

**SECTION TWO:
Common agricultural policy
and market integration**

Promoting rice “*from plant to plate*” for food security in sub-Saharan Africa: SG2000’s strategy

Tareke Berhe¹ and Toshiro Mado²

¹Sasakawa Global 2000, Ethiopia; ²Sasakawa Africa Association, Ethiopia

Abstract

Fourteen countries in sub-Saharan Africa (SSA) import more than 6 million metric tonnes (t) of rice annually in addition to more than 12 million tonnes produced locally (FAOSTAT 2005). Rice is an important staple food crop in many parts of SSA, yet SSA is food insecure in rice and loses over one billion USD in foreign exchange annually. Nigeria, Madagascar, Guinea, Ivory Coast and Tanzania are the leading rice producing countries (700 000-5 000 000 t) while Nigeria, Senegal, South Africa, Ivory Coast and Ghana are the five leading importers (700 000-1 800 000 t). The rice deficit situation in SSA can be remedied only if the region can concentrate its efforts and resources to increase productivity and quality so that sufficient quantities of rice of equal or superior quality to that of imported rice are produced locally, and put in place policies and incentives to make local rice attractive to farmers, traders and consumers. Four stages are required: I. Breeding and Selection; II. Cultural (Agronomic) practices; III. Post-harvest handling and IV. Processing, marketing and utilization. Sasakawa Global 2000 considers rice a strategic crop for food security in SSA. It has selected four focus countries – Ethiopia, Mali, Nigeria and Uganda – for the 2005-2010 period during which maximum effort is being applied so these four countries will become not only self-sufficient and food secure in rice but possibly become exporters.

Introduction

SG2000’s Regional Rice Program will strive to put science into agriculture and to focus on the following activities. This is to be accomplished in close collaboration with the Africa Rice Center (WARDA) the International Rice Research Institute (IRRI), the African Rice Initiative (ARI), the Forum for Agricultural Research in Africa (FARA), regional WARDA and IRRI affiliates and networks, national agricultural research and extension services (NARES) and other concerned development agencies. It will:

- Identify and support the evaluation of new improved and widely-adapted rice varieties from WARDA, IRRI and other sources
- Support the maintenance, production and availability of good seed of improved varieties in collaboration with NARES

- Promote productivity-enhancing technologies
- Promote post-harvest and agro-processing technologies
- Support the training of young rice scientists and field technicians
- Bridge closer partnerships and promote collaborations among WARDA, IRRI, IITA, CIMMYT, ICRAF, ADB, WB, FAO, JICA/JIRCAS, FARA and others.

Activities

Stage I. Breeding and selection

There are strong programs of breeding and selection in many African countries. Even those that do not have strong breeding programs can usually get segregating materials from other breeders or international centers and select varieties that fit to their own ecologies. The Africa Rice Center has done an excellent job in breeding and selection of the original rainfed Upland NERICAs and is continuing to develop rainfed Lowland NERICAs. The rainfed Upland NERICAs are already a success in several African countries including Guinea, Sierra Leone, Ivory Coast, The Gambia, Uganda, and Ethiopia to cite just a few examples. The Guinea success story was reported in Babagalle *et al.*, 2004 (JICA Proceedings). There is no doubt that the NERICAs are a success.

Improved breeders' seed is usually available in breeders' hands, at national and international centers. Seed production efforts are present in many countries. However, quantity (sometimes even quality) is not sufficient to satisfy farmers' needs. Accessibility is also a problem in many cases.

SG2000 is currently testing more than 60 inter- and intraspecific elite lines in Mali, Ethiopia and Uganda. These were obtained from WARDA. Another 18 high altitude, cold tolerant varieties from IRRI, the Philippine National Research Institute and Madagascar are under evaluation in Ethiopia while 13 Guinean varieties were sent to Ethiopia, Madagascar and Tanzania for evaluation by national breeders.

Stage II. Agronomy

A lot remains to be studied in NERICA agronomy. Due to their high yield potential, NERICAs demand the use of commercial fertilizers in addition to the nutrition provided by compost, alley-cropping and residual effects from rotations that may be developed with nitrogen-fixing legumes. It is also necessary to develop recommendations on plant density, planting date, fertilizer dose and time of application for the NERICAs. JICA agronomists in Uganda, Guinea, Ethiopia, etc. have already started very encouraging studies. Some specific aspects that need to be looked at in relation to the NERICAs include: balanced nutrient management, water management, cold tolerance and adaptability to various altitudes, tolerance/response to acidic and alkaline soil conditions, and also the influence of different kinds of fertilizers, especially micro-nutrients such as sulfur, zinc and magnesium, on seed filling and nutritional quality. According to Doberman and Fairhurst (2000) rice is affected by various toxic conditions: iron, sulfide, boron, manganese, aluminum etc. The International Fertilizer Association (January 2005) also reports that potassium plays a critical role in mitigating the effect of stresses such as drought, salinity, pests and disease. In soybeans, it plays a vital role in grain filling.

Stage III. Post-harvest handling

The importance of this stage cannot be over-emphasized. Unless good care is taken of the rice crop during harvesting, drying, threshing and pre-storage/processing drying, all gains made during the first two stages can be mostly or entirely lost due to prevailing unfavorable environmental conditions (moisture, insects, rodents). Unfortunately, post-harvest and agro-processing activities in many SSA countries leave a lot to be desired. Deplorable drying methods on asphalted highways have been observed in Guinea. Similar drying methods were seen in Nigeria. There is no way that rice handled in such a manner can have good market quality. It is time for African countries to wake up and improve on quality. In the last 10 or more years, SAA and SG 2000 in collaboration with IITA have been trying to promote improved post-harvest and agro-processing technologies in several countries.

These efforts continue and will be increased in future years. Activities include: local manufacturers' training, manufacturing of post-harvest machines *in situ* and also training of machines users/operators. Countries benefiting so far include: Ghana, Benin, Guinea, Ethiopia, Mali and Uganda.

Stage IV. Processing, marketing and utilization

It is important that the final product is attractive both to the seller and to the buyer/consumer. That's the only way in which African rice can compete with imported rice both at market and consumer levels.

Stages II (Agronomy) and III (Post-harvest Handling) greatly determine the quality of the material to be processed. If the produce is already poor before processing, then there is not much that processing can do to improve the quality and add value to the product. It is only when the pre-processing produce is good that additional care in processing can contribute much to coming up with good quality final product that will satisfy the seller and the buyer (customer/consumer). When these two are satisfied, the farmer gets more money. Much remains to be done in this area. Packaging and regional market development/information are still untouched. One cannot find many (if any) processed rice products in African markets. Rice is sold as polished grain and consumed boiled.

Conclusions

Rice is an important staple food crop in many SSA countries. However, most of them do not produce enough and are therefore food insecure. A lot of rice is imported to fill the gap denying the importing countries a lot of foreign exchange which they badly need. The best solution for this problem is for SSA to make improvements in rice production, post-harvest handling, and processing and utilization technologies so that locally-produced rice can compete in quantity and quality with the imported ones. Such actions will help increase farmers' incomes, satisfy rice consumers and contribute to the economies of SSA countries.

SAA and SG2000 will continue to support programs and activities that engage these areas. The authors are fully convinced that with close collaboration and partnership between all concerned national, regional and international institutions it is possible to drastically reduce or even eliminate rice importation in SSA. The actions to be taken must include all the four stages, that is breeding and selection, agronomy, post-harvest and processing, marketing information and utilization promotion. There is hope since all the relevant international Centers (WARDA, IRRI, CIMMYT, IITA etc.) and donors (World Bank,

JICA, UNDP, IFAD, ADB, FAO etc.) are now convinced that rice, particularly the NERICAs, can contribute to food and nutrition security in SSA and are focusing their attention towards helping farmers and increasing food and nutrition security in SSA. Through its implementing SG2000 Regional Rice Program, SAA will join hands in that effort.

It is hoped that by the year 2010, several SSA countries will attain food self-sufficiency and food security

References

Doberman A and T Fairhurst. 2000. Rice: Nutrient Disorders & Nutrient Management. IRRI, Potash and Phosphate Institute/Potash & Phosphate Institute of Canada. ISBN 981-04-2742-5. 192 pp.

FAOSTAT, January 2005.

JICA. 2004. Proceedings of Seminar on the Promotion of Rice Production and Dissemination in Africa. AICAD, Nairobi, Kenya. February 2004. 388 pp.