

Field Trials Show Average Yield Increases of 19 Percent in Nitrogen Use Efficient Rice

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– Improved Rice Will Enhance Farm Economics, Food Security and Sustainable Agriculture in the Developing World –

DAVIS, Calif. & NAIROBI, Kenya--(BUSINESS WIRE)--Oct. 28, 2015-- Two years of field trials in Africa with leading lines of Nitrogen Use Efficient (NUE) rice have demonstrated an average yield increase of 19 percent over the conventional control lines.

These results were reported jointly today by Arcadia Biosciences, Inc., an agricultural technology company, the Council for Scientific and Industrial Research of Ghana's Crops Research Institute (CSIR-CRI), the National Agricultural Research Organisation (NARO) of Uganda, and the African Agricultural Technology Foundation (AATF).

CSIR-CRI and NARO have been testing the new rice lines using Arcadia's NUE trait at two field research locations in Kumasi, Ghana and Namulonge, Uganda.

In the 2014 and 2015 field trials, eight out of the 15 NUE rice lines out-yielded the conventional control lines under rain-fed upland conditions applied with various nitrogen fertilizer rates. The leading NUE rice line showed an average grain yield increase of 19 percent in multiple field trials. At nitrogen rates of 30, 60 and 90 kg per hectare, the yield increase of the leading NUE rice line was 25 percent, 14 percent and 19 percent, respectively, compared with the control lines.

The African field trial results build on results from field trials carried out by the International Center for Tropical Agriculture (CIAT) in Colombia. In the CIAT trials, four years of testing at two locations demonstrated an average yield increase from the NUE rice lines of 30 percent over the control rice lines.

"Arcadia's NUE trait has consistently shown double-digit yield increases in all major types of rice grown globally," said Eric Rey, president and CEO of Arcadia. "These results have been achieved in multiple geographies, over many seasons, and under a variety of growing conditions and nitrogen application rates. Our NUE trait has the potential to deliver significant value to farmers worldwide, enabling them to increase yield and farm revenue."

Arcadia's NUE trait was developed to help farmers increase crop yields per unit of applied nitrogen fertilizer. Nitrogen fertilizer is a key input to the global agricultural industry for increasing crop yield, but conventional crops typically use less than half of the nitrogen fertilizer applied. Much of the remainder moves through the soil and enters ground and surface water systems, or volatilizes into the air as a potent greenhouse gas. Arcadia's NUE trait enables plants to produce higher yields while reducing the environmental footprint of agriculture.

Rice is the world's most valuable crop, grown on more than 395 million acres globally with a harvest value of \$429.3 billion in 2013. In Africa, rice is one of the most cultivated and important food crops. Most of Africa's rice is produced and consumed by small-scale farmers who are often constrained by challenging environmental conditions, such as nutrient-deficient soil, drought and salinity. Soil nitrogen deficiencies, in particular, affect approximately 90 percent of African land used to grow rice and other crops.

Access to rice varieties that make better use of available nitrogen in soil and respond more effectively to small amounts of fertilizer can help alleviate these agricultural pressures on African farmers and can minimize the continent's dependency on food imports. According to the United Nations Food and Agriculture Organization, farmers in Sub-Saharan Africa (SSA) produce about 22.5 million metric tons of rice annually, yet the continent imports more than 13 million metric tons, valued at approximately \$7 billion.

The African NUE field trials are part of the NEWEST Rice project, a collaboration between Arcadia and the AATF, working with the United States Agency for International Development (USAID) and other organizations under the [Feed](#)

[the Future](#) initiative to help bolster food security in Africa. NEWEST Rice is a triple-gene stack rice variety that combines Arcadia's Nitrogen Use Efficiency, Water Use Efficiency and Salinity Tolerance traits, helping farmers maintain productivity under variable conditions. The multi-organizational effort leverages the experience of leading African agricultural research organizations, as well as technical expertise and a royalty-free license from Arcadia, to develop and test new rice lines. The Public Intellectual Property Resource for Agriculture provided access to enabling technologies, and CIAT conducted initial field evaluations of the most promising new rice lines.

About Arcadia Biosciences, Inc.

Based in Davis, Calif., with additional facilities in Seattle, Wash. and Phoenix, Ariz., Arcadia Biosciences (NASDAQ: RKDA) develops agricultural products that create added value for farmers while benefitting the environment and enhancing human health. Arcadia's agronomic performance traits, including Nitrogen Use Efficiency, Water Use Efficiency, Salinity Tolerance, Heat Tolerance and Herbicide Tolerance, are all aimed at making agricultural production more economically efficient and environmentally sound. Arcadia's nutrition traits and products are aimed at creating healthier ingredients and whole foods with lower production costs. The company was recently listed in the Global Cleantech 100 and was previously named one of MIT Technology Review's 50 Smartest Companies. For more information, visit www.arcadiabio.com.

About The African Agricultural Technology Foundation (AATF)

The African Agricultural Technology Foundation (AATF) is a not-for-profit organization that facilitates and promotes public/private partnerships for the access and delivery of appropriate agricultural technologies with potential to increase the productivity of resource-poor smallholder farmers in Sub-Saharan Africa. For more information, visit www.aatf-africa.org.

About USAID

USAID is the lead U.S. Government agency that works to end extreme global poverty and enable resilient, democratic societies to realize their potential.

About Feed the Future

Feed the Future is the U.S. Government's global hunger and food security initiative. With a focus on smallholder farmers, particularly women, Feed the Future supports partner countries in developing their agriculture sectors to spur economic growth and trade that increase incomes and reduce hunger, poverty and under nutrition. For more information, visit www.feedthefuture.gov.

About the CSIR-Crops Research Institute, Ghana

The mission of the Council for Scientific and Industrial Research of Ghana's Crops Research Institute (CSIR-CRI) is to ensure high and sustainable crop productivity and food security through development and dissemination of environmentally sound technologies. CSIR-CRI has a broad research mandate covering all food and industrial crops. These include maize, rice, cowpea, soybean and groundnut. Others are cassava, yam, cocoyam, sweet potato, vegetables and fruit crops, plantain and bananas. For more information visit www.cropsresearch.org.

About the National Agricultural Research Organisation, Uganda

The National Agricultural Research Organisation (NARO) is the apex body for guidance and coordination of all agricultural research activities in the national agricultural research system in Uganda. Its goal is to enhance the contribution of agricultural research to sustainable agricultural productivity, economic growth, food security and poverty eradication through generation and dissemination of appropriate technologies, knowledge and information. For more information visit www.naro.go.ug.

About the Public Intellectual Property Resource for Agriculture

The Public Intellectual Property Resource for Agriculture (PIPRA) is a non-profit initiative which helps developing countries access new technologies by decreasing intellectual property barriers, improving commercialization strategies, and increasing technology transfer. PIPRA also helps public institutions more broadly by supporting them in getting their technological innovations to those who need it most. For more information visit www.pipra.org.

About the International Center for Tropical Agriculture (CIAT)

CIAT is an international agricultural research organization focused on eco-efficient agriculture that is, farming systems that better harness the available resources to be more competitive and to sustainably increase productivity, while leaving a smaller environmental footprint. CIAT significantly contributes to major global initiatives that seek to reduce rural poverty, strengthen food security, improve human health and nutrition, and sustainably manage natural resources throughout the developing world. For more information, visit www.ciatnews.cgiar.org.

Note Regarding Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including statements relating to Arcadia's NUE trait and the regulatory process for such trait. Forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially, and reported results should not be considered as an indication of future performance. These risks and uncertainties include, but are not limited to: Arcadia's and its partners' ability to develop commercial products incorporating its traits, including the NUE trait, and complete the regulatory review process for such products; Arcadia's compliance with laws and regulations that impact the company's business, and changes to such laws and regulations; Arcadia's future capital requirements and ability to satisfy its capital needs; and the other risks set forth in Arcadia's filings with the Securities and Exchange Commission from time to time, including the risks set forth in Arcadia's Quarterly Report on Form 10-Q for the quarter ended June 30, 2015 and other filings. These forward-looking statements speak only as of the date hereof, and Arcadia Biosciences, Inc. disclaims any obligation to update these forward-looking statements.

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