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News Release

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National research initiative reports progress on scab

Over 150 crop scientists from around the world joined members of the U.S. wheat and barley industry in a national forum held recently in Sioux Falls, S.D., to discuss advancements in the research of Fusarium head blight.

Commonly called scab, the fungal disease has plagued wheat and barley production in many areas of the United States for much of the 1990s. No wheat and barley varieties are currently immune to the fungus, which is responsible for yield and quality losses on farms in at least 18 states valued at over \$2 billion, according to university and industry estimates.

A concerted national research initiative to solve scab in wheat and barley began two years ago, and federal funding allowed most components of the comprehensive research plan to get underway this year. The scab research initiative in the 1999 fiscal year involved 66 principal scientists working on 111 research projects at 19 land grant universities across the nation and the U.S. Department of Agriculture's Agricultural Research Service.

The research initiative focuses on six distinct program areas: Variety development and coordinated screening nurseries; Epidemiology (how scab develops, spreads) and disease management; Food safety, toxicology, and utilization; Biotechnology; Chemical and Biological Control and Germplasm introduction and evaluation.

Rick Ward, a wheat breeder at Michigan State University and co-chair of the Initiative, says the effort represents an unprecedented partnership between ARS, land-grant universities, and the private sector. "We now have a substantial solution-discovery engine up and running," he says.

There will be no quick "silver bullet" solution to scab overnight, Ward says. Still, research progress is already evident. As reported at the forum in Sioux Falls, promising new sources of host plant resistance genes have been discovered, along with substantial progress in molecular tagging of previously discovered genes. Plant breeders are eliminating highly susceptible varieties and improving scab tolerance in new varieties. Genetic engineering advancements in scab research have been made, bio-control agents show promise, and studies confirm the efficacy of foliar fungicide treatments.

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Some highly innovative methods are being employed in the scab research effort, including a fluorescent gene from jellyfish to help trace development of the fungus in infected plant tissues. Small radio-controlled aircraft are even used in one research project to document aerial spore movement.

Ward says good progress has also been made in unraveling the mysteries of the scab pathogen, including new knowledge on deoxynivalenol or DON, a byproduct of scab that can make barley unacceptable for malting and brewing, and wheat unacceptable for milling. Food processors throughout the U.S. can incur losses from the cost of dealing with grain infected by scab and DON.

That's a key reason why Robert Anthony, a biological chemist with Kraft Foods Inc. participated in the Forum. "Among the companies affiliated with Kraft are Post which uses wheat and barley to make cereal, and Miller which uses malted barley to brew beer. That's why we take great interest in this research initiative, which I think is a well-organized effort to solve a specific, major problem in the shortest time possible," says Anthony.

A full report of research conducted under the U.S. Wheat and Barley Scab Initiative and discussed at the Forum can be found in the 1999 National Fusarium Head Blight Forum Proceedings on the Internet at: www.scabusa.org.

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