



Timeline of New Wheat Research Investment Announcements

2008

- Leadership of NAWG and U.S. Wheat Associates meet with representatives of BASF, Bayer CropScience, Dow AgroSciences, DuPont/Pioneer, Monsanto and Syngenta to urge investment in wheat research and indicate support for biotechnology's application in wheat.
- In October, Syngenta announces its purchase of Resource Seeds and Goldsmith Seeds to add to its AgriPro COKER wheat breeding business.

2009

- In January, Bayer CropScience announces a partnership with Ducks Unlimited to expand research into new winter wheat varieties adapted to prairie climatic conditions.
- In July, Monsanto acquires WestBred and its library of germplasm.
- In July, Bayer CropScience announces it is expanding its seeds and traits business to include wheat, and it has formalized a long-term partnership with CSIRO, Australia's national research organization and a leading wheat researcher. That project will focus on higher yields, efficient nutrient utilization and drought tolerance.
- In August, Bayer CropScience announces it has acquired biotech firm Athenix. Among Athenix's projects is development of transgenic plants resistant to chemicals and pests.

2010

- In March, Syngenta announces it will enter the hybrid wheat business, taking advantage of technology developed for hybrid barley in Germany.
 - In April, Syngenta and the international wheat research organization CIMMYT announce a five-year, public-private partnership. That partnership will focus on wheat research and development encompassing native and biotech traits, hybrid wheat and the use of seeds and crop protection products to increase yields.
 - In May, Limagrain Cereal Seeds (LCS) announces it will start a North American wheat breeding and seed program headquartered in Ft. Collins, Colo., and intends to open research stations around the country.
 - Also in May, Vilmorin, one of the world's largest and oldest producers of field crop and vegetable seeds, purchases a 7.25 percent equity position in Arcadia Biosciences. In parallel, Arcadia purchases a 35 percent ownership position in Limagrain Cereal Seeds, of which Vilmorin has 65 percent ownership. Initial collaboration between Vilmorin and Arcadia is focusing on nitrogen use efficiency (NUE) and water use efficiency (WUE).
 - In June, Monsanto and Kansas State University agree to share technology and germplasm via a non-exclusive agreement based on the principles of collaboration endorsed by the NAWG/U.S. Wheat Associates Joint Biotechnology Committee.
 - In July, BASF and Monsanto announce they are expanding an existing biotechnology research collaboration to include biotech wheat. The focus of the collaboration is on higher yielding varieties.
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2010 *(continued)*

- In August, Monsanto and InterGrain announce a new wheat breeding collaboration, with Monsanto acquiring a 19.9 percent minority interest in the leading Australian cereal breeder, the largest shareholder of which is the Western Australia State Government. The focus of their efforts is yield performance, disease resistance, drought tolerance and improved end-use qualities.
- In November, Virginia Tech and Monsanto announce an agreement to share technology and germplasm via a non-exclusive agreement based on the principles of collaboration endorsed by the NAWG/U.S. Wheat Associates Joint Biotechnology Committee.
- In November, Hexima Limited announced it has signed a research license and commercial option with Monsanto for anti-fungal research in wheat with a future option for commercialization pending research results.
- In December, Bayer CropScience and Evogene of Israel sign a collaborative agreement to improve wheat varieties utilizing Evogene's genetic modification methods. In a separate agreement, Bayer CropScience will invest \$12 million in Evogene. The partnership will focus on improved yield, drought tolerance, fertilizer utilization and other characteristics using native and biotech traits.
- In December, Bayer and the University of Nebraska announce a non-exclusive collaborative agreement, with the University providing access to its germplasm, and Bayer establishing an endowed chair in wheat breeding. Bayer also plans to headquarter its North American wheat breeding program in Lincoln, Neb.
- In December, Bayer CropScience announces it has acquired wheat breeding programs from two Ukrainian breeding companies, SORT and EUROSORT. The company said the agreement would give it access to "outstanding wheat lines with excellent winter hardiness and drought tolerance."

2011

- In January, German company KWS Lochow acquires the wheat germplasm assets of two American companies and consolidates its U.S. activities in a new company, KWS Cereals USA, LLC. The company said these acquisitions will strengthen its global activities, specifically citing U.S. support for biotechnology when announcing the investment. KWS activities are expected to focus on development of soft red winter seed varieties.
- In March, Arcadia Biosciences announces it has received a \$1.02 million award from the U.S. National Institutes for Health (NIH) for work on wheat with a high level of resistant starch. Resistant starch is digested in the upper intestine

rather than being fermented in the large intestine. Because of this, the glucose it produces is released more steadily in the bloodstream, leading to an increased feeling of satiety over a longer time period and short chain fatty acid production, which promotes colon health.

- In June, Bayer CropScience announces it has signed a licensing and cooperation agreement with RAGT Semences S.A.S., based in Rodez, France, which will give it access to the privately-owned French company's winter wheat germplasm and associated molecular markers. The companies will also explore joint projects in wheat breeding, and RAGT will have options to license wheat traits from Bayer.
- In July, Dow AgroSciences announces it has acquired assets from Northwest Plant Breeding Company in Pullman, Wash. Dow says it will expand its Hyland Seeds certified wheat seed program into the Pacific Northwest, and it will open a cereal breeding station in Pullman by early 2012.
- In September, Dow AgroSciences announces it has entered into an agreement with HRZ Wheats, an Australian wheat breeding company, to exchange germplasm and provide HRZ access to Dow's technology and financial resources.
- In November, Hexima Limited announces it has signed a research license and commercial option with Monsanto for anti-fungal research in wheat with a future option for commercialization pending research results.
- In December, Bayer CropScience and South Dakota State University announce a non-exclusive agreement to provide the company access to the University's spring wheat germplasm and to provide the University resources for advanced education in wheat breeding, including an endowed chair in wheat breeding and genetics.
- In December, Bayer CropScience announces it is establishing a European Wheat Breeding Center in Gatersleben, Germany, to focus on improved wheat varieties for the central European market and to coordinate Bayer's European wheat-breeding activities.

2012

- In January, the Idaho Wheat Commission announces it will create two faculty research endowments at the University of Idaho's College of Agricultural and Life Sciences and participate in a public-private partnership that also includes the College and Limagrain Cereal Seeds. The endowments will be worth \$2 million over time and will enhance a separate partnership between Limagrain and the College to breed new Pacific Northwest wheat varieties for improved productivity and tolerance to diseases and stress. Limagrain will also fund an endowment for cropping systems research and graduate training at the university.