



National Agricultural Research Institute

Cultivating improved upland rice varieties in the highlands of PNG



NARI TOKTOK
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INTRODUCTION

Rice was introduced into Papua New Guinea (PNG) more than 100 years ago and is grown sporadically in almost all provinces around PNG. However, only about 2% of the overall demand is produced locally whilst the nation's requirement is met through import of rice produced elsewhere. Due to the sudden shortage in world rice production, prices of imported rice sold locally have increased by 30% much to the disadvantage of the lower income earners and the rural people.

The National Agricultural Research Institute (NARI) Highlands Programme has been involved in the evaluation of 39 coldtolerant rice cultivars from IRRI, which have been bred for their adaptability under a range of agro-ecological conditions similar to those in PNG. Through this work NARI Highlands Programme has identified and pre-released rice varieties named as NARI Rice (NR-02) and (NR-03) based on their yield performances and other desirable traits for cultivation in Aiyura valley and other parts of PNG with similar agro-ecological conditions in this climatic zone of up to 1800m above sea level or more.



A display of various upland rice

IMPROVED VARIETIES (NR-02 and NR-03)

Out of the on-station trials on 39 cold tolerant varieties, IRGC 77426 and IRGC 77427 were identified to be promising which are now named as NR-02 and NR-03. The important attributes of these two varieties are given below:

PLANT DESCRIPTIONS	RICE VARIETIES	
	NR 02(IRGC 77426)	NR 03 (IRGC 77427)
Yield potential (tons/ha)	2.08-6.89	2.84-6.04
1000-grain weight (g)	32.67	32.11
Filled grain (per cent)	97.7	98.1
Tiller number/ plant	11.02	11.44
Plant height (cm)	92.23	89.54
Germination (per cent)	91.9	93.8
Time to flowering (days)	100-105	100-105
Time to maturity (days)	117-127	116-130
Grain type	Short and bold	Short and bold
Grain colour	Reddish white	Reddish brown

SITE SELECTION & SEED BED PREPARATION

Upland rice cultivation entirely depends on the amount of rain-fall received by the crop during the growth period.

The selection of area for upland rice cultivation is the most important factor for a successful upland rice crop. Therefore, the areas selected for cultivation should have frequent and well distributed rains (more than 1,200 mm) to avoid chances of crop failure.

The land must be fertile to enable good crop growth. The land should be ploughed once and then given a heavy harrow, followed by a light harrow to prepare a good bed.

Seed beds should be levelled thoroughly using spades and metal rakes, and prepared for planting.

Where there is no tractor, fields can be prepared using ordinary hand spades and garden forks and rakes.



Site selection and seed bed preparation

PLANTING

Planting of rice should be done using a simple dibbling stick cut from a pine tree branch of 1-2 m length sharpened at one end for dibbling.

Seeds should be sown at a plant spacing of 10 cm and a row spacing of 20 cm with 3-4 seeds per hole and later thinned to 2 plants to enable maximum tillering for good yield.

Seed is sown at a depth of 1-2 cm and covered lightly with soil to avoid damage by rats and birds. Seeds should be sown at a rate of 48-65 kg/ha for optimum yield.

Planting should also be done in rows to facilitate manual weeding easily.



Rice planting

FERTILIZER APPLICATION

Apply N, P and K at a rate of 100:50:50 kg/ha, respectively. Nitrogen (N) should be applied as basal dressing before planting at a rate of 60kg/ha and thereafter 20kg. N should be applied in the form of urea at tillering stage (30-40 days after planting), and finally 20kg N to be applied 20-30 days before heading (70-80 days after planting), whereas whole of P & K should be applied at the time of sowing.

WEED CONTROL

Weeding should be done at least 3 times during the plant growth stage. First manual weeding should be done at 30 days after planting which is the most crucial stage of plant growth just before the second N application. Final weeding is to be done before final N application.

HARVESTING AND THRESHING

The crop is harvested when the plants are observed to be in 80 per cent grain maturity and harvested between 110-130 days for short maturing varieties and 130-200 days for late maturing varieties.

Rice plant is harvested by cutting the base of the plant using hand sickles. For varieties which can be removed easily from the panicles, the cut plants are put into bags and beaten up to remove the grains. For varieties which cannot be removed easily from the panicles, the grains can be removed by rubbing on sieving wires with canvas underneath to collect the grains.

DRYING & STORAGE

The rice grains can be spread thoroughly on a canvas for at least five to seven days for proper drying under clear sun. The moisture content should be around and below 15%.

Mill the paddy just after drying or keep the grains in a dry place and mill when needed. The rice grains should be dried to proper moisture (about 15 %) level to avoid breaking of grains during milling.

MILLING

After 5-7 days of sun drying, the rice grains can be milled on a machine. The milling cost can vary from place to place. NARI Highlands Programme is currently charging K 0.40 /kg of paddy.

After the milling is complete, then farmers end up enjoying their locally grown rice with their family members instead of buying rice in shops.



Milling of rice grains after proper drying

For further information, refer to the following publications, *Growing Upland Rice*, NARI Information Bulletin No. 16 and *Post Harvest Handling of Rice*, NARI Information Bulletin No. 17.

Copies of this leaflet can be obtained from:

NARI Head Office
Sir Alkan Tololo Research Centre
PO Box 4415, Lae 411
Morobe Province

Telephone: (675) 79864776/76061118

Email: naripng@nari.gov.pg

Website: [//www.nari.gov.pg](http://www.nari.gov.pg)