

THE MODERN RICE MILL

Introduction

The aim of rice milling is to attain the highest yield of white rice of the best quality. This means removing the least amount of hull and bran to give well-milled rice, which contains a minimum amount of broken kernel and foreign matter. As the level of sophistication within the rice mill increases so does the milling yield and the financial value of the rice crop. In many remote and poorer areas, pestles and mortars or small single pass rice mills are still the most popular. In other countries all of the rice is milled in larger sophisticated commercial mills which incorporate the following equipment.

1. Paddy Intake

The quality of milled white rice will be dependant on the quality of the paddy or rough rice coming into the mill as well as the milling process.



2. Paddy Cleaning

While most paddy has been cleaned after harvesting, some foreign material is still present. This can be as high 5-10%.



3. Hulling the Paddy

Rubber roller huskers are widely used to remove the husk from paddy and give **brown rice**. Two-rubber rollers rotating at different speeds and remove up to 90% of the paddy in one pass. Husk account for 20% of the total paddy weight.



4. Paddy Separation

After de-husking some paddy and husk is left in the brown rice. This is removed by either a sieve or gravity separator.



5. De-Stoning

Small stones and other inert material are picked up with the paddy during the harvesting and handling process. These must be removed before polishing.



6. Polishing

Polishing the bran layer from brown rice, to produce **white rice**. The amount of bran removed is called the milling degree and this should range from 8-12%. Short and medium sized grain varieties are best polished by friction polishers while abrasive or stone polishers are best for long grained varieties. The best quality rice is attained when rice is polished in two or three stages.



7. Sifting or Separation of White Rice

After polishing, the white rice contains whole kernels as well as large and small broken kernels. White rice is separated into **head rice** (kernel which are 75% or more of a whole kernel) and large and small broken rice by a sifter.



8. Grading or Length Separation

When a high degree of precision is required in white rice grading a length or indent grader is needed. The broken rice pieces fall into the indents in the rotating roller and are removed leaving whole rice kernels or head rice.



9. Rice Mixing

An efficient rice mill will produce 50% head rice (whole kernels) 5-15% large broken and 5-15% small broken kernels. Depending on the countries standards, rice grades in the market will contain from 5-25% broken kernels. If rice mixing is to be done properly a volumetric mixer is necessary.



10. Mist Polishing

Mist or water polishing is undertaken to add a lustrous or polished appearance to rice before being sold.



11. Rice Weighing

Rice is normally sold in 50 kg sacks which must be accurately weighed and labeled.



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