

A Review - Trends In Rice Processing

S. K. Goyal*, A. K. Gupta, Samsheer and Suresh Chandra

Deptt. of Agricultural Engineering & Food Technology, SVBPUA&T, Meerut-250 110 (U.P.)

ABSTRACT

Rice processing is one of the oldest technology in India as it is the staple food for Indian population from centuries. To meet the consumer demand in quality of rice for domestic use as well export, there has been a continuous improvement in processing activities starting from the production of raw rice by home pounding devices to hullers and then to modern processing equipments. In last few decades, basmati rice processing industry has grown up exponentially in terms of facilities and quality output. But at the same time, under utilization of plant capacity does not make this enterprise more remunerative to small entrepreneurs. The modern rice mills applying modern technology for the processing may boost up quality rice production by conserving the resources at every unit operation performed in the rice mills. The post harvest and processing losses can be minimized by adopting modern processing techniques and modern, more efficient processing machines. Present paper reviews the recent developments in rice processing globally which can be profitably adopted in Indian industry.

Key words: Rice processing, Parboiling, Drying, Polishing, Energy consumption

INTRODUCTION

Rice, the staple food for more than 67 % population of India, has the largest acreage (44.6 m. ha) under cultivation. India ranks second after china with an annual production of 90 million tonnes. Area under cultivation has progressively increased from 31.0 million ha in 2001-02. The productivity and production have also witnessed a spectacular growth from 668 kg/ha to 2086 kg/ha and 20.28 million tonnes and 90 million tonnes from 1950-51 to 2001-02. Presently our country is self-sufficient and also has buffer stocks and surplus for export. Among various varieties grown in India. Basmati rice has great export potential. Presently Bangladesh, Sri Lanka, Germany, France, Russia, Switzerland, Saudi Arabia and USA are importing high grade basmati rice from India. In 1996, 470,000 tonnes of basmati rice with a value of Rs. 1200 Crore was exported, which gradually rose to 710,000 tonnes (value Rs. 2063 Crore) in 2002.

Modernization of rice mills

The process for modernization of rice milling industry in the country was initiated in 1970 with a view to obtain higher yields of rice and better quality of by-products such as bran and husk, suitable for edible oil/industrial oil extraction and as a source of energy, respectively. As a first step towards modernization, the rice mill industry (Regulation) Act-1958 and RMI (Regulation and Licensing) Ulees-1959 came into force. In the initial phase of modernization, sheller-cum-hullers and multiple hullers were brought under the purview of modernization.

Raw paddy processing

Paddy processing is probably one of the oldest technologies and has grown in stages according to the need and demand of the consumers. When demand for the quantity of rice has increased with the changes in the food habit, the hullers were used to process more amount of paddy. Today in India there are 90 thousand huller mills processing about 30 % of the paddy produced. Due to the explosion of population and the Govt. commitment for food security and assurance for supply of processed rice, the modern rice mills have increased to nearly 40 thousand and process about 60 % of the total paddy production.

Parboiling of paddy

(a) Cleaning

Prior to the actual milling operation, the paddy received from the farmers is cleaned in pre-cleaning machines. Foreign matter or impurities are removed to improve the final product. In the pre-cleaning process the differences in the size, weight and sometimes length of the impurities compared to the paddy grains are being utilized. Light impurities can be removed by aspiration and/or by sieving. Impurities larger and smaller than paddy are removed by sieving, whereas impurities of the same size but heavier than paddy are removed by gravity separation. Open double-sieve pre-cleaner, Single scalper drum cleaner, Stoner with aspirator, Paddy cleaner with stoner are generally used in modern rice mills.

(b) Short Soaking Tempering (SST)

To reduce the grain moisture, the SST process was

*Author for correspondence