Missouri Crop Improvement Association
News and Notes

July – 2018 **Vol. 14 – No. 4**

MCIA's News and Notes is designed to provide members and other interested individuals with information about MCIA programs and services, as well as timely access to information that impacts the seed industry and agriculture in general. Our format is structured to provide a brief introduction to topics of interest along with contact information or links to sources where you can obtain more detailed information. Many of the articles and items listed in this newsletter contain web addresses or hyperlinks by which you can obtain additional information. If you do not have internet access and would like additional information on any of the topics mentioned in this newsletter, please contact the MCIA office and we will forward you the information. Please feel free to contact the MCIA office if you have questions or suggestions for items to be included in future issues.

2018 Seed Wheat Harvest and Quality

With the 2018 wheat harvest behind us, it appears producers experienced average to below average yields with good quality in most areas. We have received a few reports of yields over 80 bu/ac and many more in the 50's and 60's. Statewide harvested area is forecast at 530,000 acres (down 2% from 2017) with an average yield of 65 bu/ac (down 3 bu/ac from 2017) and total production of 34.5million bushels (down 6% from 2017).

To date, the MCIA seed lab has tested 82 samples of all classes of certified and/or quality assurance seed from the 2017 crop with an average germination of 95.32% and 52 service samples (non-certified) with an average germination of 96.27%. While most producers won't need a fungicide to improve germination, please be reminded that we are offering a treatment option in the seed lab with Cruiser Maxx Vibrance Cereals for producers interested in seeing what response their samples have to treatment with a fungicide. Please mark your samples accordingly if you want to take advantage of this service.

Wheat Variety Testing Performance Results

Preliminary results from the University of Missouri's 2018 Wheat Performance Testing are currently available on the internet and will be out in printed form soon. Visit http://varietytesting.missouri.edu to access the 2018 results via the internet or contact our office and we will send you a printed copy.

MCIA Annual Membership Meeting

MCIA's 2018 annual membership meeting is scheduled for July 30 at the MCIA office in Columbia. The schedule calls for a Board of Directors meeting at 8:00 a.m., followed by a brief membership meeting and luncheon at 12:00 noon. As a reminder, board of directors elections are held each year and in 2018 the seats currently held by Rennie Davis (Vandalia – Region 1), E. L. Reed (Chillicothe – Region 2), Lynn Andrews (Carthage – Region 3), Gene Rowland (Dudley – Region 4) and Eddie Hoff (Boonville – At-large) are up for election. Please contact any current member of the board of directors to submit your name or the name of any active/affiliate member to the MCIA Nominating Committee for consideration.

Active members may be represented by proxy at the annual membership meeting in accordance with MCIA's by-laws if they are unable to attend in person. If you are unable to attend the meeting in person, it would be greatly appreciated if you could return the proxy form that follows this newsletter to insure we have enough representation from the membership to conduct business at the meeting. Proxies may be assigned to any active MCIA member, including members of MCIA's Board of Directors.

There is no charge for anyone attending the membership meeting or luncheon, however, we would appreciate receiving a phone call or email to let us know you are coming so we can get an accurate head count for food and beverage purposes.

Soybean Field Day/Plot Tour

Due to limited participation in recent years, there will be no soybean field day or plot tour associated with the 2018 annual meeting. If members are interested in looking at soybean production fields or demonstration plots, please contact the MCIA office to arrange a time for an individual tour.

2018 Fall Seed Directory

A copy of the 2018 Fall Seed Directory is attached for those of you that receive the MCIA Newsletter electronically and is also available under the Forms, Documents and Publications tab of the MCIA web site. For those that receive the Newsletter via U.S. Mail, a copy is enclosed. If anyone would like to request additional printed copies, please contact the MCIA office.

Momentum Brand Wheat Varieties and New Public Wheat Variety (Hilliard) Available for Licensing

Momentum 104, 106, 304 and Hilliard, a new public variety from Virginia, were entered in the 2018 Missouri Wheat Performance Trials. Performance varied for each variety across the different regions with some performing better than others in various locations. Overall, Hilliard once again had solid performance across all regions continuing a multi-year string of top yields. That said, all 4 lines still have very solid 2, 3 and 4 year averages. Agronomic and performance data is available on the Momentum Seeds web site (www.momentumseeds.com) and will also be provided by Missouri Foundation Seeds with their order forms. A description sheet and release notice for Hilliard is attached. All MCIA members are eligible to produce and market seed of any of the Momentum varieties. One important criteria to note is that persons/companies interested in producing and marketing Momentum varieties or Hilliard need to complete a license agreement prior to being considered for an allocation of foundation/parent seed. Please contact the MCIA office if you would like to review a copy of the license agreement or to discussion options for licensing/branding these wheat lines/varieties.

Missouri Crop Conditions

As of July 9, topsoil moisture supply was reported as 28% very short, 41% short, 30% adequate and 1% surplus. Subsoil moisture supply was reported as 30 very short, 34% short, 34% adequate and 2% surplus. Corn silking reached 76% which was 28% ahead of the previous week. Corn condition was rated as 3% very poor, 14% poor, 35% fair, 42% good and 6% excellent. Soybeans blooming reached 43% and soybeans setting pods progressed to 4%. Soybean condition was rated as 4% very poor, 12% poor, 36% fair, 44% good and 4% excellent. Cotton squaring reached 71% and cotton setting bolls reached 33%. Cotton condition was rated 5% poor, 32% fair, 56% good and 7% excellent. Rice headed was at 18%. Rice condition was rated 15% poor, 23% fair, 55% good and 7% excellent. Pasture and range condition was rated as 13% very poor, 35% poor, 34 fair and 18% good. For all Missouri Crop Condition reports please visit: http://www.nass.usda.gov/Statistics_by_State/Missouri/Publications/Crop_Progress_and_Condition *(Source: Missouri Ag Statistics)*

Soybean, Rice and Warm Season Grass Applications

As a reminder, rice and warm season grass field inspection request applications are due July 15 and soybean applications are due August 1. Field inspection request forms and instructions will be distributed electronically or via U.S. mail to MCIA members and are also available on the MCIA web site (www.moseed.org) if you need additional copies. Please complete these applications and return them to the MCIA office as soon as possible and no later than August 1.

In light of the uncertainty surrounding the future of some newly developed technologies, we strongly encourage everyone to submit all production fields that are under consideration for use as seed as soon as possible. No one knows what future demand for soybean seed might hold and having a verified supply of certified and/or QA quality seed could help in supplying any shortfalls caused by potential disruptions in supply this fall. We will do our best to cover every field and report our findings in a timely manner and having your application information by the August 1 deadline allows us to schedule our inspectors to make the best use of their time and talents. With that said, if you find yourself in a position where you have lost acreage of planned seed production and are looking for commercial production to replace lost acres or simply need to additional acres for any reason, MCIA inspectors are available to provide inspections to verify that varietal purity and overall quality standards are met. Please feel free to contact the MCIA office if you have questions or require assistance in completing your applications or verifications.

Links to Stories of Interest to MCIA Members

Listed below are topics and corresponding links of items that may be of interest to MCIA members. Please click on the links if you are viewing online or visit the web sites listed to obtain additional information on topics of interest to you.

Previously Unknown Rice Blast Resistance Isolated	http://www.seedtoday.com/article/144751/previously-unknown-rice-blast-resistance-isolated
New Summer Dormant Tall Fescue Variety Released	http://www.seedtoday.com/article/146654/new-summer-dormant-tall-fescue-variety-released
Soybean Seedling Diseases Surge in Illinois	http://www.seedtoday.com/article/146985/soybean-seedling-diseases-surge-in-illinois
How is Genome Editing Revolutionizing Ag?	http://www.biotech-now.org/food-and-agriculture/2018/06/how-is-genome-editing-revolutionizing-agriculture

Calendar

July 12-13	MO-AG Summer Meeting	Lake of the Ozarks
July 31	Show-Me Soy School Field Day	Columbia
August 9-19	2018 Missouri State Fair	Sedalia
September 3	Labor Day – MCIA Office Closed	

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Official 2018 Annual Meeting Proxy Form

As a representative of an active or affiliate member in good standing of the Missouri Crop Improvement Association, I hereby designate the proxy designee listed below to hold my proxy for the purpose of voting on any and all matters presented to the membership for a vote at the annual meeting to be held in Columbia, MO on July 30, 2018. This proxy designation shall commence at the beginning of and expire at the close of the above referenced 2018 annual membership meeting.

Proxy Designee _____

MCIA Active or Affiliate Member _____

Representative (if different from member) _____

Representative Signature _____

Date _____

ADDITIONAL DESCRIPTION OF THE SOFT RED WINTER WHEAT VARIETY HILLIARD

Hilliard is a broadly adapted, high yielding, mid-season, medium height, semi-dwarf (gene Rht2) SRW wheat. Plant stem and spike color of Hilliard are green, and its spikes are tapering and awned. In Virginia, head emergence of Hilliard (129 d, Julian) has been most similar to that of Southern States Brand 8412 (PI 667644), 3 to 4 days later than 'Jamestown' and 1 day earlier than 'Shirley' (Tables 1 – 3). In the southern SRW wheat region (Table 4), head emergence of Hilliard (121 d) has been similar to that of 'USG 3555' and 3 days later than Jamestown. In the eastern SRW wheat region (Table 5), head emergence of Hilliard (136 d) was 1 day later than 'Branson' and 1.5 d earlier than Shirley. Average mature plant height of Hilliard throughout the SRW wheat region has varied from 34 to 38 inches (Tables 1 – 5, 8, 9). In the Uniform Southern and Uniform Eastern nurseries (Tables 4 and 5), plant height of Hilliard (34 inches) was 2 inches shorter than checks 'AGS 2000' and MO-080104 and 2.5 to 3.5 inches taller than Shirley. Straw strength (0=erect to 9=completely lodged) of Hilliard (0.2 – 2.3) is very good and similar to that of Shirley (0.6 – 2.5). In the Uniform Eastern Nursery (Tables 5), winter hardiness (0 = no injury to 9 = severe injury) of Hilliard (2.2) was similar to that of the checks (1.8 – 2.9), while in the Uniform Southern Nursery (Table 4), its winter injury (4.0) was less than that of the checks (5.4 – 6.5).

In Virginia's State Variety Trials (Tables 1 – 3), Hilliard had a two year (2013-2014) yield average of 80.7 bu/ac and produced yields in 2013 (86.2 bu/ac) and 2014 (79.1 bu/ac) that were similar to those of the highest yielding varieties. Over the two year period (Table 1), Hilliard had an average test weight of 57.5 lb/bu, which was similar to the overall trial mean.

In the 2013 Mason Dixon Trial (Table 8), Hilliard ranked second among 79 entries and had an average grain yield of 88.2 bu/ac over eight locations. In the 2013 Gulf Atlantic Wheat Nursery (Table 9), Hilliard ranked fifth among 64 entries and had an average grain yield of 80.6 bu/ac over seven locations. Average test weights of Hilliard in these two trials (54.6 and 55.7 lb/bu) were similar to the overall trial means and significantly ($P < 0.05$) higher than Shirley (50.7 lb/bu) in the Gulf Atlantic Wheat Nursery.

Hilliard was evaluated at 21 sites in the 2014 USDA-ARS Uniform Southern SRW Wheat Nursery (Tables 4 and 6) and ranked second among 33 entries for grain yield (84 bu/ac). Average test weight of Hilliard (55.8 lb/bu) was similar to the overall trial mean and significantly ($P < 0.05$) higher than that of USG 3555 (54.4 lb/bu). Hilliard also was evaluated at 21 locations in the 2014 USDA-ARS Uniform Eastern SRW Wheat Nursery (Tables 5 and 7), and ranked first in grain yield within the eastern wheat region (87.6 lb/bu) and second over all test sites (86.9 lb/bu). Average test weight of Hilliard (56.9 lb/bu) was similar to the overall trial mean, and significantly ($P < 0.05$) higher than those of Branson (55.8 lb/bu) and Shirley (54.7 lb/bu).

Grain samples of Hilliard produced in five crop environments (2012 – 2014) were evaluated for end use quality by the USDA-ARS Soft Wheat Quality Lab (Tables 11 – 16). Hilliard has exhibited milling and baking qualities that are intermediate between those of Jamestown and USG 3555. Comparisons of mean milling and baking quality attributes over three crop environments (Table 11) for Jamestown, Hilliard, and USG3555 include: kernel hardness scores (0-100) of 22.5, 24.6, and 24.9, softness equivalent values of 58.7, 61.3, and 55.6%, flour yields of 68.9%, 67.4%, and 68.3%, flour protein concentrations of (8.0, 7.4%, 8.2%), gluten strength (lactic acid retention capacities of 112.7, 116.4, and 112.6%), cookie spread diameters of 18.5, 18.2, and 18.1 cm), and cookie top grade scores (0-9) of 4.3, 4.7, and 2.3. Jamestown has better milling quality attributes than Hilliard or USG 3555, while both Jamestown and Hilliard have superior baking quality compared to USG 3555. While flour of Hilliard has the lowest grain protein content, it has slightly stronger gluten strength than Jamestown or USG 3555.

DISEASE, INSECT AND OTHER INTERACTIONS

Reaction of Hilliard to disease and insect pests has been evaluated over diverse environments (Tables 1 – 5, 8, 9, and 10). Hilliard is resistant to powdery mildew (Blumeria graminis) with average ratings (0=immunity to 9=very susceptible) ranging from 0 to 1.0. It is moderately resistant to leaf rust (Puccinia triticina) with average nursery ratings ranging from 0 to 2.5. Seedlings of entries in the 2014 Uniform Eastern and Uniform Southern SRW Wheat Nurseries were evaluated for resistance to 10 races of leaf rust (Puccinia triticina) by the USDA-ARS Cereal Disease Lab in St. Paul, MN (Data summarized here). Hilliard was postulated to have the resistance gene Lr18. It was resistance to nine races (KFBJG, MBDSB, MCTNB, MFPSB, MHDSB, PBLQG, TBBGJ, TFBJQ, and TNBGJ) of Puccinia triticina and susceptible to one race (TCRKG). Seedlings of Hilliard were susceptible to all 10 tested races of stem rust (Puccinia graminis) and adult plants were susceptible (70 – 80% severity) in field tests conducted by the Cereal Disease Lab (Tables 4 and 5). In controlled environment trials conducted by USDA-ARS Wheat Genetics, Quality, Physiology, and Disease Research Unit at Pullman, WA, seedlings of Hilliard were susceptible to five tested races (PSTv-4, PSTv-14, PSTv-37, PSTv-40, and PSTv-51) of stripe rust (Puccinia striiformis). However, infection type (0 – 9) scores for adult plants of Hilliard (2 – 3) indicate that it likely has high temperature adult plant resistance to stripe rust. In field trials of entries in the 2014 Uniform Southern and Uniform Eastern nurseries conducted in the eastern U.S. and in Washington state, Hilliard had mean stripe rust disease scores (0 – 9) of 0.6 and 4.0 and 0.5 and 4.8, respectively (Table 4 and 5). In inoculated (race PSTv-100) field trials conducted at Blacksburg, VA in 2014, Hilliard also was resistant to stripe rust with an infection type of 0 and a severity of 1% (Table 3). Hilliard is resistant (0 – 2.0) to Barley and Cereal Yellow Dwarf Viruses and moderately resistant (3.0) to Wheat Soil Borne Mosaic Virus. It is moderately resistant (1.9 – 2.3) to Bacterial Leaf Steak (Xanthomonas translucens). Its reaction to Wheat Spindle Streak Mosaic Virus is unknown. Hilliard has a moderate to intermediate level of resistance to leaf blotch caused by Septoria tritici (2.4 – 5.0) and Stagonospora nodorum (5.0) and is moderately resistant (1.0 – 2.8) to glume blotch caused by S. nodorum. Reaction of entries to Fusarium head blight (FHB) caused by Fusarium graminearum was evaluated in the 2014 Uniform Southern and Uniform Eastern SRW Wheat Nurseries (Tables 4 and 5). In the Uniform Eastern nursery (Table 5), Hilliard had mean values for FHB Incidence, Severity, FHB Index (Incidence x Severity / 100), fusarium damaged kernels (FDK), and ISK Index (0.3 x Incidence + 0.3 x Severity + 0.4 x FDK) of 82%, 47%, 37%, 51%, and 61% compared to values of 88%, 61%, 54%, 70%, and 78% for the susceptible cultivar Shirley. In the Uniform Southern nursery (Table 4), Hilliard had mean disease ratings (0 – 9) for FHB incidence (3.0), FHB severity (3.5), and FDK (17.5%) that were similar to those of the moderately resistant cultivar Jamestown (3.0, 3.0, 22.5%). Hilliard also was evaluated for reaction to FHB in the 2014 Southern Uniform Winter Wheat Scab Nursery over seven environments (Table 10). Hilliard had values for FHB incidence (73%), FHB severity (40%), FHB Index (32%), FDK (38%), ISK Index (44%) and deoxynivalenol (11.2 ppm), which were lower in magnitude than those of the susceptible check 'Coker 9835' (88%, 62%, 56%, 51%, 63%, and 16.6 ppm). In seedling growth chamber tests conducted by USDA-ARS at West Lafayette, IN, Hilliard was resistant to Hessian fly [Mayetiola destructor (Say)] biotypes B, C, and D, but susceptible to biotypes O and L (Tables 2 – 5, 8 and 9). In field trials (Tables 4 and 5), Hilliard expressed moderate resistance to Hessian fly on the basis of visual scores (0 – 9) for plant stunting and dark green foliage (4.5) and Hessian fly induced plant lodging (1%).