

Reference 9 Seed production

Summary

Seed quality is a key factor in rice production. The use of certified seeds is highly recommended. However, rice producers do not always have access to certified seeds. This reference explains how to produce seeds of acceptable quality in a farmer's field, how to determine seed quality and how to store seeds.

Seed quality is crucial to rice productivity. Quality seeds have a germination rate of above 80%, are pure (i.e. all belonging to one rice cultivar and are not mixed with weed seeds), and do not harbor diseases. Producing quality seeds requires far more care and expertise than simply producing rice for consumption purposes.

Certified-seed production by specialized farmers follows strict procedures, involving evaluation of the rice crop in the field by seed experts, and testing of seed quality in a laboratory. This process guarantees a quality product. The use of certified seed is highly recommended.

However, when producers do not have access to certified seeds, they may still be able to obtain seeds of an acceptable quality if they follow the recommendations below, a system referred to as community-based seed system (CBSS).

Recommendations to improve seed quality

Selecting part of the field to be used for seed production

Producing seeds begins a long time before harvest, as at maturity stage it is often too late to distinguish off-types. It is important to select an area of the rice field where the plant stand is healthy and homogenous. Next off-types and weeds need to be removed from this area. At maturity, seeds from this area should be harvested before the rest of the field, and dried and threshed separately.

Drying

When seed has just been harvested, it is still moist and should therefore be dried, since well-dried seed keeps longer, and insect attacks and fungus diseases are reduced. In order to achieve good drying, one should:

- Spread the seed in the open air for a few days; paddy should preferably be dried in the shade.
- Avoid drying seed under a hot sun, as cracks may appear in the seeds.
- Avoid drying on tarred roads, as this may damage the seeds because of the abrupt increases or fluctuations in temperature.
- Move the seeds from time to time to ensure good ventilation.

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Threshing

Threshing must be done carefully in order to reduce the risks of damaging the seeds, contaminating them with diseases, or mixing them with other varieties. Therefore, one should:

- Carefully clean the threshing area. It should have a concrete or clay surface. If necessary, the ground should be covered with some tarpaulin, plastic sheeting or textile fabric.
- Thresh each variety separately.
- Winnow immediately after threshing.

If threshing is done with a machine, one should check that the thresher has been carefully cleaned before use. It is also advisable to let the machine run empty for a while to get rid of all the grains stuck inside. When beginning threshing, it is advisable to eliminate the first two or three kilograms to avoid mixing them with the grains that remained stuck inside even after running the machine empty.

Winnowing

Winnowing aims at cleaning the seeds, i.e. getting rid of impurities—straw, vegetation debris, insects and stones. To winnow properly, one should:

- Winnow each variety separately and preferably in a different place from other varieties.
- Keep containers holding the same variety in one place.

Just as for threshing, if winnowing is done with a machine (not frequent in West Africa), one should check that the machine was properly cleaned, let it run empty for a while, and do not use the first two or three kilograms as seed.

Storing

Storage is a critical step in seed management. It may last from a few weeks to several months and therefore deserves particular attention. Several conservation methods are currently in use. Traditional granaries are well-adapted to the farmers' environment and do not require much investment.

Granary storing in the savanna zone:

- Carefully clean the granary.
- Check that all the rice has been properly dried.
- Avoid mixing varieties (preferably store one variety per granary).
- Open the granary from time to time for ventilation. If necessary, use insecticides to remove insect pests. Natural insecticides can be made using local products, such as dried neem leaves, *caïlcedrat* (*Khaya senegalensis*) bark, black pepper, chili, mint (African tea), cinders (ash).

Apart from granaries, other storage means are often used, e.g. baskets, crates, pottery. Seeds can also be stored in bags. In these cases, the precautions to take are as follows:

- Check that the paddy has been properly dried.

- Apply insecticides; natural insecticides (neem or mint leaves) can be quite effective in controlling termites and stem borers.
- Place the bags on pallets (or pieces of wood) to ensure good ventilation.

When using a chemical insecticide, ask the local agent to recommend a product. The most often used products are Actellic 50, malathion and chlorpyrifos. These products must be handled with caution.

Germination test

Before sowing, it is essential to check the germination potential of the seeds, by following the procedure below:

- Spread a wet cloth on a dish.
- Place 100 grains on the cloth.
- Cover the grains with the corners of the cloth.
- Put the dish in the shade.
- Keep the cloth wet, adding water as often as necessary.
- After about a week, unfold the cloth and count the number of grains that germinated and survived:
 - If more than 80 grains germinated, the seeds are good and can be sown;
 - If less than 80 but more than 60 grains germinated, the quantity of seeds per hectare will have to be increased;
 - If less than 60 seeds germinated, do not use them and try to identify another seed source.

Bibliography

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