



More than production: Policies for the African rice sector



Africa Rice Center (AfricaRice) – Annual Report 2013

West and Central Africa

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Citation:

Africa Rice Center (AfricaRice). 2014. Africa Rice Center (AfricaRice) *Annual Report 2013: More than production: Policies for the African rice sector*. Cotonou, Benin: 108 pp.

ISBN:

Print 978-92-9113-374-1
PDF 978-92-9113-375-8

Writing and editing:

Green Ink (www.greenink.co.uk) and Savitri Mohapatra (AfricaRice)

Printing:

Pragati Offset Pvt Ltd, Hyderabad, India

Photo credits:

Guy Manners (Green Ink): page 23 (background; second row, all 3; third row left and center). All other pictures are by staff members of Africa Rice Center (AfricaRice), and networks and consortia convened by the Center.

was attributable to expansion of the rice area, while between 2007 and 2012, some 71% was attributable to the yield increase.

Supply, supply, supply

The Coalition for African Rice Development (CARD) was created in the midst of the crisis with a goal of doubling continental production by 2018. CARD, an initiative of the Japan International Cooperation Agency (JICA) and Alliance for a Green Revolution in Africa (AGRA), is a consultative grouping of bilateral and multilateral development partners and African and international institutions. Partners in CARD include the African Development Bank (AfDB), Food and Agriculture Organization of the United Nations (FAO), Forum for Agricultural Research in Africa (FARA), International Fund for Agricultural Development (IFAD), International Rice Research Institute (IRRI), Japan International Research Center for Agricultural Sciences (JIRCAS), New Partnership for Africa's Development (NEPAD), the World Bank and AfricaRice. CARD encouraged more than 20 countries in sub-Saharan Africa to develop national rice development strategies (NRDS) to implement this ambitious program.

In a review of the then existing 19 NRDS, former AfricaRice agricultural economist Matty Demont pointed out in a publication in *Global Food Security* journal that the programs were almost entirely focused on productivity.

Domestic supply is clearly important if the region is to meet the local demand for rice, predicted to be in excess of 31 Mt in 2020 (see 'Third Africa Rice Congress', page 17). While many still look for, hope for, or drive toward a green revolution in rice in Africa, one has to bear in mind the strong differences between Africa and Asia. The rice green revolution in Asia was based on input-responsive varieties and massive inputs, especially in terms of fertilizers and water. One might say that the green revolution for rice was an irrigation revolution. Most rice workers in Africa will

tell you that Africa's rice production area is dominated by rainfed farming.

In an analysis of data from 16 sub-Saharan African countries for which NRDS are available, AfricaRice agronomist Kazuki Saito and Deputy Director General Marco Wopereis determined that higher national average *yields* were directly related to a greater share of irrigated rice in the total rice area. Similarly, increasing national average *yields* over two periods (before and after 2000) were related to increases in the proportion of the rice area that was irrigated. It seems evident that the most rapid increases in *productivity* are going to be achieved in those countries that have the expertise and environments to establish new irrigation schemes. In all but 2 of the 16 countries analyzed, existing and targeted irrigation areas account for less than 35% of the country's potential. There is therefore huge scope for expansion of irrigated rice farming, which is key to improved national average yields and therefore production.



Rice field near Booker Washington Institute, Kakata, Liberia

Case study: Nigerian Rice Transformation Agenda

The Nigerian Rice Transformation Agenda (RTA) is an ambitious program to make the country self-sufficient in rice by addressing production and postharvest processing costs, the fragmented value chain and the poor quality of local rice.

“The Rice Transformation Agenda intends to adopt the value chain approach to form a nucleus estate around existing rice mills. Clusters of rice production will be identified and the farmers therein will be organized so that they can readily access inputs such as improved seeds, fertilizer, agrochemicals, and modern methods of production from extension services. Each cluster will use improved seeds of recommended varieties and supply paddy to the mill” (Federal Ministry of Agriculture and Rural Development, *Rice Transformation Action Plan*, Abuja, 9 September 2011).

The RTA initially targeted mills in lowland and irrigated rice areas in 20 major rice-producing states. The ‘clusters’ aggregate farmers to improve their access to improved technologies and reduce production and transaction costs. The government will subsidize seed, fertilizer and agro-inputs by 50% to encourage their uptake by farmers. While the RTA will expand the rice area by progressively rehabilitating existing irrigation schemes, the government will continue to subsidize water supply for irrigation by 50%.

As a public-sector-led initiative, the RTA will help forge links between farmers and private-sector credit sources through the Nigeria Incentive-based Risk Sharing for Agricultural Lending (NIRSAL). This is a crucial way to support mechanization by facilitating farmers’ access to tractors, harvesters and threshers.

With funding from the Federal Ministry of Agriculture and Rural Development, AfricaRice recruited three staff members for the RTA in April 2013 — an agronomist/water-management specialist, a rice seed systems specialist and a rice value-chain/postharvest specialist. All three have been placed within the Federal Ministry in Abuja, where they are involved in a number of aspects of the RTA.

Sixteen hybrid rice varieties developed by AfricaRice are undergoing evaluation trials in Kano and Kubwa with the Notore Seed Company, and at the IITA–AfricaRice research station in Ibadan. Three hybrid varieties were selected for further testing from a yield-performance evaluation by Syngenta Seed Company, National Cereals Research Institute (NCRI) and the Rice Value Chain (component of the RTA) in Wushishi (Niger State). ARICA1, ARICA2 and ARICA3 are undergoing participatory evaluation in Kano and Kubwa in collaboration with NCRI. AfricaRice helped compile a report for the registration and release of non-AfricaRice varieties UPIA 1, UPIA 2 and UPIA 3. A submergence tank is being constructed in Kubwa to demonstrate submergence-tolerant varieties.

In partial fulfillment of the agreement with the Federal Ministry, AfricaRice produced 8 t of Breeder Seed and mobilized 220 t of Foundation Seed for the RTA in 2013. Meanwhile, 25 seed technicians from the national program were trained in Breeder Seed production, and 8 seed-production officers of Kojoli Seed Company trained in Certified Seed production and quality control.

With funding from the Federal Ministry, AfDB and the Canadian Department of Foreign Affairs, Trade and Development, a 2-week program was held in Ilorin in collaboration with the National Centre for Agricultural Mechanization (NCAM) at which 24 Nigerian and 5 foreign fabricators were trained to manufacture the ‘ASI’ thresher–cleaner.

Within just 2 weeks (a record), five prototype thresher–cleaners, dubbed ‘Agricultural Transformation Agenda Threshers’ (ATATs), were produced, each with a capacity of 2.5 t/h. These are being distributed to five dry-season rice-producing states (Jigawa, Kebbi, Niger, Sokoto and Zamfara), which will arrange to demonstrate the threshers in several locations in collaboration with the rice value chain–AfricaRice team.

Together with the USAID Maximising Agricultural Revenues and Key Enterprises in Targeted Sites (MARKETS II) project, the AfricaRice RTA team has

been tasked by the Honorable Minister of Agriculture to come up with proposals to address six emerging issues that will contribute to bridging specific gaps in the Nigerian rice value chain. This follows earlier joint reports to the Federal Ministry on the challenges faced by Nigerian rice millers, which resulted in a stakeholder dialogue that identified the problems.

These issues are related to: (i) the establishment of paddy-aggregation centers nationwide to ease millers' access to paddy; (ii) fixing paddy transport subsidies for millers located far away from main paddy production areas; (iii) examining import quotas, duties and levies as a basis for a policy framework on rice; (iv) developing a robust price-support mechanism for both farmers and millers to encourage incremental paddy and finished product output; (v) developing a mechanism for accelerated adoption of rice hybrids in Nigeria; and (vi) promoting an alternative energy source from rice

husk for running mills. The team has delivered reports on items (i)–(iii), for which implementation modalities are being worked out in the Federal Ministry; work is ongoing on the remaining issues.

Two of the AfricaRice RTA team were involved in the national rice levy committee, which helped define the strategy to reinvest income from levies and duties on imported rice. They were also active members of the 'rice crack team' (one of the implementation teams of the World Bank-funded FADAMA III project to boost paddy output in Nigeria).

The presence of the AfricaRice team in Nigeria has not only increased the visibility of AfricaRice as a strong partner with the Nigerian government in the implementation of the RTA, but will also contribute significantly to the potential success and impact of the RTA on the Nigerian rice economy.



The ATAT thresher–cleaner produced by trainees at NCAM, Ilorin



*The blast causal agent (*Magnaporthe oryzae*) infects the leaves, nodes and neck of the rice plant. In neck blast (illustrated here) the point of attachment of the flower- and seed-bearing panicle is weakened almost to breaking point, severely limiting the maturation of grains*

In parallel to the marker-assisted introgression of blast field resistance genes, *Pb1* and *pi21*, JIRCAS and AfricaRice have been collaborating in an area of diversity analysis of blast isolates in Africa. The essence of this collaborative project is to use a set of differential varieties each of which carries a single race-specific resistance gene. Large numbers of blast isolates collected in Africa are being inoculated into the differential varieties. The reaction of the differential varieties identifies the pathotype of an isolate. Overall, the results indicate the prevalence of each pathotype. This information can be used to develop breeding strategies in and for specific regions of Africa.

Closing yield gaps

Rice yields in farmers' fields are still far below what would be possible with improved management. The Africa-wide Rice Agronomy Task Force serves as a platform for enhancing productivity in rice-based systems through the introduction of good agricultural practices (GAP). As part of this task force, AfricaRice agronomist Kazuki Saito has developed the protocols for analyzing yield gaps and their determinants in

rained and irrigated rice-growing environments that are currently being used by national research institutions in 15 sub-Saharan African countries. He has also trained national partners in this field. (See 'Africa-wide Rice Agronomy Task Force', *AfricaRice Annual Report 2012*, pages 4–8, for more information on the Agronomy Task Force.)



Kazuki Saito (right) and colleagues testing a smartphone application for Africa-wide Agronomy Task Force fieldwork

SMART inland valleys

As part of the project 'Sawah, Market Access and Rice Technologies for Inland Valleys' (SMART-IV) — supported by the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) — improved land development mainly for water control has been introduced in Benin and Togo in close association with farmers, and has shown promising results. For example, at one site in Benin, farmers more than quadrupled their rice yields in the lowland improved by the SMART-valleys approach (*see 'Working with farmers to improve water control in inland valleys', AfricaRice Annual Report 2012*, pages 14–16, for more information on this project). Spillover effects of the project have been seen around the project

demonstration sites in both countries. When they saw what was happening at the sites, NGO and farmers' groups independently developed lowlands using the SMART-valleys approach around the sites without any financial support from the project. This proves the high scalability of this approach.



Inland valleys hold the potential for Africa to become self-sufficient in rice

Addressing the rice crisis in Africa

In response to the rice crisis in 2007–2008, MOFA funded a short, sharp one-year project, ‘Improving access to rice seed and building a rice data system for sub-Saharan Africa’ (also known as the ‘Emergency Rice Project’). Carried out in 2009–10, the project aimed to improve farmers’ access to rice seed in 20 CARD member countries and build a rice data system for the continent. It was implemented by AfricaRice and over 70 partners, which included national programs, seed companies, agro-dealers and NGOs. It strengthened formal seed systems, providing more than 58,000 vulnerable farmers with quality rice seed, and provided direct training in quality seed production to more than 560 technicians and extension workers — including 190 women — who in turn trained a further 14,000 farmers.

Detailed rice statistics and information on nationally representative samples were collected for the first time by agricultural research systems and statistical services in the project countries. These rice statistics are critical for high-quality research and evidence-based policy formulation, and will provide a solid basis for analyzing future trends in rice production.

However, the high price of food continues to be a problem. In 2012, a number of sub-Saharan African countries suffered from unexpected climate-related damage in the form of both droughts and floods. MOFA is supporting a new Rice Emergency Initiative, implemented via the rice-sector development hub mechanism in 27 sub-Saharan African countries, to improve farmers’ access to quality seed and small-scale machinery (for more information on the rice-sector development hubs, see ‘Africa-wide Rice Agronomy Task Force’, *AfricaRice Annual Report 2012*, pages 4–8). Some 286 seed producers, farmers and extension personnel were trained in rice seed production. The goal is to provide 60 t of seed for each project country. To date, some 80–90% of the planned volume of seed has been produced and is being collected and bagged for distribution. Project farmers will be given vouchers to exchange for seed.

The situation in Niger is that flooding wiped out both the food and seed crops of rice in 2012 and 2013. The seed program consequently sourced 45 t of seed from a seed-producers’ organization in an unaffected part of the country to supply the affected farmers.

“The [project] countries have each adopted one of three different strategies for seed production,” says Kabirou N’Diaye, leader of the AfricaRice Rice Sector Development Program. “Some, like Senegal, have contracted with commercial seed producers, thereby encouraging the seed industry. Others have developed agreements with individual seed producers or with farmer associations, with the national program providing seed and inputs and the project benefiting from the seed produced. We wait to see which of these three systems works best in the hubs.”