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Rice Milling in Bangladesh



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Rice Milling in Bangladesh

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A. Industry Classification:

International Standard Industrial Classification	Code
Manufacture of grain mill products, starches and starch products	106
• Manufacture of grain mill products	1061

B. Industry Analysis:

Overview

Rice is the principal food crop of Bangladesh which accounts for about 75 percent of agricultural land use (Word Press, 2016). Bangladesh has a long history of rice cultivation and it is grown throughout the country except in the southeastern hilly areas. The agro-climatic conditions of the country are suitable for growing rice year-round (J.Shelly, Misuzu Takahashi-Nosaka, S.Haque, & Inukai, 2016). Since 1980s the rice production increased every year but the annual increase has generally been moderate, hardly in harmony with the population. In FY 1986, Rice production exceeded 15 million tons for the first time. In this time, Bangladesh ranked as the fourth largest rice producer in the world, but the productivity had been low compared with other Asian countries, such as Malaysia and Indonesia. In recent times, it is currently the world's sixth-largest producer. High yield varieties of seed, application of fertilizer, and irrigation have increased yields, although these inputs also raise the cost of production (Word Press, 2016).

The cultivation of rice in Bangladesh varies according to seasonal changes in the water supply. The largest harvest is aman which is planted in July/August and harvested in November/December. It accounts for more than half of the annual production. The crop is sown in the spring through the broadcast method, matures during the summer rains, and is harvested in the fall. The higher yielding method involves planting the seeds in special beds and transplanting during the summer monsoon (Uddin, 2012). The second harvest is aus, involving traditional strains but more often

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including high-yielding, dwarf varieties. The crop is planted in March/April, benefits from April and May rains, matures during in the summer rain, and is harvested during the summer in June/July. With the increasing use of irrigation, there has been a growing focus on another rice-growing season extending during the dry season from October to March (Hussain, 2013). The production of this boro rice, including high-yield varieties, expanded rapidly until the mid-1980s. Where irrigation is feasible, it is normal for fields throughout Bangladesh to produce rice for two harvests annually. Between rice-growing seasons, farmers will do everything possible to prevent the land from lying fallow and will grow vegetables, peanuts, pulses, or oilseeds if water and fertilizer is available (Word Press, 2016). Bangladesh has made notable progress in sustaining respectable growth in rice production, and this growth in production has originated mostly from the shift from low-yielding traditional to high-yielding modern varieties when irrigation facilities were developed (J.Shelly, Misuzu Takahashi-Nosaka, S.Haque, & Inukai, 2016). In the year 2013–2014, rice production has been 34.3 million tonnes and Aus, Aman, & Boro rice accounts for 7%, 38%, and 55%, respectively, of the total rice production in Bangladesh (Rising BD, 2014).

Production Process

After harvesting, the paddy is processed to obtain rice. Rice milling is the process which helps in removal of hulls and barns from paddy grains to produce polished rice. Rice forms the basic primary processed product and during this process various by-products are produced. Traditional commercial mill or husking mill is the oldest processing method of paddy. Mostly they are made from wood with few metal components and the single power source is usually driven through a system of transmissions. By tradition, it would be milled using some form of mortar and pestle. Over time, new simple machines replaced the old methods. Later on more efficient machinery had been developed for hulling and polishing of rice.

However, after the paddy had been parboiled and dried at home, it would be milled for finished rice in a small husking mill. These types of machines are situated in the nearby village. Generally, huskers husk paddy from the small traveling traders of the village. Lately, the huskers husk paddy directly for the villagers at a fixed price in the farmyards of the customers. In Bangladesh, the majority of the rice processing relies on the traditional rice processing system & it contributes more in Bangladesh because most of the rice producers in Bangladesh still use traditional agricultural systems (Islam, 2014).

Nowadays, modern commercial mills are completely automated or semi-automated & generally consist of one or more components of every phase of the milling process. Automatic rice mills hold out roughly all activities through a mechanical process, including categorization of rocks & unfilled grains, grain marinating, boiling, drying, milling, polishing & bagging. The difference in capacity, power requirement, hulling/polishing and bran separation & grading between husking or traditional mill and automatic mill have been given in the table below.

Types of Mill	Major Components	Capacity of Production	Power Requirement	Hulling/ Polishing	Bran Separation and Grading
Husking	Soaking Tank Steam Parboiled Drying Floor Engle berg Huller	0.6 to 1 ton/hour	30-40 HP	2 to 3 operations	Manually
Automatic	Pre-cleaner Soaking Tank Boiler, Steam Pressure Parboiled Dryer, Rubber Roll Sheller, Paddy Separator Polisher, Bran Separator Etc.	2 ton/hour	65-100 HP	Separately by different devices	All Activities Mechanically

Source: A case study had been done on the processing technique and marketing of rice in Bangladesh (Zaki-Uz-Zaman, Mishima, Hisano, & Gergely, 2001).

The basic auto rice milling process consists of Pre-Cleaning, De-stoning, parboiling (optional), Husking, Husk Aspiration, Paddy separation, Whitening, Polishing, Length Grading, Blending, weighing and bagging. Milling is done usually when paddy is dry. The resulting polished rice and bran are separated and collected. Recovery of edible rice is around 80%. By-products constitute about 15% whereas balance 5% is waste and process loss (Knowledge Bank-IRRI, 2006).

Byproduct/Waste

Rice mills can produce mainly three varieties of by-products which include rice husk, rice bran and broken rice. Even wastes from these by-products can also be used for different purposes. The straws from the harvested rice plants can be used as bedding for livestock. The oil extracted from

discarded rice bran also has use as the livestock feed. Hulls are used to produce mulch that will eventually be used to recondition the farm soil. The essential use of irrigation, flooding, and draining techniques in rice farming also produces surplus of pesticides, herbicides, and fertilizers into natural water systems. The extensive use of water in rice farming also increases its level of methane emissions. Rice farming is responsible for 14% of total global methane emissions (Made How, 2009)

Production Capacity

Bangladesh has produced around 34.449 million tons of rice, mill basis, in FY 2013-14 (July - June), increased by 2.7% from around 33.833 million tons produced in FY 2012-13. Bangladesh produced around 13.02 million tons of Aman rice which increased by 1% from around 12.897 million tons produced previous year. Boro, Aus and Aman contribute to around 7%, 38% and 55% respectively to the total rice production in Bangladesh (Rising BD, 2014).

Import demand

Due to rapid population growth and urbanization, the cultivated land is gradually decreasing which means output is less than demand. To keep pace with the population increase, demand for import needs to increase to mitigate that. Bangladesh's rice import was estimated at 100,000 tons in 2015, down about 75% from 400,000 tons in 2014. The country's rice consumption needs are estimated at around 34.8 million tons in FY 2014-15 slightly up from an estimated 34.6 million tons in FY 2013-14. Increased volatility of international grain markets, India's recent export restrictions and the important role of private traders is securing rice imports (Rising BD, 2014).

Contribution to Economy

Rice is the most strategic commodity in the economy of Bangladesh. Average share of agriculture to total GDP is 26.13% in Bangladesh since 1980 with a highest 32.77% in 1985 and a minimum of 18.29% in 2011. Around 28 percent of GDP in Bangladesh comes from this sector. Bangladesh is currently the world's sixth-largest producer. Rice accounts for about 65% value added in the crop sub sector in Bangladesh (Bishwajit, Barmon, & Ghosh, 2014). The role of rice as that of agriculture itself is declining as other sub-sectors assume increasingly greater roles. But Rice, as the staple food, its importance will continue to reign supreme.

Export

Though there was an increasing trend in growth in agriculture from 1990 to 2007, the export of rice in Bangladesh has increased during the last few years after a declining trend in rice exporting during the year 2008 to 2011. The export stood at 3.65 (000) MT in 2013 increased from 2.83 (000) MT in 2012 (Ricepedia, 2013). According to Sri Lankan customs data, 25,000 tons of Bangladeshi rice was delivered in January 2015 (Lagos, 2015).

The rate of export growth in agriculture was 5.24 percent in FY2009-10, whereas in FY2010-11, FY2011-12 and FY2012-13 the rate was 5.13 percent, 3.11 percent and 2.17 percent respectively where major portion of this effect was by the fall in rice trading.

Production constraints

Bangladesh is facing with production constraints such as drought, lack of irrigation facilities, flooding and salinity of soils and fluctuation in the commercial rice prices. Sustaining this level in the coming years may be difficult considering that the country's population continues to rise ominously and rice production growth has to be achieved with fewer resources.

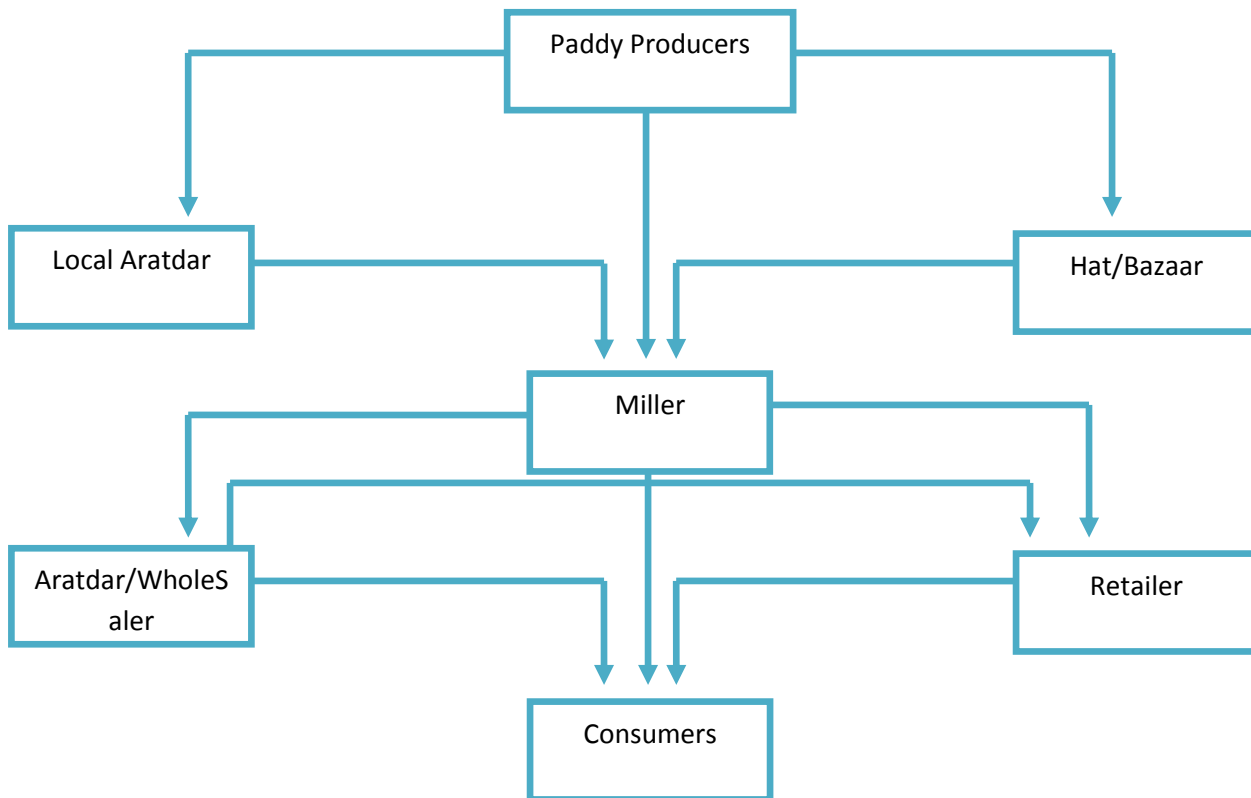
Drought is a common problem although the northwestern region of the country is more prone to it than elsewhere. Farmers deal with drought through supplemental irrigation during the late monsoon. Overexploitation of groundwater, however, is becoming an environmental concern with adverse effects on the supply of drinking water; there are suspected links to arsenic-contaminated water. Soils in coastal areas are affected by salinity. Most soils are low in organic matter (many less than 0.5%) and subsequently low in Nitrogen-Zinc and sulfur deficiencies are prevalent; replacement amounts of phosphorus and potassium are inadequate (Ricepedia, 2013).

Future growth

The output of rice crops, particularly Aman and Aus, is likely to increase in the current fiscal year compared to the last fiscal year despite falling of harvesting area, predicts the latest estimate of various national statistical agencies. The total rice output may rise 0.60% to 3.48 crore tons in the current fiscal year from last year. Timely distribution of seed and fertilizer, favorable weather and uninterrupted supply of electricity led to substantial higher production this year. The development of more high-yielding, different maturity period, drought-tolerant, salt-tolerant, disease-resistant,

submergence-resistant, and possibly nutrient-rich varieties will further boost rice production and nutrition (Dhaka Tribune, 2015).

Marketing Channel



Commonly, four groups are involved in the marketing channel for milled rice- producers, aratdar/bazaar, mill, wholesales/retailers. Paddy producer sell their paddy to nearby bazaar or hat. Then local aratdar purchases the paddy from bazaar or hat. Sometimes local aratdar also purchases paddy directly from the producers and sell it to the millers. The rice millers can also buy paddy directly from producers. Then millers process the paddy, after processing they sell it to wholesalers or retailers and sometimes directly to consumers. The retailers buy rice from wholesalers or directly from mill and sell it to final consumers.

Competition

Currently Bangladesh has about 17,000 rice mills. Automatic rice mills are growing at an increasing rate, raising competition for thousands of small and medium husking mills. However, the small husking mills are still the ones dominating the market. But their market share is shrinking, as many husking mills are pulling out. Over the last decade, several hundred automatic and semi-automatic rice mills were established in various rice producing zones. Naogaon, Chapainawabganj, Dinajpur, Kushtia and Noapara of Jessore are some districts that have attracted investment to set up big automatic rice mills. In 2005, there were only 200 semi-automatic and automatic rice mills but the number has tripled to more than 600 now. This sector has attracted many large investors to set up big automatic rice mills as demand for rice processed at automatic mills has risen. The rise in rice production has created scopes for the entry of more players in rice processing (Parvez, 2011).

Labor Participation

The majority employment of the country comes from this agricultural sector. From the total men employed, agriculture sector covered about 41 percent whereas, women comprised of about 66 percent of the total women employed. The small rice mills create more jobs, particularly for women (ADB, 2010).

Conclusion

As a main source of nourishment for over half the world's population, rice is by far one of the most important commercial food crops. Its annual yield is approximately 535 million tons worldwide. Fifty countries produce rice where China and India support 50% of total production (Encyclopedia, 2017). Given the volatility of rice prices during the past few years in Bangladesh as well as in international markets, there has been much concern over the efficient functioning of the marketing system. In the past few years, there are indications of rapid technological change in the rice marketing chain, especially in terms of milling. New automatic rice mills which are operated on a larger scale have been expanding and generate much impact on employment and market concentration (Raha, Moniruzzaman, Alam, & Awal, 2013).

Rice, being the country's staple food, requires special attention for its milling especially in terms of productivity and quality of output. Higher productivity and quality obviously have important implications for better supply and hence for food security. Technical efficiency in milling and the

technology in use are major factors behind productivity and hence investigation is needed to understand the productivity behavior over time. The government should also provide incentives to the rice mills to ensure competition in the market.

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About ECRL

Emerging Credit Rating Limited (hereinafter referred to as ECRL) began its journey in the year 2009 with the motive to deliver credible superior & quality credit rating opinion in various industry segments around Bangladesh. ECRL obtained credit rating license from Bangladesh Securities and Exchange Commission (BSEC) in June 2010 as per Credit Rating Companies Rules 1996 and also received Bangladesh Bank Recognition as an External Credit Assessment Institutions (ECAI) in October 2010.

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