Can System of Rice Intensification Address Food Security in Africa?

Rice is one of the most important food crops in the developing world and a staple for more than half of the world's population. Globally, over 3.5 billion people depend on rice for over 20 per cent of their daily calories. More than 1.5 billion people depend on rice cultivation for livelihoods. Rice is grown in 38 African countries which in 2008 consumed 10 million tons of milled rice. Although Africa accommodates only 13 per cent of the world population, the continent's consumption is a third of all the rice available on the world market.

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Land under rice in Africa was 23.5 million ha in 2006, representing a mere 4.4 per cent of total area under rice crops. In the West African region, rice ranks fifth in area after millets (21 per cent), sorghum (19 per cent), maize (11.5 per cent), cassava (9.4 per cent) and yams (5.4 per cent). Some countries like Mali and Nigeria exceed the average of 7.7 per cent. The yield of rice in a country like Egypt is 10 ton/ha compared to an average of 2.5 ton/ha in most of the Sub-Saharan African countries.

In Eastern Africa, Tanzania is a major producer and consumer with a long history of rice research and production. Rice is the most popular staple food next to maize, with consumption spreading beyond producing areas to urban communities; per capita consumption is estimated at 23.7 kg/year. The crop is cultivated in 650,000 ha with an annual production of 980,000 tons. Tanzania is 85.7 per cent self sufficient in rice.

In Kenya, rice is the third most important food after maize and wheat, especially for urban populations. About 95 per cent of the rice in Kenya is grown under irrigation in paddy schemes managed by the National Irrigation Board (NIB). The remaining 5 per cent of the rice is rain-fed. The current annual rice consumption in the country is 8 kg/person/year. It is estimated that Kenya consumes over 300,000 tons of rice annually and yet only produces 80,000 tons. The rest is imported at a cost of 87.5 million USD, depriving Kenya of much needed foreign currency. The quantity of imported rice is projected to increase due to the growing demand estimated at 6 per cent per annum. The National Rice Development Strategy document indicates that only an annual production increase of 9.31 per cent for 10 years can bring down the deficit.

In Kenya, the average yields under irrigation is 5.5 tons/ha for the aromatic variety, and 7 tons/ha for the non-aromatic varieties. Unit yield for rain-fed rice varieties is slightly below 2 tons/ha. However, with the introduction of the New Rice for Africa (NERICA) varieties, unit yields of rain-fed areas can be raised.

Successful models in some countries like Guinea, Uganda, Ethiopia and Nigeria have reduced rice imports by half over a few years through investments in high yielding NERICA rice varieties. For example, smallholder rice farming in Uganda doubled as farmers adopted rice as a cash crop, with area cultivated for upland rice growing from 1,500 ha in 2002 to 40,000 ha in 2008.

In 2007, Guinea achieved a record harvest of 1.4 million tons - five per cent more than in the previous year, mainly because of immense government support for NERICA dissemination. Domestic rice production now covers about 70 per cent of the country's

Farmers during an exchange visit on an SRI field in Ahero

consumption. In Nigeria, rice imports had declined from two million tons in 2003-2004 to less than one million in 2005-2006. Given the importance of rice as an African staple food and the recent success stories of NERICAs in countries like Uganda, it is conceivable that rice will play a key role in bringing a green revolution to Africa.

Madagascar, a major consumer of rice, led in the development of the System for Rice Intensification (SRI). The benefits of SRI include high yields per ha, savings on inputs, and optimal usage of available resources. In Kenya SRI has been adopted among the major irrigated rice schemes especially Ahero and Mwea. The SRI practices in these schemes entail use of young seedlings, transplanting one plant per hill, wide spacing, intermittent irrigation schedule, efficient weed control, and enhancement of soil organic matter by incorporation of manure and compost.

Coupled with the adoption of versatile and high yielding NERICAs (subtypes 1, 4, 10 and 11) national yields in Kenya are set to increase. The transformative rice producing countries of Eastern Africa have now tested SRI innovative approach and most of them are on the path of attaining high yield increases as reported in SRI based practices. As Africa struggles to meet its rice demands, it would make sense for more countries to experiment with SRI since most counties in Africa have established capacity for research and extension.

Worldwide, rice is grown in more than 100 countries, with a total area of approximately 158 million ha producing more than 700 million tons annually. About 90 per cent of the rice in the world is grown in Asia (nearly 640 million tons). Sub-Saharan Africa produces about 19 million tons and Latin America some 25 million tons. The rice growing enterprise in African can be addressed by:

- Enhancing adoption of improved technologies such as SRI and NERICAs thereby increasing rice production in African countries at large;
- Enabling farmers to participate in selection of new and improved varieties;
- Farmers and consumers preferences should be taken on board (grain qualities);
- Breeders and farmers adopting participatory varietal development that takes into account farmers and consumer preferences;
- Putting more emphasis on varieties that are resistant to drought and diseases.

The required actions include improved varietal selection, testing and seed production, enhanced extension services, enhanced post harvest management, policy enhancement, access to credit and promoting agribusiness approaches along the rice value chains. ■

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