

IMPROVING NERICA SEED AVAILABILITY TO END-USER FARMERS

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Unit 1 – Conventional Seed Production Scheme vs. Community- based Seed Production System

Background information

The ever-pressing demand to make NERICA seed available to end-user farmers remains a challenge many years after the initial introduction of these varieties in SSA in 1996. Weakness in the assessment and planning of seed needs as well as weakness in SSA's national seed systems are the main constraints to NERICA rice seed availability.

In fact, how long does it take a newly-released improved rice variety to get into the hands of an innovative farmer for cultivation?

Conventional Seed Production Scheme: The conventional seed multiplication system currently in operation in most countries in WCA is typical of most developing countries. Once a variety is released, the breeder provides parental materials (G0) from which three classes of seeds are obtained: 1) breeder seeds (G1, G2 and G3); 2) Foundation Seed (G4); and 3) Certified Seed (R1 and R2). This system requires six years from the release of a variety to produce sufficient seed for distribution to a large number of farmers. Consequently, farmers do not grow the new variety until the seventh year after its release. In general, the seed multiplication and delivery systems of the formal seed industry are inadequate and have concentrated on the production and distribution of high value crops, especially hybrids, which have failed to meet the seed needs of the majority of smallholder farmers. In most countries, little attention has been paid to rice varieties.

In the absence of a formal seed sector in most SSA countries, farmers remain dominant as seed sources.

Community-based Seed Production System: As reported in Module 3, WARDA introduced a new seed multiplication scheme, dubbed the Community-based Seed Production System (CBSS), that uses farmers' practices and indigenous knowledge, and acts as an alternative seed supply mechanism for smallholder farmers. The CBSS strengthens farmers' capacities in the techniques of good quality seed production. The aim of a community-based seed multiplication scheme is to promote on-farm production of quality rice seed through the involvement of individual farmers or farmers' groups in such schemes.

In this system, the national seed service may certify only G2, G3 or G4 (Beye, 2000). The extension services make small quantities of these seeds available to various informal seed growers, e.g. farmers' cooperatives, private seed producers and NGOs. These may produce non-certified basic seed for their regions, from which trained farmers will produce seed of better quality for their communities using their normal production practices. In this way, seed can be provided for many farmers within four years of the release of a variety, three years earlier than in the conventional system. Seed production and distribution are done according to the farmers' practices and capabilities, with some simple guidance given to help farmers maintain the purity of seeds for a period of 3–5 years. Rice is a self-pollinating crop and seed stocks do not need to be replaced every season. However, extension agents monitor germination ability and purity of seed at the farm level.

CBSS has been adopted by many countries in West Africa, but particularly Guinea and Côte d'Ivoire. The experience in these countries has been successfully transferred to several West African countries and is at the heart of the success of NERICA varieties in this region.

Unit 2 – Pathway for NERICA seed production

The African Rice Initiative (ARI), under the aegis of the Africa Rice Center (WARDA), has been put in place to help produce high-quality NERICA seeds, including breeder and foundation seeds, and to facilitate their subsequent dissemination to its national partners in SSA.

Where and how to get high quality NERICA seed?

The national agricultural research systems (NARES) are the privileged partners of ARI for NERICA seed dissemination in SSA. However, NGOs as well as farmers' associations can also be supplied through ARI. Write to the ARI Coordinator for further information (Please visit www.warda.org).

Ideally, rice farmers will be supplied with high-quality seed and advised by their respective NARES as to the relevant NERICA varieties to grow in their locations.

Besides, rice farmers can and should produce and secure their own NERICA seed for planting in their fields.

How to produce high quality NERICA seed?

What is quality NERICA rice seed?

Good NERICA seed should not be infested or damaged

Good NERICA rice seed should not be a mixture (long grain with short grain or fat with thin grain or grain with awns and without awns, black grains with colored grains, etc.).

Variety purity – how to recognize that a rice plant is not a NERICA plant (‘off-type’)?

Based on the NERICA rice variety planted (NERICA1 – NERICA18), and using the characteristics of the passport data of NERICA provided in the Annex to this Compendium, NERICA rice growers should apply the following controls in the field through careful examination of the NERICA rice field:

Check the height (short, tall)

Check the cycle (short, intermediate, long)

Check the leaves (droopy, upright, large, thick, and thin)

Check the grain color (yellow, red, black)

Off-types identified through differences in the above characters can be removed before harvesting and used for consumption.

Harvesting – Threshing – Drying – Storage

Select healthy NERICA plants for harvest;

Carefully harvest each NERICA variety separately;

Avoid mixing other farmers’ varieties with NERICA lines during transportation, threshing and drying and storage;

Before storage, ensure that seeds are properly dried (sun-drying to about 13%) before placing them in bags. Winnow carefully.

Dress the seeds with an appropriate fumigant, e.g. Phostoxin (aluminium phosphide) and dress them with insecticide, e.g. Actellic 50 (pirimiphos-methyl) or as recommended by local agricultural services. Properly label and safely pack bags containing seeds in areas with good air circulation while preparing for the next cropping season.

At the onset of the cropping season, a germination test should be carried out before sowing to ensure good seedling establishment.

Germination testing

Randomly select three sets of 100 seeds of the NERICA rice variety to be sown – Take a shallow basin, which you have previously covered with a wet cloth, or clean jute sacks soaked in water – Place each set of 100 seeds on a cloth then cover them with it – Place the basin in the shade – Slightly moisten as necessary – Avoid the seeds drying out. After 7 days, count the number of seeds that have germinated in each set. If more than 80 of the 100 seeds have germinated, the NERICA seed is good. If less than 80 of the 100 seeds have germinated, the NERICA seed quantity should be increased at planting (i.e. more than 60 kg per hectare).