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News Release

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Crop scientists report research headway on FHB grain disease

East Lansing, MI—Crop scientists are making progress in their efforts to find ways of controlling Fusarium head blight (FHB) in small grains.

Over 175 crop scientists from around the world and leaders of the U.S. wheat and barley industry met in Cincinnati recently in a national forum to discuss advancements in the research of FHB, commonly called scab. The fungal disease has plagued wheat and barley production in many areas of the United States since the early 1990s, resulting in farm losses in at least 18 states valued conservatively at over \$2 billion, according to university and industry estimates.

A concerted national research initiative to solve FHB in wheat and barley got underway three years ago. The \$4.3 million national research initiative in the 2000 federal fiscal year involved 73 scientists working on 104 projects, carried out in 23 states at 22 land grant universities and the U.S. Department of Agriculture's Agricultural Research Service, which funds the Initiative.

At the Cincinnati research forum, scientists reported advancements in six distinct program areas of the initiative: Variety Development and Uniform Nurseries; Epidemiology (how scab develops, spreads) and Disease Management; Food Safety, Toxicology, and Utilization; Biotechnology; Chemical and Biological Control; and Germplasm Introduction and Evaluation.

Jim Anderson, wheat breeder at the University of Minnesota, said there is encouraging progress in the use of DNA markers to help identify genes in wheat and barley responsible for scab resistance. Molecular markers are essentially an accurate means of "fingerprinting" germplasm, enabling researchers to keep track of traits such as scab resistance. Then, based on the pattern revealed by these markers, to select crosses to make improved wheat and barley varieties for better scab tolerance.

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In 2000, plant pathologists in 15 states participated in field research to analyze the effectiveness of commercial and experimental fungicides to suppress scab in wheat and barley. Researchers are also studying how different application methods may influence the effectiveness of fungicide applications.

Marcia McMullen, North Dakota State University extension plant pathologist, said that research enabled by the Initiative has helped support the registration of some fungicide products, and helped producers make better fungicide application decisions. She estimates that the use of one leading fungicide product to suppress scab during the 2000 growing season resulted in a yield response valued at almost \$16 million, on 830,000 acres of wheat in North Dakota alone. Researchers involved with the Initiative have developed Internet-based systems to help producers forecast and monitor scab during the growing season.

Anne McKendry, University of Missouri winter wheat breeder, explained the collaboration that the U.S. Wheat and Barley Scab Initiative has established with the International Maize and Wheat Improvement Center (CIMMYT). A major crop research center headquartered in Mexico, CIMMYT is the originator of high-yielding wheats that helped stave off widespread starvation for millions of people in the mid 1960s. The resulting Green Revolution earned the 1970 Nobel Peace Prize for Dr. Norman Borlaug, an early leader in CIMMYT's wheat research.

“Working with CIMMYT will allow access to germplasm potentially resistant to scab from around the world that might not otherwise be possible,” said Rick Ward, Michigan State University wheat breeder and co-chair of the Initiative.

Tine Kuiper-Goodman, a leading scientist with Health Canada, was a guest speaker at the Cincinnati forum, briefing participants on efforts to harmonize international standards for assessing the health risk of deoxynivalenol (DON), a contaminant produced by the scab fungus.

Also keynoting the forum was Wilmar da Luz, of the Brazilian research agency Embrapa Trigo, who has spent over a decade researching ways to control scab biologically, or through natural microorganisms that attack and break down *Fusarium*. Brazil lost half of its wheat crop to scab in 1994.

Research at Cornell University, South Dakota State University, Ohio State University, and USDA-ARS is also underway on methods to control scab biologically. Results in the U.S. indicate that it can be done, although more research is still needed before a commercial biocontrol product is made available.

A full report of research conducted under the U.S. Wheat and Barley Scab Initiative and discussed at the Forum in Cincinnati will be available in the 2000 National Fusarium Head Blight Forum Proceedings on the Internet at: www.scabusa.org.

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Editors: For photos from the U.S. Wheat and Barley Scab Initiative research forum in Cincinnati, contact Sue Canty, ph. (517) 355-2236, E-mail: scabusa@msu.edu