



Feed the Future Country Fact Sheet

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NEWEST Rice Marks Latest Milestone



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Researchers in Uganda plant seeds in the first ever confined field trials of genetically engineered rice in Africa.

"Today, we have new tools and approaches that enable us to achieve progress that was simply unimaginable in the past: the eradication of extreme poverty and its most devastating corollaries, including widespread hunger and preventable child death."

- [USAID Administrator Rajiv Shah](#)

One such tool is genetic engineering.

To help leverage this and other advanced molecular [tools](#) for food security, Feed the Future partners from U.S. and international research communities and the private sector have teamed up to apply these tools to common challenges faced by millions of rice farmers throughout Africa.

Their efforts are paying off. This month, for the first time in Africa, researchers in Ghana and Uganda planted confined field trials of genetically engineered rice.

The new variety includes a trait for increased nitrogen use efficiency, which helps the plant take better advantage of the scant nitrogen found in Africa's often nutrient-poor soils. Soil nitrogen deficiencies limit yields on roughly 90 percent of the lands African farmers use for growing rice. The engineered variety could also promote responsible fertilizer use by improving the crop's responsiveness to smaller doses of fertilizer.

The field trials are a major scientific milestone and mark the latest success in a vibrant partnership between USAID, international and national agricultural research institutions, private-sector biotechnology firms, and non-governmental organizations—a partnership that is not only generating improved rice varieties, but also enhancing African researchers' capacity to regulate and execute advanced agricultural research.

The partnership coalesces around the NEWEST rice project, which aims to improve the productivity and sustainability of rice

production across Sub-Saharan Africa by relieving key production constraints for African rice farmers. In addition to the soil nitrogen deficiencies that inspired the current field trials, saline soils also reduce rice productivity in Africa. Meanwhile, climate change is elevating drought risk across the continent.

Rice varieties that are nitrogen use efficient, water use efficient, and salt-tolerant (NEWEST) could therefore boost yields by up to 30 percent in many regions, increasing farmers' climate resilience while also minimizing their use of fertilizer and water, reducing deforestation, and slowing expansion of cultivated lands.

As a complement to traditional breeding programs, biotechnology has developed powerful tools that could help meet these ambitious agricultural and environmental goals. To harness these tools and spur agricultural innovation, Feed the Future relies on an international, multi-sector approach:

- As part of the NEWEST rice project, California-based Arcadia Biosciences donated the intellectual property to generate improved varieties and introduced the new traits into NERICA rice, an **important** African variety.
- The biotechnology firm then transferred these initial lines to the International Center for Tropical Agriculture (CIAT) in Cali, Colombia, which worked with Arcadia to conduct preliminary field evaluations and generate seed stocks of the most promising varieties.
- Arcadia and CIAT then shipped the seed to research partners in Ghana and Uganda's Agricultural Research Systems, who planted their confined field trials over the past month.
- Throughout this process, the African Agricultural Technology Foundation coordinated activities across the partnership, helping to navigate intellectual property and biosafety regulations in the two countries and ensuring that the confined field trials adhered to legal and environmental standards.

As the field trials progress, Ghanaian and Ugandan researchers will identify which of the new, nitrogen-use-efficient rice lines perform best under local conditions. Water-efficient, salt-tolerant, and triple-stack rice varieties (which combine all three traits) are still under evaluation in California and Colombia and will be tested in subsequent field trials in Africa. The researchers then plan to optimize the best-performing lines through conventional breeding and introduce the improved traits into locally adapted, farmer-preferred rice varieties.

As part of a **broad portfolio** of agricultural research investments, this partnership highlights Feed the Future's **strategy** to harness agricultural innovation to reduce global hunger, poverty, and undernutrition, while meeting the global challenges of food security in an environmentally and economically sustainable manner.