

MONSANTO TECHNOLOGY PIPELINE FOR CENTRAL PLAINS CONFERENCE

R. M. Lawson
Corn Yield and Stress Lead
Monsanto Corporation
St. Louis, Missouri
Voice:314-694-1000
Email:mark.lawson@monsanto.com

While corn is widely grown in the United States, from the central Corn Belt to the Western Great Plains, its yield potential is directly related to the amount of available water. From 1984 to 1992, according to the USDA, 67 percent of major crop losses were due to drought. Roughly 85 percent of corn grown in the U.S. suffers from varying degrees of drought during the growing season. About 6,800 gallons of water are required to grow a day's food for a family of four.

Water availability is already a major issue in several parts of the world and becoming a growing problem in others. Now, more than ever before, it is critical that farmers have a tool to combat the impact of water shortage on their crops.

In 2003, Monsanto successfully completed its first tests that demonstrated that some of the genes in its discovery program could enhance the drought tolerance of corn hybrids. These observations of enhanced yield and plant health were confirmed with greater precision in 2004 thru 2007.

During 2008 field trials in the Western Great Plains, drought-tolerant corn showed a six to 10 percent yield enhancement – a gain of 7-10 bushels on an average of 70-130 bushels per acre. In December 2008, the company made the first regulatory submission to the Food and Drug Administration for drought-tolerant corn – the first-ever biotech crop with that trait. Further submissions to the USDA and to other importing countries will be made in the coming months.

The crop is now in Phase 4 of the R&D pipeline, the last phase before commercialization. This phase includes development and testing of the best trait and germplasm combinations for commercial launch.

In general, the drought-tolerance gene works by mitigating the impact of low soil-moisture content on the plant's physiology. In response to inadequate water, corn plants typically begin to shut down their metabolism, slowing photosynthesis and growth-rate. The gene we have submitted for regulatory approval enables the corn plant to maintain metabolism for a longer period of time during drought stress. Ongoing testing has shown that the crop experiences no negative impact in conditions of adequate moisture.

Beyond the Great Plains, Monsanto's drought-tolerant technology is expected to also help improve on-farm productivity in other parts of the world – like Africa – where rainfall is insufficient or irregular. Monsanto's drought-tolerant technology shows promise to give corn crops worldwide a better opportunity to achieve their yield potential.

In addition to drought tolerance, Monsanto also has other corn technologies in its pipeline. SmartStax contains multiple modes of action, for insect-resistance management against above and below ground insects, and offers the company's most comprehensive weed-control system. The company expects a 2010 commercial launch for SmartStax pending regulatory approval.

These technologies as well as others in our pipeline or already on the market reflect Monsanto's commitment to help farmers boost on-farm productivity through established and new advancements in plant breeding and biotechnology. The company's investment in breeding and biotechnology research is key to meeting these commitments with more than \$2.6 million per day spent on leading agricultural research.

In June 2008, Monsanto announced an ambitious plan to double yields in its three core crops – corn, cotton and soybeans – by 2030 compared to a base year of 2000 – as part of a three-point pledge called the Sustainable Yield Initiative. The company also committed to conserving more of the world's precious natural resources by reducing by a third, the aggregate amount of key inputs such as water, land and energy, required to produce each unit. Monsanto plans to do this by providing choices for modern agricultural technology to its stakeholders and has also committed to helping resource-poor farm families.