

TURNING THE FULL CIRCLE:

**RATIONALE AND MECHANICS OF
RICE EXPORTS FROM BANGLADESH**

MAHFOOZUR RAHMAN

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PREFACE AND ACKNOWLEDGEMENTS

The very thought of rice exports evokes mixed feelings and sentiments in Bangladesh. Opinions vary, from one extreme to the other, as well as the arguments, for and against. There is a group of people who can hardly hide their bemusement at the very idea of exports of rice from Bangladesh, a country which has suffered chronic food shortages for decades. For a generation brought up on ration cards and periodic food crises and collective memories of two famines, the idea seems ludicrous indeed. Others who have a vision for the future find nothing absurd in it. They point to the success stories of food production and exports in China, India and Vietnam. Even if they are not analysts or experts, they ask the simple question: if they can do it, why can't we? They also point out the supreme importance of the national will and the willingness to exert it. This paper is an effort to answer that question and some more. While earlier work concentrated on the question "why", this effort is unabashedly biased towards the issue of 'how'.

While finding the answers, I have been greatly assisted by a number of experts and practitioners in Bangladesh, Thailand and Vietnam, some of whose names are mentioned in reference at the end of the paper. Particular mention must be made of the following people, who went out of their ways to assist me: Mr. Abdullah Al Mamun of the Ministry of Food, Dr. Abdul Baqui of the Bangladesh Rice Research Institute, Mr. A. H. Hassan, an exporter of Bangladesh, Mr. Thanaphol Vudhi of Capital Rice Co. and Mr. Jean Frank of SGS in Thailand. I am extremely grateful to them for the time and trouble they took in assisting me in every way.

Rice exports, like any human activity, are basically about people, people who produce, mill and trade rice, which ultimately feeds people. To capture the human element, I have included three stories as 'Interludes,' for they are just what the title implies. These vignettes, I hope, will introduce the reader to the people for whom this is not just an academic topic, but are something that they work for and live by.

In preparing this report, thanks are due to Shamim and Anwar, Research Assistants who collated and compiled data, Amin, and Shahnaz, who word-processed and printed these papers against a tight schedule, and Wajid Hasan Shah, who edited the entire paper in his usual meticulousness. I am grateful to them all for their devotion and loyalty.

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Weaknesses and limitations of this paper are entirely mine and in no way reflect on the experience and knowledge of the experts and scholars, whom I refer to in these papers.

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Mahfoozur Rahman

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EXECUTIVE SUMMARY

Introduction: Provisioning of adequate food security for the people has always been fundamental to successive governments of Bangladesh. This national resolve has been adequately evidenced by the rising rice production out-stripping a high population growth. With the production rise, the food grain markets also expanded rapidly. While rice production rose dramatically, the marketed portion also rose rapidly. In recent years, about 50 percent of rice harvests have gone through marketing channels, averaging about 10 million metric tons (MT) annually. Rapidly rising production, coupled with liberalized policies adopted by the government, have influenced the conventional policy environment of the past. Thus, the open market sales (OMS) prices these days are very near market prices. One of the most important policies was to keep the OMS price of rice below its import parity price, thereby allowing the private sector to import rice in times of crises, besides removal of all tariffs and other barriers to free import. However, for a free market regime, both import and export windows need to be open to reap the full benefits of the market. Case studies of India and Vietnam indicate that it is not difficult to become a net exporter within a short time of being an importer. In these changed circumstances, rice export becomes a viable proposition as an essential element of national food policy.

Production Potentials: Over the last three decades, the technology of the ‘green revolution’ – of High Yielding Variety (HYV) seeds, irrigation, fertilizer and pesticide have enhanced rice production by mainly enhancing irrigated areas and yields. Yet, over half of arable agricultural land remains non-irrigated, and yields are still much below their potential. Per hectare yield of rice in USA, Japan and South Korea is 6.4, 6.3 and 6.1 MT respectively. The Bangladesh average yield is only 2.7 MT, indicating that rice production is yet to reach anywhere near its full potential. Increase of yield will not only enhance total availability of rice, but also release agricultural land for more high value cash crops like vegetables, cotton and potato. Such increases in production will provide the surplus needed for large scale export of coarse high-yielding varieties of rice to low-price specific markets.

Fine and Aromatic Varieties: Fineness in rice is a subjective quality as perceived by the consumers, though many national specifications quantify the length and breadth of rice grain. Major aromatic rice traded in global markets includes Basmati from

India and Pakistan and Jasmine from Thailand. Aromatic varieties are all traditional low-yielding types. The yield difference partly accounts for the higher prices of aromatic rice, since farmers require higher prices in order to offset lower yields.

Aromatic and Super-fine Rice in Bangladesh: The traditional aromatic varieties are grown only in the Aman season. Surveys conducted by Bangladesh Rice Research Institute (BRRI) in 1996 estimated the total aromatic and superfine rice production at about 600,000 MT of paddy, or 300,000 MT of rice equivalent. Farmer level prices are hardly at a level to enhance production. Interviews with farmers indicated that if a price of about Tk. 900 to Tk. 1000 per moud (37.324 kg) can be ensured, the production of aromatic rice can be enhanced many times. Such rice fetches premium prices in the markets of the EC and USA at a great comparative advantage.

Export Potential and Prospects: Most Asian countries produce rice for their own domestic consumption. Compared to other major grains, rice is thus thinly traded in the international market. Over the period 1975 -- 90, world rice production grew at a rate of 2.67 percent, compared to a 2.57 percent growth achieved in international rice trade. Rice is not a homogenous commodity and a large number of types and varieties are traded in the international market. Most rice traded in the international market is classified as long, medium and short. All rice is processed as white or raw rice and parboiled rice. Then there is specialty and aromatic rice, which are termed gourmet rice in commerce. Thailand exports most of its rice as raw rice. However, one million MT of Thai rice is exported after parboiling, mainly to African countries. Vietnam, the second largest exporter, exports almost all rice as white milled. Indian exports are mainly of Basmati, though parboiled rice is exported to Bangladesh and many African countries. In the medium to long run, the volume of rice traded in the international market is likely to be enhanced with higher prices than that at which it is traded now.

Standardization of grades leads to improvements in production and marketing, and thus enhances efficiency. It is absolutely essential for the development of export that the grades conform to international standards. It is suggested that a committee of experts grade the rice produced in Bangladesh according to international standards. Classification by export grades is essential to quote prices to importers and to receive

export inquiries from them. Large varieties of aromatic rice are also produced in Bangladesh, varying from small to long and slender types, though they are not classified by any international standard grade. Demand for aromatic and specialty rice is growing in the international market. Major international buyers of aromatic rice are China, the Middle East, EU countries and the United States. The international market for aromatic rice is growing very rapidly. From 1990 to 1996, international traded quantities of aromatic rice have increased from 1.4 million to 2.4 million MT. The production of aromatic rice cannot be increased rapidly because these varieties rarely reproduce their characteristics in other climatic and soil conditions. In total, exports of aromatic rice averaged roughly 2.0 million to 2.5 million MT, or about 12 to 15 percent of world rice exports. The prospects of Bangladesh producing and exporting such high value rice are bright, but lack of infrastructure like storage, standard packaging machinery and high cost of shipping, and trade barriers by some importing countries are current hindrances. All traditional and aromatic varieties in Bangladesh are grown without chemical fertilizers. It is, therefore, a matter of organization and effort that organic rice may be grown and exported from Bangladesh.

Mechanics of Export: Excellent prospects exist for export of medium grain, special aromatic and organic rice from Bangladesh. Export parity prices of both traditional and high-yielding varieties of rice are below the comparable grades of Thai rice throughout much of the harvest seasons of both Aman and Boro. Seldom is our rice of any grade competitive compared to Indian coarse rice FOB prices, though occasionally our FOB prices do go below the Indian FOB prices. However, lower prices alone do not automatically ensure export. Many other considerations like grades, milling standards, packaging and reliability of the suppliers are major factors influencing the export of rice in the international market. Bangladesh's own rules, laws and regulations regarding the rice industry were formulated mostly in colonial times of war and chronic shortage. They need be reviewed and changed in order to export rice in an era of surplus.

Conclusions and Recommendations: The phenomenal rise in rice production through irrigation, fertilizer production and distribution, agricultural research and extension is an outcome of national aspirations and consequent governmental food policies. As Bangladesh achieves surplus in rice production, these policies need be

modified and altered. Bangladesh needs to make serious efforts to export rice of many varieties. The rationales of rice-export are multiple. The enhanced production of special, aromatic and organic rice offers the best comparative advantage in this regard. An excellent market exists for moderate quantities of this extremely high-priced rice in the international market. It is also possible to export medium to coarse parboiled rice, especially to African markets, where demand for such rice is currently satisfied by Thailand and India. Higher yields means benefits to producers through higher net revenues and to consumers through lower prices which should not be below export parity. This proven hypothesis is reflected by the fact that during 1990--2000, rice production, both in trend and in absolute value, has increased despite the fall in the real price of rice. Much more is necessary to successfully export rice than just theoretically low prices and a national surplus.

By taking recourse to a trade-based stabilization policy of import in times of shortage due to floods and other calamities, and exports at times of high production, rice prices may be kept within a narrow band of import-export parity prices as an instrument of price stabilization. Export of rice will enhance food security for the poor through increased imports of cheaper but more nutritious wheat. These imports will be balanced by earnings from the export of fine quality rice at a great comparative advantage. However, a conducive policy package needs be implemented to export rice on any significant scale. Thus, it is recommended that the government may:

- Rescind all out-dated and restrictive laws and regulations inhibiting free trade in rice by the private sector to create an enabling environment
- Encourage investments to upgrade mill-machinery, storage and other essential infrastructure for a modernized rice industry in the country
- Provide adequate credit within the existing banking regulations to the traders, millers and exporters of rice, in conformity with other export commodities
- Establish a centralized agency, preferably at the Ministry of Food, to co-ordinate, promote, encourage and assist export efforts of rice by private sector firms
- Take effective steps to remove import levies in importing countries
- Upgrade national grades and standards of rice, especially for export, and disseminate and enforce the same in the market place

- Improve markets and their structures, especially consider establishing a central market where traders, whole sellers and exporters may transact business centrally
- Invest in infrastructure like port handling facilities, improve financial and other risk management services like insurance, banking and inspection agencies, to facilitate exports.

The current policies of production enhancement need to be pursued with renewed vigor. These policies are:

- Investment in agricultural research and extension services
- Continuation and improvement of liberalized markets for seeds, chemical fertilizer, agricultural machinery, pesticides and other essential inputs
- Development of aromatic, super-fine, organic and other high-value specialty rice varieties and their commercial production at the farmers' levels.

A new era of surplus is envisioned, when export and not import of rice will be the major concern for Bangladesh. It is time to plan, prepare and exert efforts towards that direction. Newer and changed governmental policies and private sector participation are needed to exploit the full potential of production and international market demand for rice from Bangladesh.

1. A HISTORIC OVERVIEW

THE COMPULSIONS

Nothing is as fundamental to the well-being of the people of Bangladesh as provisioning of adequate food. With an average annual per capita income of only U.S. \$240, and a great imbalance in income distribution, it is a fact that adequate diet and thereby acceptable nutritional input are still outside the reach of the majority of the population. Thus, the sensitiveness of the national food policy with all its implications and ramifications exerts inordinate influence on the political and popular perception of Bangladesh society. In particular, the Great Bengal Famine of 1943 has traumatized our collective psyche for over half a century. The next famine of 1974 in the war-torn nascent state of Bangladesh, even though minuscule in magnitude to the one of 1943, was recent enough to be vivid in the collective memory of the nation. It is the ultimate compulsion on this nation and its government to never again witness such a food shortage. This national resolve has found adequate expression in the rising food, particularly rice, production outstripping a high population growth.

The national goal of self-sufficiency in food has largely been achieved in the intervening quarter century. The specter of famine is no longer a realistic threat. The nightmare of the immediate past is no more; it is time to look to the future, a future bolstered by the rich memories of our distant past when what is today's Bangladesh was indeed the granary of all India. The response of successive governments to these historic compulsions has been twofold. Firstly, these policies sustained agricultural growth in foodgrain production by investments in irrigation, agricultural research and extension, provisioning of seeds, fertilizer and other inputs as well as liberalization of agricultural markets. Secondly, efforts have been made in developing a massive public food distribution system. In the infrastructure of the Directorate General of Food, one finds a system consisting of 5 Silos, 13 Central Storage Depots, 620 Local Storage Depots totaling a static storage capacity of 1.8 million Metric Tons (MT) of foodgrain. The system was flexible enough to turnover 2.942 million MT of foodgrain, of which about 2 million MT was imported in the flood year of 1988/89. In 1991/92, the Government of

Bangladesh (GOB) procured over 1 million MT of rice internally which the food infrastructure also handled adequately. Thus, under the changed circumstances of surplus rice, the system built over the last three decades for handling imported grain may also act as a conduit in the reverse order.

The agricultural research and extension services, expansion of irrigation, and other measures have doubled food production in two decades, outstripping the population growth (Figure 1). However, progress has neither been steady nor painless. Periodic floods, draughts and cyclones constrain the production environment, resulting in wild fluctuations, creating seasonal short falls. Thus, the intra-seasonal variations in foodgrain output have been large over the years. Poverty and malnutrition remain widespread and national per capita calorie consumption remains unsatisfactorily low. More than 50 percent of the population remains below the poverty line. In the larger context of rapid economic development, national food security for the people remains one of the most important concerns for the government and people of Bangladesh.

EXPANDING AND LIBERALIZED FOOD MARKETS

With the rise in production, foodgrain markets have also expanded rapidly. Not only has rice production increased dramatically, the marketed portion of the produce has also increased rapidly. This phenomenon has had important implications on the agri-market scenario of Bangladesh. “The chief factor in the life of Bengal countryside can be said to be rice, the staple crop and staple food of the population,” noted the Imperial Famine Commission in 1880. This remains as true today as it was over one hundred years ago. The increase in the size of the harvests, particularly, Boro, has greatly reduced seasonality in prices. Despite many natural shocks, including floods and draughts, the total rice production continued to exhibit upward trends. The standard deviation of production from its long-term trends has decreased from 5.2 percent to only 3.3 percent in early 1990s (del Ninno and Dorosh, 1998) The total average rice production in the 1995–97 period was around 16.63 Million MT. With about 45 percent of Aman and 55 percent of Boro going through the marketing channels (FPMU, MOF, 1998), the total marketed rice amounts to about 8.23 million MT. These huge marketable quantities also imply advancements in milling, storage, and other infrastructure, particularly in the rural areas, and greatly enhanced the need for agricultural credit and entrepreneurial skills. This

enhancement of the supply side of the rice economy also entails great seasonal demands for agricultural inputs and for electricity and diesel in rural areas, where no such demand existed before. All these have periodically created “crises” of various kinds: of fertilizer, diesel, and rural electricity. These may also be interpreted as the symptoms of enhanced productive needs of the rice farmers.

CAUSAL EFFECTS

The rapidly rising rice production, coupled with liberalized policies adopted by successive governments, have had their telling effects upon the conventional policy environment. With reduced price seasonality, buffer stock operations have lost much of their relevance. The operation of the government to stabilize consumer prices, particularly in the urban areas, has also assumed market-friendly attributes.

Gone are the days of statutory rationing and large subsidies that those rationing channels involved. The open market sales (OMS) prices today are at near market prices and were even kept below the import parity price in the Aman season of 1998 (FMRSP Memo 1998). The private sector has started to play a dominant role in stabilizing prices by importing mainly coarse rice in times of high price regimes – a role traditionally reserved for the Government. In the most recent case, when prices rose by 30 percent in the Aman season of 1997/98, the private sector responded immediately and supplied the domestic market with more than 1 million MT of rice imports from India. The Government created an enabling environment by adopting a number of market-friendly policies and actions. The most important policy was to keep OMS prices near or below the import parity price of rice by adjusting OMS prices upward. That policy alone encouraged continued private import and the prices quickly stabilized with little government intervention. Other measures, like lifting of the remaining restrictions on import and abolishing of all duties and VAT on rice imports, gave impetus to the private importers. For the first time in Bangladesh history, the private sector played a leading role in mitigating a production shortfall driven price-rise. Prices never crossed the ceiling of import-parity. Thus, price stabilization was effectively achieved with little government intervention.

THE FULL CIRCLE

From time immemorial, the region comprising of today's Bangladesh was the breadbasket of all of India. Dispatches are mentioned in the Ain-e-Akbari by Abul Fazal, the chronicler of Emperor Akbar, that the finest rice in all of Moghul India is produced in the northwestern region of "Suba-e-Bangal," the province of Bengal, and the Emperor himself partakes of such rice on special occasions. The colonial records of British India show that the Australian colonies were fed by grain exported through Calcutta port in the mid-19th century till their own agriculture took off. In the long history of Bangladesh, the last 50 years of chronic food shortage is a nightmare the nation may well purge from the memory. It is now time to release the productive potentials of our land. The technological breakthroughs made in our agricultural production, coupled with the winds of liberalization, point unmistakably to a new era of abundance. In this changed circumstance, both export and import may well be considered viable inputs of the food policy matrix of Bangladesh.

In earlier work on export (Chowdhury and Aziz, 1988, Golli, 1994, Donald Mitchel et al., 1997), much has been made of the theoretical framework of export. Much effort was devoted to answer the question of "why", and "how" had been relegated to a second place. It is the unabashed intention of this paper to advocate the case of rice exports from Bangladesh by addressing the vital question of "how". Strength may be taken from the recent case study of Vietnam, which was a food deficit country as recently as in the 1980s. With a sustained agricultural growth of five percent over only one decade, Vietnam today is the second largest rice exporter in the world, second only to Thailand. It is time for us to turn the full circle of only 50 years, to become an exporter again. That is the collective expectation of the nation today. This aspiration may well be fulfilled sooner than most people think, if only an enabling environment is created and a conducive policy package ensured.

2. PRODUCTION POTENTIALS

HIGH YIELDING VARIETIES

The conditions under which the silent revolution had taken place in the agriculture sector of Bangladesh were neither unexpected nor unplanned. The characteristics of the green revolution in Bangladesh were the same as elsewhere in Asia; irrigation, varietal improvement and use of chemical fertilizers were the major engines of progress. The most important of all three factors is in the genetics of the plant itself; *Oryza Sativa*, rice, which underwent a dramatic transformation when the Indica varieties were crossed with the Japonica varieties. The pioneering work of the International Rice Research Institute (IRRI) has matured into national research efforts in dozens of countries from the USA to India. Literally, hundreds of these varieties are now at producer level extension networks in all rice producing countries of the world.

Rice research in Bangladesh had an early start, in 1909. The famous Dacca Farm was the center of rice research in all of British India. The early work produced about 60 improved varieties even before the Bangladesh Rice Research Institute (BRRI) was established at Gazipur in 1970. Continued research by the dedicated scientists of BRRI has resulted in 35 varieties of rice for farmer level production, while literally hundreds of new varieties are in the process of development and certification, many of them the High Yielding Varieties (HYV). However, it would be more appropriate to term these new varieties as highly responsive rather than high yielding, since they perform optimally only when heavily fertilized, especially in Nitrogen-rich inputs and suitably supplied with Phosphorus and Potassium in correct proportion under controlled agronomic conditions. Their need for water is very high and only an efficient irrigation system can satisfy their water requirements. They are also sensitive to application of micronutrients like Zinc and Sulfur, whereas controlled cultural practices are essential to reap the full benefits of their true potential. These conditions imply application of the essential but intangible resource of appropriate technology in their production regimes, which may only be ensured by adequate training and education of the farmer. The HYVs are highly adaptable in a wide area covering multiple soil and environmental conditions, where only the low-yielding

traditional varieties grew before.

Table 1 — Rice Yields in Metric Tons/Hectare: Selected Producer Countries

Sl. No.	Country	Yield (MT/hectare)	Remarks
1.	USA (Arkansas)	6.4	All long grain modern varieties in irrigated fields
2.	Japan	6.1	Short grain Japonica varieties
3.	South Korea	6.3	Mostly HYV in irrigated fields
4.	China	6.3	Mostly HYV in irrigated fields
5.	The Philippines	2.8	90 percent are HYV but about 60 percent fields are irrigated
6.	Bangladesh	2.7	40 percent are HYV with only 40 percent irrigated fields
7.	India	2.6	Mostly HYV irrigated fields

Source: University of Arkansas, Agriculture Extension Service Data.

Under favorable conditions, these varieties produce yields that are several times higher than those of the traditional varieties. For example, the typical HYV at the BRRI experimental fields yields seven to eight MT per hectare under ideal conditions. One very popular variety, BR-11, has produced up to 15 MT/hectare in international trials and 5.5 to 6.6 MT/hectare in farmer-level demonstration plots in Bangladesh. It has a short life cycle of 140-145 days and is ideally suited for Aman season production. Compared to this performance, average yields for 1960-64 were about 1.5 MT/hectare in India and Pakistan, 2 MT/hectare in Sri Lanka and 5 MT/hectare in Japan (FAO--Rice Marketing). A national yield of various rice growing countries is given in Table 1 for comparison, as well as to indicate the prospects of Bangladesh as a rice-producer whose potential is yet to be even partially exploited.

FINE AND AROMATIC VARIETIES

Fineness in rice is a subjective quality perceived by consumers. Long, slender

varieties are generally termed fine. Many national specifications quantify the length and breadth of rice grains to define fineness. Some fine rice is also aromatic, that is, it emits a fragrance in raw condition or when cooked. For the more scented varieties like Kalizira and Badshabhog of northern Bangladesh, the fragrance is very strong when the rice is cooked. In such varieties, the flowers and even the vegetation parts of the variety emit the perfume (Rice: D. H. Grist, 1953). The slender variety of Kataribhog is also scented but to a lesser degree. The major fine and aromatic rice varieties include Basmati from North India and Pakistan and Jasmine from Thailand. A localized version of Jasmine and Basmati is grown in United States, especially in Texas, that is marketed under the trade name of “Texmati” in the US market.

Efforts to grow aromatic rice in other regions than that in which it has naturally developed have largely been unsuccessful. Their yields are about one half of high yielding varieties under such circumstances. The yields in Thailand for 1991/92 were 1.7 MT/hectare for the aromatic rice compared to 2.01 MT/hectare for other traditional non-aromatic varieties. Since most production in Thailand is of the traditional non-aromatic varieties, the yield difference is less than in India, Pakistan and Bangladesh, where the modern high yielding varieties are more widely adopted. The yield difference partly accounts for the higher prices of aromatic rice since farmers require higher prices in order to offset lower yields.

AROMATIC RICE IN BANGLADESH

Rice farmers of Bengal have developed aromatic rice by centuries of selective process. Grist (Rice: 1953) reported that a few sheaves of grain which showed difference in shape, size or color, were selected by the rice farmers to plant separately. These variations occurred by natural process of genetic mutation or by natural cross-fertilization, when a few sheaves appeared with natural male sterility. Thus, a large number of aromatic varieties have developed in this region by centuries of natural selection. There are many aromatic varieties that have local names. The principal among these are: Chinigura in Mymensingh and Dhaka, Badshabhog in Dinajpur and Kustia, Kalazira in Sherpur and Mymensingh, Dadkhani in Natore and Rajshahi, Kataribhog in Dinajpur, Tulshimala in Chittagong, Bansful in Naogaon, to name a few.

The traditional aromatic varieties are grown only during the Aman season. However, there has been recent experimentation at the Barind Project, Rajshahi, to grow fine rice in the Boro season. The average yield varies between 1 MT/hectare to 1.5 MT/hectare, which is low compared to the national average of 2.7 MT/hectare. Still, BRRI scientists report (personal interview, 1998) that these aromatic varieties are competitive and more profitable to the farmer than HYVs under rain-fed high land conditions in the northwestern regions. The time to maturity of these varieties is more than 140 days, compared to 100-110 days for most modern varieties. There are no definite statistics of any government agency regarding production figures of aromatic rice in Bangladesh. However, survey work conducted by BRRI in 1996 estimated the total production of fine and aromatic rice at approximately 600,000 MT of paddy. This is equivalent to 300,000 MT of rice at the low milling ratio of 100:50. The main production areas of aromatic rice are given below:

Table 2 — Main Areas of Aromatic Rice Production (1996) with Variety and Percentage of Area of Rice Production under the Varieties

Varieties of Aromatic Paddies with Percentage of Area					
Area/Region	Kalizira	Chinigura/ Badshahog	Jotalo	Kataribhog	Others *
Mymensingh/Sherpur	9%	5%	-	-	-
Dinajpur	-	17%	9%	12%	-
Natore/Chapai-Nawabganj	-	12%	-	-	-
All other regions	-	-	-	-	2%

* Other varieties include: Basnsful, Tulshimala, Ukunamodhu, Dadkhani etc.

Source: Personal Communication: BRRI, 1998

Since the average yield of these varieties is only at about 1 MT/hectare to 1.5 MT/hectare, increase of yield is of prime consideration, if these unique varieties are to survive as viable commercial types. Research in BRRI, IRRI and elsewhere indicated that they are not responsive to Nitrogen inputs in any form. Significant improvement of yield by use of selective seeds, application of manure and better cultural practices are reported by BRRI. However, it may be assumed that no dramatic breakthrough is possible in enhancing yields of these varieties under the existing state of technology.

The search for improved varieties continues by the scientists and plant-breeders of BRRI. One such promising variety is BRRI Dhan 34, which originated from a remote area of Jessore. Its local name is Khashkhani and the average yield under ideal conditions

is 3 MT/hectare to 3.5 MT/hectare. It has been released for production in 1997-98 and scientists are hopeful of getting yields of over 2 MT/hectare under farm conditions. Slender, fine and aromatic varieties attract considerable interest in BRRI, and three to four varieties, all with yields in excess of three MT/hectare, are under final stages of certification before release. With all this research and extension work, production of aromatic varieties is expected to increase considerably in the coming years only if markets are found for viable production and ensurance of profitability to the growers in comparison to competing crops.

BRRI scientists have ascertained that production of such rice is quite economic under rain-fed conditions, particularly in the Dinajpur and Chapai-Nawabgonj regions. The main difficulties are twofold: (a) true seeds, and (b) producer prices. The problem of certified seeds is a national problem, and in the case of aromatic varieties, it is acute. Farmer level prices are hardly encouraging for enhancing production. It was only in 1995 that the farmers received a good price of approximately Tk. 1,000 to Tk.1,200 per mound (37.324 kg) for these rice varieties. Interviews with farmers indicated that if a price of about Tk. 900 to Tk. 1000 per mound can be ensured, the production of aromatic rice could be significantly enhanced. Rough calculations indicated that at the export prices currently available in the EC and the USA, such local prices of paddy are quite feasible, if these fine and aromatic varieties of rice can be exported to overseas markets.

PROBLEMS OF PLENTY

The doubling of production, mostly due to introduction of HYVs and related technology, has generated marketable quantities of unprecedented magnitude. Even with large variations in gross production, the trend for production has been sustained at a positive level. The Bangladesh average yield of 2.7 MT/hectare is still very low compared to yields of 4 MT/hectare in Indonesia and over 6 MT/hectare in South Korea and Japan. It is quite possible to achieve substantial production increases by utilizing the necessary resources. It is also possible to continue to increase HYV planting areas, particularly in the Aman season.

Changed government policies of input market liberalization acted as the long awaited catalyst to spurt production. Thus, marketed volumes have increased six-fold in

a decade (Haggblade, 1994). By and large, over half of rice produced in Bangladesh is channeled through commercial markets.

While the technology of production has been adopted reasonably enough, the same cannot be said of the development of the market structure. The problem of enhanced production over a market ill equipped to handle such quantities has not been fully appreciated. Thus, a slight rise in production reduces producer prices at an alarming level. For example, in 1991-92 and 1996-97, the Chittagong FOB prices were about 30 percent below comparable Thai prices (Figure 3). Buffer stock operations by GOB proved inadequate to remedy the situation. Market development, including serious efforts to export rice, has never been on the reform agenda. The interventionist and forceful presence of the government, devised in an era of chronic shortage, may not be appropriate in a rice-surplus situation, though periodic shortages may still be experienced. The government has handed over some role to the private sector as part of a reform agenda. However, a redefining of the government's role, as well as appropriate policy packages to ensure incentive prices to the growers when production is expected to rise on a sustained basis, is the need of the hour.

INTERLUDE I — A Profile in Enterprise

We started calling him Mr. Exporter; a nickname created by the close social proximity that group travel imposes on the participants. We were on a sponsored study tour of Thailand and Vietnam to evaluate their rice markets and had to spend two weeks together. We called him Mr. Exporter because he looked the part, and talked incessantly on the prospects of export, from banana seedlings to puffed rice, and of all the implications and ramifications that those exports will exert on the economy of Bangladesh. He was untiring in asking questions to the various groups of rice exporters in Thailand and Vietnam. His eyes gleamed when he saw the most modern storage, upgrading and packaging facilities of a large rice exporting company in Thailand. "I wish we had those things in Bangladesh," he muttered, "I wish we had half of those things," he sighed. He was particularly interested to examine a laser operated 'Sortex' machine in action. That state of the art machine 'sorts' discolored grains from a stock of rice already graded by size and broken, and a pure white rice of same grain size emerges as the final output to eventually fetch premium prices in the international market. "That machine costs \$ 80,000 FOB Japanese port, and adding the costs of shipping, import duty, VAT etc and installation, and you easily can spend \$100,000 on this single machine," he said. And continuing, " that is an amount far exceeding total fixed costs of a medium size rice mill in North Bengal. But I use our own 'Sorter' machines," he joked ineffectually, " I employ a hundred women who use their "kulas" (bamboo winnower) to sort the rice I export, and their combined output is more than this costly machine," he concluded definitely. He can talk like that for hours on end, but to his own kind, it is music to their ears, for they are 'exporters.' They are a new breed of men, always looking for an opportunity, always looking for an advantage, for they live and survive in the pitiless environment of international market place, where, being minnows, they must survive by their wits alone,

for they have neither the money, nor the machines, nor the government subsidies to go about their business and earn the much needed foreign exchange for the country.

He started his career as a banker in a nationalized bank for agricultural development. There he earned valuable experience in agriculture, agricultural credit and agribusiness. As is common in a government owned institution, the pay was low, the hours long and there was neither recognition for a job well done nor censure for failure, though there were ample opportunities for petty corruption. None of these attracted him, and he left the bank in 1983. He started various types of small business, firstly in transport -- a minibus to be precise, and then, when it didn't work out well, a dental clinic with a dentist friend of his. He tried many ventures, import of chemicals, supply of raw material to private and government concerns, and took out an export license on a whim. He was short of cash doing all of these, so he took a partner, an old banker friend of his, who invested some money in the new venture. That was in 1987, another venture among many, on the tested principle of trying something new, if the old ones turn sour.

Not knowing where to start, he started writing to Bangladesh embassies in various countries offering something that no other exporter was offering at that time -- agriculture products. His agricultural bank experience came in handy; he knew the items, where they were found, how much did they cost, and all other vital information before any offer might be made to the prospective customer. He had the beginner's luck: he got an inquiry from Turkey, for banana seedlings under the Turkey-Bangladesh trade protocol. He negotiated successfully and eventually exported 10,000 seedlings to Turkey for \$4000, his first breakthrough. Meantime, his partner withdrew as he was posted out of Bangladesh, so he got another partner, a Non-Resident Bangladeshi living in the USA. His new partner was a Green Card holder who decided to expand his business in Bangladesh. He provided the most important input for an exporter, market information and also much needed liquidity. His partner invested heavily in the now booming property sector of Dhaka, leaving the export business pretty much to him.

A rough market survey by the non-resident partner indicated that there was a dormant demand for about 5,000 MT of super fine rice in the USA, mainly in the Bangladeshi ethnic market. Likely outlets for this product would be Bangladeshi-owned grocery stores in the US. There are reportedly 100,000 Bengalis living in New York City alone. So they started to contact the known Bangladeshi owned stores in all parts of US. He obtained his first letter of credit from Houston, Texas, for 40 MT of Chinigura aromatic rice. The first consignment of Chinigura was shipped at \$1,000/MT, a 45 percent premium over the highest Basmati prices from India and Pakistan. Bangladeshi Chinigura and Kalizira retail at \$2.5 per two pounds pack, a price beaten only by the special Chinese Imperial black rice at the unbelievable rate of \$25 per lb. The Chinese treat their Imperial as a medicine and an aphrodisiac, not rice per se. That makes Bangladeshi Chinigura and Kalizira the highest priced rice in the world.

That is how it started, in small 20 MT and 30 MT consignments, totaling no more than 100 MT average per year between 1992-97, for there were many difficulties of supply, regular orders, EC import levies and many other difficulties which beset any small export business. In the meantime, a few others also got in to the business and they formed an association of rice exporters with Mr. Exporter as the President. They are still a small association, with only about ten members. Their total export of super fine rice is about 200 MT a year, all by personal contacts to friends and relations in the US, and all for the ethnic market. They haven't been able to penetrate the mainstream market though they are trying -- their dream is to market their product through the chain stores and

supermarkets. That dream may not be far off. Mr. Exporter is already negotiating with a large US-based chain store that specializes in health food, especially rice and other exotic food grain. If they agree, the first order may be in the order of several thousand tons. In the meantime, his company deals with such items as mango pickles, local bakery-biscuits, traditional rice products such as puffed (muri) and flattened rice (chira), coconut shredder, stone grinder (shil-pata), special brass utensils (badna and garu), etc. All these are available in Bengali stores in the US for the homesick Bengalis to help them build a home away from home. He also supplies betel leaves to other exporters as well as himself exports some to Pakistan.

'But how do you survive on only about \$150,000 yearly turnover?' I asked him, "your yearly net profit couldn't be more than \$5,000 after deducting your partner's share of the profit." He smiled, "who says we, the exporters do our business just for money? Remember, we all have our other businesses, my partner has his real estate development, and I haven't given up my dental clinic. Export is our hobby and I can't say why I waste so much time and effort on it, which doesn't pay so well. I don't know really, may be that is because I correspond and talk to so many people around the world, or because of it, I meet people like you," he concluded. That got me; sure he doesn't make much money, but money isn't every thing, it is that intangible satisfaction of exporting the stone grinder and the coconut shredder, that must be it, or is it? While in Bangkok, I saw him earnestly negotiating with a Sri Lankan about the prospects of potato exports from Bangladesh. When we were in a tailoring shop in Bangkok, the tailor was saying that he exported made-to-measure suits to the US, retailed through his contact outlet in San Francisco. Mr. Exporter was taking an unusual interest in the details of the tailoring business. We were in a hurry to go some place and he went on keenly questioning the rather reluctant tailor, I wondered why.

It did not take me long to find out why. When I met him three weeks later in Dhaka, he told me gleefully, "You remember the tailor in Bangkok who was talking about made-to-measure suits export to the US?" "Well, yes" I said, "not finding the link, "what about it?" He was all smiles. "I have already arranged three sub-contractors to stitch suits, made-to-measure and I am looking for the outlets in the US now, you remember, to market inexpensive made-to-measure suits. And I have already invested \$2,000 to import the best suiting materials from England on a trial basis, and I shall get the duty draw back presently, before regular back-to-back L/Cs can be established. And the breakeven CM -- the garment manufacturer's jargon for the tailoring charges -- is only \$12 for a two piece basic suit..." He was irrepressible. Exporting the made-to-measure suits to the US tailoring outlets, at only \$ 12 per suit, plus the cost of material and postage. It is as good as any you will find in Bangkok or Singapore. The measurements can be faxed or e-mailed... I could imagine his chain of thought, his sales pitch, which he will apply mercilessly without fear or favor to any one who is within earshot, whether that unfortunate recipient likes it or not is of no consequence to him. He is truly irrepressible, incorrigible, indefatigable, indefectible, definitely non-exportable, and at most times, unbearable. He is Mr. Exporter indeed -- a Profile in Enterprise.

3. EXPORT POTENTIALS

THE GLOBAL MARKET

Of the ten largest rice producers of the world, eight are Asian countries. Brazil and the US are the other two. Most Asian countries produce rice for their own domestic consumption. Compared to other major food grain, rice is thus thinly traded in the international market. Over the period 1975–90, world rice production grew at a rate of 2.67 percent, compared to a 2.57 percent growth achieved in international rice trade. That was perhaps possible as growth rates varied among the producer countries. It is to be noted that rate of growth in paddy production in Bangladesh is exceeded only by Vietnam as the following table indicates.

Table 3 — Annual Growth Rate in Percentage of Paddy Production

Period	Thailand	USA	Pakistan	Vietnam	Myanmar	Bangladesh
1975-79	2.07	1.94	5.9	-0.38	3.75	1.02
1980-84	3.68	-7.09	0.93	7.45	1.46	1.66
1985-90	0.06	3.83	0.34	3.93	-0.65	4.71

Source: Francesco Goletti et al., 1995

Highest yields are achieved by modern varieties with controlled irrigation and chemical fertilizers. With supplementary irrigation, yields can be enhanced under rain-fed conditions and land thus released from rice farming can be used for higher value cash crops. With few exceptions, and Bangladesh is among them, irrigation water is scarce in most producer countries. This has important implications for the long-term global scenario when water will be a most scarce resource in the near future. This has important repercussions for global rice production, as shortfalls may soon be experienced owing mainly to shortage of irrigation water. Thus, the period of glut in most of Asia is certainly temporary. In practical terms, a production plateau has already been reached over much of major Asian producer countries using current technology. Though new technology is being developed in the form of drought resistant and even higher yielding true dwarf varieties at IRRI, it is expected to take 10-15 years to reach field level

application in other Asian countries. Thus, the next production spurt in Asia is not expected to take off before the year 2015. Recent figures for top producers, importers and exporters are given below:

Table 4 — World Rice Production, Import and Export, 1995-97 (in thousand MT)

Sl. No.	Country/ Year	Production			Import			Export		
		1995	1996	1997	1995	1996	1997	1995	1996	1997
1	China	175930	185214	195100	1964	850	500	32	265	900
2	India	121752	119442	120822	-	-	-	4201	3556	1750
3	Indonesia	49743	51100	48500	3011	1233	800	-	-	-
4	Bangladesh	25252	26533	27633	1566	655	100	-	-	-
5	Vietnam	24615	26792	27273	-	-	-	2308	3040	3500
6	Thailand	21400	21800	20758	-	-	-	5931	5280	5275
7	Burma	16000	17000	15517	-	-	-	645	265	15
8	Japan	14977	13435	12930	29	445	600	-	-	-
9	Brazil	10885	10050	9747	987	987	1000	-	-	-
10	USA	8972	7887	7571	221	268	350	3073	2624	2300

Source: United States Department of Agriculture (USDA) Web Page

Of the ten largest rice producing countries, only six are exporters, whereas four are net importers.

CHARACTERISTICS OF THE MARKET

Rice is not a homogenous commodity and unlike wheat, various varieties are traded in the international market. Not only is it very difficult to compare the various varieties from different countries; the processing technique also has significance upon the milled grain's characteristics. Intrinsicly, all rice is classified as long, medium and short. All rice is processed as white or raw rice and parboiled rice. Then there is

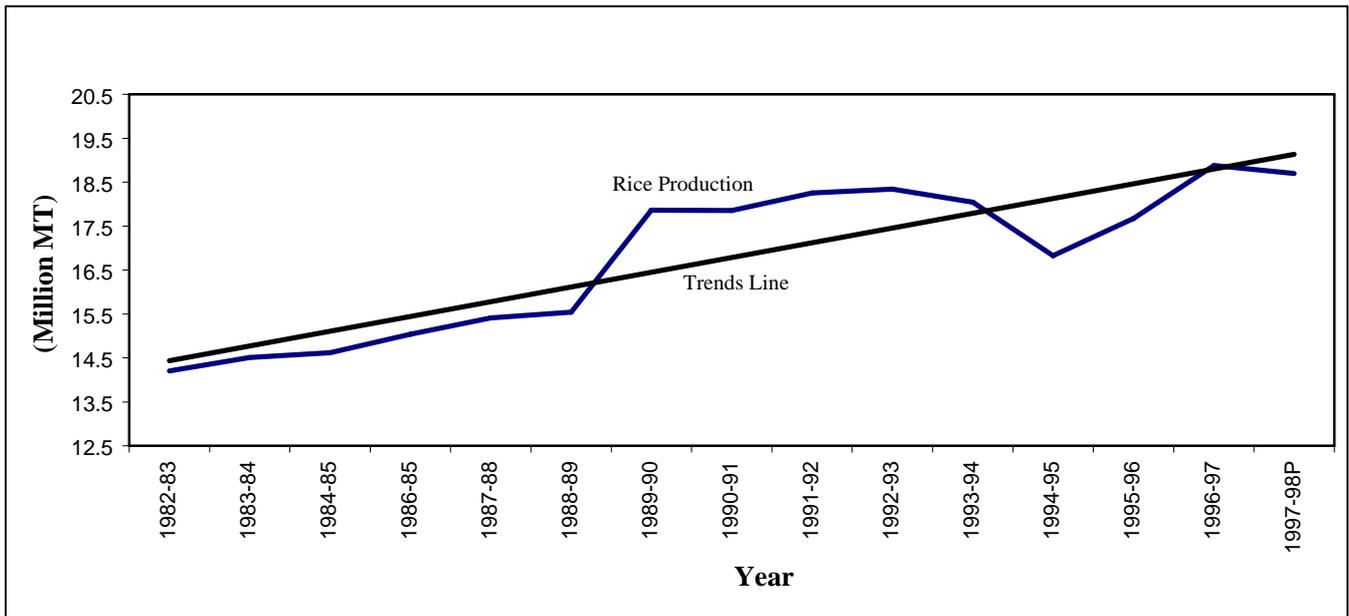
specialty and aromatic rice, termed gourmet rice in commerce, which is invariably processed as raw or white rice as parboiling destroys the aroma.

Thailand, the largest exporter of rice, exports mainly raw rice and also exports about a million tons of parboiled rice, mainly to African countries. Vietnam, the second largest exporter, exports almost all rice as white milled and practically has no facilities for parboiling. India exports mainly fine varieties of Basmati and also some parboiled rice to Bangladesh and to some African countries. The domestic consumption of rice in the US is rising due to the increase in the number of people of Asian origin, as well as for health reasons among the mainstream population.

The export growth of 4.57 percent for major rice exporting countries exceeds the overall growth of 2.57 percent achieved in world export over the corresponding period. The market share of the first five exporters has increased from 57.3 percent in 1975-79 to 71.1 percent in 1985-90. Therefore, this recent scenario unmistakably indicates that the export market is rising rapidly. In the medium to long run, the volume of rice trade in the international market is likely to witness higher prices than that at which it is traded now.

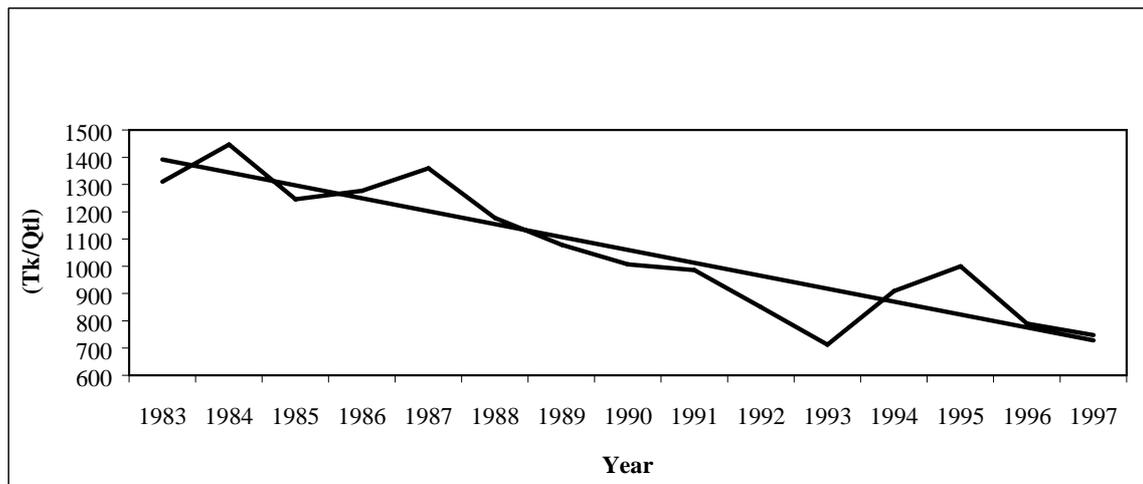
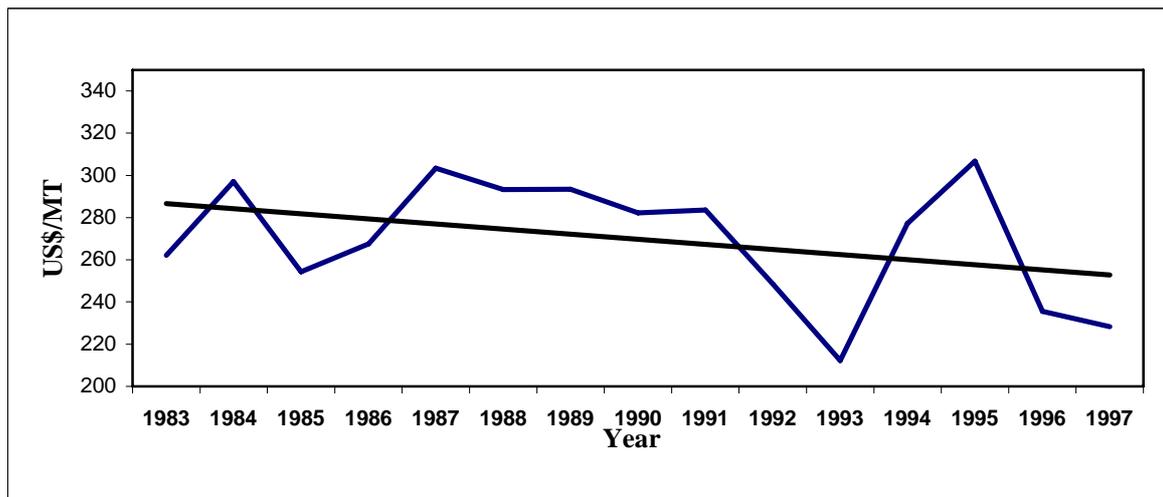
PROSPECTS FOR BANGLADESH

In the preceding discussion on the production of rice, it was seen that Bangladesh has not yet achieved even a fraction of her potential yield. Enhancement of yield is a difficult proposition. It involves the basic increase of irrigation facilities, availability of pure seeds at the farmers' level, easy access to fertilizers, provision of rural electricity and diesel in season and such other inputs and creation of an enabling market environment to encourage production. High productivity implies agro-economically correct cultural practices in addition to physical inputs, which puts a premium on education, particularly dissemination of scientific agricultural knowledge at the grower level.

Figure 1 — Total Production of Rice With Trends in Bangladesh

Source: Compiled from BBS

None of these are unknown factors. All are within the reach of our agricultural system, including government and private agencies engaged in supply of agricultural machinery and input. Even with the numerous production constraints, rice production in Bangladesh continued to exhibit upward trends (Figure 1). Though natural disasters and many other factors like low rice prices hampered production growth, the trend never went downward. The real price of rice continued to slide from 1983 onwards (Figure 2). More remarkably, even the nominal price of rice has gone down in dollar terms during the same period and was much below the trend line in 1996–97. However, fluctuations in percentage change in production are high. After a high positive movement during 1989–90, total rice production went down, only to climb back up again in 1996–97 (Figure 1). During this period, prices went down precipitously both in real and dollar terms (Figure 2).

Figure 2 — National Average Real Price of Rice With Trends**National Average Rice Price in US\$ With Trends**

To fully appreciate the price situation, a rudimentary understanding of the available grades of rice in Bangladesh is necessary, though a full description will be given in a later chapter. Bangladesh has two distinct seasons, the Aman and the Boro. In the Aman season, traditional varieties still predominate which are basically long grain and of fine Indica varieties. For comparison of export parity prices, two standard types of Aman, namely Aman Medium, the traditional variety, and Aman HYV, were taken. For Boro, only the prices for HYV (the predominant variety) were tracked. A comparison was made with Aman medium with Thai parboiled five percent broken was made. Both Aman HYV and Boro HYV prices were compared to Thai parboiled 15 percent broken.

In all cases, comparisons with Indian coarse rice FOB Calcutta were made. A somewhat detailed analysis is called for in this regard to appreciate the competitiveness of the rice from the Dinajpur and Bogra regions since this is the best available quality for computation of export parity prices. In the case of Aman medium, the prices were below Thai five percent broken high quality rice from December, 1996, and February, 1997, that is the Aman season of 1996/97. Aman HYV also showed similar results. Boro HYV, when compared to low priced Thai 15 percent broken, showed starting results. It almost always remained below Thai FOB prices. Our export parity prices are not competitive in comparison with India, but showed marginal advantage in the 1997 Boro season. The Indian prices are remarkable in their stability, whereas large fluctuations including percentage changes occurred in the Bangladesh prices, indicating poor market conditions and fluctuating production. Mention must be made here that nominal surplus and low prices do not automatically ensure exports. To ensure continued growth, adequate producer incentives are considered essential. It is beyond the purview of this paper to elaborate on the importance of fair prices to the producer and its impact on the rural economy, particularly on employment of agricultural labor and their income generation. Any producer price below the export parity price (fair price) is a direct income transfer from the producer to the consumer. So, a question of social equity may also be addressed in an environment of low rice price regimes, besides its adverse impact on productivity.

Given that the knotty issues of production enhancement are addressed adequately, markets are to be found for the low quality parboiled rice. A comparison of export parity prices for this rice with low priced 15 percent broken parboiled Thai rice (non-sortexed) is made for the aforementioned seasons.

Table 5 — Comparison of Chittagong FOB of Boro HYV with Thai (15 Percent Broken, Parboiled) Rice with Percentage Difference (US \$/MT)

Month & Year	FOB Chittagong	FOB Bangkok	Percentage Difference
May 1996	291	312	7 percent
June 1996	286	325	14 percent
July 1996	296	335	13 percent
August 1996	276	314	14 percent
May 1997	261	279	7 percent
June 1997	237	290	22 percent
July 1997	236	272	15 percent
August 1997	237	268	13 percent

Bangladesh produced HYV parboiled rice is generally considered a low priced, low-grade product. However, such rice is highly prized in many African countries and in Sri Lanka, Maldives and places where communities of Indian origin live. A brief look at the African market vis-à-vis Thai rice exports may explain the situation.

Table 6 — Thai Rice Exports to Selected African Countries

Country	1996	1997	1998 (Jan-Mar)
Benin	90,420	50,600	2,070
Cameroon	880	22,910	20
Comoros Island	11,300	7,960	2,040
Gabon	29,020	17,150	4,170
Gambia	12,000	17,150	3,000
Ivory Coast	26,580	16,670	18,890
Mauritania	99,730	114,200	1,600
Mozambique	19,150	6,170	9,200
Nigeria	339,860	584,570	98,230
Réunion	57,880	43,850	5,190
Senegal	135,420	90,500	49,400
Togo	29,330	132,320	67,800
Total	851,570	1,053,956	261,610

Source: Thai Board of Trade 1998

Though there are other large importers in Africa like South Africa and Libya, they only import high quality products. Discussions with leading Thai exporters indicated that the majority of African buyers only import parboiled coarse rice; broken percentage is of no consequence to them. A ready market of over one million MT exists where the prime consideration is of price. This market should be mainly targeted for Bangladesh HYV varieties of Boro. Aman HYV also should find ready markets if efforts are made and enough surplus can be generated domestically.

The excellent prospects of fine and aromatic varieties will be covered separately. Price and quality wise, a competitive situation exists for Bangladesh should necessary infrastructure be built and serious efforts made towards export. It should not be of prime concern whether or not our rice prices are not competitive price wise vis-à-vis Indian

coarse rice, since grade and price are not the only considerations. Indian prices are often lower than Thai prices, sometimes by as much as by \$100 per MT. If price were the only consideration, Indian exports would have overtaken Thailand's exports, particularly in Africa, where large Indian communities reside. India exported a total of 1.75 million MT of rice in 1997, out of which 0.5 million MT was Basmati. Subtracting that, India exported 1.2 million MT of rice, compared to 5.5 million MT of rice exports from Thailand. Infrastructure, reliability, reputation, information and above all an enabling environment are necessary for successful export, without which mere grade and price are irrelevant elements in international commerce.

4. RATIONALE FOR EXPORT

PRICE STABILIZATION AND PRODUCER INCENTIVES

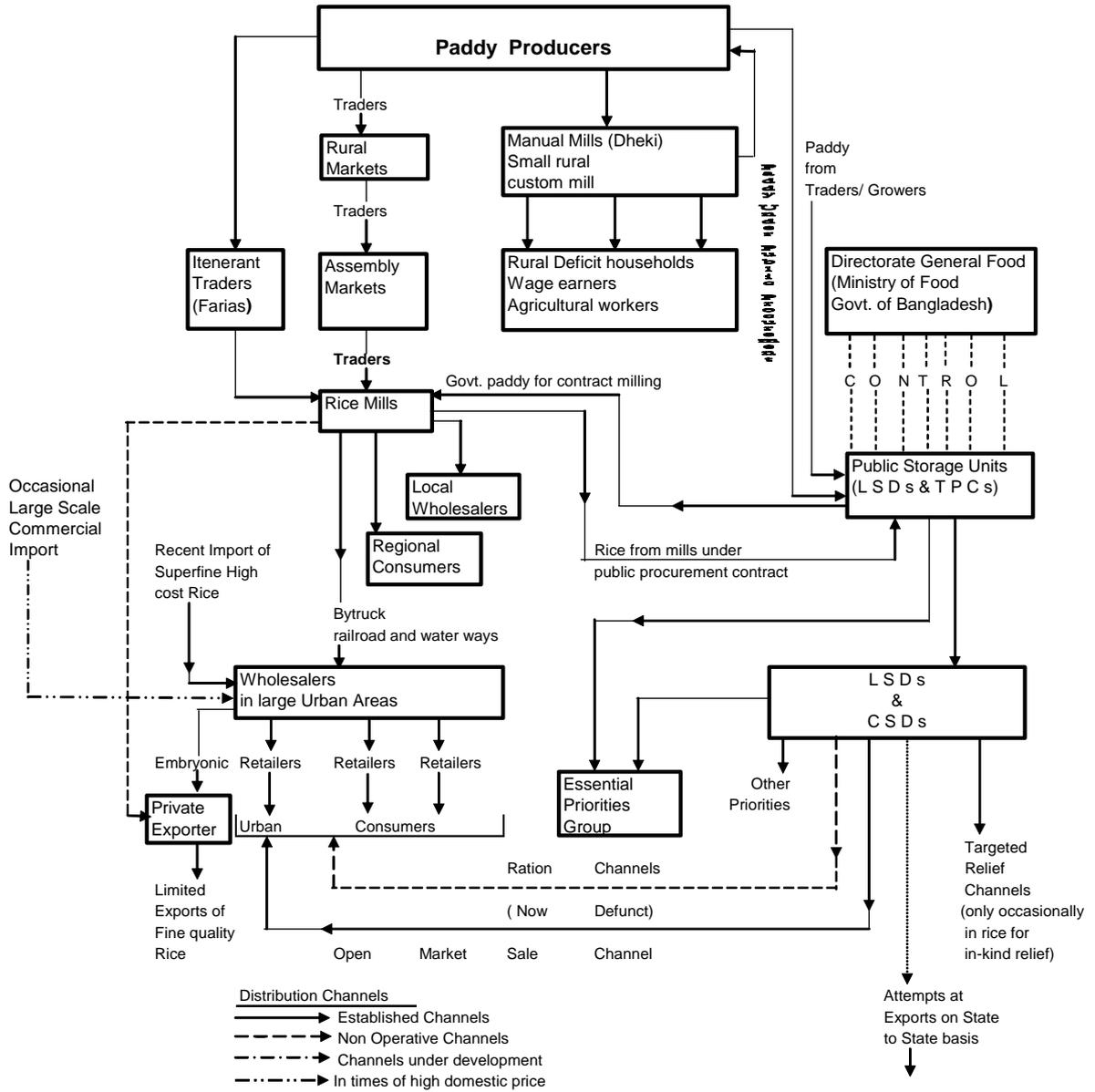
In an environment of enhanced production and new self-sufficiency in rice, stabilizing prices is a difficult task, especially in years of bumper production. To sustain growth in production, price incentive is a pre-requisite. For years of low production, it is quite easy for the government as well as the private sector to import the necessary grain, provided trade barriers are lifted. The recent case of the Aman season is noteworthy. With the shortfall in production, prices started rising, prompting the private sector to import rice mostly from India. Under market friendly policies and with little government intervention, the market stabilized with about a total of one million MT of private import. The average prices never went above the import parity price, exhibiting efficacy of a trade based stabilizing policy.

However, stabilizing producer prices in years of high production is a different ball game. Traditionally, the government attempts to stabilize prices through procurement, which historically and truly is an instrument to build up stock for the government PFDS. Here a distinction must be made between programs to improve the fiscal and administrative efficiency of government procurement and the use of the very instrument as a tool to stabilize prices in years of high production. Adaptation of open tender, combined with low fixed price (true floor price), is considered an excellent tool to effect budgetary efficiency. But these policies are not useful in stabilizing prices with good harvests over consecutive of seasons. Those policies will entail building up a massive buffer stock with all the problems of stock deterioration and consequent losses. More importantly, such stock will require regular rotation, which in the past (1995 for example) compelled the government to release the stocks in an already glutted market, putting tremendous downward pressure on prices.

Diagram 1 — Rice Marketing in Bangladesh

Diagram - 1

Rice Marketing in Bangladesh



Source : Author's observation

Adequate price at the producer level is a prerequisite for continued production growth. It is recognized that regression analysis is required to unravel the correlation between price levels and the next season's production (Boro prices on Aman Production and Aman prices on Boro Production). It may be an important agenda for future research. Some initial analysis indicates a distinct impact of prices on production, except in the abnormal years of flood in 1988/89. It adds strength to the marketers' belief and intuition that rice production in Bangladesh in the 1990s is indeed price sensitive. Price sensitivity is also an indication of a maturing agricultural sector as it is expected to progress from subsistence to commercialization and ultimately to globalization when international prices will be a major factor in production-level decision-making.

EXPORT AS A TOOL FOR PRICE STABILIZATION

In times of high prices due to production shortfalls or natural disaster, food grain imported either by GOB or the private sector can stabilize prices. In this instance, stabilization means restricting the upward movement of prices and then the gradual lowering of prices by enhancing aggregate supply. In times of high production, the aggregate supply increases, creating a mismatch of supply and demand and puts further downward pressure on prices. This phenomenon is particularly noticeable at harvest times when the capacity of small farmers to delay the sale of their produce is very little indeed. This situation was exacerbated by the introduction and rapid extension of HYVs, particularly in the Boro season, as these varieties all mature almost at the same time and the harvesting period is condensed into a few short weeks.

In such circumstances, export is a most viable tool to stabilize producer prices. Export takes off excess quantities, creates internal demand and increases internal prices. For example in 1995, 1996 and 1997, internal Boro prices went below export parity price. Later, due to draught and a reduced Aman production, prices went up above import parity price. Though no export took place, theoretically it was possible to stabilize prices by export till the prices had risen above the level when no export would take place. Therefore, export will stabilize prices from below export parity to the maximum import parity level. As the price moves above export parity, no export will take place. Export in such circumstances will stabilize prices at no cost to the public exchequer and will earn

valuable foreign exchange for the country.

Rice – Wheat Swap

This is a popular method of evaluating the comparative advantage of rice exports (Aziz, 1998, Goletti, 1996). This is relevant because Bangladesh is an importer of wheat and will continue to be so, as the demand for wheat is increasing due to urbanization and change of food habit, particularly of affluent people. At the same time, wheat production has perhaps reached optimal levels at about 1.5 million MT and is not likely to rise much further. Rice exporting Asian countries, like Thailand and Vietnam, practically import all their wheat requirements. It can also be argued that wheat for rice is not an exchange of an inferior quality product for a superior quality food item. Wheat is, in fact, superior in nutritional value, particularly in protein content, which is practically non-existent in well-milled rice.

In the case of fine quality rice, the advantages are more apparent. By export of fine quality rice, the internal prices are likely to go up, which will affect mainly the affluent section of the population. The average export FOB price of a ton of Kalizira rice is about \$900/ MT. That is equivalent to 5.6 MT of wheat at the average Cost and Freight price of \$160/ MT. At an average yield of 1.5 MT of paddy (equivalent to 0.75 MT of milled rice at a 50 percent milling ratio), this figure translates to 4.2 MT of wheat. Bangladesh average wheat yields are only 2.05 MT/hectare (0.83 MT/acre). Therefore, by exporting fine rice, it is possible to import double the quantity of wheat than it is possible to grow domestically. One MT of fine rice export means foreign exchange earnings to finance import of 5.6 MT of wheat.

The swap ratios are not that high for HYV varieties. At an average price of \$270/MT, one MT of HYV rice will earn foreign exchange to import approximately 1.7 MT of wheat. At the same time, the import of additional wheat made possible by export earnings of rice will add to the aggregate supply of total food grain, thereby improving the nutritional status of the poor who will tend to consume more of the cheaper grain.

The Export - Import Windows

Opening of the export window by pro-active, pro-market policies of the

government will allow exports in time of prices below export parity for coarse varieties of rice. Fine aromatic and specialty rice varieties are different, as they may always be exported, provided markets are developed. Such exports of low priced rice will stabilize prices to the level of export parity. No export will take place at any price below export parity. This is an automatic safety valve which will not allow exports above certain levels determined by international prices and the value that the global market place puts on Bangladeshi rice varieties and grades.

It has been argued that exports will raise prices to higher levels than consumers can afford. If price does move above import parity (CIF prices of cheapest rice), then the import window will open and domestic prices will come down till import is no longer profitable or feasible. In other words, the domestic price will remain within the narrow band of export-import parity prices. Between 1994 and 1997, monthly import parity prices ranged from Tk.11.3/kg to Tk.17.3/kg, while export parity varied from Tk. 7.6/kg to Tk. 13.6/kg. Ignoring fluctuating world prices, the band (CIF-FOB) is only about Tk.3.9/kg (Dorosh and del Ninno, 1998). Thus, if both import and export were to take place, prices would have moved no more than Tk.3.9/kg during 1994-97.

Trade Advantages

Besides these narrow technical considerations, any trading activity generates employment and accrues benefits to multiple sectors of the economy. Trade also adds to the national exchequer even if no export/import duty is applicable to the traded item in terms of income tax and other taxes and levies. Any export of rice will bring in foreign exchange. It will generate revenue for transporters, insurance companies, inspection agencies, port authorities, shippers, exporters and a multiple of other agencies. Even if no direct profit is made, an exporter definitely will execute trade at breakeven prices. It is because he at least recovers his fixed costs and overhead at those prices. Export of any high volume, relatively low priced agricultural commodity adds further benefit to labor and the transporters. Any export, particularly of an agricultural commodity, has multiplier-effect beneficial ramifications for the entire economy in general and the rural economy in particular.

INTERLUDE II — Master of the Game

I first met him five years ago. He has just joined the second largest rice exporting company in Thailand as the assistant export manager. After his MBA from the Asian Institute of Technology, he obtained a diploma in English language to prepare himself for the job of international trade. He has to buy and sell, buy rice from the local suppliers and millers and sell the rice to foreign buyers after upgrading to the exacting standards of his company. After all costs, he has to post a profit for his company. With varied qualities and fluctuating local prices, it is a hard enough job to determine costs, which, if overestimated, will make successful sales impossible, and if underestimated, will cause losses. Add to that the volatility of international rice market and you have a tight rope scenario where it is difficult to keep balance let alone cross safely. "How do you sell in advance when you do not know what the prices will be two months from now?" I asked him. He smiled, "Well, no one can predict prices, and we make a guess. Sometimes we gain and sometime we lose. It all part of the game." He spoke in excellent English with an American accent, " I guess we make more correct guesses than the wrong ones," he added hastily. They also have reasonably large buffer stock to tide over the fluctuations, about 20 percent of their turnover. That still leaves them wide open to speculative price bubbles. If one has a large order and does not have the stock in hand while these wild price swings are taking place, either the order cannot be honored or the exporter will be fired. The stakes are high, the game deadly and the tension must be at the breaking point, especially if you are playing with other people's - your company money- and you also have a career to think about. I wished him well. Courteous as ever, he opened the door for me and escorted me up to the elevator from the 28 story where his sales office was located.

That was five years ago. I was again in Bangkok and tried to contact Mr. B. C.C., the export manager over the telephone. "I am sorry, sir, there is no export manager by that name with us," came the tone of the operator, "the current export manager is Mr. Vudhi. Would you like to talk to him?" The inevitable must have happened, I thought, he must have lost his job, or may even be in jail. "Yes, but do you have any one named Mr. B... in your Company who was your export manager a few years ago?" I asked hopefully. "We have one general manager by that name. He is presently out of Bangkok." said the operator, "I will connect you to Mr. Vudhi now," she said. Intrigued, I made an appointment with Mr. Vudhi and thought he is too young to be a general manager of a big company, and one couldn't be a GM within two years service and that B must be another person.

The interview with Mr. Vudhi went very well indeed. The company has changed the designation of export manager to trader because export is largely trade, both internally and internationally. The company has flourished beyond imagination. Their export processing facilities are by far the best in the world, entirely suiting the internal trade conditions of Thailand. They have even installed the most modern under cover silo storage for finished rice. By blowing cold, refrigerated air through the polished rice, both the quality and standards may be maintained for extended periods. It was all befitting the largest rice exporter in the world with last years exports exceeding 700,000 MT that is over 15 percent of total Thai exports, and there are 147 registered Thai rice exporting companies. The recent exchange rate fluctuations of Thai Bath may have shocked the economy, but it had brought in windfall profits to the company beyond their widest dreams. The Bath started to fall and went down to 55/\$ from about 26/\$ in three months. For a company, which receives revolving letters of credit for up to 60 percent of their annual export, it meant doubled equivalent local currency for the same amount of dollars. The local rice prices did not go up much, so the profit margin must have gone up by hundreds of percent.

What about my friend the export manager, I wondered. "Do you know anything about Mr. B?" I asked Mr. Vudhi, the trader, and continued, "he was export manager about five years ago." "He is our general manager, now, in charge of all commercial operations" he said, "he is outside

Bangkok on a visit to our manufacturing plants. I remembered the company is in a big way in agri-processing as well. "How is that Mr. B has become a general manager in such a short time?" I asked Mr. Vudhi in wonderment, "how has he superseded so many senior managers". Well the story that I heard started in 1994 when Mr. B contracted to sell 130,000 MT of high quality rice to the government of Iran at \$305/MT. The world rice prices had risen to record levels due to Japanese crop failure, and the Japanese came in to market looking for the highest quality rice; price was of no consideration to them. As one witty rice trader commented, " They have the yen for it! " Well, Mr. B thought otherwise, he had a hunch that Thai rice prices were about to fall as Japanese orders would taper off and the Thai exporters would be left with a lot of excess rice with no immediate orders. That would create a temporary glut and the prices would fall, he was sure of that. He agonized a few sleepless nights and reduced his expectations to writing and put them up to his Board. In the easy informality of a Thai company, it is possible to approach a Director by even a junior executive if the matter is urgent enough. Well, the Board examined his data and analysis carefully, interviewed him closely, and once satisfied, gave him the green signal, to go ahead and execute the trade in the manner he deemed fit. " The prices may move in another direction", he told the wise old men, as if they didn't know, " and if they do, we will have to suffer terrible losses. It is a gamble, after all any price prediction is a gamble," he finally told them gloomily.

He held off buying any rice for long two months. The prices fluctuated, but the trends were downward. When he finally started buying, the price was \$25 less than two months earlier. A huge gamble had finally paid off. When the accounts were drawn after the deal was finally over and the last consignment of the Irani order was safely on board the last vessel, he had made an additional profit of \$3,500,000 for his company." " No one can predict prices even one month ahead" he kept saying, "it was always a gamble, which came good, which could easily have gone the other way round." But he could not stop the celebrations, for he was awarded a special bonus of 5 percent of the extra profit (that came to \$175,000 cash) and immediate promotion to the exalting position of general manager.

Finally I got him on the phone and congratulated him on his success. He was modest as ever. " No one can predict prices," he reiterated, "it was just a gamble that paid off." That may be so, but he like any other master speculator has the unique ability to correlate all factors, evaluate the risk versus gain ratios, look to the critical factors still in the future, and come to a decision that the events will prove right in majority of cases. To do so, he must know all the rules of the game, for, in the wilds of the free market place, not to know the rules of the game is the cardinal sin, in fact, there is no other sin in there. And then, he has to be a master of the game to break the rules, for to be in an open position without adequate hedging is too dangerous a proposition for the ordinary mortals. Only the reckless and the masters play such games, and I shall give you one guess who gets wiped out. Mr. B did indeed play for high stakes, his career, his job, and his Company money, everything was on the line; and he won, for, he is surely a Master of the Game.

5. THE TECHNICAL ISSUES

PROCESSING, STORAGE AND TRANSPORTATION

Most of internationally traded rice is white milled or raw rice. This means no pre-milling processing is needed before milling, whereas most rice in Bangladesh is parboiled. A short description of the parboiling, drying and milling process is described below.

Parboiling

Parboiling is a hydro-thermal process in which paddy is soaked in cold or hot water and then steamed with saturated steam to gelatinize the starch kernels. Such rice is a staple in Bangladesh, India, Sri Lanka, Nepal, Nigeria, West Africa and in regions where large communities of Indian origin reside, like in Malagasi, Surinam and Fiji. It is becoming popular as a process known as pre-cooking in USA and Italy. The parboiling process as practiced in Bangladesh is of two types: traditional and modern. Modern methods are only practiced in so-called automatic mills. Most rice in Bangladesh is parboiled by traditional method. Because of such variables as duration of soaking time and variations of degree of steaming, it is very difficult to produce large quantities of parboiled rice of uniform grade. All parboiled rice exported from Thailand is processed by the modern method of hot soaking and medium pressure (about 100 PSI) steam, which renders a light amber color to the milled rice.

Drying

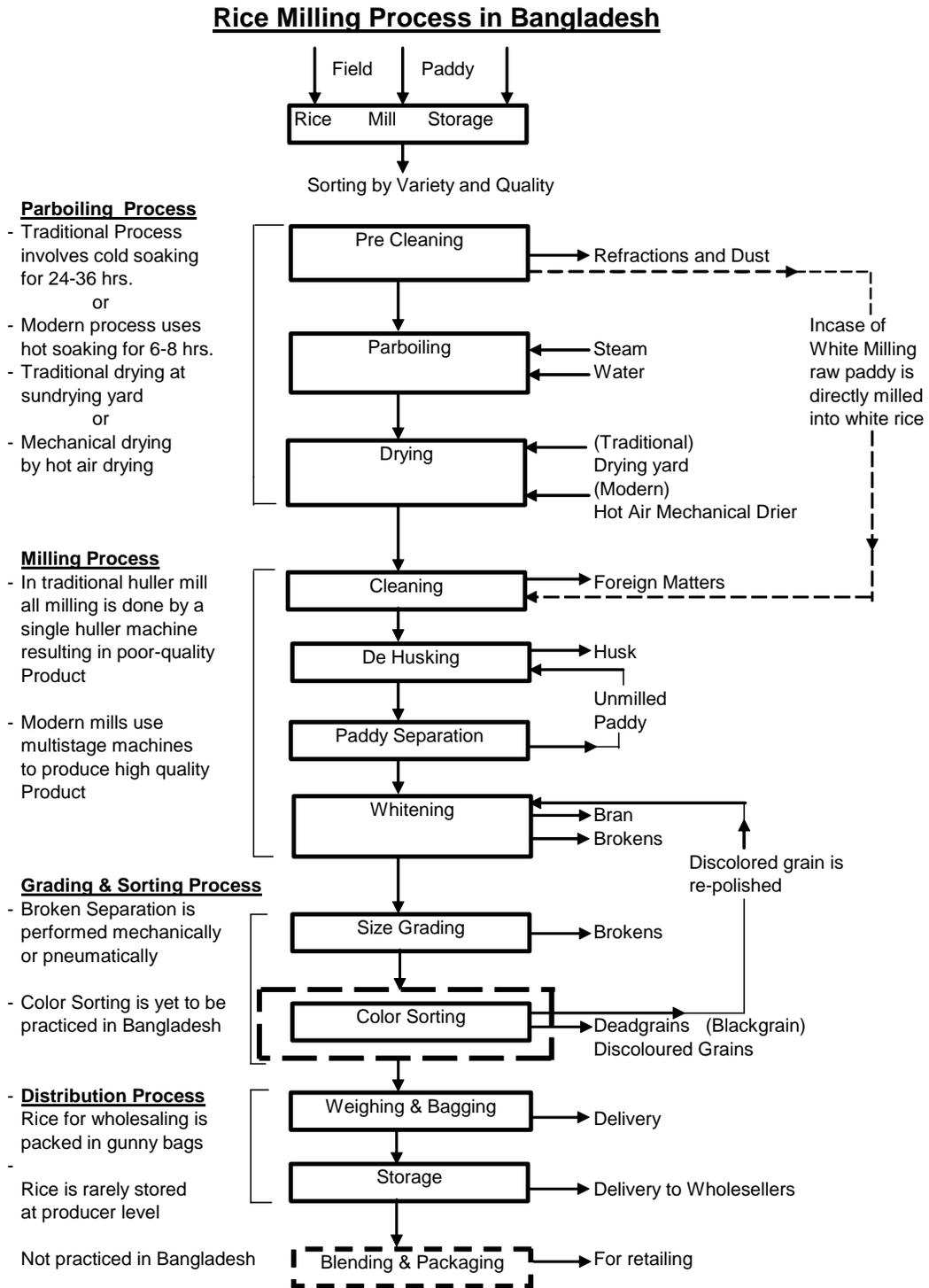
Drying is the process of moisture removal from the grain to prepare the grain for the milling process. Paddy is harvested with high moisture levels of up to 25 percent which must be dried to 14 percent or below for milling. Most paddy in Bangladesh is sun dried, as use of mechanical driers is still limited to a few large automatic mills only. If paddy is dried too quickly, internal tension will induce fissures, and micro cracks will

develop, which will result in much broken in the milling process. Paddy is thus tempered in between drying periods to equalize the moisture within the grain and thereby remove internal tension. Mechanical drying is universally practiced in Thailand and Vietnam. To be most effective, paddy should be cleaned after harvesting and then dried uniformly to 14 percent moisture or below, to reduce broken. Parboiled rice with very high moisture needs two to four days of sun drying or high temperature (up to 90⁰ C) in mechanical driers to remove the excess moisture.

Milling

Milling is the last part of the process of converting paddy into rice. It consists of a number of distinct operations: clearing, dehusking, husk separation, paddy separation, bran removal in stages, polishing, size grading and as an optional and modern process, color sorting. There are auxiliary functions of conveying, packing, weighing, etc., which are also part of the milling process to be accomplished either manually or mechanically. In Bangladesh, there are mainly two types of mill machinery: single stage huller and modern multistage mill using rubber roller, which reduces the broken percentages. For milling raw rice, rubber roll hullers are most useful as steel hullers produce unacceptable percentage of broken. Size grading removes small size grains and broken rice of design size and up-grades the rice to a single uniform size. Color sorters are the latest machinery used in milling process to remove black or discolored grains to add value to the finished products. It is an expensive machine (a 1 ton/hour capacity Japanese sorter will cost \$80,000 approx. C& F) which is universally used in export quality processing in Thailand and Vietnam. It is not yet used in Bangladesh. Therefore, no color-sorted rice is available in Bangladesh. Though it is not very important for parboiled rice, color sorting is essential for white milled rice to achieve export grades. Aromatic rice exported from Bangladesh is upgraded by removing black and discolored grain manually by labor. Such

Diagram 2 — The Rice Milling Process in Bangladesh



Source : Author's Observation

process is laborious and slow, and will not be conducive for processing large quantities for export.

Storage

While paddy is resistant to storage conditions, milled rice is prone to deterioration of quality unless stored under exacting conditions. Any moisture, damp or lack of ventilation will damage the grain, which becomes rancid and will ultimately be unfit for human consumption. Milled rice is also more prone to insect attack than paddy, which is protected naturally by the hard husk. Storage of milled rice must be in moisture-proof and damp-proof storage go-downs, the bags stacked on wooden dunnage to stop moisture migration. The store should be well ventilated with high roof so that the stock is protected from large variation of temperature. Even under best conditions, milled rice is prone to deterioration because of the hygroscopic nature of the grain. Under tropical conditions, milled rice cannot be safely stored for any time over six months in conventional storage. Bulk storage with adequate air movement through the grain offers a solution. In summer, high ambient temperature and relative humidity precludes pneumatic blowing of ambient air as moisture migration will take place. The ideal solution, of course, is to blow refrigerated air with low relative humidity (removal of moisture from air before blowing) through the bulk of stored rice. Such a solution is very expensive in terms of capital as well as in operating costs. Exporting companies in Thailand have installed such storage units to hold part of their stock in prime conditions. It is not surprising that Thai rice fetches premium prices because of its high quality. For Bangladesh, the practical solution is to export current crops which should never be stored in conventional storage for over three months; otherwise, loss of quality is likely to occur, with consequent loss of export price.

QUALITY AND STANDARDS

Rice is not a homogeneous commodity, though efforts have been made to arrive at uniform standard grades for international trade. It is absolutely essential that internationally acceptable grades, standards and mechanisms are introduced, ensured and enforced, before any large-scale export may take place.

Bangladesh national standards are determined by the Bangladesh Standard and Testing Institute (BSTI), which has established specifications for milled rice (PDS 952:1981). These standards are outdated and do not conform to modern standards as depicted by Thailand national standard B.E 2540. They have classified all exportable rice as (a) white rice, (b) cargo rice, (c) white glutinous rice, and (d) parboiled rice. Each type of rice is now graded in a number of grades, that is, white rice in 13 grades and parboiled rice under 9 grades. It is of utmost importance that discriminating types and grade must be introduced for our rice without any delay. In this respect, Thailand BOT grades and standards as specified by the United States Department of Agriculture (USDA) may be used as models.

The confusion of grades may be illustrated by one example only. Recently, import tenders by Ministry of Food specified white rice with 20 percent broken under the erroneous belief that rice with higher broken is cheaper. Thailand, the largest exporter in the world, has 15 percent broken and 25 percent broken grades in white rice. So to compete in the MOF tender, the exporters reported, they either have to add or remove five percent additional broken to their standard grades. Both operations will cost more to prepare. It is, therefore, an urgent need to conform to international grades not only for export but also for import.

It is not just enough to formulate and propagate grades and standards. They may be enforced also for domestic consumer protection. Even in the US, USDA enforces grades and standards on all agricultural products and other authorities enforce national standards on all food items. It may be appreciated that it is also essential to regulate domestic market; only then can standardization of export grades be possible. Standard grades encourage improvement in production and marketing and thus enhance efficiency. At present, there is no mechanism to regulate and enforce standard specifications on the most important food item in the country, rice. This is absolutely essential for the

development of export.

RICE VARIETIES AND CLASSIFICATIONS

Botanically, rice is a grass belonging to the genus *Oryza* Linn, of which two species are cultivated, *O. Sativa* Linn and *O. Glaberrima* Steud. The latter variety, a West African species, is commercially unimportant. All rice in Asia belongs to the *O. Stiva* species and is divided into four important subspecies, namely, (a) *Indica*, (b) *Japonica*, (c) *Brevindica*, and (d) *Brevis* Gustchin (Rice: Grist, 1954). These sativa subspecies are mainly divided into two main varieties: hard starchy grain and sticky glutinous types. Glutinous rice is produced and consumed in Japan, Korea, Manchuria and parts of Indochina. They are commercially grown in Australia and Thailand for export mainly to Japan. Non-glutinous rice of the main subspecies *Indica* and *Japonica* (originating in India and Japan respectively) have been classified by distinctive points as: (a) Slender grained, (b) Long-grained, and (c) Short-grained. Each of these is sub-classified as (i) Large grain, (ii) Medium grain, and (iii) Small grain. All such rice is characterized as ordinary and scented or aromatic.

The Food and Agriculture Organization (FAO) has the following specification of different classes, which will assist in appreciating the various rice terms used in classifying varieties:

<u>Shape</u>	<u>Ratio of Length to Breadth</u>
Slender	Over 3
Medium	2.4 to 3.0
Bold	2.0 to 2.39
Round	Under 2
<u>Size</u>	<u>Length in mm</u>
Extra Long	Over 7
Long	6 to 7
Middling	5 to 5.99
Short	Under 5

Size is also defined by weight:

	Weight in gram of 1,000 kernels of milled rice
Very large	Over 28
Large	22 to 28
Small	Under 22

Without going into the genetics and morphology of *Oryza Sativa* L., it is to be understood that each variety has been developed over millions of years of evolution to suit a particular set of climatic and soil conditions, each carrying unique genetically inherent qualities. Thus, a slender variety of rice grown in a particular area often loses the slender characteristics when transferred to another area. Particularly aromatic varieties often lose their aroma when planted in an area different than their native habitat. All the HYV of Bangladesh are crosses between long stem Indica sub-species with Japonica dwarf sub-species or even crosses between crossbred types. Some have been mutated by application of gamma radiation to develop the particular variety. BRRRI Binashail is the radiated variety developed from traditional Najirshail. One of the most successful HYV, BR II (Mukta) was developed by a cross of IR 20 (IR 532 + IR 576) and IR 5 (IR 5 + 47+2); that is to say, it has genetic inheritance of 5 different varieties. The BRRRI gene bank now possesses assets of over 5,000 distinct varieties, which should be stored in a dynamic storage system rather than static, to safeguard their unique characteristics.

The varietal characteristics of Bangladesh rice are given below. The following general classifications are based on observation:

<u>Season</u>	<u>Varieties</u>	<u>Grades</u>
Aman	Traditional	Mostly Long Grain (Slender to Medium)
Aman	HYV	Mostly Medium Grain (Medium to Bold)
Aman	Aromatic	Short Grain (Small)
Boro	HYV	Mostly Medium Grain (Medium)
Boro	Traditional	Mostly Medium to Bold (Large)
Aus	Traditional	Mostly Middling (Large)

It is suggested that rice produced in Bangladesh be graded to conform to international standards set by a committee of experts. These standardized grades are essential to quote prices and to receive export inquiries.

Box 1 — Seeds: The Vital Input

Seeds are the keys to production enhancement. Most desirable genetic traits are imparted to the varieties of new rice seeds, first developed at IRRI, the Philippines. The semi-dwarf varieties, much favored by plant breeders the world over, was a cross between the tall Indica with dwarf Japonica sub-species. But rice plant is self-fertilizing, having both male and female organs. So production of new varieties are time consuming and difficult. The new varieties lose much of their potency in successive generations, calling for seeds bred under controlled conditions -- in seed farms. Supply of good seeds is vital for a high rate of production. Rice production in Bangladesh is seriously hampered by an acute shortage of certified seeds. To remedy the situation, massive investment in seed-farms and distribution channels is required. Private sector participation in a significant way will certainly improve the situation in this vital sub-sector.

Samples of Bangladesh rice carried by this author to the Federal Grain Inspection Service, Arkansas, USA, (in 1994) and were graded as below:

Table 7 — Grades of Bangladesh Milled Rice (Graded by FGIS, USDA)

Local Name	Graded by FGIS, USDA
1. Pajam	Long Grain (US # 4)
2. Kataribhog	Long Grain, Special Aromatic (US # 3)
3. Chinigura	Short Grain, Special Aromatic (US # 3)
4. BR II (Mangal)	Medium Grain (US # 6)

Source: FGIs, USA (Stuttgart, Arkansas, USA)

Note: Low grades were because of high percentages of discolored and broken grains in the milled rice and not due to any intrinsic quality of the rice.

Of particular interest is the BR II, which was comparable to California medium grain, a widely traded and very popular rice in the US and Europe.

AROMATIC AND ORGANIC RICE

Aromatic Rice

A variety of aromatic rice is produced in Bangladesh. They vary from small (Chinigura, Kalazira) to long and slender (Kataribhog, Dadkhani) types. They all belong to special aromatic, specialty or gourmet class of rice. They fetch premium prices and thus deserve special treatment.

Demand for aromatic and specialty rice is growing in the international market. Exports of Basmati from India and Pakistan had started in the 1960s, while Jasmine from Thailand has only become commercially important in the last ten years. Major international buyers of aromatic rice are China, the Middle East, EU countries and the US. China purchased about one million MT of Jasmine from Thailand. Basmati is exported primarily to the Middle East, EC and USA. Aromatic rice attracts premium prices because it is highly valued by consumers who use it for special purposes like feasts and religious occasions, so price becomes a secondary consideration to availability.

Box 2 — Aroma in Rice

Aroma or scent in rice is an inherent characteristic. In more scented varieties, it is apparent when the grains are smelled even when raw. In lesser scented varieties, only cooking releases the aroma. Studies in India and elsewhere show that this characteristic is varietal as well as environmental. But the active principle and distribution of the aroma in the grain is not fully understood. Research to produce a HYV of aromatic rice has not been successful anywhere. Only discovery and selection of new varieties are the available means to enhance yields. BRRI introduced Dhan 34, the only aromatic rice variety certified by National Seed Committee, as an improved variety. Cross breeding of aromatic varieties has not been successful. It is unlikely that any large increase of yield in aromatic varieties is possible, even in the future.

The international market of aromatic rice is growing very rapidly. From 1990-96, international trade of aromatic rice has increased from 1.4 million to 2.4 million MT. The production of aromatic rice cannot be increased rapidly because of the varieties rarely reproduce their characteristics in other climatic and soil conditions. Besides, now there may be legal difficulties due to new laws against genetic crimes. Basmati, patented

by a US private company as “Texmati,” has been challenged by the Government of India in federal court as genetic piracy. The plaintiff has won the case in the lower court. The case is under appeal, the outcome of which may provide unique protection to the native growers. India will be particularly affected as their Basmati rice export has averaged about 400,000 MT/year in the 1990s. Pakistan's Basmati export average ranged between 200,000 MT to 720,000 MT over the same period. In total, exports of aromatic rice ranged roughly between 2.0 million to 2.5 million MT, or about 12-15 percent of world rice exports.

The price of aromatic rice is two to three times the level of ordinary long-grained rice of similar quality. Indian Basmati export prices averaged \$681/MT in 1995/96 compared to about \$ 330/MT for high quality long-grained Thai rice. Thai Jasmine rice was quoted as high as \$750/MT in 1998 (Thai Rice Exporters Association). Pakistani Basmati prices range between \$600/MT to \$800/MT because of variable quality of this rice. Prices vary because ordinary testing methods cannot fully capture the characteristics of these varieties, which become apparent only after cooking. Therefore, the reputation of the exporter is of prime importance in determination of price. The world aromatic rice market is dominated by Basmati rice from India and Pakistan and Jasmine rice from Thailand. Both these varieties are well known by the consumers and the market has been developed over a long period.

Since 1992, Bangladeshi exporters have started exporting small quantities of aromatic rice mainly to the US. These exporters have an association titled the Bangladesh Rice Exporters Association. Discussions with the Association revealed that they are mostly exporting Kalizira, a highly aromatic variety, and also other varieties like Kataribhog, Bansful and Chinigura. The quantities exported are minuscule, about 200 MT/year only, and the export price of these types is astonishingly high, about \$950/MT FOB. They are hampered by EC import levy, which is deterring their entry into the UK market, where they estimate a ready market of over 10,000 MT/year for Bangladeshi immigrants alone. The potential market in the US is estimated at 50,000 MT/year. Of course, if the price can be reduced by higher yields by rapid introduction of improved varieties like BRRI 35, the market will expand rapidly. The exporters identify their impediments as:

1. High and fluctuating prices in local markets, making export quotations difficult and risky
 2. Absence of standard specification and grade in aromatic rice
 3. Poor state of the milling industry as it lacks size graders and color sorters, making the production of high quality rice very difficult as manual labor has to be employed
 4. No financial support or bank credit even against Letters of Credit as practiced in the case of garments exports
 5. Lack of infrastructure like storage and standard packaging machinery and the high cost of shipping, as this rice is exported in containers only
 6. Lack of information and export promotion by the Export Promotion Bureau (EPB) and by the Bangladesh missions abroad
 7. General apathy of Government agencies and no clear-cut policy of incentives as are given to exporters of other commodities like leather and garments
- Source: Bangladesh Rice Exports Association.

As to the quality and acceptance of this rice, one exporter narrated an interesting anecdote: “When any food item reaches US ports, they must be inspected by Federal agents. So the container carrying Bangladeshi Rice was opened in New York port by the inspectors. The container containing Kalizera exuded such a strong aroma that the inspectors did not do any inspection. From long experience, they knew that rice that is giving such good scent must be good. (Every one knows rancid rice is also highly malodorous). They were then asking the address of the store where they could buy this rice.” This story illustrates the excellent advantage of our aromatic rice, which is still to be exploited, even fractionally.

Organic Rice

Organic rice is an addition to the long list of environmentally sound foodstuff. With sophisticated consumers looking for such food, the market is growing rapidly where wealthy consumers are ready to pay premium prices for the product which will pass the strict criteria of “organic.” This awareness is much enhanced by association of celebrities with this movement. Thus the story of Prince Charles using the horse manure from the Royal Mews (Queen Elizabeth’s stables) to fertilize the carrot and potatoes of his farm may be comic. But the merriment will fade when one knows that these vegetables, which are not so attractive looking when compared to commercially grown varieties, fetch two to three times the price in organic food shops of London, where the rich and fashionable buy their food. By definition, rice which is grown and processed without the use of any

chemical, synthetic material, chemical fertilizers, hormones, insecticides, pesticides, herbicides, fungicides, preservative, seed treatment (with micro-nutrients for example) or such, is known as “organic rice.” There are national standards (EU, USA) which are to be strictly adhered to and the products are to be inspected by special agencies who guarantee such process by issuing certificates to that effect. In other words, the production process from seed production to final packing are inspected and certified.

In Thailand, only specially selected high-quality Jasmine rice is planted organically in very limited areas. This is a collaborative effort by the producers, millers and exporters on one side and the Department of Agriculture on the other. A third party, BIOAGRICOOOP of Italy, is the inspector; they issue certificates that are acceptable to importers in the EU and US. Even after much persuasion, this author could not find out the export prices of the organic rice, which the exporting company reported is settled beforehand by the sole importers in the EU and US. However, it is expected that the FOB price of this organic jasmine is much higher than that of the ordinary jasmine, which was quoted at \$750/ MT.

All traditional and aromatic varieties in Bangladesh are grown without chemical fertilizers. These Indica varieties are not chemical fertilizer responsive and tend to lose their slenderness if fertilizer is used. Use of pesticide, if any, is minimal because they have genetic resistance to most pests. It is therefore a matter of organization and effort that organic rice may be grown and exported from Bangladesh. The only requirement is to certify the rice organic, because the rice is already grown organic. This procedure will open newer windows of opportunity for Bangladesh rice exports.

6. MECHANICS OF EXPORT

The preceding discussions addressed the rather theoretical possibilities of export of medium grain, special aromatic and organic rice from Bangladesh. It was also shown that export parity prices of both traditional and HYV varieties of rice are below the comparable grades of Thai rice throughout much of the harvest seasons of both Aman and Boro. Compared to Indian coarse rice FOB prices, it is seldom that our rice of any grade is competitive at most times, though occasionally our FOB prices do go below the Indian FOB prices. As discussed earlier, lower prices do not automatically mean export. It requires development of the right environment and correct infrastructure to effect exports on any significant scale. Export needs constant efforts and the capacity to remain competitive. From the largest exporter in the world, Burma (Myanmar) has become insignificant (only 15,000 MT in 1997) in the global market place, even though long tradition, fertile soil and relatively low population all point to the possibilities of a burgeoning exporter. Conversely, starting from zero exports of rice in 1988, Vietnam today has become the second largest exporter in the world, with 3.5 million MT of rice export in 1997. It is thus apparent that more than anything else, the right set of conditions is required which may turn an importer into an exporter within a short time. The major issues that need to be urgently addressed are described later.

Box 3 — The Vietnam Scene

Only 22 percent of Vietnam's area is agricultural land. Vietnam achieved a five percent growth in agriculture during the last decade, compared to only two percent in Bangladesh. The structure of farming is represented by small-scale farms and rice as the dominant crop in both countries. Starting in 1988, Vietnam has rapidly become the second largest rice exporter in the world. In recent years, her export figures are: 1994: 2.2 million MT, 1995: 2.3 million MT, 1996 3.04 million MT, 1997: 3.5 million MT, and 1998: 4 million MT projected. Bangladesh is yet to export rice on a significant scale. It will be a most profitable exercise to study the Vietnam method: how they did it. The question that begs answer is – if they can, why can't we?

INTERLUDE III — The Mechanic

Fine rice of many varieties grows in the northwestern region of Bangladesh. These unique traditional varieties with low yields need little manuring and definitely no application of chemical fertilizers. They are popular in Dhaka and other big cities as celebration rice without which no marriage feast is possible. So the demand for such rice is strong bringing some economic activity to the region devoid of any major industry. I see the by-lane, slow down and then turn into the yard of the mill where a number of carts were off-loading paddy, and weighing was going on in earnestness by the aid of giant scales hung on stout bamboo poles. I come to this mill as it has the reputation of producing the finest aromatic rice that is now exported to the US. The mill house looked dilapidated. It was what is commonly known as a major mill, which simply means a relatively large mill compared to a husking mill, though the equipment and technology are just about the same. The traders and mill staff who were crowding around the scale, stood up as I approached them. "Salaam, salaam," they said almost in unison. After some conversation about the state of the harvest, I asked about the aromatic fine rice that the mill produces." Oh, the Badshabhog rice, yes, we produce mostly that rice for export to Dhaka and other big cities. And now some people from Dhaka buy this rice from us for export to America," said a middle-aged man in thick glasses, who said he was the manager. There are quite a few aromatic rice varieties in Bangladesh, the principal amongst those are Chinigura and Kalizira. The latter variety is finer and more elongated in shape. The same rice with black husk is known by different names in different regions. So what is Kalizira in Dhaka-Mymensingh-Sherpur region is Badshabhog in Dinajpur, Shainla in Bogra and Tulshibhog in the Chittagong region. It is indeed the finest of rice with a strong fragrance that Bengalis everywhere love. They make their celebration rice dish of Biryani and Polau with it. And this mill is well known in trading circles for its high quality product. "May I talk to the head mistri, the foreman?" I asked. "Sure Saheb," said the manager, "let us go into the mill house, you can meet him there and see for yourself the quality." obviously he thought I am a big buyer from Dhaka. I walked into the mill house with a large retinue of paddy sellers and laborers behind me with the manager leading the way.

In the semi-darkness of the mill house the chattering and the clanking of the series of six Engleberg hullers were such that conversation was difficult. As I examined the machinery, an unassuming man came by and smilingly pointed to the cylindrical size grader. "I built it myself," he shouted over the noise of the machinery, "and the adjustable blower to remove the immature grains." I inspected the inclined and slowly rotating framed nets of different mesh sizes in which the milled rice were poured through a hopper with adjustable duct so that the material flow remains reasonably constant. The driving mechanism was rudimentary but effective; no geared drive here but a couple of large pulleys reduce the RPM from 1450 to about 10. The pneumatic blower acts as a device to remove the immature grain that is always lighter than the mature ones. The mechanic indicated that we should go outside and we walked on to the covered veranda where dozens of women were using bamboo made winnowers to separate black and discolored grain from the finally milled rice. The end product was as good as I have seen anywhere; even in the most modern mills in Arkansas and Thailand couldn't produce any better white rice. "How do you mill such good rice, Foreman Saheb?" I asked him, "You are only using hullers and that old machine produces many broken." The story he told me was remarkable in ingenuity and application of appropriate technology. The quantity of aromatic paddy is never sufficient to warrant modern milling machines. Besides, there is enough manpower available to do the job efficiently and inexpensively. He uses the paddy hullers in a number of stages so that, in effect, the first run is de-husking, the second run is also husking after the unmilled paddy are separated by the

women using the reciprocating bamboo devices and added to the stock. Subsequent runs are polishing by stages. He carefully sets the gap at the between the rotating cast iron cylinder of the huller and the steel netting by adjusting the 'knife'; the friction bar to apply controlled friction as well as internal tension to obtain the desired results. The third set of control is exercised by adjustment of the weighed outlet gate of the finished product. The main object is to reduce brokens and to impart the exact degree of polish to the grains by removing the outer and inner bran layers with the endosperm. The operations are tedious and require much manual labor and careful observation at all stages. Any increase of grain friction level and over heating of grains will result in ruinous quantities of brokens. Then the homemade size grader removes the small brokens and the pneumatic blower removes the immature grain. Still the problems of discolored grain and stones of the same or larger sizes of the rice grain remain, for the size grader or the blower cannot remove those. What is needed is a laser operated color sorter whose cost will exceed the value of the entire rice mill and some more! That is where the women come in. Their delicate hands and nimble fingers sort the grains literally by each individual grain and remove all discolored grains and stones that are still in the milled rice. The result is as fine a product as to be produced by the latest integrated circuit controlled mill machinery. In another room annexed to the cleaning room, the rice was packed in two-pound polythene bags after being carefully inspected and put in the master carton box. This rice is going for export and the exporter's representative was watching the proceedings. The whole operation looked organized and methodical.

"How do you ensure such good quality which fetch premium prices in America, Foreman Saheb?" I asked the mechanic again. "Well sir, it all starts with the seed. Our owner has a pretty good idea about the requirements of the buyer as well as the growers and farmers within a thirty-mile radius who grow this Kalizira paddy. So he ensures that the good farmers have pure seeds, which the owner keeps a good stock and supplies them to the farmers. Seed is our second line of business, it brings us good profit and ensures good supply of paddy." He took a breath after this, and given the chance, I repeated, "But how do you ensure quality rice with your hullers, rotating sieve, and the blowers which are like any in a thousand husking mills dotting the sides of the highway?" This time he smiled and showed his rough hands palm upward, "All in these hands Saheb," and striking his foreheads, "and all in the kismet. It is my fate that I have to feed my children by working these hands, I know no other way. It is these hands which mill the rice not me." That is a strange turn of phrase, 'these hands make the rice'. Through the grease and the grime, I could see the craftsman's prime tool, his hands that feel just the right pressure of that vital screw and adjusts it to perfection without even looking at it. They strike the ball-peen hammer with just the right force, heavy when riveting, feather light when high gauge sheet-metal working. They hold the chisel in just the right angle when cutting through the mild steel plate. The hands that hammer, chisel, turn, weld, adjust, feel and create. These are the hands that craft the right quality rice from machines, which by design are crude, and all the engineering manuals vouch, unable to mill raw rice without high broken percentages. As I drove by after the usual polite farewells by all and sundry at the mill, I thought, those hands created the Mechanic. No, on second thought, the Mechanic created those hands. Either way, he builds, he mills, and he knows no other way, for he is The Mechanic.

QUALITY, GRADES AND STANDARDS

Although Bangladesh has a national standard specification for milled rice, the BSTI standards are not well known, never enforced and outdated. Terms like “admixture of other varieties” confuse inspection agencies as well as potential customers. They need to be upgraded to international standards as described most adequately by the Thai Rice standards: B.E. 2540. Upgrading and enforcing the grades will not only assist export, but also enhance the quality of domestic rice marketing. For example, the definition of brokens is a source of constant dispute between the parties. The current Thai standard has made the definition scientific by specifying length for each grade. Therefore, all grain below certain length is considered brokens, thereby limiting the admixtures as well.

The standard specifications may be drawn up by national committee consisting of representations from the Ministry of Food, BSTI, BRRI, the private sector, exporters and reputable inspection agencies like SGS, which inspects 80 percent of all rice exports from Thailand. Once standardized, appropriate legislation needs to be enacted so that all milled rice in Bangladesh is graded to the appropriate specifications. It is a long and difficult process, but a start has to be made today rather than tomorrow, if we are to modernize and regulate our rice markets to protect our domestic consumers and to attract importers.

MILLING, STORAGE AND PACKAGING

Milling

The milling industry in Bangladesh, though numerous, is in a primitive stage of development. The traditional iron hullers cause much lower recovery than is possible by modern multistage mills, which use 30 year-old technology. Much of the multistage mill may be built in Bangladesh. The Government of India had banned iron-hullers back in the late 1970s. All mills in India and Thailand use rubber-rollers or disk-shellers to remove the husk, separate the unmilled paddy and polish the hulled kernels by multistage polishers to reduce the percentage of brokens and to sift pure bran. This rice-bran is a

raw material for further processing to extract rice-bran oil by solvent extraction process and to use the oil cakes as protein and vitamin-rich animal feed. The importance of modernizing mill machinery needs to be understood. Since annual paddy production is about 27 million MT, even a 1 percent enhancement of the recovery rate will produce additional supply of 270,000 MT of rice, equivalent to over Tk. 3 billion (at a rate of Tk. 12/kg) per year.

Modernization of parboiling, drying by mechanical driers and milling by multistage mills is urgently needed to improve the quality as well to recover additional rice from the same quality of paddy. These improvements are most essential for the Boro crop when adverse weather conditions put to waste thousands of tons of harvested paddy due to lack of mechanical drying. It is also most significant for export efforts, as the prices in Boro season remain most competitive.

Packaging

Rice exporting countries mainly use polybags for export packaging. An FOB price of \$5/MT to \$7/MT can be saved by shifting from the traditional B-Twill gunny bags to polybags. It was surprising to note that even for import specifications, the Ministry of Food continues to specify B-Twill gunny bags ostensibly to assist the jute industry of Bangladesh. The additional cost only enhances the cost of imports, which is passed on to the taxpayers of Bangladesh. The benefits accrue to the kenaf and jute industries of Thailand and India, the two prime exporters of rice to Bangladesh. Similarly, to use gunny bags for export packing will only add a component, albeit a small one, to the cost as well as constitute a subsidy element to the jute industry. Export packaging should conform to international standard as well as be as cost effective as possible. One-ton jumbo bags are new developments that should be seriously studied for export packaging. In addition to 50 kg bags, good quality rice is now mostly pre-cleaned and packed in 1 kg or 2 kg packets for super-market chain stores. Indian Basmati exporters are now using attractive cotton or fine jute shopping bags for packing their products. Hygienic, neat and attractive packaging adds value to the end product. Parallel development of the packaging industry is a prerequisite for the successful development of exports.

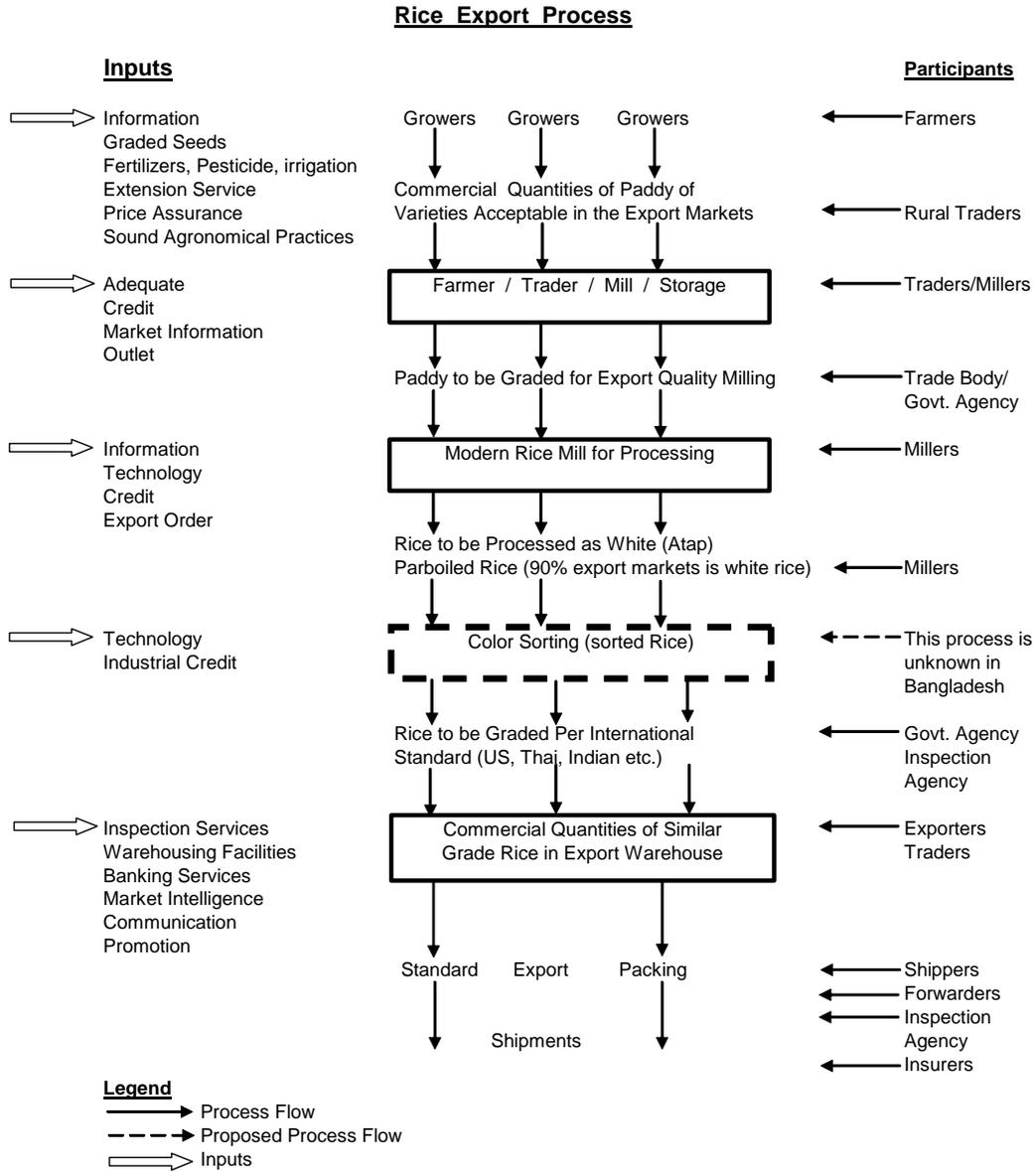
REMOVING THE LAST BARRIERS

With the introduction of GATT and WTO (Bangladesh is a signatory), countries are committed to remove all barriers against free trade between nations. Many barriers still exist. The most important trade barrier Bangladesh is facing is the import levy by the EC against Bangladeshi rice exports. EEC regulation number 715/90 indicates that levies are not applied to products originating in the African, Caribbean and Pacific (ACP) states, and Bangladesh is bracketed under ACP. However, EEC regulations numbers 3491/90 and 862/91 state that levies apply to Bangladesh rice exports. The UK exempts Surinam from the levy, but imposes the same on Bangladesh. This levy is removed if the exporting country imposes an equal amount of export duty on the product, a procedure that is certified by India and Pakistan for their Basmati and other rice exports to the EEC. It is indeed very doubtful if these countries impose such export duties on their rice exports or have some mechanism to grant equal or more subsidy in some other form. These matters were under review by the EC commission when GOB authorities pursued the issue in 1994. Since then, due to lack of interest, nothing has happened. The removal

Box 4 — The Irrigation

Bangladesh has a total land area of about 17.8 million hectares. About 51 percent of this land is cultivable. Traditionally, almost all agriculture in Bangladesh was rain fed. In 1973, only 0.5 million hectares were under irrigation. Today, about 50 percent of arable land is under irrigation by various mechanisms: by surface water, low lift pump, and deep tube well. Irrigation contributed significantly to increased rice production. Considerable scope for further expansion and thereby increased food production exists, particularly in Boro paddy, by expanding irrigated area. Supplementary irrigation during the Aman season enhances production and reduces risk of draught. Irrigation is the key to generate surplus in rice production, which will lead to export.

Diagram 3 — The Rice Export Process in Bangladesh



Source : Author's Observation

of the EEC levy should be pursued as an urgent agenda by EPB and the Ministry of Commerce, as the future of at least 10,000 MT of aromatic rice export is tied to its satisfactory resolution.

Another problem of rice export, particularly non-aromatic ordinary rice, is the provision of Title III food aid by the US. Under Annex B of the Title III Agreement, there is a provision to prohibit “the use of local currency generated from the Title III program from being used to finance production of an agricultural commodity that would compete in the world market with similar commodities produced in the United States, if such competition would cause substantial injury to US producers.” The envisioned exports of parboiled rice to African low price market should not in any way cause “substantial injury to US producers.” The reasons are as follows:

- (a) Export of parboiled rice from the US is extremely limited. Though no figures are available, personal inquiry with US rice producers indicated not more than 15 percent of total rice marketed is parboiled.
- (b) US exports are of mostly long grain rice to European markets; there is practically no export to Asia and Africa.
- (c) The US is a large importer by itself (350,000 MT in 1997) and has always espoused development of trade among nations. However, this matter should be clarified from US authorities as soon as possible to remove any remaining misgivings. There is no restriction regarding the export of fine and aromatic rice under any US law or regulation.

Bangladesh’s own rules, laws and regulations regarding the rice industry were formulated mostly in colonial times. Many of them, like the Anti-Hoarding Laws, Bengal Rice Millers Act, etc. are now suspended or under abeyance. They should permanently be rescinded from statute books to give clear, encouraging signals to the private sector.

FINANCING AND CREDIT

The entire rice economy requires injections of liquidity to keep it viable. Average rice production during 1995-97 was 9.07 million MT of Aman and 7.56 million MT of Boro. At a marketable percentage of 45 percent and 55 percent respectively (FPMU,

1995), the total quantity of rice that went through the marketing channels amounted to 8.25 million MT per year. Even at the government procurement price of Tk. 12,000/MT, the value of this rice exceeds Tk. 98 billion. This large market requires financing at every stage of transaction to be competitive and active.

Thus the importance of financing and credit for rice trade in general and export in particular cannot be over emphasized. Lack of credit had been identified in earlier work as a major impediment to the growth of the rice industry in which, directly or indirectly, a majority of the people of Bangladesh are engaged. While no advocacy is made for any form of subsidized credit that many sectors enjoy, the rice export business should have access to institutional credit under the regular banking norms of Bangladesh. To promote exports of ready-made garments (RMG), leather, shrimp and other sectors, they are provided with adequate credit. However, the Rice Exporters Association has reported that they are not even allowed packing credit against 100 percent irrevocable, at sight letters of credit. Such discriminatory treatment cannot be termed conducive to export and earning of foreign exchange. A proper credit policy for rice exports is an urgent need that should be formulated by Bangladesh Bank as early as possible.

PROMOTING RICE EXPORTS: GOVERNMENT AGENCIES

The Export Promotion Bureau and the Ministry of Commerce pursue a pro-active export policy by assisting exporters of all items from Bangladesh. They deal with a number of items and promoting a new and difficult product like rice requires a specialized agency that has a thorough understanding of the problems and prospects of this sector. In 1992, when rice export efforts were officially undertaken, an Export Cell was established in Ministry of Food with three officers, a branch of which was also organized at the Directorate General of Food.

Within a very short time, these cells did a great deal of useful work. They established a display laboratory, regularly communicated with Bangladesh missions abroad, sent samples to various trade fairs and generally created awareness among the foreign buyers that we are in the market. In fact, they received many inquiries and kept in contact with the private sector to disseminate price and other market information. The aromatic rice exporters acknowledge that they were assisted and encouraged by the

dedicated work of these cells. They also negotiated some direct sales themselves. Two case studies, one of success, another of failure, are mentioned below.

Sri Lankan Order

In 1993, Sri Lankan importers wanted to import 5,000 MT of BR II parboiled rice through a local Bangladeshi agent. The MOF computed their FOB Chittagong cost at \$244/ MT, which after negotiation, the importers agent agreed to pay. This rice was locally procured and conformed to the DG Food's FAQ standard (in short, parboiled, six percent big brokens, four percent small brokens, well milled). The importer requested immediate confirmation of the deal and sales contract. Before signing the contract, the MOF obtained formal permission from the then Prime Minister, which took over two weeks. That was a delay the importer was not prepared to accept. He imported the rice from elsewhere. The rice was never exported to Sri Lanka.

Malaysian Order

The MOF promoted special aromatic Chinigura rice at the Malaysian Trade Fair by sending 80 kg of rice in 2 kg packs. This rice created interest among the consumers. So the Malaysian Paddy Center (LPN), a government agency, requested 200 kg of this rice to test consumer reaction. This rice was sold at the center and the consumer preference was favorable. They ordered 120 MT of rice in 2 kg packages which were exported through the Trading Corporation of Bangladesh (TCB). This order was not followed up, though the Malaysians did inquire later to TCB for further quantities.

Unfortunately, the Export Cell is now in a moribund condition. Much of the contacts are lost and the promotional activities are non-existent. It is suggested that this cell or a specialized agency start the work where the old one had left off. In close liaison with the private sector and our missions abroad, a pro-active policy may be pursued to promote rice-exports by this organization.

Markets and structures: Currently, the private sector in the rice market of Bangladesh is weak, both financially and structurally. It is fragmented, there is no central market and the infrastructure in the form of rice milling machinery, storage and handling

facilities is primitive and unable to handle large quantities within a short time. All newly exporting countries like India, Pakistan and Vietnam have modernized their markets and structures for efforts towards export and they have been largely successful.

The need for a centralized grain market has long been felt by market operators. While futures trades are a very long way off, spot trades carried out centrally will send correct signals to all regional markets with its beneficial effects. The functions of such a central market will be:

- (a) To obtain market information
- (b) To trade in large quantities
- (c) To self-regulate the market
- (d) To enforce grades and standards
- (e) To eventually move to forward contracting
- (f) To stabilize prices by promoting integration among all regional markets
- (g) To obtain economies of scale in handling, storage and transportation, and thereby reduce marketing margins.

Development of markets is a prerequisite to any organized trade, domestic, export or import. Contrary to the popular press, the speculator is an essential element in any market. He brings in information, liquidity and helps correct market aberrations. As an example, the Bangladesh Tea Auction house may be cited as an excellent example of a central and regulated market that has been functioning excellently for over 50 years. Speculators are the heart and soul in this market. Due and deliberate attention must then be given to these aspects of market development.

7. CONCLUSIONS AND RECOMMENDATIONS

After years of chronic shortage, self-sufficiency in food, particularly rice, has been the cherished dream of the people and the nation. Successive government policies over the decades have reflected this national aspiration. The phenomenal rise in rice production due to improvements in irrigation, fertilizer production and distribution, agricultural research and extension are outcomes of these aspirations and policies. With the production rise, new sets of difficulties have developed giving rise to glutted markets, low prices, problems of disposal of government stocks, etc. These problems were non-existent even a few years ago, and government policies formulated at times of shortage are increasingly out of tune with the needs of the hour.

The continued production rise indicated by the fall in the real price of rice in Taka as well as in US dollars exhibits the urgent need to provide incentive prices to producers. The interests of the consumers are amply reflected by the popular press and immediate action is taken by the government, yet little concern is shown for low rice prices, which obviously has a detrimental effect if the positive trend in production is to continue. Nonetheless, it speaks volumes for the resilience and inherent strength of the rice growers of Bangladesh that despite natural disasters and fertilizer, diesel, electricity and other input shortages, production has always maintained an upward trend. It is in fact, a national compulsion for food security of the people that such upward trends be maintained at any cost. Export of rice offers a most suitable and market friendly method of achieving the desired goal.

The rationales for rice-exports are many. It will allow earning of much needed foreign exchange, particularly when import of wheat will continue because of change in the food habit of the population and to bridge the national food gap. The enhanced production of special, aromatic and organic rice offers the best comparative advantage in this regard. An excellent market exists for moderate quantities of such high priced rice in the international market. It is also possible to export medium to coarse parboiled rice, especially to African markets where demands for such rice is high, and which currently satisfy their imports from Thailand and India. The production outlook for rice in the long

run for the much of Asia is not that good, as it has already reached a production plateau, whereas Bangladesh is nowhere near the potential of increased yields. With the present technology and methods, it is possible to generate a huge surplus right now, should there be a ready outlet for the enhanced production. Higher production means benefits to the producers and consumers by lower prices, which ideally should not be below export parity. If the low prices do not cover the cost of production, it will act as a serious obstacle to enhanced production and thereby increase prices again.

To successfully export rice, much more is necessary than just theoretical low prices and a national surplus. Improvement of grades and standards, infrastructure, mill machinery, transportation, etc. all need to be addressed and effective programs of improvement undertaken and implemented in a systematic manner. In addition, provision of adequate credit, shipping, insurance, inspection services and development of entrepreneurial skills are all prerequisites for successful rice exports on any economically viable scale. Though difficult, these goals are not impossible to achieve. The recent case of achievements of Vietnam should remove the last vestige of doubt that rice exports from a nominally food deficit country is impossible. More importantly, production in Vietnam increased with increase of rice export, giving a direct correlation between tapping of unexploited resources or dormant potentialities with liberalization of internal markets and opening of the export window.

Achieving progress on the path towards surplus and exports needs a correct set of policy measures. An enabling environment which encourages the private sector to invest in new mill machinery, storage and transportation are urgently required, not only for export, but also for enhanced efficiency of the internal market. Some of the policies do not involve any resources at all, like formulation of modern grading standards. A fully open market will ensure its own stability for it is a dynamic system. By taking recourse to a trade based stabilization policy, rice price may be kept within a narrow band of import-export parity price. That would release tremendous resources for the government to invest in infrastructure, education, health, poverty alleviation and such other activities where private capital is seldom forthcoming. With high economic growth, the purchasing power of the population will increase, and therein lies the ultimate food-security of Bangladesh.

National and political will of a nation supercedes any economic analysis. Food

security of the nation is such a compulsion. It has been argued here that export of rice will enhance food security, particularly of the poor, rather than diminish it. Like Vietnam now and China in an earlier period, it needs the execution of the rational will to turn deficit into an era of surplus.

Removal of trade barriers like the EC levy and apprehension under Title III need to be removed towards the desired end. It should be a matter of pride for all that Bangladesh fine aromatic rice fetches high prices in the international market. Now is the time to exploit the full potential of our production possibilities.

To these ends a charter of policy measures need to be taken:

- (a) Rescinding all restrictive laws and regulations to create an enabling environment for the private sector to operate freely
- (b) Encouraging investment in mill machinery, storage and other modernizing measures for an efficient post-harvest industry
- (c) Providing adequate credit within the banking regulations of Bangladesh to the traders, millers and exporters
- (d) Establishing a specific agency for coordinating, promoting and encouraging rice export and exporters
- (e) Taking effective steps for removing import levy and other restrictive measures of potential importing countries
- (f) Upgrading national grades and standards and creating regulatory agencies to enforce them in domestic and export markets
- (g) Encouraging improvements of private markets by establishing a central market/exchange where traders, exporters and importers conduct their business in a systematic manner
- (h) Developing ancillary services like port handling, insurance and inspection agencies that are required for any export.

While these market friendly efforts are pursued, the production enhancement must continue unabated by such policies as:

- (a) Continued investment in agricultural research and extension services
- (b) Ensurance of a liberalized input market for seeds, fertilizer, agricultural machinery, pesticides, etc.

- (c) Continued increase of irrigation, particularly development of surface and minor irrigation, so that the HYV areas continue to grow
- (d) Development of aromatic, superfine, organic and other high valued rice and their commercial production on an urgent basis.

The above are some but not all of the measures felt necessary to create surplus leading to the export of rice. The region that supplied the finest rice to the Mughal Emperors' courts and to the continent of Australia later on needs no assurance that it can produce both quality and quantity. The colonial and post-colonial era of neglect and exploitation had sapped the productive urges and inherent pride of the people. Now is the time to release them from such mental bondage. With the opening of the Bangabandhu Jamuna Bridge, the granaries of the northwestern region are finally directly connected to the port of Chittagong, from where in times past, rice was shipped to Sri Lanka and the Maldives. It is time to turn the full circle and make every effort to be an exporter again. It is the aspiration and the will of the nation never to turn back to the recent past of deficit and shortages and instead, enter the new era of plenty, as an exporter in the international marketplace.

REFERENCES

- Abbot.J.C. et al, 1972. "Rice Marketing," Food and Agriculture of the United Nations, FAO, Rome, Italy.
- Choudhury, Nurn Nabi and Aziz, Abdul M., "Feasibility of Rice Exports from Bangladesh" Ministry of Food, Government of Bangladesh.(Mimeo)
- Del Ninno, Carlo and Dorosh, Paul, 1998 "Government Policy, Markets and Food Security in Bangladesh, World Bank, Dhaka (Mimeo)
- Hall, D. W., 1980. Handling and Storage of Food Grains in Tropical and Subtropical Countries. FAO, ROME, Italy
- Goletti, Francesco et al , 1995, " Prospects of Rice Exports in Bangladesh ," IFPRI, Washington D.C. USA. (Mimeo)
- Grist, D.H., 1969, " Rice" Longmans and Company, London.
- Hagblade, Steven and Rahman, Mahfoozur, 1999. "Laws of Gravity" IFPRI, Dhaka.(Mimeo)
- Rahman, Mahfoozur, 1988, "Problems and Prospects of Rice Processing Technology in Bangladesh" Bangladesh University of Engineering and Technology, Dhaka
- Rahman, Mahfoozur, 1994, " Liberalization of Credit for Growth: Food Grains Marketing in Bangladesh" . IFPRI, Dhaka (Mimeo)
- Robinson, John F. 1994. " Rice Production in Arkansas" University of Arkansas, Stuttgart AR, USA
- Wimberley, James 1983. " Paddy Rice, Postharvest Industry in Developing Countries" IRRI, Los Banos, Philippines

ORGANIZATIONS AND PERSONS VISITED AND INTERVIEWED

Bangladesh

1. Mr. A. H. Hasan President, Bangladesh Rice Exporters Association
2. Mr. Aminul Islam Project Director, Fine Rice Production Project, Barind Project, Rajshahi
3. Dr. Abdul Baqui Director, Agricultural Machinery Division, Bangladesh Rice Research Institute (BRRI)
4. Dr. Haran Chandra Roy Director, Plant Breeding Division, Bangladesh Rice Research Institute (BRRI)
5. Mr. Nurul Afsar Director General, Food, Ministry of Food, Government of Bangladesh
6. Mr. Khalilur Rahman Director Procurement, Directorate General, Food, Ministry of Food, Government of Bangladesh
7. Mr. Rahmatullah Senior Engineer, Pilot Plant and Process Development Department, Bangladesh Council of Scientific and Industrial Research (BCSIR)
8. Dr. Nazrul Islam Director, Institute of Appropriate Technology, Bangladesh University of Engineering and Technology (BUET)
9. Mr. Mazhar Hussain Manager, SGS, Bangladesh.

Thailand

1. Mr. Thanaphol L. Trader, Capital Rice Co. Ltd., Bangkok
2. Mr. Tiranapogn Asvinvichit Managing Director, Seng Thong Rice Co. Ltd., Bangkok
3. Mr. Vicharn Boosarawongse Chairman, Rice Exporters Association, Thailand
4. Mr. Phaiboon Kuonsogntum Managing Director, Chaiyaporn Rice Co. Ltd., Bangkok
5. Mr. Poomsak Permpoonsap Chairman, Siam Rice Trading Group, Bangkok
6. Mr. Vichai Sriprasert President, Rice Land Int. Ltd., Bangkok

- | | |
|-------------------------------------|---|
| 7. Mr. Chainarong Taephaisitphongse | Managing Director, International Trading Development Corporation, Bangkok |
| 8. Mr. Gean Frank | Technical Advisor, SGS, Thailand |
| 9. Mr. Sumeth Pichetpongsa | Plant Manager, Capital Rice Storage and Packaging Plant, Bangkok |
| 10. Mr. Kanita Kaewmanee | Rice Inspection Manager, SGS, Thailand |

Vietnam

- | | |
|--------------------------|---|
| 1. Mr. Tran Nhat Hau | Deputy Director, Ministry of Agriculture & Rural Development (MARD), Government of Vietnam |
| 2. Mr. Da Xuan Khau | Senior Expert, Ministry of Agriculture & Rural Development (MARD), Government of Vietnam |
| 3. Mr. Bui Hug Tuong | Deputy Director, Department of Science, Technology and Product Quality, Government of Vietnam |
| 4. Mr. Nguen Trang Hoan | Deputy Director, Department of Science, Technology and Product Quality, Government of Vietnam |
| 5. Ms. Le Thi Thoan | Member, Board of Management, VinaFood-1, Hanoi |
| 6. Mr. Bui Thanh Tam | Expert, Foreign Economic Division, Govt. of Vietnam |
| 7. Mr. Tran Mai Oanh | Vice Manager, VinaFood-2, Ho Chi Minh City |
| 8. Mr. Nguyen Hoang Viet | Sales Officer & Market Analyst, VinaFood-2, Ho Chi Minh City |
| 9. Mr. Nguyen Ton Hoang | Deputy Director, Vung Tau Intowrimex Co. Ho Chi Minh City |
| 10. Mr. Tran Tam Auh | Deputy Chief, Export & Import, Ho Chi Minh City |