FOREWORD

Personnel of the Department of Entomology, Soil, and Plant Sciences of the South Carolina Agricultural Experiment Station conducted the research reported in this publication. Tests were located at the Edisto Research and Education Center near Blackville, the Pee Dee Research and Education Center near Florence, and the Simpson Experiment Station near Clemson.

The circular was prepared by Benjamin E. Edge, III, Interim Small Grains Breeder, W.D. Graham, Professor of Crop and Soil Environmental Science, and Carl W. Myers, Agricultural Science Associate. The research results and variety descriptions should provide a basis for reliable evaluations of the small grain varieties involved.

Certain of the varieties and advanced experimental strains have been tested for only one or two years. Such short-term data are considered inconclusive and are included in this publication merely as a report of progress.

For their assistance in conducting these tests, acknowledgment is made to the following individuals:

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PERFORMANCE OF SMALL GRAIN VARIETIES IN SOUTH CAROLINA

Benjamin E. Edge, III, W. D. Graham, Jr., C. W. Myers*

Barley, oat, triticale, and wheat varieties are evaluated annually at three locations and two planting dates in South Carolina. These evaluations are conducted to determine the value and adaptability of commercially available and experimental small grain varieties for planting in the state. Continued testing and evaluation are essential to provide farmers, seedsmen, and other agricultural workers with reliable information to assist them in selection of varieties best adapted to their locality and individual production requirements.

This publication contains current year and multiple year data for several standard varieties and some newer promising varieties and strains. Information is provided for yield, test weight, plant height, and heading date of the barley, oat, triticale, and wheat varieties tested. Also, some varieties are rated for pest resistance, straw strength, relative maturity, and other agronomic traits.

TEST CONDITIONS

The small grain tests at each location were planted in firm, well-prepared seedbeds. Early plantings at the Simpson Experiment Station were made in mid-October for barley and oats. Late planting for barley and oats was made in late November. Early wheat was planted at the Simpson Station in late November while late wheat seeding was in mid-December. Tests in the Coastal Plain were planted the latter part of November and early December. Seeding dates are listed on individual tests. Triticale variety tests were seeded on or after November 15. It is very important to seed the triticale varieties after this date to minimize the chances of late spring freeze damage to the developing head/grain.

CULTURAL PRACTICES 2002-2003

Clemson:

Dates of planting:
Early: See individual crops.
Late: See individual crops.
Management: Chisel plowed and disked

Soil type: Cecil sandy clay loam

Fertilization: preplant-See individual crop locations for fertilizer amounts and soil test values.
topdress-50 lbs/acre N
Herbicide: 0.75 lb/acre 2,4-D

Plot size: planted 6 rows 12 ft. x 7 in.
harvested 6 rows 10 ft. x 7 in.

*Interim Small Grains Breeder, Professor of Crop and Soil Environmental Science, and Agricultural Science Associate.

CULTURAL PRACTICES 2002-2003 (continued)

Blackville:

Date of planting: December 5, 2003

Management: Deep tillage and disked

Soil type: Varina loamy sand

Fertilization: pre-plant-see individual crop locations for fertilizer amounts and soil test values.
topdress-50 lbs/acre N

Herbicide: 0.75 lb/acre 2,4-D

Plot size: planted 6 rows 12 ft. x 7 in.
harvested 6 rows 10 ft. x 7 in.

Florence:

Date of planting: November 25, 2003.

Management: Deep tillage and disked

Soil type: Norfolk loamy sand

Fertilization: preplant-See individual crop locations for fertilizer amounts and soil test values.
topdress-50 lbs/acre N
Herbicide: 0.75 lb/acre 2,4-D

Plot size: planted 6 rows 12 ft. x 7 in.
harvested 6 rows 10 ft. x 7 in.

RECOMMENDED RATES OF FERTILIZER P_2O_5-K_2O TO APPLY TO SMALL GRAIN BASED ON SOIL TEST LEVELS

	POTASSIUM			
	LOW	MEDIUM	HIGH	VERY HIGH
PHOSPHORUS	POUNDS P_2O_5-K_2O			
LOW	80-80	80-40	80-0	80-0
MEDIUM	40-80	40-40	40-0	40-0
HIGH	0-80	0-40	0-0	0-0
VERY HIGH	0-80	0-40	0-0	0-0

DIFFERENCES IN YIELD

Since experimental plots are subject to inherent soil variations, fertility differences, and other sources of variation, it is not possible to determine the exact yield potential of a variety. Therefore, all differences between varieties should be viewed with caution since they may not be "real" differences, but may have occurred by chance. Statistical aids given in each of the tables should help the reader to make valid comparisons between varieties and show the precision with which the tests were conducted. The magnitude of differences which may have been due to chance have been computed for the data presented herein and are listed at the end of each column as the L.S.D. (least significant difference).

Comparisons between varieties should be made only within columns and not between columns in the tables. In comparing varieties within a column differences greater than the L.S.D. may be assumed to be inherent differences between varieties with 90% confidence. Differences smaller than the L.S.D. are assumed not to be real differences with 90% confidence.

Coefficients of variation, (C.V.), which are listed at the bottom of the current year data tables, reflect the relative precision and accuracy with which the test was conducted. Relatively low percentages indicate small amounts of variation within each test.

CHOICE OF VARIETIES

Many factors govern the choice of small grain varieties. Plant characteristics, which should be evaluated in selecting small grain varieties, are lodging resistance, plant height, relative maturity, winterhardiness, and pest resistance, in addition to test weight of the grain. Further information on variety characteristics and pest resistance is available on the Small Grains website at http://www.clemson.edu/agronomy/vt/Small_Grains/smgrain.htm under Technical Information.

Varietal performance may seem inconsistent because of year-to-year variations in rainfall, temperature, pests, and other factors. Therefore, continued testing over a period of years is necessary to obtain a more reliable evaluation of variety performance.

In addition to the yearly data, multiple-year averages are reported for certain of the varieties. Whenever possible these long-term averages, rather than the 1-year results, should be used to make comparisons between varieties.

WEATHER AND PEST CONDITIONS

Soil moisture in fields planted to small grains was good at seeding. Edisto REC test was planted later than usual due to lack of moisture during usual seeding dates. Good stands were obtained at all test locations.

Rainfall amounts for the period October 2002 through May 2003 for Clemson and Florence are listed in the table below for the test locations. Blackville data for rainfall were not available. An additional 11.09 inches of rainfall was recorded at Clemson during June and July, prolonging an already delayed harvest. Rainfall during the growing season was well above normal at Clemson and Edisto and close to normal at the Pee Dee REC location. Early disease infestations such as powdery mildew and rust were generally quite low. Variety reaction to leaf rust is listed in the characteristics of Wheat Varieties page 18. Hessian fly levels were low at the Edisto REC and Pee REC and yield losses to fly were minimal. Barley yellow-dwarf virus infestations were minimal in the October seedings of oat and barley variety tests at Clemson in contrast to past years.

Winter temperatures were above normal during the December to February period.

Monthly Rainfall at Test Locations in 2002-2003.*

Month	Year	Clemson	Florence	Blackville**
		inches		
October	2002	4.49	4.20	
November	2002	5.54	3.84	
December	2002	7.20	0.77	
January	2003	2.21	1.17	
February	2003	6.28	1.50	
March	2003	7.59	7.65	
April	2003	5.23	0.06	
May	2003	5.49	3.13	
Total	2002-2003	44.03	26.01	
Total(Normal)***	1951-80	37.70	29.21	24.80

* Monthly Climatological Data, Agricultural Weather Office, College of Agricultural, Forestry, and Life Sciences, Clemson University, Clemson, SC 29634.

** All months were not available for Blackville.

*** Same 8 month period from 1951-80.