SAES-422 Multistate Research Activity Accomplishments Report

Project No. and Title: WERA097 DISEASES OF CEREAIS
Period Covered: 10-2012 to 09-2013
Date of Report: 19-Aug-13
Annual Meeting Dates: 18-June-2013 to 19-June-2013

Participants

- Juliet Marshall (jmarshall@uidaho.edu), Idaho State University
- Dyer, Alan (adyer@montana.edu), Montana State University
- John Sherwood (sherwood@montana.edu), MSU
- Chris Mundt (mundt@science.oregonstate.edu), Oregon State University
- Mike Flowers, OSU
- Bob Zemetra, OSU
- Tim Murray (tim.murray@WSU.edu), Washington State University
- Dale Clark, WestBred

Brief Summary of Minutes of Annual Meeting

WERA 97 met June 18-19, 2013 in Pendleton, Oregon in a joint session with Western Wheat Workers. Following an update on the discovery of transgenic wheat in Oregon, state reports were given by both WWW and WERA participants. WERA 97 Reports were given by Washington (Tm Murray), Oregon (Mike Flowers and Chris Mundt), Montana (Alan Dyer), Idaho (Juliet Marshall), as well as from the industrial participants Syngenta, Limagrain, Dow AgroSciences and WestBred/Monsanto.

Both groups went on field trips to the Hermiston research nurseries the afternoon of June 18th and to the Ruggs Research site and the CBARC Research Station on June 19th.

The WERA 97 business meeting was held early afternoon on June 18th. There was discussion on how to improve participation, which is enhanced by meeting with other groups. It was decided to meet in Idaho in summer of 2014 and will communicate with NCERA to see if they would be interested in meeting jointly.

Accomplishments

1. In Kansas, determining the impact of fungicides on wheat diseases is necessary to develop accurate chemical control recommendations. Extension publications were developed and refined to help producers make more efficient use of fungicides. We are currently developing web-based tools to deliver this information.

2. A multi-state effort to predict epidemics of Fusarium head blight (FHB) continued during the 2012-growing season. This prediction effort includes web-based tools, which display daily estimates of disease risk for 30 states. Commentary developed by a disease specialist in each state is displayed along with the risk maps. Commentary is also distributed via an
FHB Alert System. Users of the FHB prediction models and the FHB Alert System were surveyed in 2012. The survey results included input from 342 respondents and indicated that 62% of these users were either farmers or farm advisors. More than 68% of the users applied the information directly on their farm, or used it to make recommendations about disease management to others. In 2012, 96% of the users considered the information to be of high or moderate value for their farm operations and businesses. A subset of questions targeting the influence of the information suggests that more than 88% of the users experienced a moderate or great improvement in their awareness of the disease risk in their area. The results also showed that the information influenced disease management decisions directly for 33% of the respondents, and motivated another 30% to seek advice from others.

3. WERA-97 interactions resulted in joint WSU-OSU field trials to screen for resistance to the newly discovered soil-borne wheat mosaic virus in the PNW. These efforts resulted in the identification of one locally adapted variety with resistance, and a breeding line that also was resistant and released as a variety owing to its resistance and favorable agronomic traits.

4. Chris Mundt and Tim Murray are currently completing a review chapter on the biology and management of Cephalosporium stripe, a disease of great importance in the PNW and one that has never before been the subject of a review.

5. Resistance of *Zymoseptoria triciti*, causal agent of Septoria tritici blotch, to strobilurin fungicide was discovered in Oregon. This is the first such discovery in North America.

6. Testing of fungicides on wheat and barley for efficacy to Fusarium head blight was conducted as part of a national cooperative effort and recommendations of the best management practices are made available to growers through the US Wheat and Barley Scab Initiative (USWBSI) and MAES websites.

7. Varietal development continues in southern Idaho (Dr. Jianli Chen) and Northern Idaho (Dr. Jack Brown), coordinated with the extension varietal testing (Dr. Juliet Marshall) and end-use quality testing (Katherine O’Brien at the Aberdeen R&E Center). Testing of fungicidal and insecticidal seed treatments, foliar fungicides, and plant growth regulators continue at Aberdeen and on-farm. Screening for resistance to Fusarium crown rot in spring wheat is occurring in spring wheat and barley in a dedicated plot in Aberdeen.

8. Joint research with Oregon State University continues in the screening of wheat and barley varieties for resistance to cereal cyst nematode. Research trails are in Idaho (St. Anthony), Oregon and Washington State.
Impacts

1. Discussions among participants of the WERA-97 meetings have helped in the efficiency and accuracy of applied disease research efforts on winter wheat in Kansas. The following projects were aided by these meetings: 1. determining the reactions of breeding lines and commercial winter wheat cultivars to various diseases; 2. dissemination of disease-reaction data of cultivars to wheat producers; and 3. the effect of seed-treatment and foliar fungicides on wheat diseases. Progress toward identifying resistance to wheat pathogens has helped in the development of new, resistant wheat cultivars.

2. The reactions of hard red spring wheat, barley and oat cultivars to various diseases prevalent in Minnesota were disseminated to small grains producers on the Minnesota Variety Trials Results. This information provides growers with options and aids them in selecting cultivars that are appropriate for their area and risk level for the diseases prevalent in Minnesota.

3. In Minnesota, screening of breeding material for Fusarium Head Blight (wheat, barley and oat), leaf rust (wheat), stem rust (wheat), net blotch (barley), bacterial leaf streak (wheat and barley) and loose smut (oat) was conducted on up to 5,000 wheat, 12,000 barley and 1,500 oat lines in 2012. These data are used by small grains breeders and geneticists to make selections for improved resistance.

Publications


quantitative resistance to stripe rust in wheat cultivar ‘Stephens’ in multi-


Publications 2013 (as of 8/11/13)


Smiley, R. W., Marshall, J. M., Gourlie, J. A., Paulitz, T. C., Kandel, S. L.,


