COMMERCIAL CROP PRODUCTION GUIDE SERIES

Growing Lowland Rice in Nigeria

United States Agency for International Development
www.usaid.gov

Information and Communication Support for Agricultural Growth in Nigeria
www.ics-nigeria.org

Growing Lowland Rice in Nigeria

Choice of land

Choose fertile land with a moderately high water holding-capacity. Heavy soils characteristic of river valleys and Fadamas are preferred. Lands with clayey soils are considered most desirable.

Land preparation

Paddy fields can be prepared under either dry or wetland conditions; the choice depends on time of operation, soil properties and implements to be used. In either case, the field should be disc plowed immediately after harvest in November/December to expose the rhizomes of perennial weeds to scorching action of the sun.

For direct seeded rice, the field is harrowed just before the first rain, and the crop is seeded. For wet or transplanted rice, the field is flooded with the first rains and then rotavated. In the absence of ploughs, make heaps at the onset of first rains for weed control. Construct bunds and cover the paddy field with water to prevent the loss of nitrogen through denitrification.

Recommended varieties

SHORT DURATION

FARO 44 (sipi 6920233).

MEDIUM DURATION

NON-IRON TOXIC AND FLOOD-FREE AREAS

- ITA 222, ITA 306, ITA 212, FARO 29.

IRON TOXIC AND FLOOD-PRONE AREAS

- FARO 15, ITA 247, ITA 249, Suakoko 8

LATE DURATION

FARO 15 (water-logged areas)

NATIONAL ACCELERATED FOOD PRODUCTION TESTED

GALL MIDGE-AFFECTED AREAS:

- Cisadane (FARO 51)

RAINFED LOWLAND AREAS:

- ITA 368, Tox 400 4-43-1-2-1
- WITA 4 (Tox 3100-44-1-2-3-3)

IRRIGATED LOWLAND AND IRON TOXIC AREAS:

- WITA 1(Tox 3118-6-E2-3)

Time of planting

Plant in May/June when the rains are firmly established. Planting should be early (by the end of June) in flood-prone, waterlogged, and gall midge-attached areas.

Seed rate and plant population

SEED RATE

Direct sowing needs 55–65 kg/ha grain; raising seedlings to transplanting needs 45 kg/ha grain.

Planting

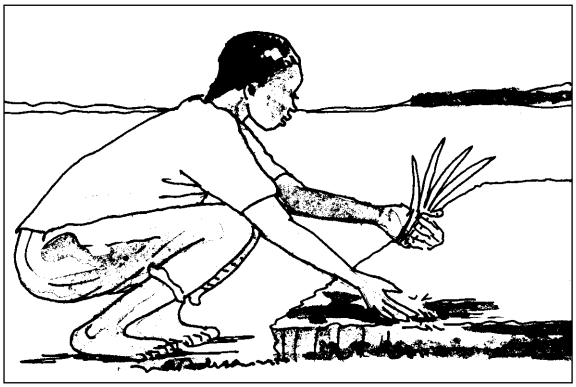
DIRECT SEEDING

This is possible in hydromorphic areas by broadcasting or dibbling. Divide the field into plots of 50 m^2 or 100 m^2, and construct small bunds. Weeds are the major problem. Apply herbicides to control them. in dibbling, the spacing should be 20–25 cm between rows and 15–20 cm between plants. Direct seeding can be done with pregerminated seeds in wet soils.

NURSERY RAISING

Soak the seeds in water for 24 hours. Spread them on the floor and incubate them by covering them with polyethylene bags for 48 hours for the seeds to sprout. To provide seedlings for 1 ha of land, raise the nursery in 500 m^2 ($^1/_{20}$ acre).

Spread the sprouted seeds uniformly on a puddled nursery field. Drain excess water from the field for a week. Ensure that seed beds are raised in high rainfall areas. Avoid bird damage during germination by scaring birds.



Transplanting rice seedlings into a prepared bed

In gall midge affected areas, apply Furadan™ (Carbofuran) at 1 kg/ha in nursery beds a week before uprooting.

TRANSPLANTING

Transplant seedlings from nursery after 21 days. This is done by uprooting the seedlings. Transplant 2–3 seedlings per hill. Spacing should be 20 cm between rows and 15–20cm between plants.

Transplant early maturing varieties 15 cm apart and transplant medium and late maturing varieties 20 cm apart.

GAP FILLING

Gap fill the areas where seeds have not germinated 7–10 days after transplanting. Use remaining seedlings.

Water management

Maintain the level of water in the field up to 5cm one week after transplanting until grain matures. Drain the water a week before harvesting. Cracks should not be seen in the field.

Fertilizer rate and time of application

TALL LODGING INDICA VARIETIES

FIRST APPLICATION: Apply broadcast, 200 kg (4 bags) of NPK 15:15:15 14 days after transplanting.

SECOND APPLICATION: Apply broadcast 100 kg/ha (12 bags) of urea at ear initiation.

IMPROVED NON-LODGING VARIETIES

FIRST APPLICATION: Apply 200 kg/ha (4 bags) of NPK 15:15:15 thoroughly puddle in the soil before transplanting, followed by another 100kg (2 bags) of Urea per hectare broadcast at 30 days after transplanting.

SECOND APPLICATION: Broadcast 100 kg/ha (2 bags) of Urea per hectare at ear initiation.

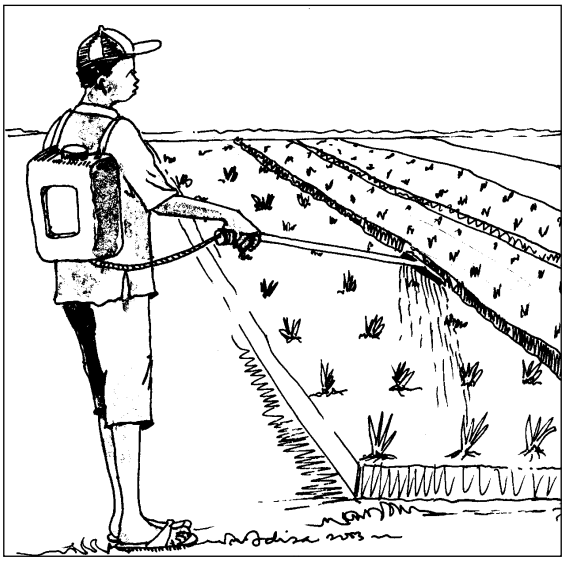
Weed Control

HAND WEEDING

Hand-weed twice at 21 and 40 days after transplanting. Collect all weeds from bunds, and decompose or bury them in one corner of the field to prevent insect attack.

CHEMICAL CONTROL

Drain water from the field. Spray herbicides such as Tamarice™ PL,



Chemical spraying using a knapsack.

Ronstar™ PL, or Risane™ at 3 kg/ha (8 litres) 2–3 weeks after transplanting on a clear sunny day.

After 2–3 days, irrigate the field. You may topdress with urea. Hand weed again around 40 days after planting.

Diseases

Spray Dithane™ M-45 at 1kg or Benlate™ at 1.5 kg/ha in 500 liters of water to control brown spot, grain discoloration, and blast.

Pests

STEM BORER

Watch the rice crop closely for dead hearts during early vegetative growth. In case of stem borer attack, spray Gammalin® 20 on leaves and plant bases thoroughly.

Apply Decis™ at 1 liter a.i/ha in 500 litres of water to control rice bugs which suck the sap after flowering.

Apply Furadan™ (Carbofuran) at 1 kg/ha or Miral™ (Isazofos) at 0.75 kg a.i/ha to control African rice gall midge 20–30 days after transplanting as symptoms are seen on the field.

BIRD CONTROL

Birds are a problem during grain filling. Control them manually by scaring them.

Harvesting

Harvest long straw close to the ground 15–20 cm to permit hand threshing. Other operations are as for Upland rice.

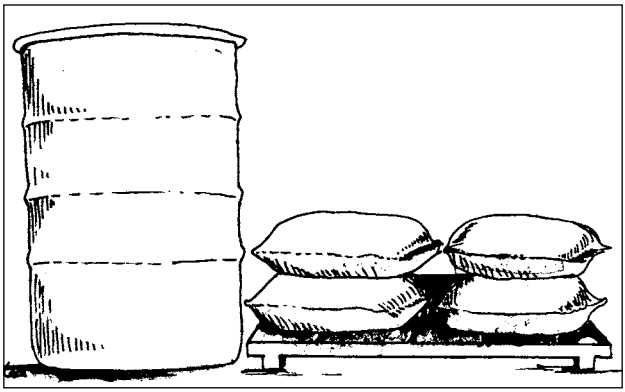
Expected Yield

5–6 t/ha paddy.

Drying

Dry paddy properly to a safe moisture content of 13–14%, by spreading it on a clean concrete floor, mat or tarpaulin.

Sun dry slowly for 2–3 DAYS to reduce breakage during milling. On a clear bright day, sun dry for one day only by spreading paddy thinly on clean concrete floor, mat, or tarpaulin. Use a mechanical drier, if possible.



Proper storage of rice in airtight containers or in jute bags.

Storage

Store in cool, dry rodent-proof conditions. Infested paddy should be fumigated with phostoxin in air-tight containers at the rate of one tablet/jute bag (100 kg paddy) or 10–15 tablets/t paddy.

Processing

PARBOILING

Soak paddy in hot water at 70 °C for 5–6 hours. Discard all floating empty grains. Parboil rice by steaming soaked paddy in a jute bag for 10–16 min by suspending the bag over steaming water in a drum. Stop parboiling when rice husks start to split open. Chalky grains or white centers indicate incomplete parboiling, which may cause grain to break during milling.

MILLING

Mill rice in a two-stage milling machine. Always mill one pure variety at a time.

NOTE

State governments should assist farmers to obtain quicker results from soil testing, e.g. by procurement of soil testing kits, through the Extension Service. There is a need for some mechanism for estimating only what farmers should know about the nutritional status of their soil, e.g., major elements (N, P, K), and Fe, pH, and S instead of a detailed soil analysis.

About ICS-Nigeria

Information and Communication Support for Agricultural Growth in Nigeria (**ICS-Nigeria**) is a project which aims to increase the quantity and quality of information available for increased agricultural production, processing, and marketing and also strengthen the capacity of farmer assistance organizations to package and disseminate information and agricultural technologies to farmers for the alleviation of rural poverty.

In recent past, investment in the support services to Nigerian agriculture has been neglected with the result that this sector has not realized its full potential to contribute to the prosperity and economic development of the country. Meanwhile, increasing population pressure and the accompanying need to intensify agricultural production is leading to erosion of the natural resource base on which agriculture depends.

The sustainability of production is threatened by a vicious cycle of declining soil fertility and increasing problems of pests, diseases, and weeds. Moreover, the lack of knowledge on how to add value through proper storage, processing, and marketing impedes agricultural growth.

Promising technologies exist to address these problems, but their adoption is constrained by a lack of information packaged in appropriate formats, and poor communication channels for this information, between farmers and the research, extension, and education organizations that are supposed to address these issues.

ICS-Nigeria aims to assist in meeting these challenges by developing appropriate-format materials for disseminating information and agricultural technologies to target user groups, while increasing capacity of farmer assistance organizations to produce information materials. At the same time, communication channels will be reinforced so that information flow is enhanced.

Agricultural technologies have been selected on the basis that they will lead to agricultural commercialization thereby enhancing rapid income generation for farmers and private sector practitioners. The project is taking advantage of existing agricultural development programs in Nigeria, national research institutes, and international research institutes in and out of Nigeria to identify these technologies. The project is also taking advantage of existing successful partnerships arising from recent and ongoing programs to enhance information flow.

ICS-Nigeria is funded by the USAID.

IITA
Research to Nourish Africa
International Institute
of Tropical Agriculture
www.iita.org