



# Missouri Crop Improvement Association

## News and Notes

July – 2017

Vol. 13 – No. 7

*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.*

### **2017 Seed Wheat Harvest and Quality**

With the 2017 wheat harvest behind us, it appears most producers experienced very good yields with excellent quality. We have received a few reports of yields over 100 bu/ac and many more in the 80's and 90's. Statewide harvested area is forecast at 510,000 acres (down 11% from 2016) with an average yield of 68 bu/ac (down 2 bu/ac from 2016) and total production of 34.7million bushels (down 13% from 2016).

To date, the MCIA seed lab has tested 159 samples of all classes of certified and/or quality assurance seed from the 2017 crop with an average germination of 96.15% and 79 service samples (non-certified) with an average germination of 94.68%. While most producers won't need a fungicide to increase 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**

Results from the University of Missouri's 2017 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 2017 results via the internet or contact our office and we will send you a printed copy.

### **Orders for Foundation/Parent Seed Wheat Due August 4<sup>th</sup>**

MCIA members that have ordered foundation/parent seed wheat from Missouri Foundation Seeds in recent years should have already received ordering information. As a reminder, orders received by Missouri Foundation Seeds by the August 4 deadline will receive priority over orders received after that date. Missouri Foundation Seeds will market foundation/parent seedstock through wholesale channels after the August 4 deadline. Make sure to return your order form or contact Missouri Foundation Seeds at (573) 884-7333 prior to August 4 to insure you are considered for an allocation of the varieties you want.

### **MCIA Annual Membership Meeting & Soybean Field Day/Plot Tour**

MCIA's 2017 annual membership meeting is scheduled for July 27 in Columbia. The schedule calls for the membership meeting and luncheon at 11:00 a.m. followed by a field day and soybean plot tour from 12:30 – 2:00. As a reminder, board of directors elections are held each year and in 2017 the seats currently held by Brian Anderson (Columbia), Dan Weber (Marshall), Bruce Strobel (Concordia) and Kevin Mainord (East Prairie) 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.

The field day will begin with a classroom style review of the performance of new and established wheat lines in 2017 and proceed to a plot tour of established soybean lines currently on the market, new lines that have just been released for production and experimental lines currently under evaluation for possible release at a future date. A combination of conventional, sulfonylurea (STS) tolerant and glyphosate tolerant lines will be available for evaluation.

There is no charge for anyone attending the membership meeting, luncheon or field day/plot tour, although it would be appreciated if you could complete the registration form that follows this newsletter and return it to the MCIA office no later than July 25 so we can get an accurate head count for food and beverage purposes. Additionally, 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.

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

Momentum 104, 106 and 304 either performed very well or not so well in the University of Missouri 2017 Wheat Performance Trials depending upon location. Hilliard, a new public variety from Virginia performed well, albeit not as well as the past 2 years. A study of the data would seem to indicate that early maturing varieties did not perform very well in the SE locations when compared with later maturing varieties and the same varieties in central and north locations. 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](http://www.momentumseeds.com) ) and will also be provided by Missouri Foundation Seeds with their order forms. 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 18 topsoil moisture supply was reported as 3% very short, 18% short, 76% adequate and 3% surplus. Subsoil moisture supply was reported as 4% very short, 16% short, 79% adequate and 1% surplus. Corn silking reached 81%, 30% ahead of last week. Corn condition was rated as 1% very poor, 5% poor, 25% fair, 58% good and 11% excellent. Soybeans blooming reached 44% and soybeans setting pods progressed to 14%. Soybean condition was rated as 2% very poor, 5% poor, 28% fair, 57% good and 8% excellent. Cotton squaring reached 82 and cotton setting bolls reached 16%. Cotton condition was rated 12% poor, 34% fair, 45% good and 9% excellent. Rice headed was at 27%. Rice condition was rated 3% poor, 25% fair, 47% good and 25% excellent. Pasture and range condition was rated as 1% very poor, 2% poor, 29% fair, 62% good and 6% excellent. For all Missouri Crop Condition reports please visit: [http://www.nass.usda.gov/Statistics by State/Missouri/Publications/Crop Progress and Condition](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 were due July 15 and soybean applications are due August 1. Field inspection request forms and instructions have been distributed electronically or via U.S. mail to most MCIA members and are also available on the MCIA web site ([www.moseed.org](http://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.

We strongly encourage everyone to submit all production fields that are under consideration for use as seed as soon as possible. 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 up 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 add 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.

Univ. of Illinois Develops New Way to Identify Palmer Amaranth Seed <http://www.grainnet.com/article.php?ID=166742>

K-State Researchers Identify Gene to Resist Wheat Streak Mosaic Virus <http://www.grainnet.com/article.php?ID=166774>

Grasses: The Secrets Behind Their Success <http://www.grainnet.com/article.php?ID=167119>

Univ. of Missouri Research Show How to Save Decreasing Bee Population [http://www.seedtoday.com/info/ST\\_articles.html?ID=166736](http://www.seedtoday.com/info/ST_articles.html?ID=166736)

U.S. Bee Colonies of the Rise [http://www.seedtoday.com/info/ST\\_articles.html?ID=166923](http://www.seedtoday.com/info/ST_articles.html?ID=166923)

Monsanto to Launch VISTIVE Gold Soybeans in 2018 [http://www.seedtoday.com/info/ST\\_articles.html?ID=166976](http://www.seedtoday.com/info/ST_articles.html?ID=166976)

MU Extension Weather Stations Help Farmers Know When to Spray <http://muextension.missouri.edu/n/3128>

## Calendar

July 20	MU Hops Field Day for Growers, Craft Brewers and Home Brewers – Bradford Research Farm	Columbia
July 24-27	Iowa State University Soybean and Small Grain Seed Conditioning Clinic	Ames, IA
July 26	MCIA Summer Board of Directors Meeting	Columbia
July 27	MCIA Annual Membership Meeting & Soybean Field Day/Plot Tour	Columbia
August 1 & 3	Iowa State University Gravity Separation Clinic	Ames, IA
August 10-20	2017 Missouri State Fair	Sedalia

**Advanced Registration Form**

**99<sup>th</sup> Annual Missouri Crop Improvement Association Meeting/Luncheon/Field Day  
University of Missouri South Farm  
Columbia, MO  
July 27<sup>th</sup>, 2017**

**Name** \_\_\_\_\_

**Representing** \_\_\_\_\_

**Address** \_\_\_\_\_

**City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_

**Telephone** \_\_\_\_\_ **Fax** \_\_\_\_\_

**Please list the names of the persons registering: (there is no charge for any of the activities)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Please return completed form no later than July 20, 2017 to:**

**Missouri Crop Improvement Association  
3211 Lemone Industrial Blvd.  
Columbia, MO 65201-7600  
Fax: 573-874-3193  
Email: moseed@aol.com**



# Missouri Crop Improvement Association

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## Official 2017 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 27, 2017. This proxy designation shall commence at the beginning of and expire at the close of the above referenced 2017 annual membership meeting.

MCIA Active or Affiliate Member \_\_\_\_\_

Representative (if different from member) \_\_\_\_\_

Representative Signature \_\_\_\_\_

Date \_\_\_\_\_ Proxy Designee \_\_\_\_\_

## 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 Streak (*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%).