Potential Economic Powerhouse

Because of this unique technology package, NERICAs have a huge potential economic impact in Africa for:

- Feeding subsistence farmers' households.
- Generating surplus harvests.
- Boosting income and consumption.
- Reducing imports and saving foreign exchange.

From Lab to Field

To quickly move the NERICA technology into farmers' hands, WARDA and its partners have adopted farmer-participatory approaches, such as the Participatory Varietal Selection (PVS) and community-based seed production systems (CBSS).

Showcasing NERICA in Guinea

Farmer-participatory approaches were successfully used to introduce NERICA varieties to Guinea. As a result, Guinean farmers are now able to gross US$65 per hectare with minimal inputs, and US$145 per hectare with a moderate level of inputs.

African Rice Initiative: Stepping Up NERICA Dissemination in SSA

Building on the Guinea success story, WARDA and its partners joined forces to create a mechanism to scale up the dissemination of the NERICA throughout SSA. Their efforts culminated in the launching of The African Rice Initiative (ARI) in March 2002.

ARI is in harmony with the New Partnership for Africa's Development (NEPAD) and provides a framework for achieving the Millennium Development Goals.

Although the initial focus of ARI will be on selected West African pilot countries, NERICAs will be promoted across SSA through farmer-participatory approaches.

According to ARI's projections, by the end of 5-year project (Phase I), some 200,000 ha will be under NERICA cultivation with a production of nearly 750,000 tonnes per year, achieving rice import savings worth nearly US$90 million per year.

NERICA — New Rice for Africa

NERICAs on the Move

NERICAs are making rapid headway in SSA. In 2002, NERICA 1, 2, 3 and 4 were the top varieties selected by farmers in PVS trials in Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Mali, Sierra Leone, and Togo.

Within WCA, Côte d'Ivoire released the first two NERICA varieties in 2000, and Nigeria released one in 2003. Farmers in The Gambia, Guinea, and Sierra Leone are growing several NERICA varieties. In Benin, Gabon, Mali, and Togo, several NERICA varieties are under extension.

Uganda has released a NERICA variety as "NARIC–3". Ethiopia, Madagascar, Malawi, Mozambique, and Tanzania are evaluating several NERICA varieties.

Coordinating NERICA Dissemination

A growing number of donors and development agencies are championing the dissemination of NERICA in many African countries. The African Rice Initiative, hosted by WARDA, has been created to serve primarily as a single focused channel for all NERICA dissemination efforts in Africa. This will help to efficiently coordinate its dissemination across the region, satisfy the high demand for pure seeds and eliminate the risk of its dissemination in inappropriate environments.

Capturing NERICA's Full Potential

The current NERICA varieties are targeted to upland rice systems. NERICA varieties for irrigated and lowland systems, which hold a high potential for Africa's food security, are in the pipeline.

WARDA and its partners are together delivering the promise of NERICA to the poor across SSA, and NERICA varieties are increasingly reaching villages, farms, and homes of rice farmers and consumers of Africa.

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NERICA ON THE MOVE

A symbol of hope for rice farmers in Africa

WARDA – The Africa Rice Center
Consultative Group on International Agricultural Research

NERICA — A Technology from Africa for Africa

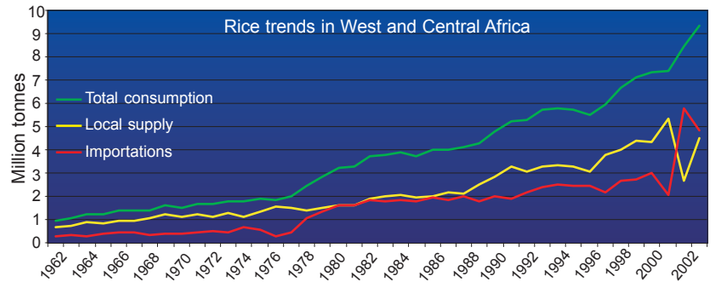
Since its creation in the mid-1990s, the New Rice for Africa (NERICA) has carved a special niche for itself among upland rice farmers in sub-Saharan Africa (SSA). Today, it is a symbol of hope for food security in SSA—the most impoverished region in the world, where a staggering one-third of the people are undernourished, and half the population struggle to survive on US$1 a day or less.

This hope stems from:

- **NERICA's unique combined assets:** higher yield, shorter growth duration, resistance to local stresses and higher protein content than traditional rice varieties.
- **NERICA's relevance:** Responds to the real needs of millions of upland or dryland rice farmers of SSA.
- **NERICA's promise:** Potential to alleviate the desperate food situation in the region and fuel SSA's economy.

NERICA is a technology from Africa for Africa. It is perfectly adapted to the harsh growing environment and low-input conditions of upland rice ecologies in sub-Saharan Africa (SSA), where smallholder farmers lack the means to irrigate and apply chemical fertilizers or pesticides. It responds even better to higher inputs.

The Rice Challenge in Africa



Demand. Today, food means rice to millions of Africans. The demand for rice in West and Central Africa (WCA), the rice belt of Africa, is growing at the rate of 6% per annum—faster than anywhere else in the world.

The growth is largely the result of urbanization, which is growing at the rate of 3.5% per year in Africa—again the fastest in the world—and changing consumer preferences.

Imports. Rice imports represent over 25% (in value) of total food imports in WCA. Since the 1960s, rice imports in the sub-region have increased eight-fold to 4 million tonnes per year, at an annual cost of over US$1 billion.

Domestic production. Rice is grown under subsistence conditions in WCA by about 20 million smallholder farmers, many of whom are women. Many of the Asian rice varieties grown by them are highly susceptible to insect pests, diseases, weeds and toxic soils.

The challenge. To create a new plant type—high-yielding and resistant to local stresses—designed specifically for smallholder farming conditions in Africa.

Rice—an integral part of African history and culture

Rice is generally associated with Asia. But it is also an integral part of the history and culture of Africa, where it has been grown for over 3000 years.

There are only two species of cultivated rice in the world: Oryza sativa *(Asian rice) and* Oryza glaberrima *(African rice).*

The African rice is thought to have been domesticated in West Africa some 3500 years ago. The Asian rice was introduced into West Africa about 450 years ago.

The African rice survives in small pockets. Its taste is well appreciated and it is sometimes served as a special dish during festivals. It is also used for rituals by certain communities.

The Response

To address the rice challenge of the region, WARDA—The Africa Rice Center—took groundbreaking initiatives.

Focus on poor farmers' ecology. WARDA scientists first focused their attention on upland or dryland ecology, because:

- It represents about 40% of the total area under rice cultivation in WCA and employs about 70% of the region's rice farmers.
- The majority of upland rice farmers in the region are women, who lacked appropriate varieties to help reduce the strain of their back-breaking work.

Characteristics of Asian and African rice species

Oryza sativa

- *High yield potential, but low adaptation to rainfed uplands.*
- *Has replaced* O. glaberrima *over much of the rice-cultivated area.*

Oryza glaberrima

- *Low yield, but a rich reservoir of genes for resistance to local stresses.*
- *Almost totally abandoned by farmers.*

Combining the best of the two rice species. WARDA scientists decided to combine the toughness of *O. glaberrima* with the productivity of *O. sativa.* This was a formidable scientific challenge, because the two species have evolved separately over millennia and are so different that many previous attempts did not lead to reliable variety development.

Using molecular biology, the scientists, in association with an array of partners from around the world, overcame hybrid sterility—the main problem in crossing the species. This also allowed them to accelerate the breeding process from 5–7 years to 2 years or less. The fruit of this effort was the New Rice for Africa (NERICA), which presents several advantages over traditional varieties. NERICA is not just one variety; over 3000 family lines have been developed, opening up a new world of rice biodiversity.

The NERICA Advantage

- *Higher yields (by 50% without fertilizer and by more than 200% with fertilizer).*
- *Earlier maturity (by 30–50 days).*
- *Resistance to local stresses.*
- *Higher protein content (by 2%).*