



For further information contact:

Wet-Lowlands Mainland Programme
Sir Alkan Tololo Research Centre
P.O. Box 1639, Lae 411
Morobe Province
Papua New Guinea

Tel: (675) 475 1033
Fax: (675) 475 1034
Email: nariwlm@nari.org.pg

This information was compiled by Stanis Malangen and edited by Elick Guaf of the NARI, Wet Lowlands Mainland Programme, Bubia, Morobe Province, Papua New Guinea.
We would like to thank NDAL/JICA and PDAL-Madang for using some of their drawings in this information booklet.



National Agricultural Research Institute

Milling Rice



**NARI TOKTOK
BUB 009 (E)**

April 2006

What is milling?

In rice production, milling is a process where either husk only or the husk and the bran is separated from the kernel. The husk is removed from rough rice to get brown rice after which the bran is removed to get white rice.

Below is a diagram of a rice milling process.

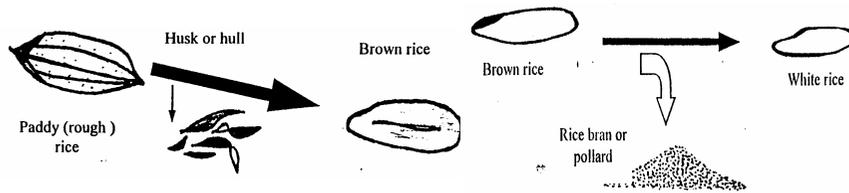


Figure 1: Husking or hulling of Paddy rice and polishing of brown rice to give white rice

Start milling 100 kilogram of rough or paddy rice will yield 80 kilogram of brown rice from which after polishing gives 70 kilogram of white rice.

The by product is 20 kilogram of husk and 10 kilogram of bran.

Given below are definition of terminologies commonly used in rice milling.

Rough rice. It is also called paddy rice. It is dried to 18% moisture and consists the hull, bran and kernel.

Brown rice. It is also known as husked rice. It is the least processed form of rice with the husk removed. The bran layer gives the characteristic tan colour.

Milled rice. Commonly called white rice. This is the final milling

3. A skilled operator is in charge of mill.

Acknowledgements

We would like to thank the National Department of Agriculture and Livestock (NDAL), the Japanese International Cooperation Agency (JICA) and Provincial Department of Agriculture and Livestock–Madang (PDAL), for using one of their drawing in this information booklet.

b. Secondly, The motorized rubber rollers

It is a modern electricity operated rice mill and is suitable for commercial scale operations and remove the hull and the bran at the same time to produce white rice.

This machine has the capacity to produce 1.6 tonnes of white rice in one hour.

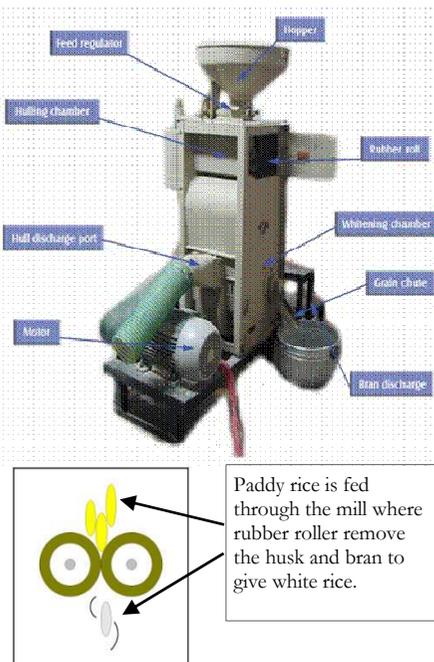


Figure 6: Rubber roller mill

What is required to produce good quality rice after milling?

There are three requirements to produce quality milled rice and they are:

1. A good paddy, dried to 14 % moisture with no rubbish like unfilled grains, stones and sticks.
2. A clean milling yard and regular maintenance of milling machine.

product after the bran is removed or the whitening process.

Rice husk. This is also called the rice hull. It is the outer skin of the rice.

Rice bran. This is also called the pollard. Rice bran is polished or removed to get white rice.

Methods of milling rice

There are many ways of milling rice. Here, two main methods are discussed.

1. The Manual and
2. The Mechanical method.

Firstly the Manual Method

Again, there are many forms of manual method, however three are described below.

a. The Jeans Method

A 50cm piece of cut jeans trousers is tied securely on one end. Filled paddy rice into the open end. Pound against a hard surface to remove the husk. Repeat until most of the husk is separated from the

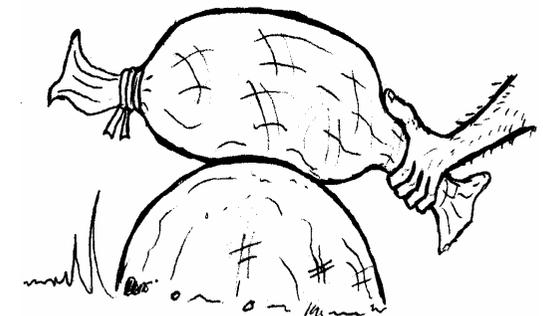


Figure 2: Jean trousers milling

kernels. Winnow to separate the husk from the grains. Repeat the process to until all the rubbish is separated from the grains.

b. The Tongtong Method.

This is a mortar and pestle method. Fill the paddy rice in the mortar and pound until most of the husks are removed from the grains. Repeat the process to get the required quantity. Pour into another container and winnow to separate the husks for the grains.



Figure 3: Tongtong mill

c. Tajat Kiser? Roller Tongtong method

This method was introduced from West Papua.

It involves the rubbing of the weight of the top against the bottom piece. The Rice is held steady between the groves cut out of the bottom piece.

The constant movement removes the husks from the grains. The hulls are later winnowed using the wind.



Figure 4: Tajat Kiser mill

Village methods of milling rice are not efficient and produce small quantities sufficient for a meal for a family unit. The rice produced is brown and nutritious.

Secondly, the Mechanical Method

Two mechanical methods of milling rice are described below.

a. Firstly, The Micro-mill

It is a diesel engine operated mill and remove the hul and the bran at

the same time to produce white rice.

This machine has the capacity to produce 5 tonnes of white rice in one hour.

Similar machine are available in Brain Bell stores, Agmark and Farmset Didiman Stores throughout Papua New Guinea.



Figure 5: Micro-mill