Agronomy Facts No. 19

(Revised August, 2014)

2014 MARYLAND WHEAT & BARLEY VARIETY PERFORMANCE TRIALS

http://www.mdcrops.umd.edu

Wheat and barley cultivar trials were conducted by the Maryland Agricultural Experiment Station and the Department of Plant Science and Landscape Architecture across Maryland in the 2013/2014 season at the following four locations : (1) Lower Eastern Shore Research and Education Center's (REC) Poplar Hill Facility near Quantico in Wicomico County; (2) Wye REC at Queenstown in Queen Anne's County; (3) Central Maryland REC's Clarksville Facility in Howard County; and (4) Western Maryland REC near Keedysville in Washington County (crop management practices at each location are listed in Table 1).

Entries that are generally available to Maryland producers and that are commonly grown in the state are selected each year for the tests. In addition, new varieties, commercial brands, and advanced breeding lines are included in the tests to compare their performance to that of known varieties. Seventy-two wheat entries and ten barley entries made up the 2014 tests. Table 2 lists the suppliers and seed treatments applied to each entry. The following characteristics were evaluated in these trials: grain yield (adjusted to 13.5% moisture), test weight, moisture content at harvest, heading date, plant height, Fusarium Head Blight (scored on a 0-9 scale), and Powdery Mildew (scored on a 0-9 scale). Heading date was determined when approximately 50% of the small grain heads had cleared the boot. Plant height did not include the length of the awns.

Wheat and barley entries were planted (both for conventional tillage and no-till) at all locations in seven-row plots 16 feet in length and later trimmed to 13.8 feet in randomized blocks with three replications per entry. Both wheat and barley were planted in 6 inch rows. Wheat was seeded at a target rate of 18 seeds per foot of row, which represents a population of approximately 1.3 million plants per acre based on 90% germination. For no-till studies, a rate of 22 seeds per foot of row was used (approximately 1.7 million plants per acre based on 90% germination).

Plots were mechanically harvested using a small plot combine (Wintersteiger Seedmech Nurserymaster Elite). Plot weight, test weight, and moisture content data of the wheat trials were obtained with a HarvestMaster HM-1000b attached to the plot combine. Other location-specific management factors are summarized in Table 1.

PRODUCTION YEAR

Planting conditions were fairly favorable in early October at most locations in the Fall of 2013. Heavy snow was present in during winter months and extremely low temperatures on a few nights caused damage to plots. The Spring had adequate moisture and Fusarium head scab was not present at most locations this year. Overall grain yield of wheat entries was a little higher than normal and barley was normal. Harvest was timely but happened later due to later maturity. Test weights were higher than average.

RESULTS

Wheat and barley performance data are summarized in the data tables, posted separately. There are tables summarizing the individual test locations for both small grain crops. In addition, there are statewide summary tables and a relative yield table. A two and three-year summary table for selected entries of each crop is also included.

Data were statistically analyzed to determine if differences existed between varieties at each location. At the bottom of each table a mean, an LSD, and a CV are reported. Least significant differences (LSD) were calculated at the 5 % probability level. "NS" in the tables indicates that no statistically significant differences were observed for that character at the 5% probability level. The coefficient of variation (CV) is a measure of field variability in relation to the mean. CV's below 10% are an indication that the precision of the test is good in distinguishing differences between varieties. A CV above 10% indicates other factors than varietal differences are causing variability. These factors can include fertility management, different soil types within the study, low spots in the field, etc.

As an aid to assess the performance of individual varieties in the test, relative yield values were calculated. Relative yield value of a variety is the percentage of the mean yield for all varieties at a location. A variety with a relative yield that is consistently greater than 100 is a variety that consistently yields higher than the mean yield of all of the varieties at that location.

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ACKNOWLEDGMENTS

The Small Grains Breeding Program would like to recognize the farm staff of the Maryland Agricultural Experiment Stations (Table 1) for their assistance with land preparation, plot management, harvest, and equipment repair. We would also like to thank the **Maryland Crop Improvement Association** and the **Maryland Grain Producers Utilization Board** for their generous financial contributions to our breeding and testing program. We also wish to recognize for their hard work in seed preparation as well as during harvest and processing of seed, Ben Conway, Daniella Miller, and Yaopeng Zhou, and Dr. Robert Kratochvil and Dr. Arvydas Grybauskas for their helpful suggestions and data.

The cooperation and support offered by commercial seed companies, state crop improvement associations, and several University Experiment Stations in supplying seed and information about varieties are greatly acknowledged. Finally, a special note of appreciation is also extended to the County Extension Educators who disseminate this information.

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Table 1. 2013/2014 Wheat and Barley Variety Test Plot Information

1. Lower Eastern Shore Research and Education Center (LESREC) - Poplar Hill Facility

Wicomico County - Quantico, MD
Planting dates: 10/17/13 (wheat and barley). Harvest date: 6/16/14 (barley); 6/18/14 (wheat)
Soil Type: Hambrook Sandy loam. Previous crop: corn. Minimum-tillage.
Fertilizer: Fall: none. Spring: 3/21/14: 300lb/a of 15-00-15. Spring: 4/4/14: 40# N as 30% UAN.
Herbicide on 4/4/14: Harmony Extra SG 0.6oz/A.
Farm Staff: David Armentrout and Fred Senkbeil.

2. Wye Research and Education Center (WREC)

Queen Anne's County - Queenstown, MD
Planting date: 10/21/13 (All wheat and barley). Harvest date: 6/16/14 (barley); 6/20/14 (wheat)
Soil Type: Mattapeake/Mattapex silt loam, Previous crop: corn. Minimum-tillage; Fertilizer: Fall: none. Spring: 60#N as 30% on 3/11/14, 20#N as 30% on 4/14/14 (wheat). Herbicide: Harmony Extra SG .8 oz/A on 4/10/14. Insecticide: Warrior 2 w/Zeon Tech on 5/10/14
Farm Staff: Mark Sultenfuss, Donny Murphy, and Joe Streett.

3. Central Maryland Research and Education Center (CMREC)-Clarksville Facility

Howard County - Clarksville, MD
Planting dates: 10/3/13 (wheat and barley). Harvest dates: 6/23/14 (barley); 7/7/14 (wheat)
Soil type: Chester Silt Loam. Previous crop: Silage corn. Tillage: Heavy Disk.
Fall Fertilizer: 200 lbs of 5-14-40 on 9/18/13. Spring: 65# N as 30-0-0 UAN on 4/4/14
Herbicide: Harmony SG 0.75 oz/A on 4/18/14
Farm Staff: Dave Justice and Michael Gray.

4. Western Maryland Research and Education Center (WREC) - Keedysville Facility

Washington County - Keedysville, MD

Planting date: 10/23/13. Harvest date: 7/7/14 (wheat).

Soil Type: Hagerstown silt loam. Previous crop: Soybeans. No-tillage.

Fertilizer: Fall: none. Spring: wheat and barley: 40lbs N on 3/27/14. 40 N as 30% UAN on 4/21/14

Herbicide: Harmony Extra SG 0.75oz. on 4/21/14

Farm Staff: Tim Ellis and Douglas Price

Table 2. Sources of Winter Wheat, and Barley Entries Tested in Maryland in the 2013/2014 season.

Supplier/Address/Local Rep.	Brand	Varieties and Seed Treatments*
Syngenta Seeds, Inc., 2424 Webster RD Monroeville, IN 46773; Chris Munsterman (304)261-9564; chris.munsterman@syngenta.com	Syngenta	SY 1526, SY 474, SW 007, M09L-9547 (treated with Vibrance Extreme)
Growmark FS; 308 NE Front St., Milford, DE 19963; Mike Wheatley (302)535-6014; mwheatley@growmarkfs.com	FS	FS 888, FS 815, FS 820, FSX 850, FSX 851, FSX 852, FSX 853, FSX 854, FSX 855. FSX 856. FS 950 (barley), FS 501 (barley) (treated with DXT)
Pioneer Hi-Bred Intl., Inc.; 59 Greif Pkwy- Suite 200, Delaware, OH 43015; Bill McCollum (302) 584-5428; bill.mccollum@pioneer.com	Pioneer	Pioneer Brand 25R32, Pioneer Brand 25R40, Pioneer Brand 25R39, Pioneer Brand 25R77 (treated with DXT)
Southern States Coop.; P.O. Box 26234, Richmond, VA 23260; Eric Fogg (302) 629-7991: eric.fogg@sscoop.com	Southern States	SS 5205, SS 8340, SS 8360, SS 8412, SS 8415, SS 8500, SS 8870 (treated with Proceed, 8415 with R, 8870 with EverGol Energy)
Mid-Atlantic Seeds, Inc., 204 St Charles Way #163E, York, PA 17402; James Vizzard (717) 852-8894; jamesvizzard@comcast.net	MAS	MAS-2, MAS-4, MAS-6, MAS-7, MAS-10, MAS-23, MAS-31, MAS-32, MAS-33, MAS-35, MAS-36, MAS-37 (treated with MAS Pro Shield)
UniSouth Genetics, Inc.; 3205-C HWY 46 S, Dickson, TN 37055; Kevin Anderson (410) 651-2706; wimberlyfarms@gmail.com	USG	USG 3201, USG 3251, USG 3315, USG 3993, USG 3013, USG 3523, USG 3404 (treated with DXT)
Seedway; 5901 Vera Cruz, Emmaus, PA 18049; John Folkenstein (717)363-0034; jfolkenstein@Seedway.com		SW 53, SW 550, SW 57SR
Crop Production Services; 1140 Sweet RD, East Aurora, NY 14052; Tyler Ames (757) 710-2440; tyler.ames@cpsagu.com	Dyna-Gro	Shirley, Yorktown, 9223, 9343 (treated with Foot Hold and Awaken ST)
Limagrain Cereal Seeds; 257 E. Hail St., Bushnell, Il 61422; Ken McClintock (309) 569-0008; ken.mcclintock@limagrain.com	L-Brand	L-Brand 343, L-Brand 221 (treated with DXT)
Eddie Mercer Agri-Services, Inc.; 6900 Linganore Road Frederick, Maryland 21701; Tom Mullineaux (410) 409-7538	Mercer	MBX 11-V-258, MBX 12-V-251, MBX 12-W-270, MBX 12-W-296, MBX 14-K-297, MBX 14-S-210 (treated with Vibrance)
University of Georgia; UGA/GRIFFIN CAMPUS, 1109 EXPERIMENT ST., GRIFFIN, GA. 30223; Jerry Johnson (770)228-7345; jjohnson@uga.edu		GA-041293-11E54 GA-041293-11LE37 GA-04434-11E44 (treated with D EX)
Maryland Agric. Exp. Stn.	------	Chesapeake (treated with D), MD wheat breeding lines (treated with Vibrance/Storcide) MD barley breeding Lines (treated with RT)
VPI & SU/VCIA/EVAREC; 2229 Menokin RD, Warsaw, VA 22572; Robin Markham, Mark Vaughn (804) 333-3485; rmarkham@vt.edu, mvaughn@vt.edu	------	VA Breeding Lines (treated with R MD/Mertect 340F/Storecide II) Thoroughbred, Atlantic, Price (barley) and VA Breeding Lines (treated with RMD/Storecide II),

*Seed treatment codes in parentheses after each entry are as follows: **R**= Raxil**; RT** = Raxil/Thiram; **D** = Dividend; **DXT** = Dividend Extreme.