NCERA-184 Wheat Pathology Technical Committee Meeting
March 11, 2013 – Pensacola Beach, FL

NCERA-184 Wheat Pathology
Minutes of the Annual Meeting
Pensacola Beach, FL
March 11, 2013

Administrative Advisor:
Dr. Kendall Lamkey
Department of Agronomy
Iowa State University

Chair:
Dr. Erick De Wolf
Department of Plant Pathology
Kansas State University

Secretary:
Dr. Kiersten Wise
Department of Botany and Plant Pathology
Purdue University

Members and guests in attendance:

Erick DeWolf (Kansas State University), Kiersten Wise (Purdue University), Marty Draper (USDA-NIFA), Scott Isard (Penn State University), Rachel Melnick-Lippart (USDA-NIFA), Bob Hunger (Oklahoma State University), Shaukat Ali (South Dakota State University), Laura Sweets (University of Missouri), Don Hershman (University of Kentucky), Christina Cowger (USDA-ARS, Raleigh, NC), Tom Allen, (Mississippi State University), Clayton Hollier (Louisiana State University), Madelieine Smith (University of Minnesota), Pierce Paul (Ohio State University), Forrest Nutter (Iowa State University), Heather Young Kelly (University of Tennessee), Albert Tenuta (Ontario Ministry of Agriculture and Food), Damon Smith (University of Wisconsin), Steve Koenning (North Carolina State University), Bill Bockus (Kansas State University)

Minutes:

Erick DeWolf called the meeting to order at 8:30 AM and welcomed the group.

Bill Bockus began the meeting with a presentation on the progress of wheat blast research in the United States (U.S.) Bill provided an overview of the pathogen and disease symptoms, and potential yield loss due to disease in Brazil. The first detection in the U.S. of this pathogen was in Kentucky on May 18th, 2011. Symptoms were detected on a single head of wheat in research plots. The disease was not detected in 2012 in the U.S. Don Hershman mentioned that the lack of detection may be due to drought conditions that were prevalent in 2012, or misidentification of the diseas. Symptoms of wheat blast are easily confused with those of Fusarium head blight and Stagonospora glume blotch. The pathogen can be seed-borne, and the U.S. now requires

inspection of grain imported from South America. Bill's research has demonstrated that seed-to seedling infection can occur at a level of up to 30% in some varieties.

Research on wheat blast has been a collaboration among Barbara Valent, Jim Stack, Gary Peterson, Kerry Pedley, and Christian Cruz (PhD student) at KSU. Research on pathogenicity has been conducted using isolates obtained from Ft. Dietrich, MD. Experiments examined the correlation between leaf infection and head infection, and found a correlation, although the R^2 = 0.57. Bill mentioned that some studies in Brazil found no correlation between leaf and head infection. Varieties do vary in their susceptibility, and a continuum of reactions were observed in hard winter wheat lines in growth chamber experiments. Experiments examining the evidence of races in older isolates found no evidence of race structure, although there were isolate x race interactions. Other reports exist on race structure within the pathogen.

Aggressiveness studies with newer (2011-2012) isolates indicated differences in aggressiveness among new isolates, but nothing that fits the classic definition of what a physiological race would be. Newer isolates appear to be more aggressive than the original older isolates obtained from Ft. Dietrich. Erick asked how the varieties screened for wheat blast were rated for Fusarium head blight resistance—there is no correlation (among KS varieties) between FHB resistance and blast resistance. Albert Tenuta asked if the Kentucky (2011) isolate had been examined in varietal resistance trials, and that isolate has not been screened at KSU to date. Bill also presented data from U.S. cultivar testing in South America. Despite challenges with screening lines, some lines were considered resistant to blast in Brazil. Resistance ratings were based on the percent of spikes prematurely killed.

Modeling experiments based off of rice preliminarily indicate blast may occur in the U.S. in areas where gray leaf spot of corn is annually problematic. Winter weather, such as cold and frost events, may also influence where in the U.S. blast may occur. Bill mentioned that fungal sporulation does not occur on heads unless there is very high humidity. Christina asked about inoculation timing—Bill mentioned they inoculate as soon as the head is fully emerged from the boot. Bill said this is similar to symptom occurrence in Brazil, however, they are not sure where the inoculum comes from—speculation is that it may come from surrounding weed or grass species.

Clayton Hollier initiated discussion on the strong similarities between wheat blast and rice blast, and suggested that additional information on wheat blast could be obtained by going through rice blast literature. Clayton described some of the conditions that favor rice blast, and mentioned that inoculum may occur from spore showers. There are questions about how far spores can disperse, long-distance spore dispersal, and survival in residue.

Pierce Paul presented research on the effects of spray parameters on deposition and coverage of wheat organs. The research is in collaboration with agricultural technologists, and focuses on application technology, particularly stem coverage, and penetration of fungicides into the wheat canopy. The research examined several factors, including nozzle type, droplet size, spray volume, nozzle orientation and air-assist systems. Dye was included in the spray, and chromatography analysis was used to determine coverage on sampled plant parts. Analysis has not yet been completed on the entire data set, although Pierce discussed some trends. The goal was to determine parameters that would be optimum for coverage on the stem, and how that might impact head coverage.

Preliminary conclusions were that it depends on the plant part targeted which spray system is most efficient for coverage. Questions remain about what coverage is necessary for disease management. The question of ground vs. air application is one that persists and Albert Tenuta discussed Ontario "sprayer rodeo" demonstration trials that compared aerial (fixed wing and helicopter) versus various ground nozzle configurations. The use of water sensitive papers has proven to be helpful in demonstrating spray coverage and droplet size but it does have limitations. Very fine droplets such as those produced by aerial and ground equipment may not be visible on the water sensitive paper (or detected by scanning programs) but when a tracer was used such as copper the amount of spray was similar for both aerial and most ground equipment. The best configuration was ground at double nozzles forward + back as well as alternating turbo flood jets. Although application method (with correct nozzles) is important the group stressed that optimum application timing is still the most important factor for efficacy.

Erick DeWolf led a discussion on wheat common bunt in Kansas. Erick presented information on seed and head symptoms, and discussed that there were new locations were bunt has been reported in recent years. Past information indicates that soil survival is rare, but may be possible in dry years, without summer rain. Other contributing issues may be saved seed, and contaminated equipment.

Management options for wheat common bunt are fungicide seed treatments, and using clean seed. However, questions were posed on if seed treatment coverage is adequate, and observations from KSU do indicate that there are differences in seed treatment coverage, depending on how and where seed is treated. Research indicates that with seed that has 100% seed treatment coverage, only about 2% of seed exhibited common bunt symptoms, whereas seed with only 50% seed treatment coverage had bunt infection levels over 10%. New seed averaged just under 8% infection, and saved seed had over 15% infection.

Additional management measures may be necessary, especially once common bunt is detected in a field. Recommendations include crop rotation, controlling volunteer wheat, and ensuring all wheat seed planted is treated with fungicides for 2-3 years after the initial detection.

Erick next presented an update from Tim Murray on the new stem rust recovery and communication plan, which was developed to handle the first detection of the UG99 strain of wheat stem rust in the United States. In the drafted plan, suspect samples would all go to the Cereal Disease Laboratory, and the CDL would communicate findings through APHIS and PPQ, and other regulatory personnel. State Extension Specialists would be notified by USDA-NIFA, and would deliver information to state agriculture groups, breeders, researchers, and agribusiness personnel, including growers. Additional information on the plan will be provided to the group as it is finalized.

Christina Cowger mentioned that Extension and research personnel should be sending samples of stem rust to the CDL for characterization each year. Erick mentioned that variety screening program information and results on commercial and breeding lines susceptibility to UG99 may be available from Gene Milus and David Marshall (USDA). Some discussion ensued on barberry detection within states, and if colleagues are interested in documentation and detection of barberry, they should contact Tim Murray at Washington State University.

Forest Nutter provided information on his computer-based disease rating program called Severity Pro. This program has provided training and disease assessment keys for several crops, but has now been adapted for barley. The program will provide assessment keys for training students (or others) in disease rating, and has the ability to track under or over-estimation of disease severity. Program tracking indicates that people can improve their ability to accurately assess disease severity through consistent usage. The program allows training and rating assessments for specific diseases of barley, including barley scald, net blotch and spot blotch. Crop-specific Severity Pro options cost approximately $95 per crop, while the multi-crop Severity Pro program costs $200. Orders can be placed directly through Forrest Nutter and more information can be found at the following website:
http://www.plantpath.iastate.edu/people/nutter

Christina Cowger led a discussion on Fusarium Head Blight (FHB) management updates. A survey was developed in coordination with the USDA-ARS and the USWBSI to determine adoption of FHB management practices at the grower level, and to help understand what barriers exist for adoption of these practices. Wheat and barley producers will be surveyed in major wheat-producing states through NASS, based on input from the USWBSI management committee. The survey is currently in development and will be distributed in February of 2014. The goal is to obtain a 50% response rate through mail surveys with follow-up phone calls. To improve response rate, Extension specialists should notify local boards and media outlets to create awareness of surveys at the local level. States without wheat commodity boards should release press about the survey through the Farm Bureau. Christina welcomes feedback from the group on how to improve participation in the survey.

Christina asked the group for their interest in surveying soft wheat states to determine the predominant varieties planted each year in the state. The discussion initiated about how to find funding for a collective survey over multiple states and how to generate accurate assessments of acreage per variety. Additional discussion on how growers can obtain information on how diseases are rated for commercial varieties, and if this information is available to farmers. Screening methods and rating assessments differ from state-to-state. The hope is that even with differences in scales, there will be consistent patterns in how varieties respond to FHB. State specialists will be contacted about rating assessments and information availability for their state, and information will be compiled. After compilation, gaps in the system can be addressed, and systems can be put in place to ensure that commercial varieties will be rated for FHB and DON in each state.

Fungicide recommendations for FHB are continuing to be refined. Kiersten will contact Carl and Pierce about interest in organized fungicide testing and protocols that may be available to the group for 2013 testing. Interest in projects that target timing and flexibility of fungicide applications are of particular interest to the group.

Erick discussed the new version of the FHB risk assessment tool with a new user interface. Erick demonstrated the updated prediction tool, which has many new features and navigation tools that will enhance the user experience and work across multiple platforms. The risk assessment tool can now also be accessed using a mobile device. Individual state commentary will still be essential for the assessment tool to ensure accurate interpretation of the model. Links will be sent to the group for a commentator site where individual specialists can enter state-specific commentary that will be viewable on the public version of the model. State specialists should

encourage users to sign up to receive text or email alerts for updated commentary. Erick will look into the possibility of creating a link on the prediction tool website to sign up for the text/email alerts.

Heather brought up the idea of forming an eXtension pathology group, and Marty mentioned that all communities must be vetted by the eXtension committee. Contact information will be provided by Marty.

Erick discussed the annual update to the fungicide efficacy table. Aproach (Dupont) should be added based on a new label and updated fungicide efficacy ratings. Priaxor may also need to be added, but limited efficacy data may be available. It was agreed that Stratego will be removed from the table. Erick will share the information with the group via email to discuss updated ratings.

Erick commenced the business meeting at 4:00 PM, beginning with an update from Marty Draper. Marty Draper (USDA-NIFA) presented an administrative update from NIFA regarding funding. Currently, funding availability is uncertain. It is currently unknown what grant money is available for any NIFA grants. Proposals will still be solicited and reviewed, however, and funding decisions will be dependent upon final budgets. Mandatory funding programs were cut based off of the current extension of the farm bill, and sequestration resulted in an additional cut for an approximately 15% reduction in the total budget. The inability of the agency to adjust how cuts are distributed has resulted in current funding levels similar to 2002 levels.

Marty also discussed the PCAST reports that were released in November and December. Both reports discussed agricultural preparedness and the importance of addressing production through inputs, which is favorable for pest management and plant pathology. Any new Hatch projects in the next 6 months will be completed through a new web interface called REEports. This program should be more user-friendly than the former CRIS report forms. To work through this portal, you will need to sign up through NIFA and obtain an account.

Ruth Dill-Macky has been asked to edit the Barley Compendium for APS Press. Please let her know if you have interest in helping or participating in this project.

Erick solicited the group for volunteers to secretary the group for the meeting in 2014, and chairing the meeting in 2015. Damon Smith volunteered to be secretary for 2014, and the group thanked him. Discussion about meeting times and locations for 2014 resulted in several options for the group, including meeting with the eastern wheat disease group, MAWS, or WERA-97. The discussion will continue via email.

The group thanked Erick for his service and the meeting was at 4:23 PM.