

CLUSTER PROFILE

RICE HUSKING & POLISHING, MANDI BAHUDDIN



Turn Potential into Profit

Small & Medium Enterprise Development Authority

Ministry of Industries, Production & Special Initiatives

Government of Pakistan

<http://www.smeda.org.pk>

8th Floor, LDA Plaza, Egerton Road **Lahore**

Tel: +92-42-111-111-456

Fax: +92-42-6304926-27

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1 Introduction – Mandi Bahauddin

Mandi Bahauddin is a district of the Punjab province of Pakistan. It is located at 32°34'60N 73°30'0E and is bounded on the North and North-West by the Jhelum River, on the East and North-East by Gujrat District on the South and South-East by the Chenab River which separates it from Gujranwala and Hafizabad districts and on the West and South-West by Sargodha District. The district has an area of 2673 km² comprising of three Tehsils.

Sugarcane, Wheat and Rice are the main crops grown in the district. Citrus and Guava are main fruits grown in the district. Turnip, Potatoes, Cauliflower and Peas are main vegetables grown in the district. An area of 19275 acres is under forest. There is also linear plantation of 1129 Km alongside the roads/rails/canals in the district. Trees grown in the area are Kau, Phalai, Kikar and Shisham.

2 Description of Cluster

2.1 History and Background of Cluster

The history of Rice planting is as old as mankind. Originally Paddy was a self growing plant in the low lying areas adjoining sea shores and river banks. In the sub continent, **Rice** grain botanically known as “**oryza stiva**” is the staple food of almost half of the mankind. No formal or informal occasion can afford to skip this important food item at homes or restaurants, hence consumed in huge quantities all over the world.

Rice is a crop which requires a warm, humid and damp climate from the period of its sowing till its ripening and this factor rather becomes imperative for fine varieties of rice. The strong presence of agricultural practices in Mandi Bahuddin region along with the fertile soil, climatic conditions and availability of water has encouraged and favored the plantation/production of the fine quality/variety of Rice in the area. The traces of Rice plantation in the area are as old as the city itself. The strong presence of Rice plantation practices and availability of the crop in abundance has paved the way for establishment of Rice Husking and Processing units in the region.

2.2 Description of Products

Rice means milled rice which obtained from paddy which has been husked and milled white by removing its bran layers. The rice plants are cut halfway up the stem and either allowed to dry in the field or bundled for processing. The commonest method is harvesting by hand. Harvested grains are threshed to separate the grain from the stalk and enclosing husk. Rice hulls are the coating for the seeds, or grains.

This is usually done by bashing bundles of rice stems on a stone or other hard platform. Winnowing is usually done by shaking or tossing the rice on a basketwork tray. The grain falls onto the mat and husk, chaff and dust are carried away by the wind. The grain is then dried in the sun ready for hulling or transport to the mill. Husked or hulled rice is usually called brown rice. This is then milled to remove the outer layers, which is polished to produce white rice in Rice Husking Mill.

2.3 Core Cluster Actors

The owners of Rice Husking Mills are the core clusters. They produce Rice from paddy through the process husking. The information about core cluster actors is presented in the table below:

Table 1: Core Cluster Actors Rice Husking, Mandi Bahuddin¹

Number of Units	Total Units Approximately 80 - Large Size Units: 05 (have both facility husking and polishing) - Small and Medium Size Units: 70-75 (have only husking facility)
Employment Generation	Approximately 1600 (Directly and Indirectly Employed)
Capacity Utilized	Approximately 40% of total installed capacity

2.4 Other Cluster Actors

2.4.1 Farmers Rice Growers

Sugarcane, Wheat and Rice are the main crops grown in the district. Production of these crops during the period 2005-06 to 2007-08 is given here

Table 2: Production of Main Crops (000 M. Tones)

Crops	2005-2006	2006-2007	2007-2008
Wheat	342.80	312.90	320.88
Sugar Cane	1476.80	1530.90	1545.80
Rice	115.31	117.90	119.20

2.4.2 Raw Material Suppliers

Paddy is the only raw material used in husking plant. They purchased paddy from the local grain market (Mandi) as well as directly from the farmers on cash basis. The paddy harvesting season starts in mid of September and ends in December. The paddy husking is a seasonal process and is limited to only four months after the harvesting of rice crop. The husking operations start in November and ends in February.

2.4.3 Rice Husking Machine Suppliers

Majority of the machinery required for husking and polishing unit is manufactured locally apart from few items like SM and NF machines, which are used for refining the rice. Machinery can also be imported from China at cheaper rates compared to those from Japan or Korea. The major machinery components of the rice-husking mill are manufactured in the local markets of Daska, Jalapur Bhattian, Gujranwala and Lahore.

¹ Source: Local Industry

Amongst the foreign suppliers, China is considered to be more competitive than other countries.

Major machinery required for polishing of rice is also manufactured locally. It is being manufactured at towns of Daska, Jalapur Bhattian, Gujranwala and Lahore. Modern machinery can also be imported from UK, China, Japan, Germany and Korea. China is considered to be more competitive than other countries. The essential components of machinery and equipment required for Husking unit mainly includes the following:

- Pre-Cleaner
- Husk Grader
- Husk Separator
- Paddy Separator
- Holding Bin
- NF 14 Machines

2.5 Geographical Location

Geographically the majority of Rice Husking Units are spread across the city. However, husking/sheller units are mainly concentrated on main Phalia Road Mandi Bahauddin, where as dealers setups and shops are concentrated on main Gallah Mandi/Grain market.

2.6 Major Players

There are two major players in the cluster i.e. **Ittefaq Rice Mill** and **Al-Qadir Rice Mill**. These two units have captured more than 20 % share of the local market and 50% of total export share of district. Ittefaq Rice Mill is equipped with the most modern machinery and advanced laboratories for extensive testing. Prominent brands of the cluster mainly include; Ittefaq Rice, Indus Rice and Qadir Rice.

2.7 Current Cluster Scenario

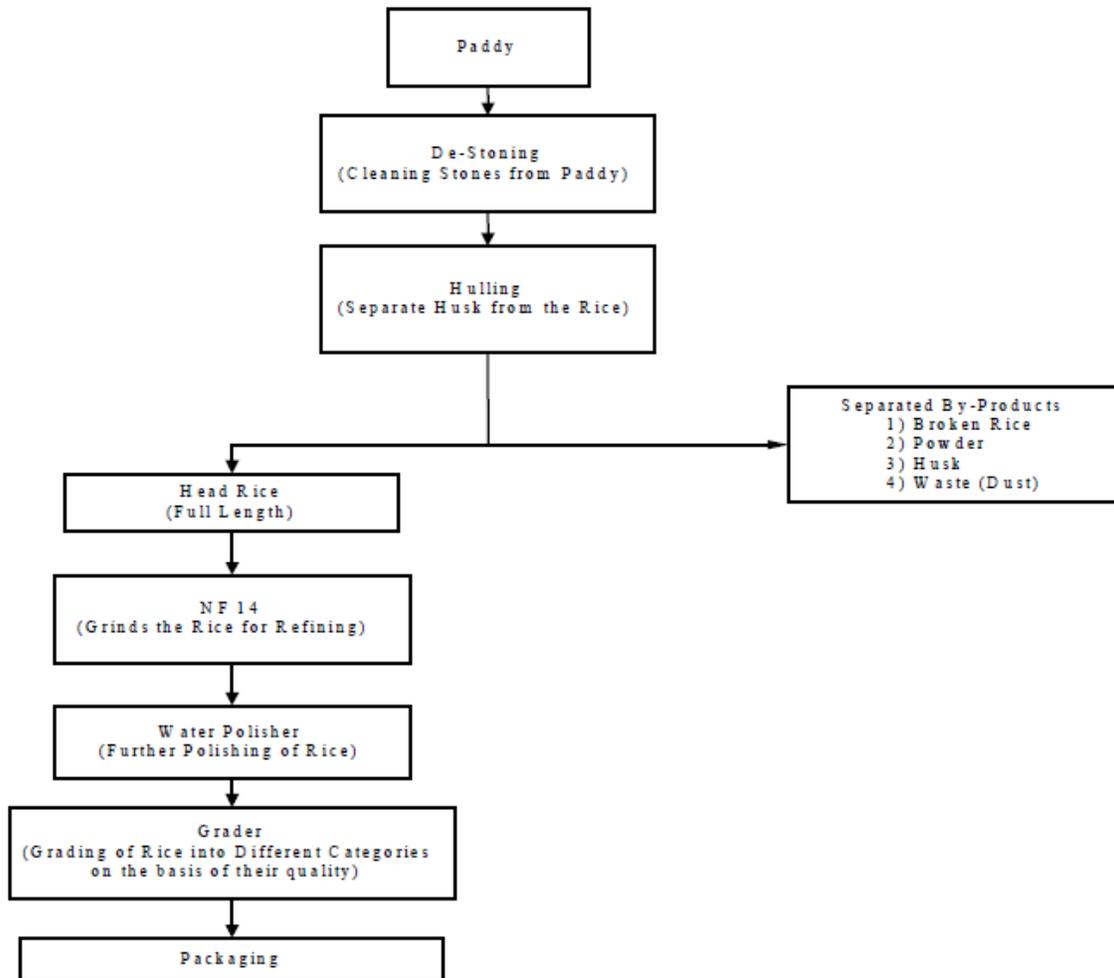
Rice industry is growing over the last three decades with an increasing demand of processed rice in local as well as in export market. This increasing trend is also quite evident in the cluster as number of rice mills have increased from 15 units in 1999 to 80 units in 2011. Out of these 80 units 5 units are vertically integrated i.e. complete unit with both husking and polishing facilities. The major export market for processed rice from the cluster is Middle East and Iran. But Ittefaq Rice mill exports almost all over the world.

3 Analysis of Business Operations

3.1 Production Process Flow

Rice Husking and Polishing are the two major processes involved in production of rice. The production process flow of a Rice Mill along with brief details of different processes is provided below:

Figure 1: Production Process Flow



3.1.1 Husking

Husking is the process of separating the rice from the husk. Rubber roll and hullers are used to shatter the paddy to produce rice. Different processes are used for separation of head rice, broken rice, rice powder, dust & bran. The selected paddy is allowed to slowly reduce its moisture by traditional and modern methods until it achieves optimum moisture content for husking. Gradual drying helps to avoid thermal cracks in the rice grain that would later result in broken. The husking of paddy produces different products, including 53% head rice, 10% broken rice, 2.5% powder rice, 33.50% husk and 1.00% waste & dust particles.

3.1.2 Ware Housing

Stocks of rice are placed at spacious go downs at units. Well-ventilated, these go downs have been constructed specifically to store rice under hygienic conditions. During maturing period, stocks are subjected to periodic inspection and fumigation from time to time under experts' supervision for protection against infestation by organisms.

3.1.3 Cleaning

First stage consists of several steps for cleaning of rice to ensure hygienic end-product absolutely free from all foreign materials like straw, mud balls, threads, stones, paddy etc. It is further ensured that once cleaned rice is not contaminated during processing. All the machines, conveyers, bins and hoppers are equipped with a generously sized aspiration system which keeps the entire building dust-free.

3.1.4 Polishing

Rice polishing process comprises of using the brown rice (head/broken rice) for cleaning and polishing. In this stage the bran layers are removed through whitening and polishing machines to give rice a pearl white look. This process is carried out gradually in several passes to save kernels from breaking. Number of passes depends upon the degree of whiteness required. The mist polishers installed at BRM impart an extremely clean and glossy appearance to the kernels of rice; a distinct advantage over traditional milling methods. Furthermore, rice is allowed to pass through mist polishers which impart an extremely clean and glossy white appearance to the kernels, a distinct advantage over traditional milling methods.

The operations of a polishing are spread over a period of eight months. In the current industrial practice, both the husking and polishing units are not operated at one time due to certain reasons. After the husking operation, the brown rice requires a time of six to ten weeks for the drying and conditioning. So, the brown rice is stored for a period of at least two months before taking it to the polishing process.

3.1.5 Grading

Rice is graded at different stages on the basis of thickness and length to remove malnourished, shriveled and broken grains from healthy pure and full grains. Advanced technology from Buhler in Drum Grader, Plan sifter and Indented Cylinders employed at three different stages achieves optimum and uniform grain length.

3.1.6 Color Sorting

Before packing, rice is passed through the color sorter to remove discolored grains hence producing a final product with each grain having uniformity in all respects. Color sorting is a computer-controlled process where CCD technology is used for high resolution- optical inspection of each and every kernel. It removes the high concentration of predominantly chalky and discolored kernels from healthy one. The equipment has a product tracking and automatic calibration mechanism that ensures consistent sorting efficiency and performance. The feeding system with advanced chute design ensures precise product presentation. Basmati rice sold as brown rice or cargo rice is also properly fumigated, cleaned and graded before packing.

3.1.7 Packaging and Shipping

Some units have installed modern computerized bagging scales to ensure high degree of accuracy in weighing. Each and every bag shipped weighs precisely the same. The equipment is capable of packaging different sizes ranging from 0.5 Kg to 100Kg. following types of packaging materials are used as per customer demands:

- Cardboard
- Paper-sack
- Polypropylene
- Polythene
- Cotton
- Jute

Packaging process is carefully designed and performed to increase shelf life of products as well as easy handling till the point-of-consumption. Even a good product needs good presentation to sell in the market. Rice goes extra miles to present its products in beautiful, eye-catching and striking designs. A team of designers and printers has been assembled to have packaging designed as per the requirements of customers.

3.2 Technology Status

Technology is rapidly changing across all industrial sectors including rice milling industry as well. However, the cluster is suffering from serious technological deficiencies. Lack of education among entrepreneurs, limited financial resources and change repellent culture has resulted in production facilities with primitive process techniques and obsolete machinery & equipment. It has severely hampered the quality of product. The lack of modern technology and modern system is the biggest hurdle in the growth of Mandi Bahuddin rice cluster as the manufacturers are still relying on conventional processing machinery.

3.3 Raw Material Availability

The raw material of the husking unit is paddy, obtained from rice harvesting. The paddy can be purchased from the local grain market (Mandi) as well as directly from the farmers on cash basis. The paddy-harvesting season starts in mid September and ends in December. The paddy husking is a seasonal process and is limited to only seven months after the harvesting of rice crop. The husking operations start in November and end in May. It is assumed that the polishing plant will work throughout the year, in first seven (7) months the entrepreneur will polish (process) in house rice later it will polish the unpolished rice that is available in markets. By this a plant can be run throughout the year.

3.4 Quality Control

An important aspect of production process is ensuring standardization and quality control. No real quality control system and standard is followed in the industry. Physical appearance and measurement fits are the only parameters considered.

3.5 Market Analysis

No real concept of branding and advertisements is followed in this cluster. Normally products are rated by customers demand. And some mill owners have shops along with processing setups where they sold directly to end user. Marketing and sales is limited to word of mouth and sales agents only.

3.5.1 Traders

The brown and processed rice are sold to the traders within the city and out of the city (country-wide). Each mill owners concern has its own relationship with the dealers of the different areas of the country. The terms of sale and services are different between each supplier and trader.

3.5.2 Indenter/Exporters

In Mandi Bahuddin rice cluster, the owners are depending on indenting exporters received the trade lead from the international market especially from the Middle East, EU countries and cater the orders, from the varieties prepared in the cluster. Only five big processors export directly, while others have to rely on the indenters for export orders.

3.6 Financing

Millers require credit and financing for purchase of paddy from the market dealers or directly from farmers during the season. In this regard they have to stock at least 20,000 ~ 60, 000 bags of paddy which requires a huge amount of money and manufacturers have to bear the losses if they could not able to acquire the finances well before the start of season because of the varying crop rates at the time of harvesting and onwards. An informal credit system prevails in the cluster which usually varies from season to season.

Mandi Bahauddin being one of the small industrial cities of Pakistan has branches of all major banks operating in the country. However, no special financing scheme for manufacturers has been introduced by any of the financial institution in Mandi Bahauddin. The financial products available in the market are not geared to cater the requirements of the cluster. The financial institutions are reluctant to offer customized financial products to SMEs. Conventional financing on standard rates is available through all banks. Biggest issue in this aspect has been the spread of technology gap between local units and modern trends of Gujranwala Industry. Modern machinery and equipment is too expensive for common entrepreneur of this sector to be affordable even through bank financing. An inadequate level of education of entrepreneurs is also an obstacle to accept the financial products offered by financial institutions.

3.7 Human Resource

During husking season, the semi-skilled labor is required for drying paddy, loading and unloading of paddy bags. For a husking plant with processing capacity of 2.5 tons per hour, about 20 workers are required for four months of operations.

The sector is severally short on skilled and technically qualified labor. The employed labor force does not have any specialized technical or vocational certificates/diplomas from any technical institutions. Shortage of specialized technical training institutes is also major concern for the cluster. There is no coordination and linkages between the industry demands and educational curriculum adopted at operational technical training

institutes in the district. It resulted in workers unawareness about latest production techniques.

4 Institutional Setup

4.1 Entrepreneurs Associations and Trade Bodies

4.1.1 Rice Mills Owners Association

4.1.2 Mandi Bahauddin Chamber of Commerce and Industry

Mandi Bahauddin Chamber of Commerce and Industry is operative since 19,,, but it is not registered. It is more like an informal group of industry representatives in the district. However, the rice millers who deals in exports requires a membership of a formal Chamber of Commerce and Industry that's why majority of rice millers are members of the nearby Gujrat Chamber of Commerce and Industry (GtCCI) which is very progressive and proactive for raising the voice of industry stakeholders at various forums.

4.2 Government/Semi Government Support Institutions

The Government/Semi Government business support organization do not have their offices in the district to support the cluster. However following business support institutions have their sub offices in the nearby city Gujrat. They extend their services and provide limited support to cluster stakeholders from these sub offices. The cluster stakeholders required a more focused and comprehensive support plan from these institutions. There is a dire need to establish strong networking with business and technical support institutions for strengthening and facilitating the cluster actors:

- Small & Medium Enterprises Development Authority (SMEDA)
- Punjab Small Industries Cooperation (PSIC)
- Trade Development Authority of Pakistan (TDAP)
- Rice Research Institute

4.3 Educational Institutions

Technical Education and Vocational Training Authority (TEVTA) and Punjab Vocational Training Council (PVTC) are major institutes, which offer technical courses. The objectives of TEVTA and PVTC include the provision of the up-to-date training facilities to the technical staff and the trainers to improve the efficiency of the available human resources. However, industry specific courses are being offered by these institutes. In Mandi Bahuddin, the important institutes of TEVTA include Government Technical College Rasool. Currently TEVTA is making efforts to introduce the short courses according to the need of the cluster.

4.4 Private BDS Providers

No significant private business development service providers are operating in the region with specific reference to Rice Husking and Polishing Cluster, Mandi Bahauddin.

5 SWOT ANALYSIS

5.1 Strengths

- Availability of raw material
- Persistent and increasing demand in local as well export market
- Geographically situated on ideal place as the district is well recognized for producing and cultivating fine varieties of rice
- Availability of cheap labour force
- Strong historical background and business knowledge of entrepreneurs

5.2 Weaknesses

- Shortage of electricity
- Low skill labor
- Out dated conventional technology and production process for manufacturing.
- Lack of marketing awareness (branding and retailing)
- Non Availability of financial support.
- No long term vision or policy
- Lack of well equipped facilities for commodity testing and research & development

5.3 Opportunities

- Improvement in production practices.
- Potential for high market growth due to wide gap in population.
- Export potential in all over the world markets
- Emerging markets of EU, Afghanistan, Iran and African Countries
- Export potential in niche markets

5.4 Threats

- Concern decreasing water levels and rains
- Low organic matter in the soil
- Harvest and post-harvest losses
- Non-achievement of yield potential
- No trade mark registration
- Regional conflicts
- Continuous depreciation of rupee against top world currencies.

6 Investment Opportunities in Cluster

Keeping in view the strong Agriculture base of the region, there is an ample opportunity of investment in the cluster. Some potential projects for investment are as follows:

- Processing Units
- Parboil Units
- Automated Storage Facilities (Go-downs comprising of Rice storage bins should be fitted with computer-linked sensors that monitor grain storage conditions and keep the rice at a suitable temperature and moisture level).
- Corporate Farming
- Investment in Land Leveling