

## **Arcadia Biosciences and Australian Research Organizations Enter Research and Commercial License Agreement for Development of Nitrogen Use Efficient Wheat**

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### **-- Environmental and crop productivity benefits expected from global collaboration in wheat among U.S. and Australian research and development organizations --**

**Davis, California, USA, Adelaide, SA, AUSTRALIA, and Canberra, ACT, AUSTRALIA (October 10, 2007)** – Arcadia Biosciences Inc., an innovative U.S.- based plant technology company, and two Australian research organizations, the Australian Centre for Plant Functional Genomics (ACPFPG) and the Commonwealth Scientific and Industrial Research Organization (CSIRO) through the Food Futures Flagship, today announced that they have signed a three-way agreement to develop and commercialize wheat and barley varieties that require significantly less nitrogen fertilizer to produce. The joint program will use Arcadia's proprietary Nitrogen Use Efficiency (NUE) technology and ACPFG and CSIRO research, seed and plant breeding capabilities. The collaboration is expected to result in the development of nitrogen use efficient wheat and barley varieties that will be commercialized globally.

Under the agreement ACPFG and CSIRO will carry out research activities and manage commercialization of NUE wheat and barley products in Australia. Arcadia will carry out research activities and manage commercialization of new products in the rest of the world. Arcadia receives technology license fees, and the parties will share commercial revenue from product sales. NUE wheat and barley varieties from the collaboration are expected to be commercialized by 2016.

Wheat is the world's largest agricultural crop with 212 million hectares grown globally, 11 million hectares of which are grown in Australia<sup>1</sup>. Nitrogen fertilizer is a key input for the achievement of high wheat yields and represents a significant production cost for farmers. Globally, wheat uses more nitrogen fertilizer than any other crop, accounting for approximately 30 percent of total nitrogen fertilizer use. Wheat and other crops typically absorb less than one-half of applied nitrogen. Much of the unabsorbed nitrogen ends up in waterways, contributing to The Food and Agricultural Policy Institute (FAPRI), Agricultural Outlook 2007, 2006-2007 crop data. (<http://www.fapri.iastate.edu/outlook/2007/tables/8wheatables.pdf>) oxygen-starved fresh and ocean waters, or is volatilized as nitrous oxide, a highly potent greenhouse gas.

Agriculture is the second largest industrial contributor to global greenhouse gases, ranking ahead of the entire transportation sector and behind only electric and heat generation. According to the 2006 Stern Review, the earth is only capable of absorbing about 5 billion metric tons of CO<sub>2</sub> equivalents per year. Agriculture alone is responsible for producing about 5.6 billion metric tons of CO<sub>2</sub> equivalents annually, and nitrogen fertilizer is a major contributor to total agricultural emissions.

Arcadia's proprietary NUE technology enables plants to utilize nitrogen fertilizer much more efficiently than conventional crops. In field trials, NUE crops consistently achieve high yields with as much as 50 percent less nitrogen fertilizer.

Because NUE wheat will require less nitrogen fertilizer for production, farmers are expected to benefit from reduced costs and enhanced yields, making them more globally competitive. At the same time, the environment is expected to benefit significantly from reduced greenhouse gas emissions and water pollution.

"This technology could represent a major advance for Australian agriculture," said Michael Gilbert, ACPFG's general manager. "Nitrogen fertilizer costs have been spiraling and the environmental benefits of reducing its use will be irresistible to the Australian Grains Industry. Arcadia is an outstanding company and we look forward to working with them and also furthering our great relationship with the CSIRO."

"CSIRO's pre-breeding and novel grain trait research, Arcadia's NUE technology and ACPFG's high quality research are a perfect fit," said Dr. Bruce Lee, director of the CSIRO Food Futures Flagship. "Leveraging each organization's strengths has produced a highly effective international collaboration with significant opportunities not only in reducing nitrogen use

but also the potential to impact positively on grain quality attributes."

"ACPFPG and CSIRO are highly desirable partners for the development of NUE technology in wheat and barley" said Eric Rey, president and CEO of Arcadia. "Each organization has very strong research and development capabilities, and their presence in Australia, a major wheat producing country, offers significant benefits. The development and commercialization of NUE wheat and barley will benefit farmers by increasing overall production efficiency and reducing costs. At the same time, the environment will benefit through the reduction of nitrogen pollution in waterways and reduced greenhouse gas emissions."

Field tests conducted by Arcadia during five growing seasons in various U.S. regions demonstrated that NUE canola achieved higher yields than the control canola variety in each trial using as much as two-thirds less nitrogen fertilizer. Arcadia has also demonstrated similar results in rice.

#### **About ACPFG**

In 2003, ACPFG was established by the Australian Research Council, the Grains Research and Development Corporation and the South Australian Government to develop new technologies for the Australian Grains Industry. Whilst headquartered in Adelaide South Australia, it has three other nodes throughout Australia and employs 140 staff. For more information visit, [www.acpfg.com.au](http://www.acpfg.com.au).

#### **About CSIRO**

CSIRO is Australia's national science agency and one of the largest and most diverse research agencies in the world. With an annual budget of A\$934 million and over 6,500 staff, CSIRO can draw on expertise from around the organization to offer an effective, multidisciplinary research package.

The CSIRO Food Futures Flagship is a collaboration involving CSIRO, industry and research partners. Within a wide-ranging portfolio of food-related research across the entire supply chain, the Flagship is engaged in researching new techniques in advanced genetics to create differentiated grain, food and aquafeed products.

#### **About Arcadia Biosciences, Inc.**

Based in Davis, Calif., with additional facilities in Seattle, Wash. and Phoenix, Ariz., Arcadia Biosciences is an agricultural biotechnology company focused on the development of agricultural products that improve the environment and enhance human health. For more information visit [www.arcadiabio.com](http://www.arcadiabio.com).