UPLAND RICE
CULTIVATION GUIDE

Tatsushi Tsuboi
Rice Technical Advisor
Promotion of Rice Development (PRIDe) Project

UPLAND RICE VARIETIES
NARO has released 5 Upland Rice Varieties being grown by farmers. They are more superior to the previous variety Abilony (IRAT 112).

NARIC 1 NARIC 3
ITA 257 NARIC 3
Maturity 115 - 120 days Yield 3.5- 4 t / ha
NARIC 2 NARIC 3
ITA 325 NARIC 3
Maturity 115 - 120 days Yield 3 - 3.5 t / ha
NERICA 1 NERICA 4
NERICA 2 NERICA 4
NERICA 10 NERICA 10
NERICA 10: Maturity 100 - 105 days Yield 3 t / ha Grain with long awn

Note: However, yields of upland rice depend largely on the rainfall pattern and good agronomic practices like weeding and fertilization.

RAINFALL AND FIELDS
You have to check rainfall pattern in your area. Upland rice grow well where 5 days total rainfall is more than 20 mm from sowing to 15 days before harvesting (about 90 days). Field location should preferably be in the low lying areas since these areas have more water available to sustain rice to maturity. It is advisable to make bands around the field to avoid rain water from running off.

GERMINATION TEST
Before sowing, a germination test should be done to ensure 80% germination. The following procedure should be used:
1. Count 100 seeds
2. Soak seeds for 24 hrs
3. Wrap seeds in wet paper / cotton wool
4. Incubate for 2 days
5. Count the number of seeds that have germinated

If the germination percentage is lower than 80%, then use a higher seed rate.
SEED
Since rice is self-pollinated plant, rice seed can be produced by farmers. Planting 1 kg of seeds can produce 50-60 kg seed.

SEED SELECTION AT PLANTING
It is difficult to determine seed viability with the naked eye. It is advisable to carry out seed selection using the floatation method. Separate sunken seeds (filled grain) with high potential to germinate from those that float (empty grain) that are unable to germinate.

PLANTING METHODS
There are 3 methods of planting upland rice namely; Drill, Dibble, Broadcast. Drilling and Dibbling allow straight row planting that ensures optimum plant population and can use a hoe for weeding. Straight row planting can be achieved by using a planting rope or using line markers.

<table>
<thead>
<tr>
<th>Method</th>
<th>Plant spacing</th>
<th>Seed/hill</th>
<th>Seeding rate/ha</th>
<th>Seeding rate/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drill</td>
<td>30x1.5cm</td>
<td>222</td>
<td>60kg</td>
<td>24kg</td>
</tr>
<tr>
<td>Dibble</td>
<td>30x12.5cm</td>
<td>26.7</td>
<td>50kg</td>
<td>20kg</td>
</tr>
</tbody>
</table>

Germination of upland rice

3 days after sowing

4 days after sowing

5 days after sowing

PLANTING DEPTH
It is recommended that upland rice be planted at a depth of between 2 - 4 cm. Planting at a depth of more than 4 cm has been observed to result in low germination, delayed emergence, delayed maturity and thus low yields.

Intercropping
Upland rice can be intercropping with maize, banana and coffee.

REFILLING OF MISSING HILLS
Missing hills lead to low yield. It is therefore advisable that you set a small nursery bed beside the mother garden to raise seedlings for purposes of refilling gaps. Gap filling should be done 15-20 days after sowing and it's important to water the seedlings after transplanting.
FERTILIZATION
Rice should not be continuously grown on the same fields, it should be
rotated with other crops to conserve soil fertility. Composted organic
material such as rice straw and animal manure can be added to the soil to
supplement soil fertility.

Fertilizer rates and regimes

<table>
<thead>
<tr>
<th>Fertilizer</th>
<th>15-20 DAG</th>
<th>55-65 DAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAP 8-46-0</td>
<td>50kg/ha</td>
<td>20kg/acre</td>
</tr>
<tr>
<td>Urea 46-0-0</td>
<td>50kg/ha</td>
<td>20kg/acre</td>
</tr>
</tbody>
</table>

WEED CONTROL IN UPLAND RICE FIELDS
Weeding must be done at least twice (2 times) at 3 and 6 weeks after
germination either by hand or hoe.
Weeds should be removed before they produce seeds.

INSECT PESTS OF UPLAND RICE
Stalked-eyed flies (Diopsis thoracica)
The larvae bore and feed on plant tissue inside the ricestem causing dead
heart.

Stem borers (Pyralidae)
The larvae bore through the stem and eat up the plant tissue resulting in a condition called
dead heart and / or white head.

Termites
Termites eat and cut the stem of rice plants. Severe damage is experienced in
dry soils.

Stink bug and Rice bug
The bugs stay on the panicle and suck the milky juice in young panicles
causing staining of the grains hence lowering grain quality.
Note: Usually insect damage does not necessitate chemical control since it does not reduce yields significantly.

DISEASES OF UPLAND RICE

Rice Blast (Magnaporthe grisea)

It is one of the most destructive of all the fungal diseases of rice. The fungus produces spots or lesions on leaves, nodes, panicles and grains. The spots are usually elongated and pointed at each end. Damage is often characterized by 50% reduction of yield. Control is by planting resistant varieties like NERICA 1, 4 and 10, and avoiding excessive nitrogen application.

HARVESTING

The stem of the rice is cut close to the ground by serrated sickles. This method of harvesting is much faster than harvesting by panicle using a knife. Harvesting should be done when 80-85% of the grains are straw coloured and the grains in the lower part of the panicle are in the hard dough stage.

RATOON CROP

After harvest, rice plant produces new shoot and panicle. About 1 - 2 t / ha can be harvested within 60 days after harvest. Harvesting height of rice plant stubble should be 15 - 25 cm.

THRESHING

Threshing can be done by beating with sticks against a log or using thresher. However, threshing by beating increases the chances of broken grains at milling.

Two types of threshers are available in Kampala.

DRIYING

Open air drying under the hot sun heat is widely practiced in the tropics. Preferably drying should be done on a tarpaulin or a clean drying floor free of stones. The rice should be 4 - 5 cm thick and needs to be turned over 30-60 minutes to allow equal exposure to the sun. It’s important to monitor moisture reductions, less than 3% reductions per day are recommended.

DRY SLOWLY!