
Agronomy Facts No. 19

(Revised July, 2010)

2010 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 2009/2010 season at the following five locations : (1) Allen, in Wicomico County (2) Lower Eastern Shore Research and Education Center's (REC) Poplar Hill Facility near Quantico in Wicomico County; (3) Wye REC at Queenstown in Queen Anne's County; (4) Central Maryland REC's Clarksville Facility in Howard County; and (5) 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. Sixty-three wheat entries and eleven barley entries made up the 2010 tests. Hull-less barley entries were also included in the barley trials. 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, leaf rust (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 2009. Heavy rains compromised later plantings of small grains. Heavy snow was present in February but March and April were warmer than average. May and June were drier than usual in most of the state and Fusarium head scab was not present this year. Powdery mildew was very limited during the spring of 2010 and was not scored. Leaf rust and stripe rust were present and scored where there was an even infection in the trial. Grain yield of both barley and wheat entries were average at most locations. Harvest was timely and 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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Table 1. 2009/2010 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: 10/14/09 (wheat and barley). Harvest date: 6/4/09 (barley); 6/15/09 (wheat conventional and wheat no-till)

Soil Type: Hambrook Sandy loam. Previous crop: corn. Conventional and no-tillage.

Fertilizer: Fall: 30# N, 20# P, 80# K, 24# S. Spring: 3/2/10 (greenup): 10# N as 50 gal/A 2-4-12. Spring: 3/25/10: 60# N as 30% UAN.

Herbicide on 3/25/10: Harmony 0.6oz/A

Farm Staff: David Armentrout, Vivian Calder, James Lynch, and Fred Senkbeil.

2. Wye Research and Education Center (WREC)

Queen Anne's County - Queenstown, MD

Planting date: 10/12/09 (conventional wheat and barley). 11/2/09 (Wheat no-till). Harvest date: 6/3/10 (barley); 6/18/10 (wheat conventional);

Soil Type: Mattapeake/Mattapex silt loam, Previous crop: corn. Conventional Tillage.

Fertilizer: Fall: 300# 10-10-10 on 10/9/09. Spring: 60#N as 30% on 3/10/10 (all), 40#N as 50/50 water/30% on 4/7/10 (wheat)

Herbicide: Harmony .8oz/A on 4/6/10.

Farm Staff: Mark Sultenfuss, Reese Stafford, and Joe Streett.

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

Howard County - Clarksville, MD

Planting dates: 10/2/09 (wheat and barley). Harvest dates: 6/8/09 (barley); 6/21/10 (wheat)

Soil type: Chester Silt Loam. pH= 7.0. Previous crop: Silage corn. Conventional tillage.

Fertilizer: Fall: 200# 7-18-36 on 9/30/09. Spring: 65# N as 30-0-0 UAN on 4/2/10

Herbicide: Harmony Xtra 0.6 oz/A on 4/2/10

Farm Staff: Dave Justice, and Tim Ridgley Sr.

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

Washington County - Keedysville, MD

Planting dates: 10/2/09 (wheat and barley). Harvest dates: 6/11/10 (barley). 6/21/10 (wheat).

Soil Type: Hagerstown silt loam. pH=6.8. Previous crop: corn. Minimum tillage.

Fertilizer: Fall: none. Spring: wheat and barley: 35lbs N as 30% UAN on 3/10/10. 35lbs N as 30% UAN on 4/5/10.

Herbicide: Harmony Xtra 5G 0.6oz. on 4/5/10

Farm Staff: Tim Ellis and Douglas Price.

Table 2. Sources of Winter Wheat, and Barley Entries Tested in Maryland in the 2009/20010 season.

Supplier/Address/Local Rep.	Brand	Varieties and Seed Treatments*
Syngenta Seeds, Inc., 8337 Hwy 903 North, Ayden, NC 28513; Phil Farmer (910)452-5597; phil.farmer@syngenta.com	AgriPro Coker	Branson, W1566 (MO4-4566), Coker 9553, Oakes (BO30543), BO40798, (treated with D)
Growmark FS; 308 NE Front St., Milford, DE 19963; Duane Orr (410) 960-7447; dorr@growmarkfs.com	FS	FS 801, FS 621, FS 627, FS 888, FS 950 (barley), FS 501 (barley) (treated with DXT)
Pioneer Hi-Bred Intl., Inc.; 59 Greif Pkwy- Suite 200, Delaware, OH 43015; Bill McCollum (410) 648-9991; bill.mccollum@pioneer.com	Pioneer	26R39, 25R56, 25R62, 26R31 (treated with DXT)
Southern States Coop.; P.O. Box 26234, Richmond, VA 23260; Aaron Cooper (302) 629-7991; aaron.cooper@sscoop.com	SS	SS 520, SS 560, MPV-57, SS 8302, SS 8309, SS 8404, SS 5205, SS Exp 8600, SS Exp 8700 (treated with RT)
Mid-Atlantic Seeds, 204 St Charles Way #163E, York, PA 17402; James Vizzard (717) 852-8894; MAS-office@comcast.net	MAS	MAS-2, MAS-4, MAS-5Exp, MAS-6 Exp, MAS-7 Exp, MAS-8 Exp, MAS-9 Exp, MAS-10 Exp (treated with RT)
UniSouth Genetics, Inc.; 2640-C Nolensville RD, Nashville, TN 37211; Kevin Anderson (410) 651-2706; wimberlyfarm@earthlink.net	USG	USG 3209, USG 3555, USG 3342, USG 3592, USG 3665, USG 3409, USG 3770, USG 3201, USG 3251, USG 3438, USG 3315, USG 3360, USG 3725 (treated with DXT)
JGL Inc.; 3540 S. US 231, Greencastle, IN 46135; Bryan Gerard (765) 653-5402; beg@jglinc.net	JGL	Exp 72562, Exp 60172, Exp 51585 (treated with DXT)
Dyna-Gro Seed; 6221 Riverside Dr, Suite one, Dublin, OH 43017; Kevin Willin (302) 379-4172; Kevin.willin@cpsagu.com	Dyna-Gro	Dyna-Gro 9922, Dyna-Gro Shirley, Dyna-Gro WX09602, Dyna-Gro WX09612 (treated with DXT)
University of Georgia, GA Station, 1109 Experiment St., Griffin, GA 30223; Jerry Johnson (770) 228-7345; jjohnson@griffin.uga.edu	-----	GA-031238-7E34, GA-991336-6E9, GA-991209-6E33 (treated with RT)
Maryland Agric. Exp. Stn.	-----	Chesapeake, MD wheat breeding lines, and MAS-3 (mildew check) (treated with RT) MD barley breeding Lines and Barsoy (treated with RT)
VPI & SU/VCIA/EVAREC; 2229 Menokin RD, Warsaw, VA 22572; Ted Lewis (804) 333-3485; tedr19@vt.edu	-----	Jamestown, McCormick, Sisson, Merl, VA Breeding Lines (treated with RT) Eve, Thoroughbred, Dan, and Nomini barley (treated with RT)

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