10025H2				S		MS	MS	
WO 10025T1				MR		S	MS	

¹ Based on all available information. Contributors include: Drs. Christina Cowger, Paul Murphy, and Carrie Brinton

² R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible and S = Susceptible

³ Stagonospora nodorum blotch

⁴ Fusarium Head Blight

⁵ E = Excellent, G = Good, F = Fair and P = Poor

Funding for pest resistance evaluation is provided in part by the NC Small Grain Growers Association

Table 6. Multi-year STATEWIDE performance summary of COMMERCIAL WHEAT varieties, 2013 - 2015.

Brand Variety or Variety	2015 One Year Mean			2014 - 2015 Two Year Mean			2013 - 2015 Three Year Mean		
	Yield	Yield Test Wt.		Yield	Yield Test Wt.		Yield	Yield Test Wt.	
	bu/a	Rank	lb/bu	bu/a	Rank	lb/bu	bu/a	Rank	lb/bu
Pioneer 26R10	82.6 *	12	57.4	74.7 **	1	57.3	77.0 **	1	57.1
USG 3404	83.5 *	9	56.5	73.0 *	2	56.5	76.1 *	2	56.2
Pioneer 26R20	79.4 *	19	58.6	72.6 *	3	58.4	74.4 *	4	58.0
USG 3833	78.9 *	21	56.9	72.3 *	4	56.8	-	-	-
Dyna-Gro Shirley	82.5 *	13	56.2	71.1 *	5	56.1	74.9 *	3	56.1
Pioneer 26R53	83.0 *	10	57.6	70.5 *	6	57.1	73.4 *	6	56.8
AgriMAXX 415	83.6 *	8	57.6	70.3 *	7	57.9	74.4 *	5	57.7
AgriMAXX 434	80.8 *	18	56.4	69.5	8	56.0	72.2	8	55.9
USG 3523	81.2 *	17	56.5	69.4	9	56.7	73.2	7	56.5
Featherstone VA-258	78.3 *	26	56.5	69.2	10	56.6	71.4	11	56.4
USG 3120	76.1	31	56.7	68.9	11	57.3	70.9	14	57.0
USG 3201	78.8 *	23	57.7	68.1	12	57.7	71.6	10	57.7
Syngenta SY Harrison	84.3 *	2	56.9	67.4	13	56.6	70.7	15	56.2
USG 3251	78.4 *	25	57.2	67.4	14	57.1	71.4	12	56.6
Syngenta SY 9978	72.4	40	56.8	67.3	15	56.2	69.3	20	56.2
Southern States SS 8500	78.9 *	22	56.0	67.1	16	56.6	71.3	13	56.7
USG 3993	75.4	32	56.8	66.9	17	57.3	70.3	17	57.3
Dyna-Gro 9223	84.2 *	4	56.7	66.9	18	56.6	70.4	16	56.0
AgriMAXX 413	74.6	35	55.6	66.7	19	55.8	69.7	19	56.0
Southern States SS 8340	81.4 *	16	57.8	66.7	20	57.3	71.7	9	57.3
Featherstone 73	78.1 *	28	57.9	66.2	21	57.3	-	-	-
Southern States SS 8404	75.0	33	57.3	66.1	22	57.8	69.9	18	57.4
Pioneer 25R32	73.4	39	57.3	65.3	23	57.5	66.6	25	57.0
Progeny P 870	74.1	37	55.9	64.8	24	56.1	68.3	22	56.0
USG 3612	79.3 *	20	54.7	64.7	25	55.3	68.2	23	54.8
AgriMAXX 427	77.0	29	55.1	64.4	26	55.4	68.7	21	55.2
Syngenta Oakes	74.8	34	58.5	63.2	27	58.4	68.1	24	58.2
Progeny P 357	74.5	36	54.5	61.5	28	54.7	64.7	27	54.5
NC Yadkin	70.9	43	56.9	60.1	29	57.0	65.2	26	57.0
Progeny P 117	67.9	49	57.1	59.3	30	56.6	62.8	28	56.4
Southern Harvest 4300	84.4 **	1	56.0	-	-	-	-	-	-
Southern States SS 8360	84.3 *	3	57.7	-	-	-	-	-	-
Harvey's AP 1871E	84.2 *	5	56.7	-	-	-	-	-	-
Dyna-Gro 9552	83.8 *	6	56.8	-	-	-	-	-	-
Southern Harvest 4400	83.7 *	7	56.8	-	-	-	-	-	-
AgriMAXX 444	83.0 *	11	57.3	-	-	-	-	-	-
AgriMAXX 446	81.6 *	14	56.8	-	-	-	-	-	-
USG 3895	81.4 *	15	56.2	-	-	-	-	-	-
USG 3756	78.7 *	24	57.3	-	-	-	-	-	-
Dyna-Gro 9522	78.3 *	27	57.1	-	-	-	-	-	-
Progeny P 410	76.5	30	57.1	-	-	-	-	-	-
Southern Harvest 555	73.8	38	57.9	-	-	-	-	-	-
Harvey's AP 1882E	71.2	41	56.5	-	-	-	-	-	-
Armor Havoc	71.0	42	57.2	-	-	-	-	-	-
Southern Harvest 3200	70.5	44	56.1	-	-	-	-	-	-
Dyna-Gro Savoy	69.8	45	56.2	-	-	-	-	-	-
Limagrain Cereal LCS NEWS	69.6	46	57.3	-	-	-	-	-	-
AGSouth Genetics AGS 2027	69.4	47	56.1	-	-	-	-	-	-
Syngenta SY Cypress	69.4	48	57.1	-	-	-	-	-	-
Southern States SS 520	67.4	50	56.4	-	-	-	-	-	-
Limagrain Cereal LCS 2214	66.6	51	56.5	-	-	-	-	-	-
Limagrain Cereal LCS 2347	65.9	52	57.4	-	-	-	-	-	-
MEAN	77.1	56.8		67.4	56.8		70.6	56.6	
SEM	3.1	0.5		1.9	0.4		1.5	0.3	
LSD (p=0.10)	7.2	1.2		4.4	0.8		3.5	0.7	
df LSD	153	153		232	232		324	324	
# environments	4	4		9	9		13	13	

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

SEM - standard error of variety mean across environments

LSD - smallest difference between variety means considered different, across environments

TABLE 7. Multi-year STATEWIDE performance summary of EXPERIMENTAL WHEAT lines, 2014 - 2015.

Brand/Variety or Variety	2015 One Year Mean			2014 - 2015 Two Year Mean		
	Yield <i>bu/a</i>	Yield <i>Rank</i>	Test Wt. <i>lb/bu</i>	Yield <i>bu/a</i>	Yield <i>Rank</i>	Test Wt. <i>lb/bu</i>
USG 3120 ‡	88.8	13	61.5	71.6 **	1	59
Pioneer 26R53 ‡	90.9	10	61.2	71.0 *	2	58.9
Dyna-Gro Shirley ‡	92.1 *	9	60.6	70.9 *	3	58.3
AgriMAXX Exp1450	87.0	15	60.3	68.9 *	4	57.6
Syngenta Oakes ‡	86.2	20	62.9	68.3 *	6	60.1
NC10-23720	82.4	32	63.4	68.3 *	5	60.5
VA10W-119	81.1	35	59.9	67.9 *	7	57.9
NC10-23663	85.3	22	61.2	66.3	8	58.9
Southern States SS 8404 ‡	85.6	21	61.1	65.2	9	59.3
NC8170-4-3	82.5	31	62.2	65.1	10	59.8
NC09-20986	76.3	42	61.4	60.0	11	59.2
Syngenta SY Viper	101.2 **	1	61.9	-	-	-
Pioneer XW13T	98.1 *	2	61.0	-	-	-
Armor ARX 1327	95.9 *	3	60.3	-	-	-
Doebler's XP1007DB	95.4 *	4	60.2	-	-	-
Southern States SS EXP 8530	94.2 *	5	60.5	-	-	-
Armor ARX 1433	93.9 *	6	60.0	-	-	-
AgriMAXX Exp 1555	93.8 *	7	60.3	-	-	-
Armor ARX 1325	92.5 *	8	60.4	-	-	-
Hilliard	90.5	11	60.7	-	-	-
Pioneer XW13W	88.9	12	60.0	-	-	-
Dyna-Gro WX15733	88.4	14	59.5	-	-	-
Progeny PGX 13-6	86.8	16	60.2	-	-	-
Dyna-Gro WX14611	86.8	17	59.4	-	-	-
Armor ARX 1413	86.7	18	61.1	-	-	-
VA10W-96	86.4	19	61.9	-	-	-
VA11W-106	85.2	23	61.1	-	-	-
GA-04417-12E33	85.0	24	61.0	-	-	-
Armor ARX 1418	84.6	25	58.6	-	-	-
WO 10025H2	84.3	26	61.1	-	-	-
Doebler's XP1005DB	83.9	27	59.3	-	-	-
GA-03564-12E6	83.6	28	61.7	-	-	-
Armor ARX 1412	83.1	29	59.6	-	-	-
NC11-23321	82.7	30	61.0	-	-	-
Armor ARX 1441	82.3	33	59.9	-	-	-
NC11-21899	81.9	34	61.0	-	-	-
SCLA 99049D-E1-J1	81.0	36	61.4	-	-	-
VA11W-230	80.5	37	61.8	-	-	-
Southern States SS EXP 8513	80.5	38	61.0	-	-	-
WO 10025T1	80.0	39	60.1	-	-	-
GA-04434-12LE28	79.1	40	60.3	-	-	-
NC11-21982	76.5	41	61.2	-	-	-
Southern States SS EXP 8629	74.2	43	59.6	-	-	-
NC11-22289	71.7	44	61.2	-	-	-
SCTX 98-27H1	63.4	45	59.6	-	-	-
MEAN	85.4		60.8	67.6		59
SEM	4.2		0.6	2.2		0.4
LSD (p=0.10)	10.0		1.3	5.1		0.9
df LSD	44		44	60		60
# environments	2		2	7		7

‡ Commercial check variety

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

SEM - standard error of variety mean across environments

LSD - smallest difference between variety means considered different, across environments

Table 8. Performance of COMMERCIAL WHEAT varieties - Perquimans County, 2015.

Brand Variety or Variety	Yield bu/a	Test Weight lb/bu	Moisture %	Lodging %	Plant Height inches
Dyna-Gro 9552	99.4 **	59.9	12.9	0	35
USG 3895	98.6 *	59.6	12.8	0	34
Southern Harvest 4300	97.8 *	58.6	12.8	23	35
Syngenta SY Harrison	96.9 *	59.2	13.2	4	35
Harvey's AP 1871E	96.5 *	60.4	13.0	0	36
Southern States SS 8360	95.9 *	59.9	13.2	0	35
AgriMAXX 446	95.7 *	60.5	12.8	0	36
USG 3756	95.4 *	61.0	12.8	0	41
USG 3612	94.7 *	58.9	12.7	6	38
Southern Harvest 4400	93.8 *	59.1	13.3	0	37
Dyna-Gro 9223	93.2 *	58.7	13.5	6	38
USG 3251	92.8 *	60.1	12.9	0	36
Dyna-Gro 9522	92.8 *	60.1	13.4	2	36
USG 3523	92.0	60.0	13.0	3	37
AgriMAXX 444	91.3	60.2	13.1	0	35
Pioneer 26R53	91.2	60.8	12.8	0	34
USG 3404	90.5	60.1	13.9	0	36
Southern States SS 8340	90.4	60.2	13.3	0	35
USG 3993	90.3	60.8	12.8	5	37
Pioneer 26R20	90.3	60.7	13.0	24	38
AgriMAXX 415	90.1	60.1	13.4	0	35
Pioneer 26R10	89.9	60.1	13.3	0	35
Featherstone 73	89.9	60.4	13.8	0	37
AgriMAXX 427	89.2	58.9	13.6	17	38
USG 3833	89.1	60.7	13.9	0	37
USG 3201	88.7	60.9	13.1	0	35
Southern States SS 8404	88.7	61.2	13.0	0	34
Dyna-Gro Shirley	88.5	59.4	12.9	0	33
Syngenta Oakes	88.3	61.5	13.6	22	39
Progeny P 357	87.5	58.6	12.9	0	34
AgriMAXX 434	86.9	59.6	12.7	0	34
Featherstone VA-258	86.3	58.9	13.1	18	40
Limagrain Cereal LCS NEWS	85.0	61.1	13.3	0	38
Syngenta SY 9978	85.0	58.2	13.0	30	40
Limagrain Cereal LCS 2347	84.2	60.8	13.6	11	40
Progeny P 410	84.0	59.8	13.3	0	39
Progeny P 870	83.9	59.0	12.5	0	34
AgriMAXX 413	83.6	59.7	12.8	0	35
AGSouth Genetics AGS 2027	83.6	58.2	13.0	15	33
Syngenta SY Cypress	82.5	59.5	13.3	4	34
Pioneer 25R32	81.1	60.4	13.1	0	37
USG 3120	81.0	61.0	13.2	0	38
Southern States SS 8500	80.4	59.3	13.2	4	38
Progeny P 117	79.5	59.5	13.1	36	38
Harvey's AP 1882E	78.1	60.0	13.1	0	36
Southern Harvest 3200	77.9	59.4	13.4	4	36
Southern States SS 520	77.6	58.3	13.0	14	37
NC Yadkin	77.2	60.8	13.0	11	38
Southern Harvest 555	75.6	60.4	13.1	0	35
Limagrain Cereal LCS 2214	75.1	58.8	13.1	45	37
Armor Havoc	74.8	59.2	13.0	0	35
Dyna-Gro Savoy	70.1	59.3	12.9	17	30
MEAN	87.4	59.8	13.1	6	36
CV (%)	8.3				
avg SEM	3.2				
Trial Weight	0.19				
Variety F-value	5.3				
Variety Pr>F	<0.001				
avg LSD (p=0.10)	7.3				
df LSD	206				

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

CV: within-trial variability as a percent of mean yield for the trial

avg SEM = [average (variance of variety mean)]^{1/2}; based on within-trial variation, referred to as avg SEM

Trial Weight = (1/ avg SEM² for trial) (1/ sum over trials of [1/avg SEM²]); all locations of same trial sum to 1

avg LSD: smallest difference considered significant between varieties within the same trial

Table 9. Performance of EXPERIMENTAL WHEAT lines - Perquimans County, 2015.

Brand Variety or Variety	Yield <i>bu/a</i>	Test Weight <i>lb/bu</i>	Moisture <i>%</i>	Lodging <i>%</i>	Plant Height <i>inches</i>
AgriMAXX Exp1555	99.6 **	58.5	12.2	0	35
Southern States SS EXP 8530	99.6 *	59.5	12.0	0	37
Doebler's XP1007DB	99.3 *	59.1	12.2	5	36
Syngenta SY Viper	99.1 *	60.5	12.2	0	41
Armor ARX 1433	98.5 *	59.3	12.0	0	34
Armor ARX 1327	98.2 *	59.1	12.1	0	35
Pioneer XW13T	97.9 *	58.5	12.0	0	32
Armor ARX 1325	97.4 *	59.2	12.0	0	34
Doebler's XP1005DB	94.4 *	58.5	11.9	1	36
Hilliard	93.7 *	60.1	12.3	0	38
Pioneer XW13W	93.7 *	58.5	12.1	0	36
Armor ARX 1412	93.6 *	58.1	11.9	13	38
USG 3120 ‡	92.9 *	59.4	12.0	0	37
Progeny PGX 13-6	92.8 *	59.1	12.2	0	35
Pioneer 26R53 ‡	91.7 *	59.4	12.1	2	33
VA10W-119	91.2 *	59.2	12.0	0	37
Syngenta Oakes ‡	90.7	61.1	12.3	14	38
Dyna-Gro WX15733	90.7	57.6	11.8	3	32
Southern States SS 8404 ‡	90.1	58.7	12.2	0	34
Dyna-Gro Shirley ‡	88.0	58.5	12.0	2	33
VA10W-96	87.9	60.4	12.2	0	37
Armor ARX 1413	87.1	59.1	12.2	0	36
GA-04417-12E33	86.4	59.2	12.0	0	36
Dyna-Gro WX14611	86.3	58.2	12.0	0	39
GA-03564-12E6	85.9	60.8	12.1	23	35
VA11W-106	85.7	59.8	11.9	5	36
Armor ARX 1418	85.6	57.4	11.6	34	38
NC11-23321	85.1	59.0	11.7	0	39
AgriMAXX Exp1450	84.0	58.3	11.9	0	36
WO 10025H2	83.0	59.3	12.0	15	39
NC11-21899	83.0	59.9	12.1	0	37
Armor ARX 1441	80.1	57.8	12.1	12	36
GA-04434-12LE28	79.9	59.5	12.3	0	34
NC8170-4-3	79.9	59.0	12.2	27	39
WO 10025T1	79.6	58.1	11.8	10	39
NC10-23720	79.6	61.5	12.4	76	37
NC10-23663	78.9	59.8	12.3	37	37
Southern States SS EXP 8629	78.8	58.4	11.8	31	33
Southern States SS EXP 8513	78.6	59.0	12.1	49	38
SCLA 99049D-E1-J1	78.3	60.1	12.3	0	36
VA11W-230	77.7	59.8	12.0	0	34
NC11-21982	75.2	59.7	11.8	7	35
NC11-22289	72.0	59.4	12.1	9	36
NC09-20986	72.0	59.7	12.1	0	36
SCTX 98-27H1	63.0	57.0	11.6	8	32
MEAN	86.8	59.2	12.0	9	36
CV (%)	9.6				
avg SEM	3.7				
Trial weight	0.46				
Variety F-value	5.4				
Variety Pr>F	<0.001				
avg LSD (p=0.10)	8.6				
df LSD	178				

‡ Commercial check variety

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

CV: within-trial variability as a percent of mean yield for the trial

avg SEM = [average (variance of variety mean)]^{1/2}; based on within-trial variation, referred to as avg SEM

Trial Weight = (1/ avg SEM² for trial) (1/ sum over trials of [1/avg SEM²]); all locations of same trial sum to 1

avg LSD: smallest difference considered significant between varieties within the same trial

Table 10. Performance of COMMERCIAL WHEAT varieties - Beaufort County, 2015.

Brand Variety or Variety	Yield bu/a	Test Weight lb/bu	Moisture %	Lodging %	Plant Height inches
USG 3612	91.0 **	55.2	18.2	0	35
Southern States SS 8500	84.2 *	55.7	18.0	0	39
Syngenta SY Harrison	82.1 *	59.9	18.5	0	34
Southern States SS 8340	81.7 *	59.9	18.8	0	35
USG 3523	81.6 *	57.4	18.6	0	34
USG 3993	81.1	56.1	17.9	0	35
Syngenta Oakes	80.9	60.3	18.8	0	36
Featherstone VA-258	80.7	58.8	16.3	0	39
Southern Harvest 4300	80.4	58.6	17.4	0	34
Southern States SS 8360	80.4	60.5	16.9	0	34
Dyna-Gro 9223	80.1	58.3	18.4	0	39
USG 3833	79.7	57.9	18.7	0	38
AgriMAXX 444	78.3	59.0	18.4	0	37
USG 3404	78.2	56.7	17.8	0	36
Harvey's AP 1871E	77.6	58.5	17.3	0	34
USG 3895	76.3	56.3	17.7	0	33
Progeny P 357	76.2	58.4	17.0	0	35
Featherstone 73	75.7	61.1	17.6	0	35
AgriMAXX 415	75.6	58.8	18.6	0	35
Pioneer 26R10	75.5	59.5	18.5	0	35
Dyna-Gro Shirley	74.5	55.9	17.6	0	33
USG 3756	74.3	57.3	19.0	0	36
AgriMAXX 427	74.0	54.9	18.1	0	35
AgriMAXX 446	74.0	56.8	18.0	0	35
Dyna-Gro 9552	73.6	58.6	17.3	0	35
Dyna-Gro Savoy	73.0	55.4	16.3	0	29
Southern States SS 520	72.8	59.1	17.2	0	36
Southern Harvest 4400	72.8	59.6	18.5	0	35
NC Yadkin	72.8	57.5	17.6	0	33
Limagrain Cereal LCS NEWS	71.8	58.6	18.4	0	36
USG 3120	71.4	57.2	18.2	0	34
Progeny P 410	70.4	57.7	18.7	0	40
Syngenta SY 9978	69.8	60.4	17.0	0	40
Southern States SS 8404	69.7	57.5	18.1	0	30
Harvey's AP 1882E	69.6	56.2	18.0	0	36
Southern Harvest 555	69.1	58.3	16.1	0	32
Progeny P 117	68.6	60.1	18.9	0	36
AgriMAXX 434	68.1	58.2	17.4	0	33
USG 3201	67.3	58.7	18.0	0	33
AgriMAXX 413	66.8	55.3	16.6	0	32
AGSouth Genetics AGS 2027	66.1	59.1	17.3	0	30
Pioneer 26R53	66.0	58.1	17.6	0	31
USG 3251	65.6	57.6	18.5	0	36
Limagrain Cereal LCS 2347	64.0	58.3	18.4	0	38
Progeny P 870	64.0	57.7	18.0	0	32
Pioneer 26R20	63.7	61.1	18.1	0	37
Pioneer 25R32	63.6	58.9	17.6	0	37
Dyna-Gro 9522	63.6	57.7	18.2	0	36
Armor Havoc	63.0	60.2	19.3	0	35
Syngenta SY Cypress	59.6	58.1	17.5	0	30
Limagrain Cereal LCS 2214	59.1	60.2	18.7	0	33
Southern Harvest 3200	52.4	56.2	17.7	0	33
MEAN	72.5	58.1	17.9	0	35
CV (%)	13.8				
avg SEM	4.5				
Trial Weight	0.36				
Variety F-value	3.2				
Variety Pr>F	<0.001				
avg LSD (p=0.10)	9.9				
df LSD	201				

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

CV: within-trial variability as a percent of mean yield for the trial

avg SEM = [average (variance of variety mean)]^{1/2}; based on within-trial variation, referred to as avg SEM

Trial Weight = (1/ avg SEM² for trial) (1/ sum over trials of [1/avg SEM²]); all locations of same trial sum to 1

avg LSD: smallest difference considered significant between varieties within the same trial

Table 11. Performance of COMMERCIAL WHEAT varieties - Robeson County, 2015.

Brand Variety or Variety	Yield bu/a	Test Weight lb/bu	Moisture %	Lodging %	Plant Height inches
Dyna-Gro 9223	76.8 **	56.3	13.7	3	35
USG 3404	76.6 *	57.1	14.0	0	33
AgriMAXX 415	76.0 *	57.4	13.6	0	30
Dyna-Gro 9552	75.9 *	56.0	14.1	0	31
Southern States SS 8360	74.8 *	56.4	13.9	0	32
Harvey's AP 1871E	74.4 *	55.4	13.8	0	34
Syngenta SY Harrison	74.0 *	56.6	13.1	0	32
Featherstone VA-258	73.6 *	55.8	13.3	2	33
Pioneer 26R53	73.0 *	56.9	13.5	0	30
Southern Harvest 4300	72.9 *	56.2	13.3	0	32
Progeny P 410	72.9 *	57.3	12.9	0	38
Southern Harvest 4400	72.3 *	54.3	13.1	0	33
USG 3120	71.9 *	55.9	13.4	0	33
AgriMAXX 446	71.8 *	56.8	13.7	0	33
AgriMAXX 444	71.8 *	57.3	13.0	0	34
Dyna-Gro Shirley	71.6 *	56.2	13.6	0	33
Pioneer 26R10	70.9 *	56.9	13.1	0	32
USG 3833	70.9 *	54.7	13.9	0	35
Featherstone 73	70.8 *	56.6	14.1	0	33
Southern Harvest 555	70.7 *	57.7	13.4	0	31
Southern States SS 8500	70.3 *	56.5	13.1	0	33
AgriMAXX 434	69.6 *	55.7	13.0	0	31
USG 3895	68.5	56.4	12.8	0	31
AgriMAXX 427	68.0	54.9	13.2	0	32
USG 3612	67.8	52.9	13.7	2	33
Dyna-Gro 9522	66.7	56.7	14.3	0	33
Dyna-Gro Savoy	66.5	56.8	13.1	16	30
Southern States SS 8404	66.3	56.9	13.1	0	32
USG 3251	66.3	57.5	13.2	0	34
Southern States SS 8340	65.2	57.4	14.2	0	32
AgriMAXX 413	65.0	55.9	12.7	0	31
Southern Harvest 3200	64.6	56.0	13.3	0	30
USG 3523	64.2	56.4	13.3	0	33
USG 3201	63.9	57.4	13.5	0	30
Progeny P 870	63.1	55.0	13.8	0	31
Pioneer 25R32	62.9	56.3	14.1	0	36
Syngenta Oakes	62.7	57.0	14.1	2	32
Limagrain Cereal LCS NEWS	62.7	56.7	14.2	0	32
Syngenta SY Cypress	62.0	57.1	13.2	0	30
Syngenta SY 9978	61.9	56.1	13.5	2	38
Pioneer 26R20	61.7	57.3	13.2	0	32
NC Yadkin	61.3	56.0	13.5	4	31
Progeny P 117	58.5	55.7	13.8	34	35
Progeny P 357	58.2	51.1	13.1	0	33
Armor Havoc	57.9	56.6	13.6	0	33
USG 3993	57.8	56.7	13.2	0	32
AGSouth Genetics AGS 2027	57.2	54.2	13.3	24	29
Limagrain Cereal LCS 2347	56.1	56.8	13.6	34	35
Southern States SS 520	55.2	55.2	13.9	20	33
Harvey's AP 1882E	53.5	56.5	13.6	0	36
USG 3756	51.8	56.5	13.2	0	33
Limagrain Cereal LCS 2214	49.2	55.5	13.7	18	31
MEAN	66.3	56.2	13.5	3	33
CV (%)	11.6				
avg SEM	3.4				
Trial Weight	0.22				
Variety F-value	4.0				
Variety Pr>F	<0.001				
avg LSD (p=0.10)	8.0				
df LSD	202				

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

CV: within-trial variability as a percent of mean yield for the trial

avg SEM = [average (variance of variety mean)]^{1/2}; based on within-trial variation, referred to as avg SEM

Trial Weight = (1/ avg SEM² for trial) (1/ sum over trials of [1/avg SEM²]); all locations of same trial sum to 1

avg LSD: smallest difference considered significant between varieties within the same trial

Table 12. Performance of COMMERCIAL WHEAT varieties - Rowan County, 2015.

Brand Variety or Variety	Yield bu/a	Test Weight lb/bu	Moisture %	Lodging %	Plant Height inches
Pioneer 26R20	98.1 **	55.2	13.1	0	38
Pioneer 26R53	97.6 *	54.6	12.9	0	33
AgriMAXX 434	96.3 *	52.0	12.4	3	33
Dyna-Gro Shirley	94.7 *	53.2	12.6	0	33
Pioneer 26R10	93.7 *	53.2	12.6	0	37
Southern Harvest 4400	93.4 *	54.2	12.7	0	38
USG 3201	92.9 *	53.8	12.5	0	35
USG 3756	92.8 *	54.4	12.8	4	38
AgriMAXX 415	92.1 *	53.9	12.9	0	35
AgriMAXX 444	90.8 *	52.7	12.4	0	37
Southern States SS 8340	90.5 *	53.6	12.9	2	36
USG 3523	89.1	52.1	12.6	7	35
USG 3404	88.8	52.0	12.6	0	36
Armor Havoc	88.1	52.8	12.3	0	37
Harvey's AP 1871E	87.1	52.6	12.5	0	34
Dyna-Gro 9223	87.0	53.6	12.5	0	38
Southern Harvest 4300	86.3	50.6	11.9	12	35
Southern States SS 8360	86.0	54.1	12.8	0	36
Southern States SS 8500	85.9	52.4	13.1	11	40
Harvey's AP 1882E	85.8	53.1	12.4	0	38
Dyna-Gro 9522	85.6	53.7	12.7	0	37
USG 3251	85.2	53.6	13.0	3	39
Syngenta SY Harrison	84.7	51.9	12.5	0	35
Pioneer 25R32	84.5	53.6	12.6	4	38
Progeny P 870	83.3	51.8	12.3	0	33
Dyna-Gro 9552	83.0	52.7	12.6	3	35
AgriMAXX 446	82.8	53.2	12.7	4	34
Limagrain Cereal LCS 2214	82.5	51.6	12.9	3	34
Southern Harvest 3200	81.9	52.9	12.5	14	35
AgriMAXX 413	81.8	51.5	12.4	0	34
USG 3895	81.1	52.4	12.5	0	33
Southern Harvest 555	80.9	55.3	13.1	6	34
USG 3120	80.8	52.7	12.6	6	35
Progeny P 357	78.4	49.9	12.2	10	36
Progeny P 410	78.2	53.5	13.0	5	40
USG 3833	78.0	54.2	12.9	0	40
AgriMAXX 427	76.8	51.6	12.7	27	36
Featherstone 73	76.6	53.6	12.7	13	35
USG 3993	75.6	53.5	12.7	37	37
Featherstone VA-258	75.5	52.3	12.8	20	37
NC Yadkin	75.4	53.5	12.4	15	35
Southern States SS 8404	74.4	53.6	12.5	0	32
Dyna-Gro Savoy	74.0	53.2	13.0	76	33
Syngenta SY 9978	73.1	52.4	12.0	13	40
Syngenta Oakes	70.7	55.3	12.6	3	36
Syngenta SY Cypress	70.7	53.7	12.4	16	34
AGSouth Genetics AGS 2027	70.6	53.0	13.0	48	32
USG 3612	69.0	51.7	12.2	65	36
Southern States SS 520	67.8	52.8	12.6	32	35
Progeny P 117	66.8	53.0	12.7	36	39
Limagrain Cereal LCS NEWS	60.3	52.7	12.6	55	35
Limagrain Cereal LCS 2347	58.6	53.9	12.4	70	38
MEAN	82.0	53.0	12.6	12	36
CV (%)	9.6				
avg SEM	3.5				
Trial Weight	0.23				
Variety F-value	7.4				
Variety Pr>F	<0.001				
avg LSD (p=0.10)	8.0				
df LSD	200				

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

CV: within-trial variability as a percent of mean yield for the trial

avg SEM = [average (variance of variety mean)]^{1/2}; based on within-trial variation, referred to as avg SEM

Trial Weight = (1/ avg SEM² for trial) (1/ sum over trials of [1/avg SEM²]); all locations of same trial sum to 1

avg LSD: smallest difference considered significant between varieties within the same trial

Table 13. Performance of COMMERCIAL WHEAT varieties MANAGED for pests - Rowan County, 2015.

Brand Variety or Variety	Yield bu/a	Test Weight lb/bu	Moisture %	Lodging %	Plant Height inches
Dyna-Gro 9223	107.3 **	54.3	12.2	15	39
Southern Harvest 4400	105.7 *	55.9	12.5	15	39
Dyna-Gro Shirley	105.6 *	54.1	12.0	0	34
Pioneer 26R20	101.7 *	55.9	12.2	30	39
Harvey's AP 1882E	101.3 *	55.1	12.0	0	39
Armor Havoc	99.0 *	54.6	10.1	0	37
AgriMAXX 413	98.7 *	53.4	11.7	0	34
USG 3756	98.4 *	55.1	11.9	0	39
Southern States SS 8340	98.0 *	54.4	12.0	0	35
USG 3404	97.9 *	54.1	12.1	0	36
USG 3523	97.0 *	52.9	11.8	23	36
Southern States SS 8404	95.8 *	52.5	11.8	0	31
AgriMAXX 434	95.6 *	52.9	11.6	0	34
AgriMAXX 446	95.3 *	50.4	11.8	0	34
Harvey's AP 1871E	95.3 *	54.1	12.1	0	36
Dyna-Gro 9522	95.0 *	53.2	12.0	0	37
Dyna-Gro 9552	93.7 *	54.8	12.0	0	35
Pioneer 26R53	93.5 *	55.4	12.3	0	33
Limagrain Cereal LCS 2214	93.3 *	54.1	12.0	12	35
USG 3251	93.1 *	54.7	12.0	0	37
Southern Harvest 4300	92.7	52.8	11.7	38	36
Syngenta SY Harrison	92.3	52.2	11.9	0	34
Southern States SS 8360	91.9	53.8	12.0	0	35
AgriMAXX 444	91.8	52.7	11.8	0	36
USG 3201	91.5	52.3	12.2	0	35
Syngenta SY Cypress	91.1	54.7	12.1	25	33
USG 3833	90.2	54.7	12.1	0	39
NC Yadkin	89.8	54.0	12.0	7	36
Pioneer 26R10	86.5	54.4	12.0	0	36
Featherstone VA-258	86.4	53.6	12.0	15	38
Syngenta SY 9978	86.3	54.1	12.0	28	40
Progeny P 357	86.1	50.2	11.5	17	37
Syngenta Oakes	84.9	55.5	12.5	42	36
AgriMAXX 415	84.6	54.5	12.1	0	35
Dyna-Gro Savoy	84.1	54.7	12.0	52	33
Progeny P 870	84.0	52.5	11.6	0	34
Southern Harvest 555	83.3	56.2	12.4	10	34
Pioneer 25R32	83.1	54.9	12.0	0	38
USG 3612	82.9	52.1	11.6	50	36
USG 3120	82.8	54.0	11.7	30	37
Southern Harvest 3200	81.6	53.3	9.9	13	36
Southern States SS 520	81.4	53.9	12.0	8	35
USG 3895	81.3	52.2	11.7	0	32
Southern States SS 8500	79.7	54.2	11.8	30	39
Featherstone 73	79.4	54.6	11.9	87	37
USG 3993	77.4	50.1	11.6	58	35
AgriMAXX 427	77.0	52.1	11.7	32	37
Progeny P 410	76.6	54.6	12.0	25	41
Limagrain Cereal LCS NEWS	75.8	54.1	11.8	67	36
Progeny P 117	72.4	53.5	11.7	65	40
Limagrain Cereal LCS 2347	69.8	55.1	11.8	75	37
AGSouth Genetics AGS 2027	68.3	53.1	11.7	60	33
MEAN	89.0	53.8	11.9	18	36
CV (%)	12.0				
avg SEM	6.1				
Trial Weight	1.0				
Variety F-value	2.3				
Variety Pr>F	<0.001				
avg LSD (p=0.10)	14.3				
df LSD	100				

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

CV: within-trial variability as a percent of mean yield for the trial

avg SEM = [average (variance of variety mean)]^{1/2}; based on within-trial variation, referred to as avg SEM

Trial Weight = (1/ avg SEM² for trial) (1/ sum over trials of [1/avg SEM²]); all locations of same trial sum to 1

avg LSD: smallest difference considered significant between varieties within the same trial

Table 14. Performance of EXPERIMENTAL WHEAT lines - Rowan County, 2015.

Brand Variety or Variety	Yield <i>bu/a</i>	Test Weight <i>lb/bu</i>	Moisture <i>%</i>	Lodging <i>%</i>	Plant Height <i>inches</i>
Syngenta SY Viper	104.1 **	63.3	12.3	19	38
Pioneer XW13T	98.6 *	63.5	12.2	0	33
Dyna-Gro Shirley ‡	97.2 *	62.7	12.0	8	34
Armor ARX 1327	93.4	61.6	12.1	0	35
NC10-23663	93.2	62.7	12.1	49	37
Doebler's XP1007DB	91.0	61.3	12.0	0	35
AgriMAXX Exp1450	90.9	62.3	12.0	9	38
Pioneer 26R53 ‡	90.3	63.0	12.1	0	32
Armor ARX 1433	88.6	60.6	11.7	0	36
Southern States SS EXP 8530	88.0	61.6	10.7	0	36
Dyna-Gro WX14611	87.7	60.7	11.7	0	36
AgriMAXX Exp1555	87.1	62.1	11.8	0	38
Hilliard	86.9	61.2	11.8	0	36
Armor ARX 1325	86.8	61.5	11.9	0	35
Armor ARX 1413	86.6	63.0	12.0	0	38
WO 10025H2	86.1	62.9	12.0	59	36
Dyna-Gro WX15733	86.0	61.5	11.7	0	35
NC10-23720	86.0	65.3	12.6	19	35
NC8170-4-3	85.8	65.4	12.4	33	39
Armor ARX 1441	85.1	61.9	12.0	30	34
VA11W-106	84.9	62.4	12.0	2	34
VA10W-96	84.9	63.4	12.1	13	35
SCLA 99049D-E1-J1	84.6	62.8	12.0	7	37
VA11W-230	84.1	63.9	12.0	11	33
USG 3120 ‡	84.0	63.6	12.0	21	37
Armor ARX 1418	83.6	59.8	11.6	7	38
GA-04417-12E33	83.5	62.9	12.0	5	36
Pioneer XW13W	83.4	61.6	11.9	0	36
Southern States SS EXP 8513	83.0	63.1	12.1	38	34
NC09-20986	81.8	63.1	12.0	21	34
GA-03564-12E6	81.2	62.7	11.9	23	33
Syngenta Oakes ‡	81.1	64.8	12.4	37	35
NC11-21899	80.8	62.2	11.8	5	35
WO 10025T1	80.7	62.0	11.8	45	37
Southern States SS 8404 ‡	80.5	63.6	12.1	0	31
NC11-23321	80.1	63.0	12.0	6	36
Progeny PGX 13-6	80.0	61.3	11.9	3	36
NC11-21982	78.4	62.7	11.9	5	35
GA-04434-12LE28	78.3	61.2	11.8	13	34
NC11-22289	71.7	63.1	11.9	42	31
Doebler's XP1005DB	71.6	60.0	11.7	12	35
Armor ARX 1412	71.0	61.1	11.8	4	37
VA10W-119	69.3	60.7	11.7	47	34
Southern States SS EXP 8629	69.1	60.7	11.7	52	33
SCTX 98-27H1	64.2	62.1	11.8	26	32
MEAN	83.9	62.3	11.9	15	35
CV (%)	10.8				
avg SEM	4.1				
Trial weight	0.54				
Variety F-value	3.9				
Variety Pr>F	<0.001				
avg LSD (p=0.10)	9.3				
df LSD	173				

‡ Commercial check variety

Highest yielder. *Not significantly different from highest yielder. **BOLD entries comprise the upper quartile.

CV: within-trial variability as a percent of mean yield for the trial

avg SEM = [average (variance of variety mean)]^{1/2}; based on within-trial variation, referred to as avg SEM

Trial Weight = (1/ avg SEM² for trial) (1/ sum over trials of [1/avg SEM²]); all locations of same trial sum to 1

avg LSD: smallest difference considered significant between varieties within the same trial

Table 15. North Carolina winter wheat milling quality data^{1,2} - 2014 harvest.

Brand/Variety or Variety	Milling Quality³ <i>Score: 1 - 5</i>	Flour Yield <i>% of Wheat</i>	Softness Equivalence⁴ <i>%</i>	Grain Condition⁵ <i>Score: 0 - 4</i>
AgriMAXX 413	4.6	73.1	55.1	0.5
AgriMAXX 415	4.6	73.1	54.4	0.5
AgriMAXX 427	3.1	70.8	59.1	0.5
AgriMAXX 434	3.5	71.3	57.6	0.5
AgriMAXX 438	4.7	73.3	58.6	0.5
AgriMAXX 447	3.5	71.4	54.4	0.5
AGSouth Genetics 2026	3.8	71.7	58.7	0.5
AGSouth Genetics 2035	4.0	72.3	55.1	0.5
AGSouth Genetics 2038	4.8	73.3	53.7	0.5
Beck's 113	1.8	69.2	57.5	0.5
Beck's 120	4.4	72.6	56.1	0.5
Beck's 129	4.6	73.2	58.2	0.5
Beck's 135	3.2	70.9	58.4	0.5
Dyna-Gro 9012	4.4	72.8	55.8	0.5
Dyna-Gro 9223	4.5	72.9	59.6	0.5
Dyna-Gro Savoy	5.0	73.7	57.6	0.5
Dyna-Gro Shirley	4.2	72.4	55.0	1.0
Dyna-Gro Yorktow n	1.9	69.4	56.0	0.5
Featherstone 73	3.2	71.0	56.2	0.5
Featherstone VA-258	3.5	71.3	54.7	0.5
Jamestow n	3.7	71.6	57.0	0.5
L-Brand 343	4.6	73.1	56.6	0.5
Merl	4.0	72.2	55.8	0.5
NC Cape Fear	3.2	70.9	54.5	0.5
NC Yadkin	3.6	71.6	54.9	0.5
Pioneer 25R32	4.7	73.2	49.1	0.5
Pioneer 26R10	3.8	71.7	59.9	0.5
Pioneer 26R12	3.5	71.3	55.7	0.5
Pioneer 26R20	2.9	70.5	54.5	1.0
Pioneer 26R41	3.8	71.8	59.2	0.5
Pioneer 26R53	4.0	72.2	55.5	0.5
Progeny 117	3.8	71.9	57.5	0.5
Progeny 125	3.0	70.6	61.3	0.5
Progeny 185	4.0	72.3	56.5	0.5
Progeny 357	3.6	71.5	57.9	0.5
Progeny 870	4.5	72.9	56.5	0.5
Roane	2.4	69.8	55.0	0.5
Southern States SS 8340	4.4	72.7	54.5	0.5
Southern States SS 8360	4.4	72.6	60.1	0.5
Southern States SS 8404	3.9	72.0	52.8	1.0
Southern States SS 8412	3.7	71.7	54.7	1.0
Southern States SS 8415	5.0	73.8	56.6	1.0
Southern States SS 8500	4.4	72.7	56.0	0.5
Southern States SS 8870	3.5	71.4	55.6	0.5
Syngenta Oakes	3.8	71.9	53.5	0.5
Syngenta SY 9978	4.8	73.5	60.7	0.5
Syngenta SY Harrison	4.5	72.8	60.0	0.5
USG 3013	4.6	73.1	59.3	0.5
USG 3120	4.2	72.4	56.1	0.5
USG 3201	4.5	73.0	55.9	0.5
USG 3251	3.2	70.9	60.2	0.5
USG 3404	4.6	73.1	60.6	0.5
USG 3438	4.2	72.3	55.5	0.5
USG 3523	3.5	71.2	57.2	0.5
USG 3612	3.0	70.6	59.5	0.5
USG 3833	3.1	70.8	54.6	1.0
USG 3993	2.9	70.5	55.0	0.5

Continued on next page

Table 15 (continued). North Carolina winter wheat milling quality data^{1,2} - 2014 harvest.

Brand/Variety or Variety	Milling Quality³ <i>Score: 5 - 1</i>	Flour Yield <i>% of Wheat</i>	Softness Equivalence⁴ <i>%</i>	Grain Condition⁵ <i>Score: 0 - 4</i>
AgriMAXX Exp1444	4.6	73.1	59.5	0.5
AgriMAXX Exp1450	3.5	71.4	58.1	1.0
AgriMAXX Exp1465	4.5	72.9	58.0	1.0
ARS07-1214	2.3	69.8	43.3	1.0
ARS09-155	4.5	72.8	57.2	0.5
ARS09-367	2.8	70.3	45.0	1.0
ARS09-750	1.9	69.2	54.7	0.5
ARS10-211	0.1	67.4	55.7	1.0
ARS10-389	5.0	74.3	41.2	1.0
Dyna-Gro WX13622	3.9	72.0	59.5	0.5
Dyna-Gro WX13652	4.6	73.1	58.7	0.5
GA-031086-10E26	3.5	71.4	60.2	2.0
GA-041293-11E54	4.3	72.6	55.6	0.5
GA-041293-11LE37	4.4	72.7	56.5	0.5
GA-04434-11E44	3.6	71.4	55.7	1.0
MD04W 249-11-7	3.1	70.8	56.7	0.5
NC Cape Fear	3.8	71.7	55.7	0.5
NC08-140	2.2	69.7	57.3	1.0
NC08-21273	3.3	71.0	52.9	0.5
NC09-20765	2.8	70.3	53.7	2.0
NC09-20768	3.0	70.7	51.9	1.0
NC09-20986	2.8	70.4	55.6	1.0
NC09-22402	4.4	72.7	51.6	1.0
NC10-23663	3.0	70.5	56.8	1.0
NC10-23720	2.8	70.3	49.8	0.5
NC8170-4-3	4.9	73.6	52.9	0.5
NC8932-12	3.9	71.9	43.3	1.0
Progeny PGX 13-1	3.0	70.6	55.4	1.0
Progeny PGX 13-2	4.0	72.2	60.9	1.0
SX 101	4.5	72.8	51.9	0.5
SX 102	2.5	69.9	57.3	1.0
SX 103	3.1	70.8	56.0	1.0
VA08MAS-369	3.8	71.9	54.8	0.5
VA10W-119	5.0	74.7	55.7	1.0
VA10W-21	3.8	71.7	48.0	0.5

¹ Milling quality data presented on 2014 harvest. Milling data analyzed at 15% moisture.

² Many thanks to Mennel Milling Company in Fostoria, Ohio, for providing this analysis.

³ Softness equivalence indicates the percent of fine flour to total flour; equals the Break-Flour Yield.

⁴ Milling Quality Score:

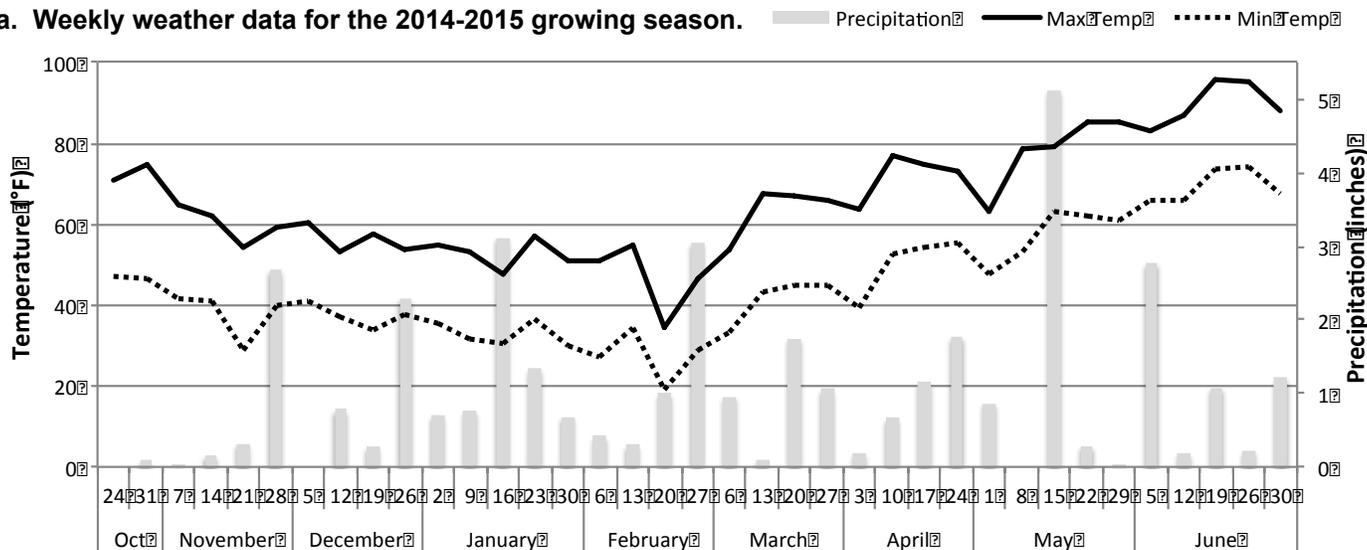
1 = Marginal 2 = Marginal 3 = Good/Average 4 = Excellent 5 = Superior

⁵ Grain Condition Score:

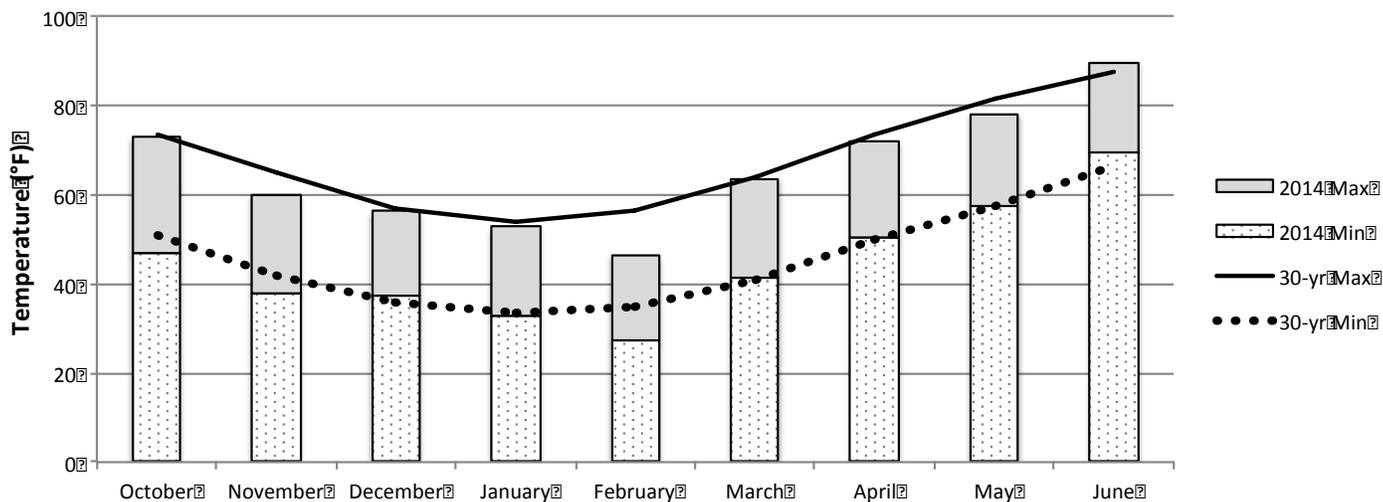
0 = no shriveling 1 = < 10%, slight shriveling 2 = 10 - 20%, slight shriveling
3 = increased degree of shriveling, wider crease 4 = significant shriveling, wide crease, surface depre

Figure 1. Lenoir Weather Data

1a. Weekly weather data for the 2014-2015 growing season.



1b. Temperature for the 2014-2015 season compared to the 30-year average.



1c. Precipitation for the 2014-2015 season compared to the 30-year average.

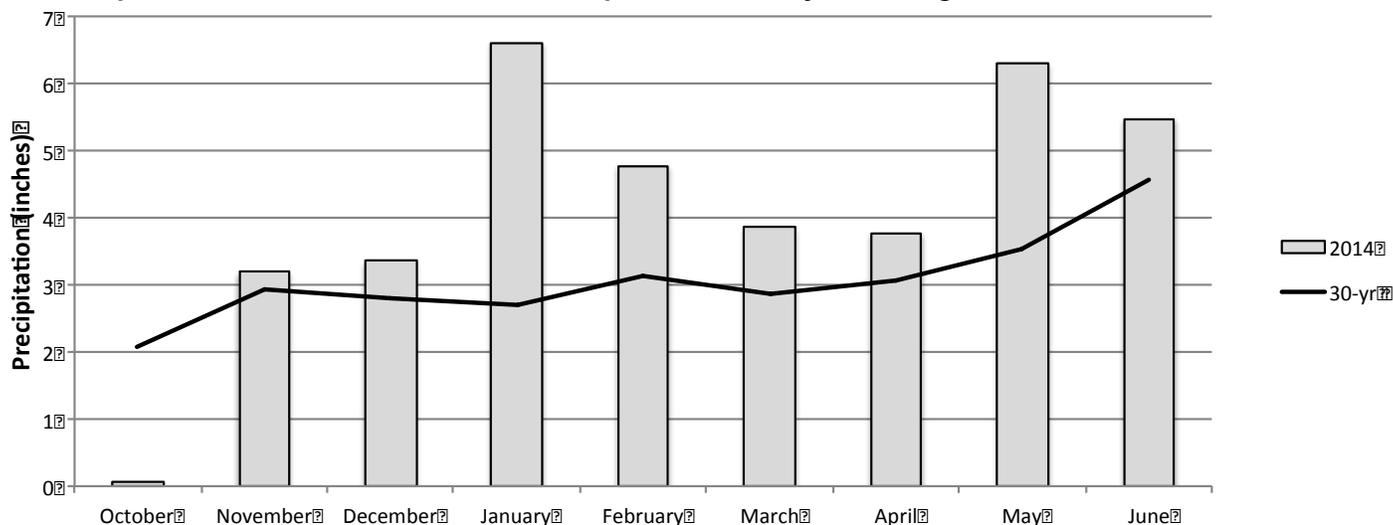
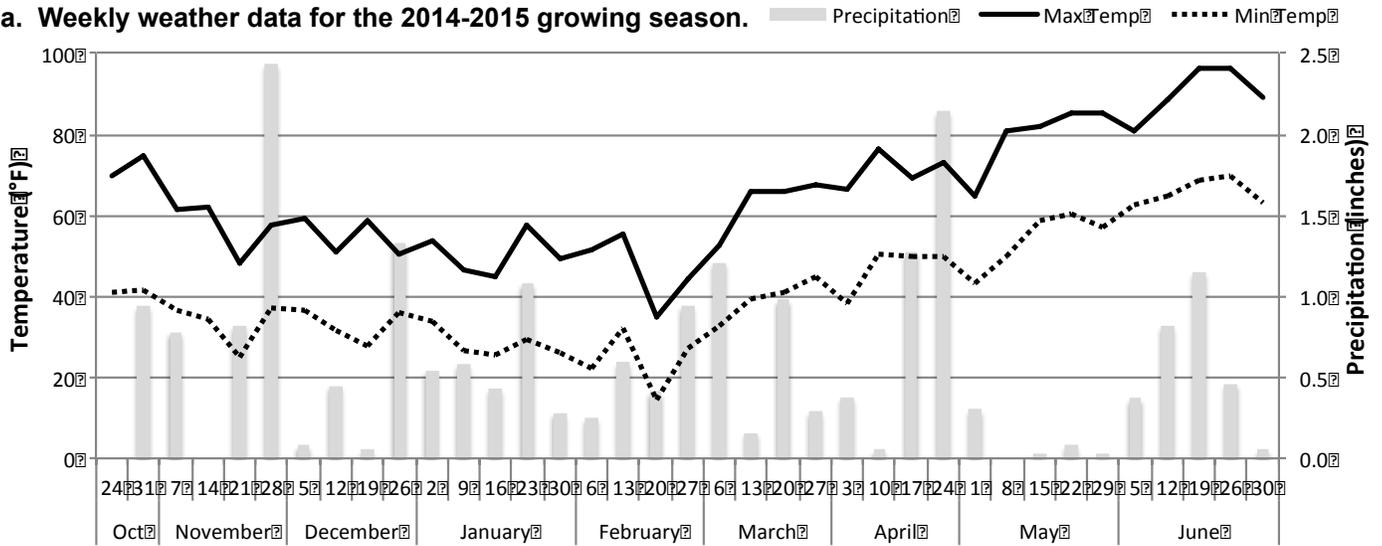
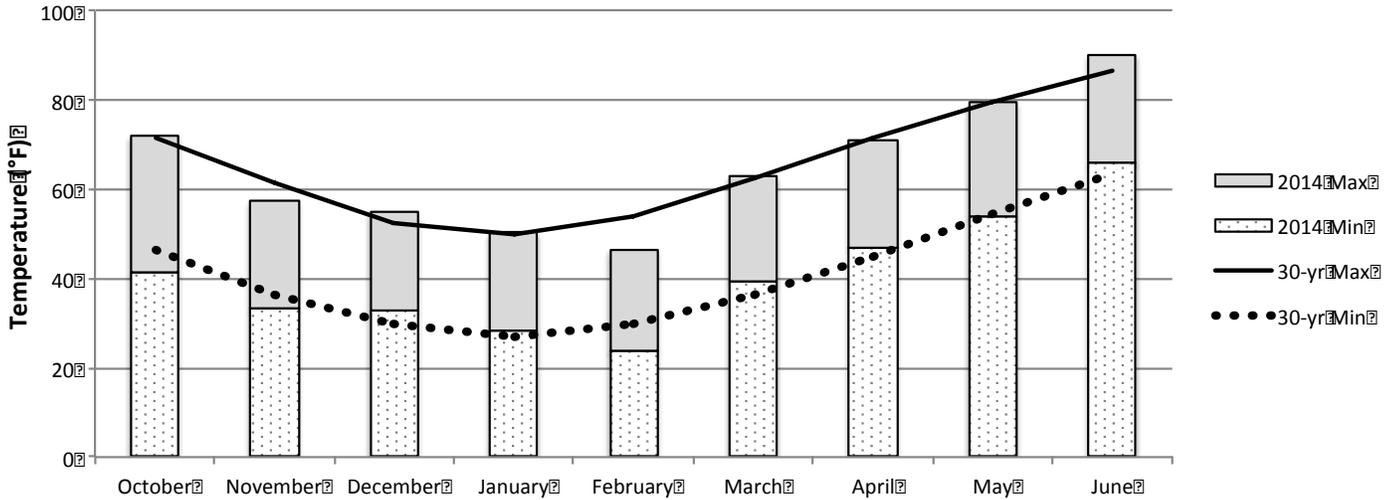


Figure 2. Rowan Weather Data

2a. Weekly weather data for the 2014-2015 growing season.



2b. Temperature for the 2014-2015 season compared to the 30-year average.



2c. Precipitation for the 2014-2015 season compared to the 30-year average.

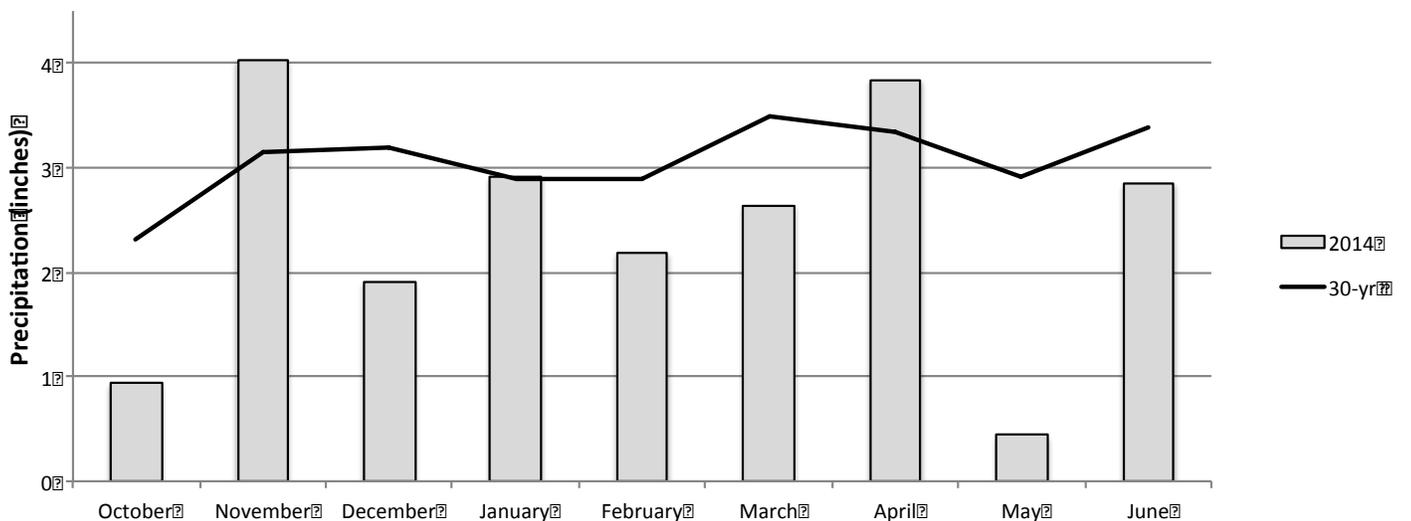
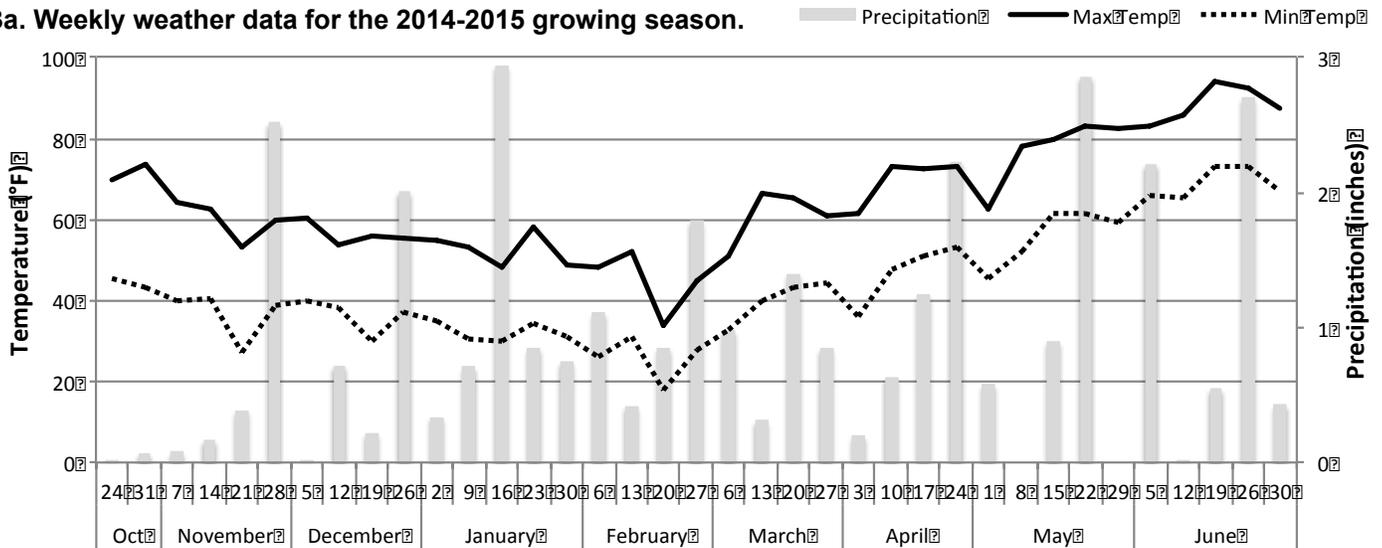
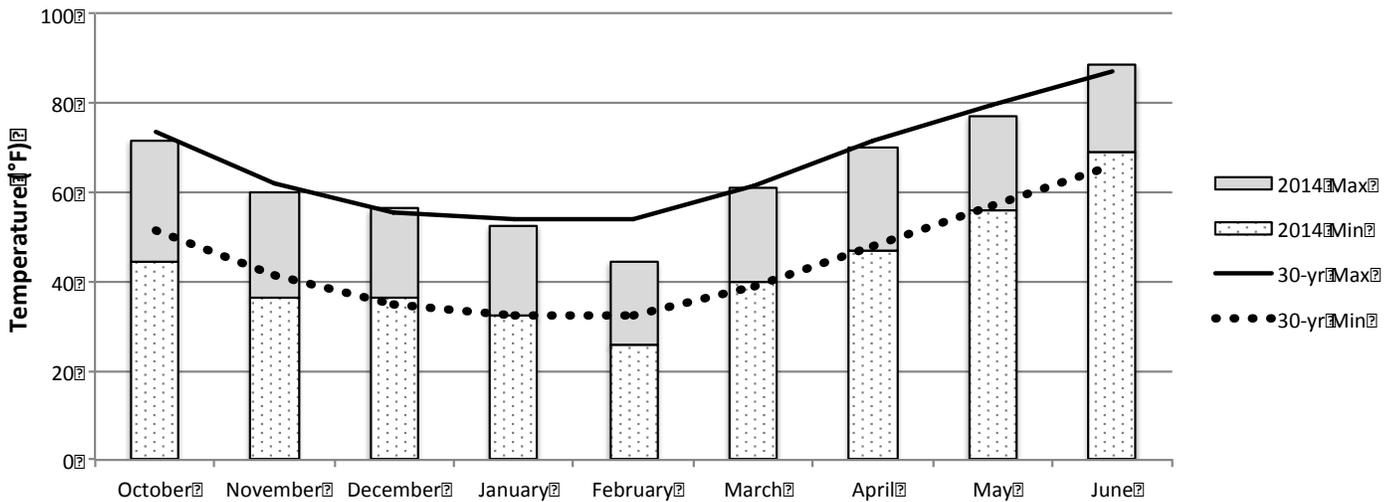


Figure 3. Washington Weather Data

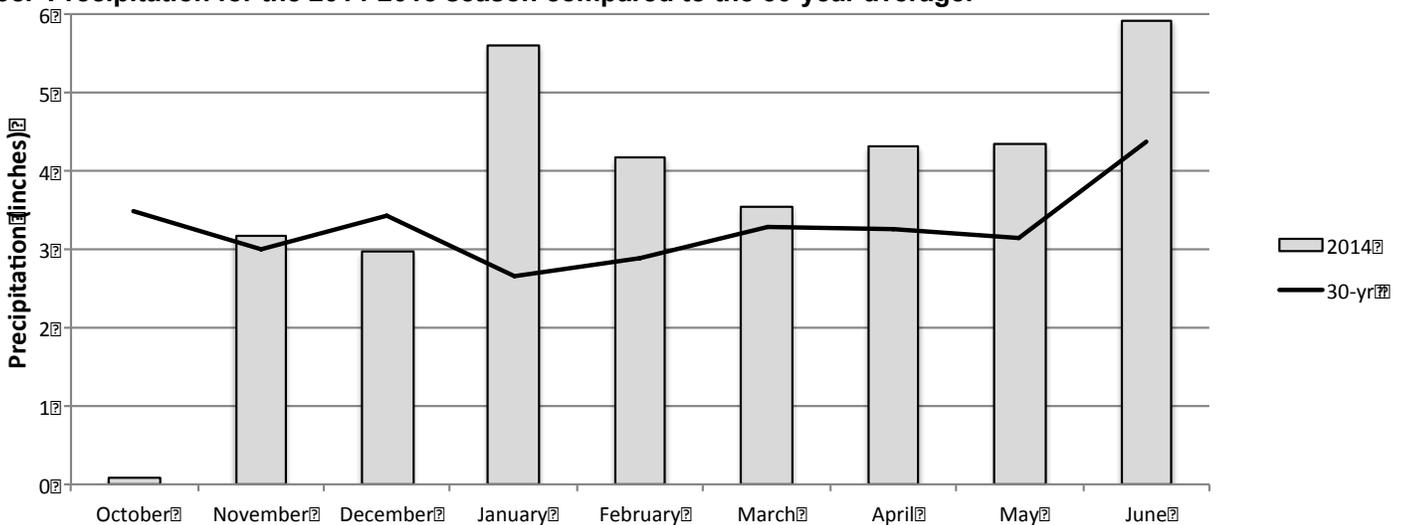
3a. Weekly weather data for the 2014-2015 growing season.



3b. Temperature for the 2014-2015 season compared to the 30-year average.



3c. Precipitation for the 2014-2015 season compared to the 30-year average.



REFERENCES

- Brownie, C., D. T. Bowman and J. W. Burton. 1993. Estimating Spatial Variation in Analysis of Data from Yield Trials: A Comparison of Methods. *Agron. J.* 85: 1244-1253.
- Bowman, D. T. and J. O. Rawlings. 1995. Establishing a Rejection Procedure for Crop Performance Data. *Agron. J.* 87: 147-151.