

MARKETING OF AGRICULTURAL INPUTS :  
A STUDY ON SELECTED THANAS OF  
GAZIPUR DISTRICT.

A THESIS SUBMITTED TO THE DHAKA UNIVERSITY IN  
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লেখাগার

# MARKETING OF AGRICULTURAL/INPUTS: A STUDY ON SELECTED THANAS OF GAZIPUR DISTRICT.

*A thesis submitted to the Dhaka University in partial fulfilment of the requirements for the degree of "Master of Philosophy" in Marketing*

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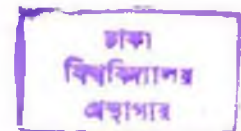


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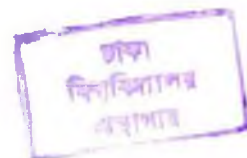
DECEMBER 1997

## DECLARATION

I do hereby declare that the thesis entitled "Marketing of Agricultural Inputs :A Study on Selected Thanas of Gazipur District" prepared and presented by me to the Dhaka University in partial fulfilment of the requirements for the Master of Philosophy degree is an original work of mine which has been done during the study period. The thesis has not been presented in any form to any other academic institutions for any degree or any other purpose.

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**CERTIFICATE**

This is to certify that the thesis entitled "**MARKETING OF AGRICULTURAL INPUTS :A STUDY ON SELECTED THANAS OF GAZIPUR DISTRICT**" in partial fulfilment of the requirement for the award of the degree of **MASTER OF PHILOSOPHY** in Marketing prepared under my supervision by **MD. ABUL KALAM AZAD**, has been completed during the period prescribed under M. Phil Ordinance.

The thesis embodies the results of his investigation. It does not contain any conjoint research work or analysis with me or any other else.

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## PREFACE

Agriculture is the largest and most important sector of the Bangladesh economy. The place of agriculture in our economy is such that Bangladesh can well be described as an agricultural country per excellence. About 31 percent of the country's GDP at current price is derived from agriculture. About 69 percent of the working population is engaged in agriculture. In village, about 80 percent of the people earn from cultivation and allied agro-industries. A good number of labour force in cities too find jobs in marketing and other activities connected with agriculture. Agriculture also meets a large portion food requirements of the country. It contributes 60 percent of the country's exports. The importance of agricultural exports lies in enabling the country to buy development goods and essential commodities. Transport, marketing, processing and other aspects of agriculture also have a strong bearing on the tertiary sector of the economy.

Notwithstanding, agriculture promotes economic development of the country, yet it is the most underdeveloped part of the economy. Agriculture in Bangladesh has long been carried out in a traditional manner, hardly using the modern techniques as are commonly used in developed countries. Yield per acre of land is low, compared to those countries. The slow growth rate in agricultural productivity adversely affects the continuous food shortage in the country.

Agriculture development can be achieved in different ways. Firstly, increase in productive capacity through more investment. However, this involves large amount of capital expenditure. Financing of such capital is beyond the capacity of individual farmers. Secondly, development and application of new technology and modern management practice. This requires modernizing the attitude of the farmers and demonstration of new methods. However, much of the technology requires import with high cost. Thirdly, use of adequate inputs (seeds, fertilizer, pesticides and agricultural machineries and implements ). Increased productivity cannot be achieved merely through better know-how. The most important may be to guarantee adequate and sustained availability of inputs through effective marketing system, that is critical if productivity in

agriculture is to increase. Obviously any strategy for marketing of agricultural inputs forms an integral part of the overall agricultural strategy.

Considering the importance of agriculture in the economy of Bangladesh, the government brought in various institutional changes and formulated programmes to overcome the problems in production and marketing. Despite that performance in agricultural sector is not satisfactory. The poor performance of agriculture results from the existence of a variety of factors like ineffective marketing of agricultural inputs and many other serious gaps which do not permit efficient conduct of agriculture. Notwithstanding, the markets for inputs in Bangladesh are large, marketing of these inputs is highly difficult and complex operation. The markets and the consumers of agricultural inputs are unique. The business of inputs marketing is large and growing. So the importance of marketing of agricultural inputs in Bangladesh must be understood and attended to accordingly. The curiosity of the researcher in the subject arose out of the criticisms about the maladies of inputs marketing.

A thorough review of the existing literatures, research conducted and the projects undertaken, reveals that the studies were either related to one input or one aspect of marketing. These are no concrete and comprehensive study covering all important facts of inputs marketing made to find out the problems.

The present study is an attempt to fulfil some of the lacuna in the field of knowledge about the phenomenon under review in the context of Bangladesh. An attempt is made in this study to identify marketing patterns and accessibility of inputs to the farmers. Attempt is also made to locate marketing problems of specific input and to make suggestions for the improvement of their marketing..

Keeping in view of limitations of researcher, the study has been confined to the marketing of four inputs like fertilizer, seeds, pesticides and agricultural machineries and implements. In order to make the study intensive and purposeful, it has been limited to selected thanas of Gazipur District only, which is an important district of Bangladesh and where farming is still a subsistence attempt and not a commercial venture.

The present study has been divided into seven chapters. Chapter- I is on introductory where the role of agriculture in the economy of Bangladesh has been discussed along with the rationale of the study and review of the related literatures. Chapter- II describes the objectives and research procedures used to obtain information. Chapter- III, IV, V and VI are devoted to the study of marketing of fertilizers, seeds, pesticides and agricultural machineries. These chapters examine the importance of each input, the channel of distribution including marketing cost and accessibility of these inputs to the farmers. These chapters also discuss the problems in the marketing of each input and offer a number of suggestions to extenuate marketing problems. Chapter VII is of concluding nature which sums up the findings and the suggestions of each preceding chapter.

The author fervently hopes that identification of marketing problems and the suggestions made therein will help bring about a significant improvement in marketing of agricultural inputs to the benefits of the government, industry, traders and ultimately the farming community as a whole.



## ACKNOWLEDGEMENT

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Md. Abul Kalam Azad  
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# CHAPTER-1

## INTRODUCTION

### **Introduction:**

Agriculture is the largest and most important sector of the Bangladesh economy. It plays an important role in the economy of the country. It provides not only food and raw materials but also employment to a large section of the population. The improvement or changes in national output depends on the output in agriculture. It provides the capital required for its own development and makes available the surplus for national economic development.<sup>1</sup> The exports of primary agricultural produce can earn foreign exchange in the early stages of economic development which can be used to import capital goods for the development of industry and infrastructure. The history of newly developed economics demonstrates that improvement in agriculture preceded and paved the way for rapid strides in industry, transport and other non-agricultural activities. Modern days' examples include Japan's rise to world economic prominence, which was founded initially on rising agricultural productivity. Likewise, the success stories of Taiwan, Korea and China have similar bases in agriculture that grew out of initial circumstances not too dissimilar from those found in Bangladesh.<sup>2</sup> The interaction between agricultural and non-agricultural sector facilitates the growth of both. The demand for non-farm inputs of industrial origin stimulates industrial activity. The industrial growth in turn increases the demand for wage goods and raw-materials, which helps expand agricultural employment and income. Increased agricultural incomes create market demand for consumption of industrial goods, thereby providing stimulus to industrialisation and market development. Thus agriculture has a pivotal role to play in the country's economic development.<sup>3</sup>

The economy of Bangladesh is predominantly based on agriculture. The place of agriculture in our economy is such that Bangladesh can well be described as an agricultural country par excellence. The people and the entire economy are so bound up with the fortunes of agriculture that life-style and pattern of activities do not more than

1. Ministry of Agriculture and Irrigation, Govt. of India, "Report of the National commission on Agriculture, New Delhi, 1976, p.1
2. Wennergren, E. Boyd, Antholt, Charles H. and Whitaker, Morris D. "Agricultural Development in Bangladesh," A Westyien Replica Edition, U.S.A., 1984, p.345.
3. Jalan, Manohar Lal, "Marketing of Agricultural Inputs," Himalaya Publishing House, Bombay, 1987. pp.1-24.

mirror all that happens in this sector.<sup>4</sup> The place of agriculture in our economy is well reflected in the large income that flows out of this sector. In 1992/93, about 30.47 percent of the country's GDP at current price is derived from agriculture.<sup>5</sup> No other sector taken separately comes anywhere close to this. The agricultural sector alone provides employment and work for living to the majority of people. In 1991, about 68.5% percent of the working population was engaged in agriculture.<sup>6</sup> In villages, about 80 percent of the people earn from cultivation and allied agro-industries. A good number of labour force in cities too find jobs in marketing and other activities connected with agriculture. Agriculture also meets large portion of food requirements of the country. Import of agricultural products plays a vital role in meeting the needs of increasing population. Similarly, agriculture provides fodder to sustain livestock whose number runs into crores. Agriculture contributes about 60 percent of the country's exports.<sup>7</sup> The importance of agricultural exports lies in enabling the country to buy development goods and essential commodities. Moreover, it supplies bulk of goods required by the non-agricultural sector and raw-materials for a large section of industry. Transport, marketing, processing and other aspects of agricultural production and utilization also have a strong bearing on the tertiary sector of the economy.<sup>8</sup>

Notwithstanding, agriculture promotes the economic development of the country, yet it is the most underdeveloped part of the economy. Bangladesh has 110 million population with 9.03 million hectare of cultivable land. It is characterized by the largest population density of the world, 782 person per square kilometre. And a population growth rate with declining death rate, together with low growth rates in agricultural

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4. Bangladesh Bureau of statistics, "Statistical Year book of Bangladesh-1994," Dhaka, August 1995, P.83.
  5. Dutt, Kalyan; Dasgupta, Ranjit and Chattarjee, Anil, "Bangladesh Economy: An Analytical study," Peoples Publishing House, New Delhi, 1973.p.7
  6. Planning Commission, "The Govt of Bangladesh prospective plan for Bangladesh. 1995-2010" (First Draft) Dhaka July 1995.p.11.
  7. Ministry of Finance, Government of The Peoples' Republic of Bangladesh, "Bangladesh Economic Survey 1990/1991," Dhaka.1991.p.21.
  8. Chendra, Dr. Satish, "Agricultural Price Policy in India," Clugh Publications, Delhi,1985.p.2

productivity adversely affected the continuous food shortage in the country.<sup>9</sup> Land under crops depend on rainfall, which is very much unevenly distributed. It results in either deficient, scanty or in excess rains, low yield per acre of land as compared with other developed and developing countries. Even there is great variation in the area cultivated, yield per acre and production of crops. Table 1.1 shows that per acre yield of fruits, vegetables, potatoes and spices and condiments is much higher than rice, pulses and oil seeds.

**Table - 1.1**  
**Area, Yield Rate and Production of Crops in Bangladesh. (1988/89 - 1990/91)**

Crop \ Year	1988-89			1989-90			1990-91		
	Area .000 Acres	Per acre yield (kg)	Production .000 M.Tons	Area .000 Acres	Per acre yield (kg)	Production .000 M.Tons	Area .000 Acres	Per acre yield (kg)	Production .000 M.Ton
Rice	25265	615	15544	25893	690	17856	25786	692	17852
Pulses	1817	273	496	1823	281	512	1799	291	523
Oilseeds	1415	307	434	1418	309	436	1407	319	448
Fruits	402	3451	1389	412	3518	1449	414	3493	1447
Vegetables	398	2452	975	419	2497	1046	424	2565	1090
Potato	275	3460	1089	288	3699	1066	306	4041	1237
Fibre spices & condiments	354	859	304	366	887	325	364	877	319

Source: Bangladesh Bureau of statistics, "Year book of Agricultural Statistics of Bangladesh 1992", Dhaka, June 1993, PP 17-22.

**Table-1.2**  
**Number and Area of Farm Holder by Size in Bangladesh.**

Size of holding	No of farm holder	Area of farm holder (in area)	Aggregate
Small holding	7066	6573	0.9
Medium holding	2483	10226	4.1
Large holding	496	5879	11.8
	10045	22678	2.2

Source: Bangladesh Bureau of statistics "Yearbook of Agricultural Statistics of Bangladesh 1992", Dhaka June 1993, PP. 172.

9. Raha Shankar Kumar and Akbar, Md. Ali, " Marketing or Minor Irrigation Equipment's and Its Economic Implications in some selected Areas of Bangladesh," Win rock International, Dhaka.1993,p.(mimeographed)

Even there is no market improvement in yield over the years 1988/89-1990/91. Low productivity of land, large number of cultivators and agricultural labourers result in low productivity of workers. Another feature of the agriculture is that there exists a large number of small farmers whose farming is uneconomic. It appears from table 1.2 that out of 10045 thousand number of farm holdings, 7066 have the areas of 6573 thousand acres, the average size of holding being 0.9 acre. On the other hand, average size of holding of large farmers is ridiculously high at 11.8 acres, although their members are small. The size of operational holding is important from the point of view of consumption of inputs, adoption of new technology and other factors.

In the light of above discussion, it is imperative that a strong foundation of agriculture is necessary for sustained and rapid economic and social development in Bangladesh. Agriculture development can be achieved in different ways.<sup>10</sup> Firstly-increase in productive capacity through more investment. However, this involves large amount of capital expenditure. Financing of such capital is beyond the capacity of individual farmers, when majority of them are poor and belong to marginal and small farmers. Role of the government in this regard is very important. Secondly-development and application of new technology and modern management practice. This requires modernizing the attitude of the farmers and demonstration of new methods. However, much of the technology requires import with high cost. Thirdly-use of adequate inputs. Increased productivity can not be achieved merely through better know-how. The development of an adequate agro-industrial base is necessary if agriculture is to register a major advance. A modern agriculture can be sustained only on the basis of increased production of irrigation machine, pesticides, fertilizer and HYV seeds<sup>11</sup>. The most important may be to guarantee adequate and sustained availability of inputs through effective marketing system, which is imperative if productivity in agriculture is to increase<sup>12</sup>.

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10. Jalan, Manohar Lal, Op. cit., p.11

11. The Government of Bangladesh, "Bangladesh Agriculture Towards Self-Sufficiency," Dhaka, 1988, p.122

12. C. Subramaniam, "A New Strategy in Agriculture," Indian council of Agricultural Research, New Delhi, 1972, p.6

Considering the importance of agriculture in the economy of Bangladesh, the Government brought in various institutional changes and formulated programmes to overcome the problems in production and marketing. It created separate Agricultural Ministry to look after the interests of farmers and development of agriculture. Separate institutions like Bangladesh Agricultural Research Council, Bangladesh Agricultural Development Corporation, Directorate of Agricultural Marketing were set up for research, development and marketing of agricultural products. The Govt. also gave due attention in the Five Year Plans to accelerate the development of agriculture. The First Five Year Plan aimed at achieving self-sufficiency in the production of food grains. The agricultural plan envisaged concentration of new seed based technology in certain areas. The small farmers, tenants, share-cropped and landless farmers were drawn into all credit and co-operative organization by providing incentives and carrying out intensive promotion work. The Govt. focused on the increasing yield per acre by the introduction of high yielding variety of seeds, application of chemical fertilizers, control of pests and diseases, adoption of improved practices and controlled irrigation.<sup>13</sup> During the Two Year Plan, a number of development programme under World Bank assistance were undertaken for production of HYV seeds, its processing and proper storage throughout the country to supply quality seeds to the farmers. Liberal provision for short term credit created scope for increased application of modern agricultural inputs<sup>14</sup>.

The Second Five Year Plan also tried to achieve rapid growth in agricultural production and productivity. The Govt. brought in institutional changes and formulated measures relating to the supply of inputs and supporting facilities viz, irrigation water, fertilizer, pesticides, improved seeds, credit, extension services, price support measures and marketing facilities. Priority was given to minor irrigation projects like LLPs, DTWs and STWs.<sup>15</sup> Agricultural college and Agricultural Extension Training centres were set up

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13. Ministry of Planning, The Govt. of Bangladesh, " First Five Year Plan 1973-78", 1973, Dhaka. pp.87-90.

14. Ibid. pp.1-11

15. Ministry of Planning, The Govt. of Bangladesh, " Second Five Year Plan 1980-85," Dhaka.1980.p.11-5



during the plan period<sup>16</sup>. The operational programme of the Agricultural Marketing Directorate was extended upto thana level to cope with the increasing problems.<sup>17</sup> The Third Five Year Plan emphasized subsidization of agricultural inputs and role of private sector in marketing and distribution. The Govt. has also taken measures to increase the yield of crops, availability of agricultural inputs, dissemination of technology to farmers, plant protection service, agricultural research & education and improvement in agricultural marketing system.<sup>18</sup> The Fourth Five Year Plan emphasized acceleration of technological transformation with a view to becoming self sufficient in food production and thereby improving nutritional status of the population. Emphasize was also given to stimulate crop diversification. The policy of privatization in terms of ownership equipment, and private sector investment in trading of agricultural inputs has been vigorously pursued and implemented.<sup>19</sup>

Despite that the Govt. and International organizations have taken various measures to alleviate the problems, the performance in agricultural sector is not satisfactory. The average annual growth rate in the agricultural sector declined from about 3.5 percent over the 1972/73 - 1979/80 period to about 2.7 percent during the 1980/81-1984/85 period.<sup>20</sup> The growth of the agricultural sector during the third plan period was below the rate envisaged in the plan. The estimated annual growth rate was about 2.5 percent compared to the target of 4 percent set in the plan.<sup>21</sup> The contribution of agriculture to the G.D.P. at current price also declined from 36.85% in 1989/90 to 30.47% in 1992/93.<sup>22</sup> Index of agricultural crop production ( 1972/73 as base year )

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16. Ibid.p.X11-18

17. Ibid p.X11-20-23

18. Ministry of Planning, The Govt. Of Bangladesh, " Third Five Year Plan-1985-90," Dhaka 1985.pp. 1953-1971

19. Ministry of Planning, The Govt. of Bangladesh, "Fourth Five Year Plan1990-1995." Dhaka 1990. pp. V.A 8,10 and 38.

20. Ibid, p.V.A-2

21. Ibid.p.V.A-4

22. Bangladesh Bureau of Statistics, Op. cit.,p.83

although increased from 129 in 1981/82 to 163 in 1989/90 dwindled down to 116 in 1990/91.<sup>23</sup> Per acre cost and benefit ratio of major agricultural crops was also adverse during 1983-1992 (Table 1.3).

**Table-1.3**  
**Per Acre cultivation Costs & Returns of Major**  
**Agricultural Crops in Bangladesh**

	(Cost in Taka)							
Items/Year	1983	1984	1985	1986	1989	1990	1991	1992
<b>Broadcast Aus</b>								
Total cost	2527	2897	2860	3690	4587	4489	4679	4867
Gross Return	2116.4	2272	2685	2544	2587	3145	3168	3586
Cost: Benefit	1:0.84	1:0.78	1:0.94	1:0.69	1:0.56	1:0.71	1:0.68	1:0.74
<b>T. Aus (HYV)</b>								
Total cost	3633	3991	5328	5118	5894	5657	6640	6824
Gross Return	4833	4800	5639	5247	5632	6326	7181	7650
Cost: Benefit	1:1.33	1:1.20	1:1.06	1:1.03	1:0.96	1:1.12	1:1.08	1:1.12
<b>T Aman(Local)</b>								
Total cost	2142	2794	3932	4058	4988	5112	5533	5573
Gross Return	2350	3131	4086	4977	4865	6702	5406	N.A.
Cost: Benefit	1:1.10	1:1.12	1:1.04	1:1.23	1:0.95	1:1.21	1:0.97	N.A.
<b>T Aman (HYV)</b>								
Total cost	3148	4190	5186	5883	6315	6639	6742	7156
Gross Return	4250.4	7006.4	7308	7400	8272	9376.5	8816.4	9530.5
Cost: Benefit	1:1.35	1:1.67	1:1.40	1:1.45	1:1.31	1:1.41	1:1.31	1:1.33
<b>Jute:</b>								
Total cost	3186	3735	4451	5045	5465	5948	6655	6782
Gross Return	2371.2	5090.4	8480.0	3332	3412.6	4724.2	6484.8	4530.8
Cost: Benefit	1:0.74	1:1.36	1:1.90	1:0.62	1:0.62	1:0.79	1:0.97	1:0.67

Source: Bangladesh Bureau of Statistics "Yearbook of Agricultural Statistics of Bangladesh 1992", Dhaka June 1993, pp 240-247.

The Government and the people voiced grave concern over the poor agricultural performance. The poor performance of agriculture results from the existence of a variety of factors like institutional, human and technical; Partly because of institutional and human drawbacks as also because of the inadequacy of various inputs like water, seeds and fertilizers. Most of the implements used for agricultural operations are primitive and unsuitable for scientific cultivation. Again in respect of finance for such inputs and implements as also marketing of agricultural produce and inputs, there are many serious gaps which do not permit efficient conduct of agriculture.<sup>24</sup> Notwithstanding, the

23. Ibid.p.132.

24. Jalan, Manohar Lal. Op.cit., p.9

markets for agricultural inputs in Bangladesh are large, marketing of these inputs is highly difficult and complex. The rural areas that form the market for agricultural inputs has many problems as well as opportunities. There is a difference in buying motives, habit and psychology. Obviously marketing of agricultural inputs in Bangladesh must be understood as a specialized job.

Declining production of agricultural products drew considerable attention of the economists and the Government. Habib in his study tried to analyze the existing system of marketing of fertilizer and to estimate the availability of fertilizer to the farmers. He also examined the existing organizational and operational features of fertilizer marketing with a view to assessing performance of marketing system. He did not dig in detail the accessibility of fertilizer to the farmers and problems of fertilizer marketing.<sup>25</sup> Like one input study of Habib, Quasem conducted a study on impact of the new system of distribution of fertilizer and irrigation machines in Bangladesh. He found that there was a marginal increase in the number of regular traders under the new marketing system compared to the old marketing system and the increase was spectacular in case of the seasonal traders who are highly concentrated in the accessible area. The benefits from the NMS (New marketing system) accruing to the farmers in the less accessible area was not significant. He argued for decrease of price fluctuation and availability of fertilizers under NMS without getting into the grip of marketing problems.<sup>26</sup>

Like one input study of Habib and Quasem, Raha and Akbar analyzed the distribution system of minor irrigation equipment, extent of accessibility of irrigation equipment to different groups of farmers. Development of private sector and policy implications can not be utilized fruitfully in identifying and solving problems of agricultural inputs as a whole.<sup>27</sup> Mosharaff and his associates carried out a study to

25. Habib, A.N.M. Ahsan, "Impact of the New Marketing System of Fertilizer in Selected Areas of Comilla District," (M.Sc. Thesis) Department of Co-operation and Marketing, Bangladesh Agricultural University, Mymensingh. Nov.1973.

26. Quasem M.A., "Impact of the New System of Distribution of Fertilizer and Irrigation Machines in Bangladesh-Survey Findings," Research Report no.62, BIDS, Dhaka, 1987.

27. Akbar, Md. Ali and Raha Sankar kumar, "Marketing of Minor Irrigation Equipments and Its Economic Implications in Selected Area of Bangladesh," Winrock International, Dhaka, June 1993(Mimcographed)

know mainly the impact and costs of low lifting pump at farmers level without getting into the grip of marketing system and problems.<sup>28</sup>

The study conducted by Centre for Development Science is concerned with the impact of decontrol of fertilizer prices on prices, availability and use of fertilizers and to assess dealers margins. The study also sought to assess the marketing and distribution prices with respect to storage and transportation and role of credit in alternative system but did not probe into the marketing problems.<sup>29</sup> Nazrul also tried to determinate the impact of irrigation on cropping pattern and production practices without getting into the grip of marketing system, accessibility of inputs to the farmers, entrepreneurial development and marketing problems.<sup>30</sup> Jabbar found fertilizing experience as the most important factor influencing the rate and mix of fertilizer application for major crops. He found that tenure status affected and mix of fertilizer in all crops except HYV Boro. He also found positive impact of institutional sources of credit on mix of fertilizer use specially on Aman and on the rate of application on jute<sup>31</sup>.

Khan, et al, found fertilizer use to be more sensitive to non-price factors like HYV cultivation, availability of fertilizer, irrigation water and credit. They found positive relationship between farm size and fertilizer use, but no clear impression regarding fertilizer use and tenure status. They found rates of fertilizer application and per acre yields to be positively related.<sup>32</sup> Saiful Islam found that degree of fertilizer use was not

28. Hossain, Md. Mosharraf; Islam, Md. Nazrul; Ahmed, Mahbub, Ali, Md. Akbar; Noor, M.M. Shah and Siddique, Md. Abu, "Economics of Irrigation"(working paper no-4). Agro Economic Research, Ministry of Agriculture, The Govt. of Bangladesh.

29. Center for Development Science, Bangladesh Union Parishad, "Fertilizer Price Decontrol Study," May 1984 (Mimeographed)

30. Islam, Md. Nazrul, "Impact of Irrigation on cropping Pattern and production practices in Two selected villages under Comilla Kotwali. Thana," (M-Sc-thesis), E.P. Agricultural University, 1967 (Mimeographed).

31. Jabbar, M-A, "Supply, Delivery System and Utilization of Chemical Fertilizers in Bangladesh," Report prepared for the Ministry of Agriculture and Forests, The Govt. of Bangladesh, Dhaka, 1980.

32. Khan, M. Sekandar; Pramanik, Ataul Huq; Khaled, Md. Saifuddin; and Chowdhury, Abdul Mannan, "A Study of Fertilizer Distribution," Dhaka, May 1980 (Mimeographed)

the same for all crops. The degree of adoption was the highest in case of Boro HYV and it was generally higher for major crops in comparison to minor crops. Education and fertilizing experience of the farmers was the most important on farm factors influencing the degree of fertilizer adoption. Size of cultivated holding had also impact on fertilizer use. Application of fertilizer was also influenced by variety of crops. Tenure status had also positive influence on the degree of fertilizer adoption. He found that high price of fertilizer and lack of fund as the main causes for not fertilizing.<sup>33</sup> Mofizul Islam studied on some economic aspects of input subsidies with respect to Boro rice without getting into the grip of marketing system and problems<sup>34</sup>.

Malek analyzed the exiting pattern of distribution for seeds, fertilizer and irrigation equipments in Mymensingh District. He found that seeds, fertilizer and irrigation are three of the most important complementary inputs constituting improved agricultural technology; and utilization of these inputs have fairly increased overtime. The system of distribution, and the institutions involved have been changed in the past. Absence of Co-ordination, motivation, extension and supervision have resulted in improper use, under utilization and non-utilization of various inputs distributed. There were also infrastructural deficiencies in handling seeds, fertilizer and different types of irrigation resulting in quality deterioration and physical loss and also unsatisfactory service to the farmers. The author did not dig in detail the other aspects of marketing and its problems.<sup>35</sup> Hossain and Quasem studied on growth of fertilizer consumption.<sup>36</sup>

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33. Islam, Abu Reza, Md. Shariful, "An Economic Study of the Fertilizing Behaviour of some Selected Farmers in Rangpur District" (M.Sc. Thesis). Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh. 1981.

34. Islam, Md. Mofizul, "A Study on Some Economic Aspects of Inputs Subsidies with Respect to Boro Rice Cultivation in the Area of Mymensingh District" (M.Sc. thesis), Department of Agricultural Economics. BAU, Mymensingh, 1981.

35. Malek, M.A., "Distribution Systems for Seeds, Fertilizers and Irrigation Equipments in Mymensingh Districts" (M.Sc. thesis) Bangladesh Agricultural University, Mymensingh.

36. Hossain, Mahabub and Quasem, M.A., "Growth of Fertilizer Consumption in Two Villages of Bangladesh 1977-84, 54-74. The Bangladesh Development Studies, Vol. XIV No. 1, Dhaka March 1986.

Abdullah analysed distribution aspects of fertilizer pricing policy.<sup>37</sup> Quasem concluded that fertilizer used is mainly dependent on the crops grown and their productivity. Farm size does not seem to have much effect on the use of fertilizers, even under unfavourable tenurial system because of serious crisis of land.<sup>38</sup> Hossain and Quasem found that although small farmers are late adopters they are not using less fertilizer per acre compared to large farmers in comparable crops. Total fertilizer use per acre is higher on large farms mainly because of differences in crop mix. Tenurial status of a farm is not found to have a negative impact on fertilizer use.<sup>39</sup> Hossain, Quasem and Abdullah further studied on price response to fertilizer demand, impact of the new system of distribution of irrigation machine and the fertilizer subsidy-cost and returns respectively.<sup>40</sup> But their findings could not be used as yardsticks in the solution of inputs marketing.

Most of the above studies were either related to aspect one input or one aspect of marketing. There was no concrete and comprehensive study covering all important facets of inputs marketing made to find out the problems. The curiosity of the researcher in the subject arose out of the criticisms pertaining to the maladies of agricultural inputs marketing. What has really gone wrong? Are there any defects in inputs marketing? Are the inputs easily accessible to farmers? Why has, unlike inputs marketing in India, China or Thailand, Bangladesh been unable to penetrate into the vast distribution networks and reach rural farmers? Consequently, researcher in this study, has concentrated his attention as to how the operation of input marketing could be solidified so that sour lemon of failure might be turned into success.

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37. Abdullah, Abu, "Distribution Aspects of Fertilizer Pricing policy," *The Bangladesh Development Studies*, vol. XIV, No.1, March 1986.

38. Quasem, Md. Abul, "Factors Affecting the use of Fertilizers in Bangladesh," *The Bangladesh Development Studies*. Vol.VI, Number-3, Dhaka Monson 1978..

39. Quasem, Md. Abul and Hossain, Mahbub, "Fertilizer use in Two Elected Areas of Bangladesh," *The Bangladesh Development studies*, Vol. VII, No. 4 Autumn, Dhaka, 1979.

40. Rahman, Atiq (Edited) "Special issues on Agricultural Inputs in Bangladesh," *The Bangladesh Development studies*, Vol.XIII, No.3 & 4, Dhaka, Dec.1985.

## **CHAPTER-2**

# **OBJECTIVES AND METHODOLOGY**

## **Objectives:**

Fertilizers, seeds, pesticides and agricultural machineries are the most important complementary inputs constituting improved agricultural technology. These inputs need to be employed in an optimum way to maximise the returns. The rate of adoption and efficiency in uses of these inputs at the farmers level depend, among others, on proper marketing system. The system should be such as to make them available to the farmers in adequate quantities and in right amount and at least cost. The marketing system has undergone changes in the past. Therefore, an analysis of performance of existing marketing system is essential. The present study proposes to do that.

The specific objectives of the study are :

- i) to investigate and analyse the existing pattern of distribution for fertilizers, seeds, pesticides and agricultural machineries.
- ii) to inquire into the level of accessibility and availability of inputs to the farmers.
- iii) to identify the marketing problems faced by farmers and traders in the study area.
- iv) to suggest some remedies to overcome marketing problems.

## **Methodology:**

An exploratory research design is thought of appropriate to study marketing of agricultural inputs wherein interrelationship of a number of factors are involved and it is difficult to understand individual factor without considering their interrelationships.<sup>1</sup> The emphasis is, therefore, on discovering possible alternatives. Several lines of exploration (use of primary and secondary source) have been combined by the researcher to get complete knowledge of the issues involved therein to find out likely plausible explanation<sup>2</sup> of the value ascertained as to the evaluation of inputs marketing.<sup>3</sup> However, no enough pertinent published materials or useful unpublished data on inputs

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1. Boyd, Harper W., Westfall, Ralph and Starch Stanley F., "Marketing Research: Text and Cases" (4th ed.), Richard D. Irwin, Inc., Homewood, Illinois, 1977, p.49.
  2. Wasson, C.R., "The Strategy of Marketing Research", Appelton-Century Crafts, Newyork, 1964, p.55.
  3. Luck, D.J., Wales, H.G and Taylor, D.A., "Marketing Research", Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1970, p.64.



marketing found available. Whatever types of secondary data found were not only exiguous but also did not fully tailor the needs of the researcher. Under the circumstances, he collected necessary information from primary data. Where primary data could not be obtained, secondary data had been studied with care to develop possible explanation.

The selection of study area depends on the objectives of the research. The main consideration in this case was the availability of inputs. Agricultural inputs are available all over the country. However, based on concentration of agricultural inputs, Gazipur district was considered for the study. There are six thanas in Gazipur district. Two thanas were selected purposively. To make the study exploratory, an area selected was 'accessible' that is well connected with the district headquarter and the other was 'less accessible area' that is not well connected with the same. In the study area, Joydebpur thana was of the first type and Kaliakair was of the second type. Other considerations behind the selection of the above areas were (i) better consciousness of the farmers about cultivation and inputs use and (ii) researcher was familiar with the areas. There are eight and nine unions under Joydebepur and Kaliakair thanas respectively. Simple random sampling was applied to draw four unions (Mirjapur, Pubail, Baria and Kashimpur) from Joydebpur thana and four (Full Baria, Mouchak, srifaltali and MODOOPARA) Unions from Kaliakair thana. Since the study is exploratory in nature, a small size was considered appropriate for the purpose. It was thought feasible that a sample size of 120 farmers, who were using various inputs from each area, would be appropriate. Researcher decided to select 30 farmers from each union on the basis of non-probability convenience sampling method taking 120 from accessible and 120 from less accessible area. Table 2.1 shows sample size of farmers by size and accessibility.

Various types of middlemen were engaged in inputs marketing such as dealer, Wholesaler and retailer. The number of dealers were known to the researcher but exact number of wholesalers and retailers were unknown. As such, it was difficult to select different categories of middlemen on the basis of random sampling. Non-probability convenience sampling technique was therefore used in the selection of middlemen. In

fertilizer marketing, 6 dealers, 25 wholesaler and 50 retailers in accessible area and 4 dealers, 25 wholesalers and 50 retailers in less accessible area were covered. In case of seeds, 4 dealers and 25 producer-cum-retailers from accessible area and 2 dealers and 25 producer-cum-retailers from less accessible area were selected for study purpose. There was no wholesaler in seed marketing. In case of pesticides, 2 wholesalers/distributors/agents and 25 retailers were taken from accessible area and same number was taken from less accessible area.

Table 2.1

## Distribution of Farmers by Size of Farm and Accessibility

Accessibility of Area	Number of Farms by Size			Total
	Small upto 2.5 acres	Medium (2.51 to 5.0 acres)	Large (5.01 acres and above)	
Accessible	40 (33.34)	51 (42.50)	29 (14.16)	120 (100)
Less Accessible	53 (44.17)	46 (38.33)	21 (17.50)	120 (100.0)

N.B. Figures in the brackets indicate percentages

The agricultural machineries and implements that have been taken for the study are broadly classified as heavy and light equipments. Deep Tubewells(DTWs), Shallow Tubewells(STWs) and Low lifting Pumps(LLPs) are known as heavy equipments. They are also known as irrigation equipments. Light equipments that are included in the study are plough, harrow blade, harvester, winnower and sprayers. Irrigation equipments are owned by BADC but rented out to co-operative and individual/group. Each group has its own peculiarities in operation. Therefore, ownership pattern was taken into account in selection of irrigation or heavy equipments. Researcher decided to select 13 BADC owned machines, 7 co-operatively owned machines and 37 individual/group owned machines from accessible area and 21 BADC owned machines, 9 co-operatively owned machines and 16 individual/group owned machines from less accessible area on the basis of non-probability convenience sampling technique and interrogated manager in case of BADC owned, manager/ secretary in case of co-operatively owned and individual in case

of individual/group owned machines. In the case of light equipments, researcher also purposively selected 10 retailers and 15 village smith from accessible area and 10 retailers and 15 village smith from less accessible area to obtain necessary information. Middlemen selected for the study are shown in table 2.2 . Though, sample size of farmers and middlemen were not fully representative in view of the nature of the study, their views on different aspects would be fairly representative.

**Table 2.2**

**Sample Size of Middlemen/Owners Covered in the Study Area**

Accessability of Area	Middlemen/ Owners	Dealer	Wholesaler Distributor / Agents	Retailer	Producer -Cum- Retailer	BADC Manager	Co-operative / Manager / Secretary	Owner/ Group	Manufactured by Village Smith
	Name of the Inputs								
Accessible	Fertilizer	06	25	50	-	-	-	-	-
	Seeds	04	-	-	25	-	-	-	-
	Pesticides	-	02	25	-	-	-	-	-
	Heavy irrigation equipment	-	-	-	-	13	07	37	-
	Light equipments	-	-	10	-	-	-	-	15
Less Accessible	Fertilizer	04	25	50	-	-	-	-	-
	Seeds	02	-	-	25	-	-	-	-
	Pesticides	-	02	25	-	-	-	-	-
	Heavy irrigation equipments	-	-	-	-	21	09	16	-
	Light equipments	-	-	10	-	-	-	-	15

Questioning technique was used to collect primary data. Respondents were questioned in person to obtain views in the furtherance of the study. Two sets of structured non-disguised questionnaires - one for the farmers and another for middlemen were used to obtain factual information and opinion. Questionnaires for farmers were divided into different sections. Section-1 dealt with questionnaires on general information, section-2 dealt with questionnaires on fertilizers, section-3 on seeds, section-4 on pesticides and section-5 on agricultural machineries and implements. Section-5 was again divided into two sub-sections. Sub-section-A dealt with the questionnaires on heavy

equipments and sub-section-B dealt with the questionnaires on light equipments (exhibit-4 in appendix). Questionnaires for middlemen were also divided into two sections. Section-1 dealt with the questionnaires on fertilizers, seeds and pesticides traders. Section-2, subsection-A dealt with the questionnaires for owners/managers/secretaries of heavy machineries and sub-section-B for village smiths/producers and retailers(exhibit-5 in appendix). However, before finalizing these questionnaires, ten sets of each group were pretested to make them more pertinent for the study. On the basis of experience gained during the pilot testing, questionnaires were modified. As a means of opening up topics of interest to the respondents, open-ended type of questions were put up. Open ended type of questions are particularly useful in exploratory research where new ideas and relationships are looked for. <sup>4</sup>

Multiple choice types of questions were also used to obtain unbiased responses. The specific points, side comments and explanations of the respondents helped the researcher to obtain ideas and views corroborating fruitful in exegeses of the final results. In order to avoid misgivings, the respondents were assured that information provided by them would be kept confidential. Respondents were also given necessary explication during the course of interview and encouraged them to answer accurately to increase the validity of the information. Researcher took every care to reduce any source of interviewer bias. Major sources of non-sampling error were lessened by means of executing field work personally with maximum care. In view of the nature of research design, technique of percentage of frequency distribution was applied for the analysis of data.

### **Limitations:**

Every research project has some limitations and one must indicate the limitations of the investigation. It was difficult to collect all the necessary data from grass-root level. Although researcher tried his best, the latest information on some aspects of inputs marketing specially light equipments could not be obtained. The study used macro

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4. Ghosh, B.N., "Scientific Method and Social Research", Sterling Publishers Private Ltd., New Delhi, 1982, p.211

approach to fathom likely explanation for evaluating inputs marketing, but micro issues could not be examined in depth. The seemingly casual explanations of the research, therefore, should not be considered as accurate measure of the evaluation. Moreover, exploratory study design cannot lend itself to generalization. The result of the present study must be viewed more in a quantitative focus than absolute qualitative terms. Findings might be verified and tested through further conclusive investigation. The study covered only selected aspects of agricultural inputs marketing. Given the scope of the study, broad treatment of every aspects of inputs marketing was impossible. Rather the treatment had been selective and the emphasis was placed on significant factors crucial to the effectiveness of the agricultural inputs marketing.

## CHAPTER -3

# MARKETING OF FERTILIZERS

## **Introduction:**

Fertilizer has been used for a century or more in most countries where agriculture is now well developed.<sup>1</sup> It is the king-pin for intensive agriculture and has a key role to play in any strategy for increasing agricultural productivity and production.<sup>2</sup> It is considered as a plant food, usually in chemical form, which supplies the elements essential for plant growth. Technically, fertilizer is a substance that can be absorbed by plants and that promotes their growth.<sup>3</sup> It includes any solid or liquid substance, or any organic or inorganic nutrient element or elements, applied directly to the soil or plant, singly or in combination with other materials, for the purpose of promoting plant growth, increasing crop yield or improving yield quality.<sup>4</sup> The forms, chemical as well as physical, that are to be applied to determine not only their availability but also the efficiency of the use of fertilizers containing them. The maintenance of quality of fertilizers in the distribution channel is also important.<sup>5</sup> It's use may depend on crop response to fertilizer and fertilizer output price ratio. Besides, it's use may vary at the farm level due to variation in soil quality, crop variety, crop size, difference in farm size, water availability, management practice, tenurial status, level of knowledge and education of the farmers.<sup>6</sup> In the context of Bangladesh, much of the success of fertilizer use depends on proper marketing system and adoption capability or accessibility of the farmers. These and some related issues are dealt with in this chapter.

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1. G.W. Cooke "Fertilizer for Maximum Yield" (2nd ed), Publishing Ltd. Crosby Lockwood Staples, 1972, p. xvii.
  2. The Fertilizer Association of India, "Handbook on Fertilizer Marketing", New Delhi, 1980, p.i.
  3. Philippine Council for Agriculture and Resources, "The Philippines Recommend for Fertilizer usage" (Technical Bulletin No. 52), Laguna, 1983, p.1.
  4. FAO. "Manual on Fertilizer Distribution" (Bulletin No-8) Rome, 1985, p-2.
  5. Jalan, Manohar Lal, Op. cit., p.53.
  6. Islam Abu Reza Md. Shariful, Op. cit., pp. 1-2.

### **Fertilizer Trade in Gazipur District: An Overview**

Fertilizer is one of the key inputs in the seed based technology for increasing agricultural production. Fertilizer supply comes from both domestic production and import. Until 1966-67, domestic production was the main source supply. Since then, imports increased at a faster rate than domestic production and created heavy pressure on foreign exchange budget.<sup>7</sup> The situation, however, changed with the establishment of more fertilizer industries. Domestic production in 1989-90 accounted for about 79% of the total sources of supply and the rest from import.<sup>8</sup> Urea has always been the dominant product accounting for about 67% of the total fertilizer consumption in 1988-89 followed by TSP (27%). MP comes third in terms of importance constituting about 6% of total fertilizer consumption.<sup>9</sup> HP, SP DAP, NPK have been introduced to the market very recently and as yet have made significant impact. Thus, three types of fertilizers are mainly used by farmers in Bangladesh namely urea, TSP and MP. The major source of growth in demand for fertilizer is the HYV of rice cultivated during Boro season and extended to Aus, Aman, Wheat, Potato, Sugarcane and Tobacco.

Since cropping pattern vary among the districts, the demand for and consumption of fertilizer are also likely to vary. Table-3.1 shows the demand for and consumption of fertilizer in Gazipur district for the year 1992/93-1996/97. The demand for fertilizer at district level is based on accumulated demand of various thanas. Thana Agricultural Officer on the basis of certain assumptions with respect to total population, production needs, cropping pattern changes, fertilizer, application rate and target data for self sufficiency in food grain estimates demand for fertilizer of the respective thanas. It appears from the table that total demand for fertilizers after increasing from 44,262 metric tons in 1992/93 to 44,370 metric tons in 1993/94 dwindled down to 19014 metric tons in 1995/96 and it was estimated to be 50,033 metric tons in 1996/97. Urea has always been in dominant position in demand side. It's share in total demand increased from 41.14% in 1992/93 to 78.08 % in 1995/96, although the demand for Urea was

7. Islam, Md. Mafizul, Op. cit., p.26.

8. Bangladesh Bureau of Statistics, Op. Cit. p. 126

9. Ibid, p.125.



Table-3.1

**Demand and Consumption of Fertilizers  
in Gazipur District (1992/93-1996/97)**

(in M.T)

Year	Demand				Consumption			
	Urea	TSP	MP	Total	Urea	TSP	MP	Total
1992-93	18,210 (41.14%)	15,723 (35.52%)	10,329 (23.34%)	44,262 (100%)	15,043.20 (47.01%)	10,777.84 (33.68%)	6,178.89 (19.31%)	31,999.93 (100%)
1993-94	20,826 (44.91%)	16,218 (34.98%)	9,326 (20.11%)	46,370 (100%)	15,757.63 (47.13%)	11,201.95 (35.50%)	6,476.31 (19.37%)	33,435.89 (100%)
1994-95	18,511 (45.76%)	14,621 (36.14%)	7,320 (43.80%)	40,452 (100%)	16,711.32 (48.55%)	11,150.66 (32.40%)	6,556.31 (19.05%)	34,418.29 (100%)
1995-96	14,846 (78.08%)	2,548 (13.40%)	1,620 (8.52%)	19,014 (100%)	12,364 (78.10%)	841 (5.31%)	2,625 (16.58%)	15,830 (100%)
1996-97 (Estimated)	26,860 (53.68%)	13,138 (26.26%)	10,043 (20.06%)	50,033 (100%)	12,707 (56.96%)	1,100 (4.93%)	8,500 (38.11%)	22,307 (100%)

Source: District Agricultural Office, Gazipur.

estimated to be 53.68% in 1996/97. TSP came next in terms of share of the total demand followed by MP. With the exception of 1995/96, the demand trend of both the fertilizers during 1992/93-1994/95 showed upward trend. However, demand showed upward trend in 1996/97 as compared to 1995/96. Consumption of fertilizers in Gazipur district also showed similar trend. It increased from 31,999.93 metric tons in 1992/93 to 34,418.29 metric tons in 1994/95. After dwindling down to 15,830 metric tons in 1995/96, it again increased to 22,307 metric tons. With the exception of 1995/96, consumption trend of urea and MP showed upward trend while it showed downward trend in case of TSP.

Demand and consumption of fertilizers in survey areas i.e., Joydebpur and Kaliakair Thanas are presented in table - 3.2. It appears from the table that both demand and consumption of fertilizer in Joydebpur thana are much higher than Kaliakair thana. It is due to accessibility of Joydebpur thana with the district head quarter and large farm size, crop variety and crop size. Demand for fertilizer in Joydebpur thana after increasing from 14,524 metric tons in 1992/93 to 15,847 metric tons in 1993/94 rapidly declined to 3,573 metric tons in 1995/96. However, it was estimated to be 15,885 metric tons in

**Table-3.2****Demand and Consumption of Fertilizers in Joydebpur and Kailiakair Thanas (1992/93-1996/97)**

(In M.T)

Year	Joydebpur								Kaliakair							
	Demand				Consumption				Demand				Consumption			
	Urea	TSP	MP	Total	Urea	TSP	MP	Total	Urea	TSP	MP	Total	Urea	TSP	MP	Total
1992-93	7,320	5,812	1,392	14,524	5,447	3,841	1,111	10,399	1,025	890	520	2,435	920	925	260	1,605
	50.40%	40.02%	9.58%	100%	52.38%	36.94%	10.69%	100%	42.09%	36.55%	21.36%	100%	57.32%	26.48%	16.20%	100%
1993-94	8,256	6,166	1,425	15,847	5,517	4,028	2,079	11,292	1,292	920	582	2,794	925	435	262	1,622
	52.10%	38.91%	8.99%	100%	47.46%	34.65%	17.89%	46.24%	46.24%	32.93%	20.83%	100%	57.03%	26.82%	16.15%	100%
1994-95	6,280	4,382	2,578	13,240	1,050	4,096	2,143	7,289	1,382	1,082	419	2,886	1,050	450	275	1,775
	47.43%	33.10%	19.47%	100%	14.41%	56.19%	29.40%	100%	47.99%	37.49%	14.52%	100%	59.15%	25.35%	15.507%	100%
1995-96	1,920	1,029	624	3,573	1,818	245	872	2,935	365	191	135	691	422	80	474	976
	53.74%	28.80%	17.46	100%	61.94%	8.35%	29.71%	100%	52.82%	27.64%	19.54%	100%	43.23%	8.20%	48.57%	100%
1996-97	8,771	4,017	3,097	15,885	5,220	438	437	6,095	2,973	1,684	1,554	6,211	4,021	369	663	5,053
	55.21%	25.29%	19.50%	100%	85.64%	7.19%	7.17%	100%	47.87%	27.11%	25.02%	100%	79.58%	7.30%	13.12%	100%

Source: District Agricultural Office, Gazipur.

1996/97, Consumption also showed similar trend. Demand and consumption of fertilizer in Kaliakair thana showed similar trend. Both demand and consumption, after increasing from 1992/93 to 1994/95, rapidly went down in 1995/96, although estimated demand and consumption for the year 1996/97 increased to a great extent.

### **Distribution of Fertilizers:**

Before creation of BADC, the Directorate of Agriculture was engaged in buying and selling of fertilizers through district, thana and union stores. BADC took over distribution in July 1962<sup>10</sup>. BADC was responsible for procurement of domestic production and imported fertilizer as well as distribution of them through their points. There was a storage/godown in each thana controlled by BADC. BADC distributed fertilizers from thana sales centres. This distribution network was called old marketing system. However, it was argued by the critics that monopoly in fertilizer trade, retained by BADC appointed dealers, was not conducive to expansion and timely delivery of fertilizers to the users. These views seem to be based on certain consultancy reports commissioned by interested donors<sup>11</sup>. In case of fertilizer distribution, the pressure to private sales came from the USAID (United States Agency for International Development). The USAID agreed in 1978 to provide a grant to finance fertilizer imports, warehouse construction and technical assistance provided that a new marketing system was to be introduced, which would substitute the role of BADC as a wholesaler by a private retail market with a more open system. From 1979, the new marketing system of fertilizer distribution was introduced first in Chittagong division experimentally and later in Dhaka, Khulna and Rajshahi divisions with the objectives of providing the availability of fertilizers to the farmers, reducing the cost of fertilizer distribution, encouraging new traders and ensuring full privatization of fertilizer trading successively and executing subsidy reduction of programme.<sup>12</sup> Under new marketing system, BADC was responsible for fertilizer

<sup>10</sup> Jabbar, M.A., Op. cit., P.19

<sup>11</sup> Quasem, Md. Abul., "Impact of the New System of Distribution of Fertilizer and Irrigation Machines in Bangladesh-Survey Findings". Op. cit., P.2.

<sup>12</sup> Habib, A.N.M. Ashan, Op. cit., p.6

system, BADC was responsible for fertilizer distribution up to its primary distribution points located in major regional and district centres. Free trading below primary distribution points were allowed. But this situation is past. In most of the areas, BADC's involvement in fertilizer distribution has been stopped and from 1991 onward its fertilizer wing was inactive.

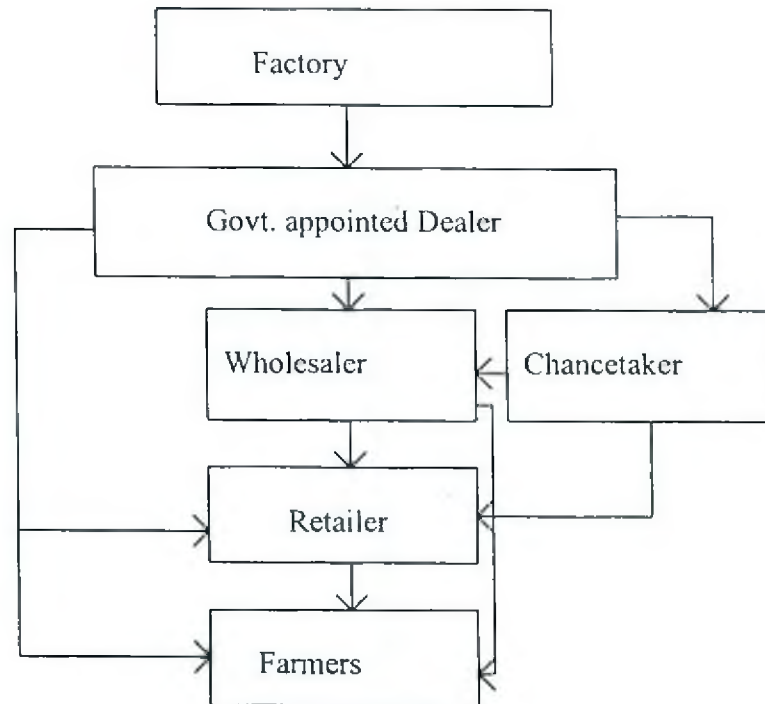
From the very beginning of introduction fertilizers in Bangladesh, distribution of fertilizers has got different shape at different time. In the present situation, the distribution of fertilizers has been privatised by the Government. Bangladesh has almost achieved self-sufficiency to meet up the local demand for urea. But in case of TSP, Bangladesh has not yet achieved the goal of self- sufficiency and thus has to import a portion of TSP and total of the MP. Thus distribution channel of urea differs to some extent from distribution pattern of TSP and MP. Channels of distribution of Urea, TSP and MP are shown in **Fig. 3A** and **3B**. In case of Urea distribution, the responsibility of selection of dealers at district/thana level lies with the District Fertilizer Scrutinizing Committee on the basis of the terms and conditions as mentioned in the advertisements made by the Bangladesh Chemical Industries Corporation. The district committee is the Government sponsored committee at district level. The Deputy Commissioner acts as the convener of the committee. The Deputy Director of Agricultural Extention Office at district level acts as the member secretary. The other members are AGM of Sonali Bank or his representative, President of District Trade Association or his representation and the representative of Bangladesh Fertilizer Association.

The persons belonging to the district/thana, who are interested for Urea fertilizer dealership, are to apply to the District Fertilizer Scrutinizing Committee complying with the following terms and conditions. These are (i) at least 3 years fertilizer business experience, certificate to this effect has to be secured from Bangladesh Fertilizer Association, if he is a member of that association, and in other cases. from District trade and Industry Society (ii) Urea fertilizer godown under his control having capacity of atleast 100 metric tons at district/thana level or a big bazar at thana level. (iii) the applicant must have own selling centre in that particular area (iv) payorder/demand draft

(refundable) equivalent to Tk. 20,000 as application fee in favour of Bangladesh Chemical Industries Corporation. The Corporation reserves the right to forfeite the said

**Fig: 3A**

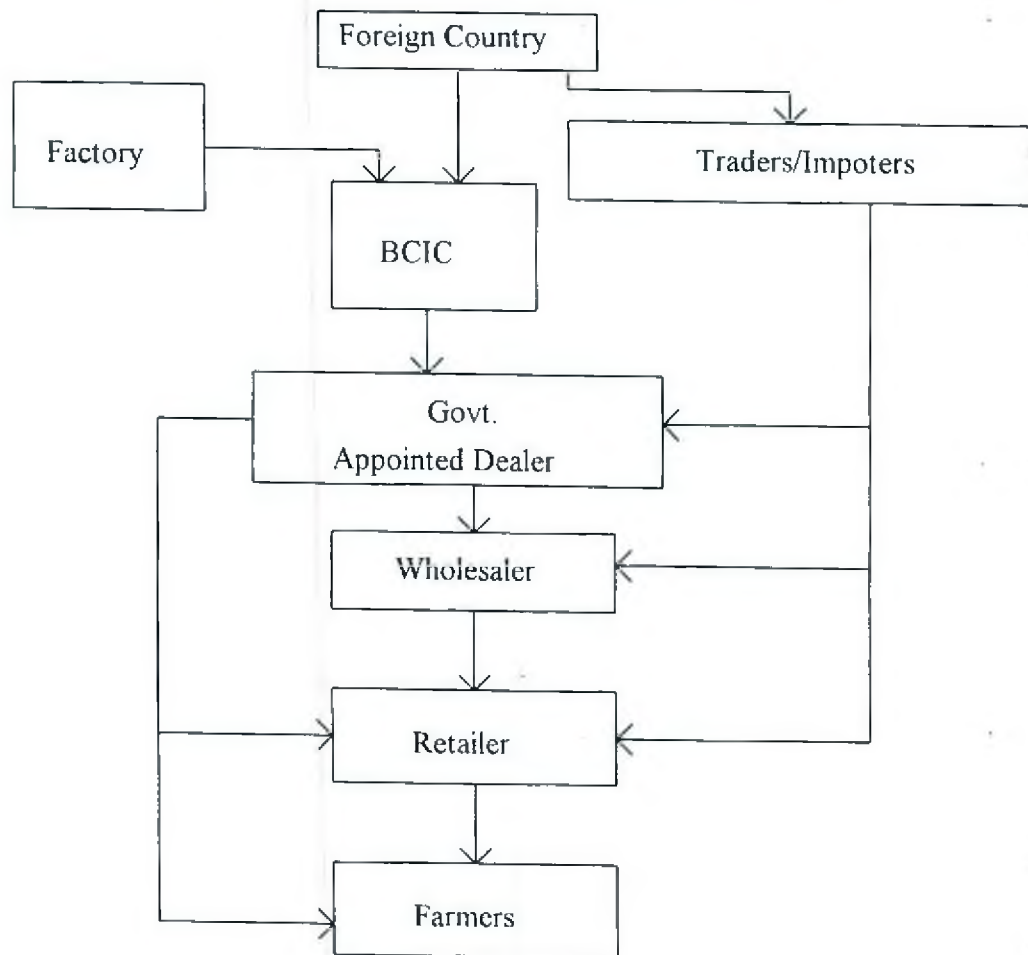
**Channels of Distribution of Urea Fertilizer.**



amount in case of misrepresentation of fact or false documents as supplied by the applicant (v) attested copies of trade licence issued in his name and G-I number (vi) financial solvency certificate from any scheldute bank (vii) selection of dealer by the District Scrutinizing committee will be deemed final (viii) fixed deposit of Tk. 2,00,000 as pay order/demand draft has to be made to the office of deputy commissioner in favour of Bangladesh Chemical Industries Corporation within 7 days after notification of appointment as dealer. The application fee will be refunded to the selected person soon after the receipt of fixed deposit amount and he will be given dealership licence. The application fee will be forfeited and the application will be cancelled if the selected person fails to deposit fixed amount Tk. two Lakhs within the period fixed by the

Corporation. (ix) the authority reserves the right to cancel dealership if the papers are proved to be false/untrue in the subsequent time. In that case the authority will forfeit Tk. 50,000 from the fixed deposit (x) an undertaking with the application to the effect that he will abide by the terms and conditions set up by Bangladesh Chemical Industries Corporation after being appointed as dealer. Having been scrutinized and satisfied with the papers and documents attached with the application, the authority prepares a list of dealers on district wise and sends the same to the Bangladesh Chemical Industries Corporation. The authority, however, does not take into account the proportionate number of dealers on thana basis. As such, there is a gap in the availability of fertilizer within the district.

**Fig-3B**  
**Channels of Distribution of TSP&MP Fertilizers**



After having received thana wise target, district wise target of fertilizers are fixed by the District Agricultural Extension Officer with the proper approval of district administration and the same is sent to the Ministry of Agriculture. The Ministry of Agriculture then fixes up the total requirements of the fertilizer showing the district wise requirements and sends to Bangladesh Chemical Industries Corporation (BCIC). BCIC allocates fertilizers to the different dealers supplied by district fertilizer committee on monthly basis. The dealers are to submit monthly report to the office of Deputy Commissioner. The District Fertilizer Monitoring Committee supervises the activities of the dealers to ensure proper distribution.

In response to a question, all the farmers in both the area mention use of chemical fertilizers; While 20% -26% farmers in both areas use indigenous manures. In the study area, farmer, middlemen have been asked to mention their sources of supply of chemical fertilizers and the responses are shown in table 3.3. It reveals that all the dealers get their supplies from Factories. Dealers distribute their products to the private wholesalers, chance takers, retailers or directly to the farmers. Compared to dealers, wholesalers are small traders. They are located in important markets and all of them buy their requirements from the dealers of both accessible and less accessible areas. They distribute a portion of fertilizers to the retailers or directly to the farmers. In between dealers and wholesalers, there exist a type of occasional traders known as chance takers. They have no permanent establishments and are found when there is a scarcity or high demand for fertilizers. They lift fertilizers from dealers and sell at high prices to the wholesalers and retailers. A portion of their purchase is passed to the neighbouring country through the black marketeers.

The retailers are the last link of fertilizer marketing chain Some retailers get their approval from Thana Agricultural Officer while others do not. Insecticides trade licence/Pourashava trade licence or trade licence from their union parishad is mandatory to get approval from Thana Officer. They purchase a portion of their requirements from

dealers, wholesalers and chance-takers. Majority of the retailers in accessible and less accessible areas purchase fertilizers from dealers. While 82% and 18% retailers buy fertilizers respectively from dealers and wholesaler in accessible area, about 86% and 14% retailers in less accessible area mention that their sources of supplies are dealers and wholesalers respectively. Their selling points are the farmers. Of the farmers interrogated, 54.17% respondents in accessible area and 58.47% respondents in less accessible area mention that they lift fertilizers from retailers. The tendency of the farmers towards the purchase of Urea fertilizers from dealers seems to be high in less accessible area.

While the tendency of the farmers to purchase Urea fertilizers from wholesaler is high in accessible area. Rarely farmers buy fertilizers from black markets.

**Table-3.3**  
**Opinion of the Respondents about Their Sources of Supply.**  
**(Urea, TSP & MP Fertilizer)**

(In Percentage)

Accessibility of Area	Types of Respondent	Sources									
		Factory /BCIC		Importer		Dealer		Wholesaler		Retailer	
		Urea	TSP & MP	Urea	TSP & MP	Urea	TSP & MP	Urea	TSP & MP	Urea	TSP & MP
Accessible	Dealer	100	100	-	100	-	-	-	-	-	-
	Wholesaler	-	-	-	88	100	12	-	-	-	-
	Retailer	-	-	-	10	82	72	18	18	-	-
	Farmers	-	-	-	-	25	10	25.83	20	54.17	70
Less Accessible	Dealer	100	100	-	100	-	-	-	-	-	-
Accessible	Retailer	-	-	-	8.0	86	70	14	22	-	-
	Farmers	-	-	-	-	20.16	10	12.05	10	58.34	80

Note : Respondents utilize more than one source.

However, distribution of TSP and MP differs to some extent from distribution pattern of Urea. Local factories supply 15% of the total requirements of TSP fertilizer. Thus BCIC has to import TSP and MP from overseas. Private importers are also allowed to buy from foreign countries. BCIC distributes TSP and MP fertilizers to the dealers at district/thana level. But production of TSP is so little that it can hardly meet the requirements of dealers and as such they buy from importers. Although all the dealers in accessible and less accessible area lift TSP from BCIC, but in practice they get only 15%



of total requirements. As such, they buy rests of their requirements from traders/importers. In case of MP, all the dealers get some portion of their requirements from BCIC and they all get rests of their requirements from traders/importers also. Importers sell major portion of their proceeds to the wholesaler and small portion to the dealers and retailers. About 88% wholesalers in accessible area and 84% in less accessible area mention that they get their supplies from importers. Retailers lift major portion of their requirements from dealers and relatively small portion from wholesalers and importers and sell proceeds to the farmers. About 70% and 80% farmers in accessible and less accessible areas respectively purchase TSP and MP from retailers and the rests from wholesalers and dealers. The tendency of the large and medium farmers to buy from wholesalers and dealers appears to be higher than small farmers. The reason is that they can buy in large quantity at a lower price from those middlemen.

Respondents have been asked to mention the mode of transport used in carrying fertilizers Table 3.4 shows the opinion of the respondents in this regard. It appears that tractor/truck is the most popular transport to the dealers, wholesalers and retailers in both areas. While 54% retailers and 70.6% farmers in accessible area mention rickshaw to be their popular transport in carrying fertilizer, it is preferred by 58.49% farmers in less accessible area. In contrast to accessible area, large member of wholesalers, retailers and farmers in less accessible area prefer boats while carrying fertilizer. It is perhaps due to poor road communication network within less accessible area. Few farmers carry their own fertilizers or hire labourers or bullock carts in carrying fertilizers. The choice of particular largely transportation mode in carrying fertilizers depends largely upon its availability and quantity of fertilizers.

Marketing costs represent the cost of performing various marketing functions which are needed to transfer a commodity from place of production to the ultimate consumers. Marketing cost and margin of Urea fertilizer is shown in table 3.5. Dealer's price accounts for about 71% of the consumer price in accessible and in less accessible area. The cost of trading of dealer is about Tk. 19.55 per bag in accessible area as against Tk. 21.40 in less accessible area. It is mainly due to difference in transport cost. All other

marketing costs almost remain same. However, dealers in accessible area charge higher margin than that of less accessible area. Wholesalers' purchase price of Urea account for more than four-fifth of the farmers price in accessible and less accessible area. Marketing cost and margin account for 6.77% and 1.99% of the farmers price in accessible.

**Table-3.4**  
Opinion of the Respondents about the Modes of  
Transport used in carrying fertilizers

(In percentage)

Accessibility of Area	Types of Middlemen/ Farmers	Modes of Transport					
		Rickshaw	Bullock Cart	Tractor/ Truck	Labourer	Boat	Own carrying
Accessible	Dealer	-	-	100	-	-	-
	Wholesaler	20	-	80	-	-	-
	Retailer	54	-	46	-	-	-
	Farmers	70.6	1.46	1.96	3.92	11.96	9.8
less Accessible	Dealer	-	-	100	-	-	-
	Wholesaler	-	-	60	40	-	-
	Retailer	-	-	70	30	-	-
	Farmers	58.49	1.89	1.89	5.67	28.28	3.78

Marketing cost and margin of TSP is shown in table 3.6. Cost of marketing for the dealer is found to be Tk. 19.55 in accessible area while it is about TK.21.40 in less accessible area. Of the costs of marketing, transport alone accounts for major share in both the areas. While cost of transport is higher in less accessible area, cost of store and weigher are somewhat higher in accessible area than that of less accessible area. Dealers in less accessible are, however, in advantageous position as they get higher margin than accessible area. Cost of marketing at wholesale level shows that it accounts for Tk. 17.77 in accessible area whereas it is about Tk. 19.15 in less accessible area showing a higher cost of marketing. Cost incurred by retailers averaged about Tk. 15.30 in accessible area and TK.15.42 in less accessible area, of which transport itself accounts for TK. 6.90 in accessible area and TK. 6.80 in less accessible area respectively. Other major cost elements in both areas are wastage, loading & unloading and store rent.

Like Urea and TSP, marketing cost of MP fertilizer is high in less accessible area. It is revealed from table 3.7 that marketing costs of dealer, Wholesaler and retailer in

accessible area are TK. 19.55, TK. 17.77 and the 15.30 respectively as against TK.21.40,TK.19.15 and TK.15.42 respectively in less accessible area. Of the various cost elements, transport accounts for large share followed by wastage, loading and unloading and store rent. However, there is variation in the cost structure. All other marketing costs elements remaining the same, cost of transport at dealers' level in accessible area is lower by Tk 2.00 per bag than that of less accessible area. At wholesale level, cost of transport, store rent and weigher are high in less accessible area whereas loading & unloading, electricity, telephone & wastage are high in accessible area. At retail level, store rent, electricity, telephone and wastage charges are high in less accessible area but in accessible area only transport charge seems to be high. Except dealers in accessible area, all other middlemen in less accessible area get high margin.

The marketing cost and margin of different fertilizers as discussed above hold true in normal distribution i.e. dealer, wholesaler and retailer. But it may happen that retailer by passes wholesaler and purchases fertilizers from dealer. Wholesaler may by- pass dealer and purchase from factory or importer. Sometimes retailers purchase TSP or MP from traders or importers. In these cases, purchase and selling price as well as their margin will vary accordingly. These are shown in exhibit-1 and 2 in appendix. Thus it will not be wise to say that the channel of distribution, marketing cost and margin will remain same for different fertilizers. The price to be paid, cost involved in marketing and margin to be charged depend much on types of channel they use. It difficult to show farmers' cost of carrying fertilizer in table 3.5, 3.6 & 3.7 and exhibit-1 and 2 because they use different sources and means of transports. Moreover, it varies according to size of holding. As such, farmers' costs of carrying different inputs are shown in separate table(Exhibit-3 in appendix). Exhibit-3 shows that cost of carrying fertilizer (per bag per mile) by rickshaw is higher in less accessible area than that of accessible area. It ranges from about Tk.7.00 to Tk.8.00 in accessible area while it varies from about Tk. 8.00 to Tk.9.00 in less accessible area. Cost of carrying fertilizers by boat ranges from about Tk. 7.00 to 8.00 in accessible area while it is around Tk. 8.00 in less accessible area. Truck and labourer appear to be the costliest of all means of carrying fertilizer.

**Table-3.5**  
**Dealer's, Wholesaler's, and Retailer's Marketing**  
**Cost and Margin of Urea Fertilizer:**

Accessible Area			Less Accessible Area		
Cost Elements	Cost	%	Cost Elements	Cost	%
<b>Dealer purchase price:</b>	186.50	71.05	<b>Dealer purchase price:</b>	186.50	70.11
<b>+ Marketing Cost:</b>			<b>+ Marketing cost:</b>		
a) Transportation - 8.00			a) Transportation - 10.00		
b) Loading & unloading - 2.00			b) Loading & unloading - 2.00		
c) Shop/store rent - 2.10			c) Shop/store rent - 2.00		
d) Personnel or weigher - 0.25			d) Personnel or weigher - 0.20		
e) Electricity & Telephone - 0.20			e) Electricity & Telephone - 0.20		
f) Wastage - 5.00			f) Wastage - 5.00		
g) Others - 2.00			g) Others - 2.00		
Margin _____	19.55	7.45	Margin _____	21.40	8.05
	10.95	4.17		10.10	3.80
<b>Selling price of Dealer or</b>			<b>Selling price of Dealer</b>		
<b>Wholesaler Purchase price:</b>	217.00	82.67	<b>or Wholesaler Purchase price:</b>	218.00	81.96
<b>+ Marketing cost:</b>			<b>+ Marketing Cost:</b>		
a) Transportation - 7.78			a) Transportation - 9.63		
b) Loading & unloading - 2.22			b) Loading & unloading - 2.00		
c) Shop/store rent - 2.07			c) Shop/store rent - 2.10		
d) Personnel or weigher - 0.20			d) Personnel or weigher - 0.23		
e) Electricity & Telephone - 0.20			e) Electricity & Telephone - 0.15		
f) Wastage - 4.30			f) Wastage - 4.00		
g) Others - 1.00			g) Others - 1.00		
Margin _____	17.77	6.77	Margin _____	19.15	7.20
	5.23	1.99		6.00	2.26
<b>Selling price of wholesaler or</b>			<b>Selling price of wholesaler or</b>		
<b>Retailer Purchase price:</b>	240.00	91.43	<b>Retailer Purchase price:</b>	243.15	91.42
<b>+ Marketing cost:</b>			<b>+ Marketing cost:</b>		
a) Transportation - 6.40			a) Transportation - 6.80		
b) Loading & unloading - 2.00			b) Loading & unloading - 2.00		
c) Shop/store rent - 2.00			c) Shop/store rent - 2.10		
d) Personnel or weigher - 0.20			d) Personnel or weigher - .20		
e) Electricity & Telephone - 0.10			e) Electricity & Telephone - .12		
f) Wastage - 4.00			f) Wastage - 4.10		
g) Others - 0.10			g) Others - 0.10		
Margin _____	15.30	5.83	Margin _____	15.42	5.80
	7.20	2.74		7.43	2.79
<b>Selling price of Retailer or</b>			<b>Selling price of Retailer/</b>		
<b>Purchase price of Farmers.</b>	262.50	100	<b>purchase price of farmers.</b>	266.00	100

Farmers have been asked to mention the percentage of cost of fertilizer to the total cost of production of rice (per acre of land). On the basis of information provided by

Table - 3.6

## Dealers/Wholesalers/Retailer's Marketing Cost and Margin of TSP Fertilizer

Per bag(50Kg.)in k.

Accessible Area			Less Accessible Area		
Cost Elements	Cost	%	Cost Elements	Cost	%
<b>Dealer purchase price :</b>	560.00	85.11	<b>Dealer purchase price:</b>	560.00	84.47
<b>+ Marketing Cost:</b>			<b>+ Marketing cost:</b>		
a) Transportation	8.00		a) Transportation	10.00	
b) Loading & unloading	2.00		b) Loading & unloading	2.00	
c) Shop/store rent	2.10		c) Shop/store rent	2.00	
d) Personnel or weigher	0.25		d) Personnel or weigher	0.20	
e) Electricity & Telephone	0.20		e) Electricity & Telephone	0.20	
f) Wastage	5.00		f) Wastage	5.00	
g) Others	<u>2.00</u>		g) Others	<u>2.00</u>	
Margin	19.55	2.97	Margin	21.40	3.23
	<u>16.45</u>	<u>2.50</u>		<u>17.10</u>	<u>2.56</u>
<b>Selling price of Dealer or</b>	596.00	90.58	<b>Selling price of Dealer or</b>	598.40	90.26
<b>Purchase price of Wholesaler:----</b>			<b>Purchase Price of Wholesaler:-</b>		
<b>+ Marketing cost:</b>			<b>+ Marketing Cost:</b>		
a) Transportation	7.78		a) Transportation	9.63	
b) Loading & unloading	2.22		b) Loading & unloading	2.00	
c) Shop/store rent	2.07		c) Shop/store rent	2.10	
d) Personnel or weigher	0.20		d) Personnel or weigher	0.23	
e) Electricity & Telephone	0.20		e) Electricity & Telephone	0.10	
f) Wastage	4.30		f)Wastage	4.00	
g) Others	<u>1.00</u>		g)Others	<u>1.00</u>	
Margin	17.77	2.70	Margin	19.15	2.84
	<u>17.23</u>	<u>2.62</u>		<u>18.00</u>	<u>2.71</u>
<b>Selling price of Wholesaler or</b>	631.00	95.90	<b>Selling price of wholesaler or</b>	635.55	95.86
<b>Purchase price of Retailer:</b>			<b>Purchase Price of Retailer:</b>		
<b>+ Marketing cost:</b>			<b>+ Marketing cost:</b>		
a) Transportation	6.90		a) Transportation	6.80	
b) Loading & unloading	2.00		b) Loading & unloading	2.00	
c) Shop/store rent	2.00		c) Shop/store rent	2.10	
d) Personnel or weigher	0.20		d) Personnel or weigher	0.20	
e) Electricity & Telephone	0.10		e)Electricity& Telephon	0.12	
f) Wastage	4.00		f)Wastage	4.10	
g) Others	<u>0.10</u>		g) Other	<u>0.10</u>	
Margin	15.30	2.32	Margin	15.42	2.32
	<u>11.70</u>	<u>1.78</u>		<u>12.03</u>	<u>1.82</u>
<b>Selling price of Retailer or</b>	658.00	100.00	<b>Selling price of Retailer or</b>	<u>663.00</u>	<u>100.00</u>
<b>Purchase price of Farmers.</b>			<b>Purchase price of farmers.</b>		

**Table - 3.7**  
**Dealers,Wholesalers and Retailer's Marketing Cost and Margin of MP Fertilizer**

Per bag(50Kg.)in k.

Accessible Area			Less Accessible Area		
Cost Elements	Cost	%	Cost Elements	Cost	%
<b>Dealer purchase price :</b>	350.00	82.35	<b>Dealer purchase price:</b>	350.00	81.78
+ <b>Marketing Cost:</b>			+ <b>Marketing cost:</b>		
a) Transportation 8.00			a) Transportation 10.00		
b) Loading & unloading 2.00			b) Loading & unloading 2.00		
c) Shop/store rent 2.10			c) Shop/store rent 2.00		
d) Personnel or weigher 0.25			d) Personnel or weigher 0.20		
e) Electricity & Telephone 0.20			e) Electricity & Telephone 0.20		
f) Wastage 5.00			f) Wastage 5.00		
g) Others 2.00			g) Others 2.00		
Margin	19.55	4.60	Margin	21.40	5.00
	8.00	1.88		7.15	1.67
<b>Selling price of Dealer or Purchase price of Wholesaler:---</b>	377.55	88.83	<b>Selling price of Dealer or Purchase Price of Wholesaler:-</b>	378.55	88.45
+ <b>Marketing cost:</b>			+ <b>Marketing Cost:</b>		
a) Transportation 7.78			a) Transportation 9.63		
b) Loading & unloading 2.22			b) Loading & unloading 2.00		
c) Shop/store rent 2.07			c) Shop/store rent 2.10		
d) Personnel or weigher 0.20			d) Personnel or weigher 0.23		
e) Electricity & Telephone 0.20			e) Electricity & Telephone 0.10		
f) Wastage 4.30			f)Wastage 4.00		
g) Others 1.00			g)Others 1.00		
Margin	17.77	4.18	Margin	19.15	4.47
	7.20	1.70		7.25	1.69
<b>Selling price of Wholesaler or Purchase price of Retailer:</b>	402.52	94.71	<b>Selling price of wholesaler or Purchase Price of Retailer:</b>	404.45	94.62
+ <b>Marketing cost:</b>			+ <b>Marketing cost:</b>		
a) Transportation 6.90			a) Transportation 6.80		
b) Loading & unloading 2.00			b) Loading & unloading 2.00		
c) Shop/store rent 2.00			c) Shop/store rent 2.10		
d) Personnel or weigher 0.20			d) Personnel or weigher 0.20		
e) Electricity & Telephone 0.10			e)Electricity&Telephone 0.12		
f) Wastage 4.00			f)Wastage 4.10		
g) Others 0.10			g) Other 0.10		
Margin	15.30	3.60	Margin	15.42	3.60
	7.18	1.69		7.63	1.78
<b>Selling price of Retailer or Purchase price of Farmers.</b>	<u>425.00</u>	<u>100.00</u>	<b>Selling price of Retailer or Purchase price of farmers.</b>	<u>428.00</u>	<u>100.00</u>

them, it comes to average Tk. 26.96% in accessible area and Tk. 27.96% in less accessible area. The difference may be due to variation in transport cost or price of fertilizer.

### **Availability and Accessibility of Fertilizer:**

It is very difficult to measure the availability and accessibility of fertilizers to the farmers as relevant statistic are not readily available. Moreover, a comparison between New Marketing System and Old Marketing System is complicated due to socio-economic changes that have taken place in the recent past. Thus some indirect techniques such as number of traders, stock information, price spread, farmer's opinion about price fluctuation, availability and adaptability of fertilizers are used to know about the availability and accessibility of fertilizers in the study areas.

Data collected from the study areas indicate that there is 17% increase in the number of traders under New Marketing System compared to Old Marketing System. However, there appears a significant difference in terms of the degree of accessibility of an area. There is a 25% increase in the member of regular traders in the accessible area compared to 9% increase in less accessible area. Attempt has been made to collect information from Thana Agricultural Officer about the number of traders actively engaged in fertilizer business compared to traders registered with primary distribution point. It indicates that out of the traders registered with primary distribution point in both accessible and less accessible area about 53% wholesalers and 65% retailers are actively engaged in business. Of the wholesalers, about 62% and 41% wholesalers are engaged in accessible and less accessible area respectively. In case of retailers about 75% in accessible area and 55% in less accessible area are engaged in fertilizer trading. This indicates that the number of wholesalers and retailer is found to be much higher in accessible area. The adoption and rate of utilization of fertilizer vary at the farm level.<sup>13</sup> Table 3.8

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13. Quasem, Md. Abul and Hossain, Mahabub. "Fertilizer uses in Two selected Areas of Bangladesh".  
Op. cit., P.69

shows the extent of adoption and period of experience with fertilizer use. On average about 92.09% cultivators in accessible area and 72.86% in less accessible area reported using fertilizers for more than four years. Thus, accessibility of area has a influence on adoption of fertilizer. It is perhaps due to better exposure to education and earlier availability of irrigation. Farmers in less accessible area are the late adopters, compared to those of accessible area. However, in both accessible and less accessible areas, higher proportion of large farmers are early adopters.

**Table-3.8**

**Opinion of Farmers about the Extent of Adoption and Period of Experience with Fertilizer use.**

(In percentage)

Accessibility of Area.	Size of holding	Percentage of adopters using fertilizer for		
		Up to 2 Years	Up to 4 Years	More than 4 Years
Accessible	Large	6.90	3.45	89.65
	Medium	1.96	3.92	94.12
	Small	5.0	2.5	92.5
	All farmers	4.62	3.29	92.09
Less Accessible	Large	4.76	19.05	76.19
	Medium	6.53	15.21	78.26
	Small	13.21	22.64	64.15
	All farmers	8.17	19.97	72.86

Farmers' decisions as to the utilization of fertilizers on crops depend on crop-mix which in turn is determined by economic and physical factors such as level and quality of land and access to irrigation facilities. Table 3.9 shows number of farmers by size using fertilizers on major crops. It exhibits that cent percent respondents of both accessible and less accessible areas apply Urea, TSP and MP for cultivation of Boro HYV. This is followed by local Aus. The proportionate number of farmers using Urea, TSP and MP are generally low in case of local T. Aman. This is true in case of accessible and less accessible area. Crop wise pattern further shows that large number of farmers in accessible area are using Urea, TSP and MP for cultivation of local Aus as compared with the farmers in less accessible area. On the other hand, proportionate number of farmer in less accessible area using fertilizers for cultivation of local T Aman is higher than that



accessible area. In both accessible and less accessible area, the number of large farmer is higher than medium and small farmer.

**Table 3.9**

**Proportion of Farmers Using Fertilizers on major crops by size of farm ( In Percentage)**

Accessibility of Area.	Size of Holding	Boro- HYV			Local T. Aman			Local Aus		
		Urea	TSP	MP	Urea	TSP	MP	Urea	TSP	MP
Accessible	Large	100	100	100	10.35	10.35	10.35	51.72	51.72	51.72
	Medium	100	100	100	5.88	5.88	5.88	29.41	29.41	29.51
	Small	100	100	100	5.00	5.00	5.00	40.00	40.00	40.00
	Average	100	100	100	7.08	7.08	7.08	40.38	40.38	40.38
Less Accessible	Large	100	100	100	28.57	19.59	14.29	14.29	14.29	9.53
	Medium	100	100	100	2.17	2.17	-	-	-	-
	Small	100	100	100	7.55	7.55	5.66	5.66	6.66	3.77
	Average	100	100	100	12.76	9.74	9.96	9.96	10.48	6.65

Note: Respondents use more than one fertilizer.

An effort is made to identify as to the amount of fertilizer used by the farmers on a given piece of land and whether size of holding has any influence on the extent of utilization of fertilizer. Table 3.10 shows the views of the respondents in this regard. The table shows that except MP fertilizer, farmers in less accessible area are using large quantity of Urea and TSP than the farmers in accessible area. On an average farmers in less accessible area are using about 85.53 Kg. Urea, 64.04 Kg. TSP and 26.59 Kg. Urea. MP per acre of land in contrast to 77.17 kg. Urea, 54.72 kg. TSP and 28.03 kg. MP in accessible area. The findings of the table further reveal that the quantity of Urea and TSP uses per acre of land is higher in both accessible and less accessible area than the quantity of MP fertilizer.

It is argued that size of holding may influence the extent of utilization of fertilizers. But the findings of the survey as shown in table 3.10 reveals that the effect of size of holding is not found systematic. The positive size effect is found in less accessible area with the exception of TSP for medium size holdings. Larger farmers are using larger amount of fertilizers and small farmers apply fertilizers in a smaller proportion. However,

it appears that small farmers are not lower utilizers of fertilizers in any specific crop variety. But they are using lower amount per acre of land because they cannot cultivate the same amount of land of high yielding crop which are heavy users of fertilizers. Because of this and the greater control over land by the large farmers, the small farmers get less benefit from increased supply of fertilizers than medium and large farmers.<sup>14</sup> In accessible area, the size effect is found negative. The medium and small farmers are using larger amount of fertilizers per acre of land than large size farmers.

**Table-3.10**  
**Opinion of the Farmers about the Use of Fertilizer by Farm size.**  
 Kg. Per acre of Land.

Accessibility of area	Size of holding	Urea	TSP	MP
Accessible	Large	75	48.79	25
	Medium	78	62	30.35
	Small	78.5	53.38	28.75
	Average	77.17	54.72	28.03
Less Accessible	Large	98.57	77.38	29.19
	Medium	80.52	55.33	27.13
	Small	77.5	59.40	23.45
	Average	85.53	64.04	26.59

Tenurial status also influences the rate and mix of fertilizer application. However, defining tenure status is a problem since a farmer may be a tenant in case of some crop production but owner operator with respect to other crops. Moreover, size of land ownership has some relationship with tenurial status. For example, large land owners are generally part operator, medium owners are generally owner-operators while small farmers are part-tenant.<sup>15</sup> The amount of fertilizers used per acre of land by tenurial status as reported by farmers is shown in table 3.11. It is evident from the table that tenants use higher amounts of fertilizers per acre of land than owner-cultivators. The difference is higher for medium and small farmers but for large farmers there is narrow difference. On the other hand, owner-cum-tenants use higher quantity of fertilizers on the

14. Ibid p. 76

15. Jabbar, M. A. Op cit., p.59

share-cropped land than owned land. This is true in case of small and medium size tenants but in case of tenants belonging to large size holding, the quantity of fertilizer uses per acre of land is lower on share cropped land than on owned land. Thus tenurial status does not appear to have a negative impact on fertilizer application except in case of large size of holding. Tenants are better users of fertilizers as they use large doses on their owned land compared to the owner farmers.<sup>16</sup>

**Table -3.11**

**Utilization of Fertilizers by the Tenurial Status and Farm size.**

(Kg. Per acre of Land)

Size of holding	Tenurial status		
	Owner Cultivator	Owner-cum-tenants	
		Owner Land	Share cropped Land
Large	63	67	60
Medium	60	64	69
Small	52	60	63

A comparison of fertilizer application under tenurial status for the major crops in table 3.12 also depicts that tenants do not use less fertilizers than owners. Tenants use larger quantity of fertilizers for cultivation of Boro HYV and local T Aman than owners. However, the difference of fertilizer application for local Aus seems to be insignificant. The table further indicates that tenants use more fertilizer on share cropped than on owned land in case of Boro HYV. Reverse picture is found in case of local T. Aman and local Aus where tenants use more fertilizers on owned land than share-cropped land. The main reason for use of high quantity of fertilizers on share cropped land is that larger proportion of the share cropped land is under HYV compared with owned land. Tenants may not use less than that of owner cultivators due to the insecurity of tenure and implicit pressure on the part of the land owner to cultivate rented land more intensively.<sup>17</sup> Application of fertilizer also varies according to length of tenure. Table 3.13 show opinion of the respondents in this regard. It shows that a large proportion of tenants is

16. Quasem, Md Abul and Hossin, Mahabub, Op. cit., p. 76

17. Ibid, p.77

**Table -3.12**

**Opinion of the Farmers about the Uses of Fertilizers in different Crops by Tenurial Status.**

(Kg. per area of Land.)

Crop	Tenurial status		
	Owner Cultivator	Owner-cum-tenants	
		Owner Land	Share cropped Land
Boro-HYV	64	70	77
Local Aus	60	61	59
Local T.Aman	58	68	65

found to operate the shared in land for five years and more, both in accessible and less accessible area. It also appears that the longer is the period of tenure, the lower is the quantity of fertilizer used on the share cropped land and the rate of proportion is higher in less accessible area than accessible area. In accessible area, tenants who have been cultivating land for upto two years, use 65.40 kgs. of fertilizer per acre compared to 59.13 kgs for tenants having length of tenure for upto two years, use 67.52 kgs in contrast to 63.57 kgs per care having lenght of tenure for five years and above. This signifies that

**Table -3.13**

**Opinion of the Farmers about the Quantity of Fertilizers Uses According to Length of Tenure.**

Length of Tenure	Accessible Area		Less Accessible Area.	
	% of respondents	Kg. per. acre of land	% of respondents	Kg. per acre of land
Up to 2 Years	30.5	65.40	22.83	67.52
Up to 4 Years	23.9	60.79	28.30	65.40
More than 4 Years	45.6	59.13	48.87	63.57

subsistence pressure and fear of us the rented in land compel the tenants to use fertilizer more intensively. In case of large farmers who have no such pressure, the tenancy effect on fertilizer use is found negative. 18

18. Ibid., p.79

An effort is made to determine adequacy of fertilizer stock per trader with a view to know whether stock holding levels of fertilizers are sufficient enough to meet local demand. Table 3.14 shows stock of fertilizers with different traders at the time of interview. It appears from the table that less accessible area suffers relatively more from

**Table -3.14**  
**Stock of Fertilizers with the Traders at the Time of Interview.**

Accessibility of Area	Types of Middlemen	Average stock per trader (Per Bag/50 Kg.)			
		Urea	TSP	MP	Total
Accessible	Dealers	30 (56.60)	16 (30.19)	7 (13.21)	53 (100)
	Wholesalers	19 (59.37)	9 (28.13)	4 (12.5)	32 (100)
	Retailers	4 (40)	4 (40)	2 (20)	10 (100)
Less Accessible	Dealers	21 (50)	14 (33.34)	7 (16.66)	42 (100)
	Wholesalers	14 (53.85)	8 (30.77)	4 (15.38)	26 (100)
	Retailers	4 (44.45)	3 (33.33)	2 (22.22)	9 (100)

N.B: Figures in the bracket indicate percentage.

an inadequate supply of fertilizers than accessible area. The shortage is acute in case of TSP and MP. While average stock of dealers, wholesalers and retailers in accessible area are 53 bags, 32 bags and 10 bags respectively, it is 42 bags, 26 bags and 9 bags respectively in case of less accessible area. Out of the available fertilizers, stock of Urea per trader is better than that of TSP and MP. Average stock of Urea accounts for 40% to 60% of the total stock per trader. There appears difference to some extent between accessible and less accessible areas in terms of stock of Urea per trader. But little difference between accessible and less accessible areas is observed in terms of stock of TSP and MP per trader.

Differences in fertilizer prices across space, if any, could throw some light on the regularity of supply in different areas and accessibility of various size of farms<sup>19</sup>. If a

19. Quasem, Md. Abul, "Impact of the New system of Distribution of Fertilizer and Irrigation Machines in Bangladesh-survey findings". Op. cit., p.13.

smooth flow of fertilizer supply can be maintained in the areas, the price fluctuations would be maintained and the variation in prices between accessible area and less accessible area will arise out of marketing cost. Traders' selling price of different fertilizers are shown in table 3.15. Some discrepancy is found among the selling prices that are reported by dealers, wholesalers and retailers or by the farmers. The difference is perhaps attributes to the traders bias for under reporting prices or farmers bias for over reporting. The table, however, shows that selling prices of fertilizers (except MP) by different traders in less accessible area are higher than that of accessible area. The price differential between the two areas appears due to the higher transport or handling cost. The difference in the average price of Urea is similar at dealers', wholesalers' or retailers' level both in accessible and less accessible areas. In case of TSP, price differentials at dealers' and retailers' level seem more or less uniform but at wholesalers' level, the differences appear to be high. It is higher by TK. 0.72 per kg. Price difference of MP fertilizer shows mixed trend. Differences between average and maximum prices of fertilizer are also observed in accessible and less accessible areas. The difference between average and maximum price is higher in less accessible area than that of accessible area. Price difference in the case of TSP is higher in both areas followed by MP and Urea. This is perhaps middlemen who are charging higher prices for TSP and MP due to shortage of supply. With the exception of MP fertilizers price differential widened greater at retailer's level followed by wholesalers and dealers. Retail price, thus, is found stable and close to official price in the accessible area, while prices in the less accessible area display some variation. Table 3.16 shows prices of fertilizers as reported by farmers. Discrepancy is found between the prices reported by retailers and those prices reported by the farmers. The difference can be attributed to over or under reporting prices by either of the sides. The price difference between accessible and less accessible areas as reported by farmers reveals that it is higher in accessible area by Tk. 1.88 per kg. for TSP and Tk. 0.06 per kg. for MP. It might be that demand for TSP and MP fertilizers is higher in accessible area. On the other hand, price of Urea is higher by Tk. 0.06 per kg. in less accessible

**Table-3.15**  
**Traders Sales Price of Fertilizers.**

(Per Kg. in Tk.)

Accessibility of Area.	Types of fertilizer	Average Sales Price of Fertilizers			Maximum Price		
		Dealer	Wholesaler	Retailer	Dealer	Whole saler	Retailer
Accessible	Urea	4.50	4.50	4.50	5.00	5.25	5.50
	TSP	11.50	11.60	11.60	12.60	12.70	13.16
	MP	7.40	7.50	8.00	7.50	8.25	8.50
Less Accessible	Urea	4.75	4.75	4.75	5.50	5.75	5.80
	TSP	11.80	12.32	11.80	12.90	13.00	13.26
	MP	7.50	7.50	7.50	8.00	8.50	8.60

**Table -3.16**

**Prices of Fertilizers as Reported by Farmers.**

(Per. Kg. in Tk.)

Accessibility of Area	Urea		TSP		MP	
	Average	Maximum	Average	Maximum	Average	Maximum
Accessible	5.70	9.71	9.56	11.42	7.87	9.57
Less Accessible	5.76	8.81	7.68	9.46	7.81	11.69
All Areas (Average)	5.73	9.26	8.62	10.44	7.84	10.63

area. The level of price fluctuation between average and maximum price indicates that farmers in accessible area are paying higher Tk. 4.01 per kg. for Urea and Tk. 1.86 per kg. TSP during peak period as against Tk. 3.05 and Tk. 1.78 for Urea and TSP respectively in less accessible area. On the other hand, farmers in less accessible area are paying a higher price of Tk. 3.88 per kg for MP as against Tk. 1.70 per kg in accessible area.

### **Problems in Fertilizer Marketing:**

In the study area various problems are faced by different intermediaries and farmers in the marketing of fertilizer. The problems as perceived by the respondents have been discussed in the following sub - heads.

#### **01. Demand & Supply Problems:**

Determination of effective demand and supply is the natural desire to protect traders and farmers against the risks and uncertainty associated with sustainable

agriculture. A common objective to many farmers and traders in the study area is that they face certain problems relating to demand and supply. Respondents have been asked to mention the problems they face with regard to demand and supply. Table 3.17 shows opinion of the respondents in this regard.

The table shows that lag of demand and supply is the most important problem faced by the respondents. About 89.34% respondents in accessible area and about 93.34% in less accessible area mention this problem. Although Bangladesh produces large quantity of fertilizer, still its availability is unstable and low because of problems in the local factories like breakdown, labour unrest, low capacity utilization and shortage of gas and electricity. On the other hand, TSP and MP are produced in a few factories. Low production, low capacity utilization, high unit cost and resultant subsidy have been a problem from the beginning. As a result, dependence on imports remains much greater than what it should be. Because of poor economic conditions, the Govt. is not in a position to import enough to meet demands. As a result, there is wide gap between demand and supply resulting in insufficient availability of fertilizers. Multifarious use and magnitude of the increasing consumption of fertilizers have also resulted in maladjustment between demand and supply. As a result, it is difficult for farmers to get fertilizers at a price fixed by the Govt.

Artificial scarcity is the next important problem faced by the respondents. Average 77.33% respondents in accessible area and 80.54% respondents in less accessible area stated this problem. The problem seems to be serious in less accessible area. Respondents argue that unscrupulous traders make hold of fertilizers during political unrest, shortage of supply or high demand which leads to artificial scarcity. This results in high price or poor availability of fertilizers.

Another important problem is that the mixes of fertilizers to be highly unbalanced. More than three-fourth respondents in accessible and less accessible area replied in positive frame of mind. The supply mix is unbalanced due to sources of supply. Fertilizers imported under grant/credit contracts are in most cases bilateral. There is little chance of negotiation for balanced supply. The slow growth of balance sales may be due



**Table: 3.17**

**Opinion of the Respondents (in percentage) about the Problems,  
They face regarding Demand and Supply of Fertilizer.**

Problems	Accessible Area				Less Accessible Area					
	Farmer	Dealer	Wholesaler	Retailer	Average	Farmer	Dealer	Whole saler	Retailer	Aver-age
a) Lag of demand and Supply	83.34	100.0	84.0	90.0	89.34	91.34	100	92	90	93.34
b) Unbalanced mixed of fertilizers.	66.67	66.67	72.0	80.0	71.34	75.0	83.34	68.0	70.0	74.08
c) Lack of clear and realistic estimation of requirements.	86.77	50.0	60.0	70.0	66.69	70.6	66.67	64.0	65.0	66.57
d) Artificial Scarcity.	83.34	50	96	80.0	77.33	95.5	66.67	80.0	80.0	80.54
e) Right type of fertilizer and volume not available.	50.0	66.67	56.0	70.0	60.66	58.34	50.0	52.0	78.0	59.58
f) Not available at right time.	66.67	66.67	56.0	66.0	63.84	70.6	66.67	56.0	72.0	66.31

to lesser acceptance of TSP and MP to the users. Quick and visible response by Urea creates a natural impact on the users. Usefulness of TSP and MP are far less visible and to be convinced, one has to learn from experience that takes time.<sup>20</sup> The unbalance use of fertilizer may be due to lack of extension work, publicity, sincerity, lack of required amount of fertilizer and wrong distribution system.

Average about 67% respondents in accessible and less accessible area further complain that authorities fail to make clear and realistic estimation of the fertilizer requirements. They are of the opinion that authorities do not dig into detail about population trend, production needs, fertilizer application rate, soil fertility, crop variety, crop size and water availability while estimating fertilizer requirements. Past experience and past estimations are their bases for estimating fertilizer requirements. The multifarious use of the fertilizer is also responsible for lack of clear and realistic estimation. Thus, authorities failed to make clear adjustment of supply according to changing requirements. Even they failed to safeguard interest of the farmers against black market price and adulteration. Sometimes adequate fertilizers are not available in time in all or many parts of the study area. Sometimes certain types of fertilizers become unavailable. These problems seem to be more critical in less accessible area. The reason for this is that supply from local factories may be inadequate and adequate import also cannot be ensured because of the resource constraints. Foreign fertilizers are either purchased or are received under grant. Supply of fertilizers received under grant depends on availability of grants and convenience of donor countries. Arrival of these fertilizers at port is often delayed. On the other hand, due to shortage of wagons or trucks, fertilizers cannot be distributed timely to the remote areas.

## 02. Quality Problems:

Respondents have been interrogated with a view to know about the quality of the fertilizer. Table 3.18 shows the opinion of the respondents in this regard.

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20. Jabbar, M.A., Op. cit., P.12.

**Table -3.18****Opinion of the Respondents about the Quality of Fertilizer.**

(In Percentage)

Accessibility of Area.	Middlemen/ Farmers	Good	Neither good nor bad	Bad
Accessible	Dealer	-	33.33	66.67
	Wholesaler	-	20.00	80.00
	Retailer	-	24.00	76.00
	Farmer	4.17	16.67	79.16
Less Accessible	Dealer	-	25.00	75.00
	Wholesaler	16.00	40.00	44.00
	Retailer	14.00	50.00	36.00
	Farmer	-	25.00	75.00

A large majority of the middlemen and farmers in accessible and less accessible area mention quality of fertilizer to be inferior, Moderate respondents show indifferent attitude towards the quality. However, negligible percentage of the respondents who mention quality to be good one. Respondents who mentioned quality to be poor, had further been asked to mention causes of poor quality. Their response are shown in table 3.19.

**Table-3.19****Distribution of Respondents (in Percentage)****According to Reasons for Poor Quality of Fertilizer.**

Accessibility of Area	Middlemen/ Farmers	Reasons for poor quality			
		Inadequate storage facility	Lack of standard bag to maintain quality	Lack of quality control	Adulteration
Accessible	Dealer	100	75	25	100
	Wholesaler	45	100	60	90
	Retailer	40	100	48	92
	Farmer	42.10	21.05	63.15	100
Less Accessible	Dealer	100	100	33.33	66.67
	Wholesaler	81.82	100	63.64	60.00
	Retailer	100	55.56	94.44	100.00
	Farmer	50	60.00	48.00	100.00

Highest number of respondents both in accessible and less accessible area are of the opinion that quality of fertilizer is deteriorated due to adulteration of fertilizer. They further argue that it is not done at factory level rather it is practiced at the lower level of distribution channel. Respondents further argue that lack of standard bags at traders' level specially at farmers level affect the quality of the fertilizer. It is also of the opinion of the respondents that storage accommodation is not sufficient to meet the requirements of distribution. It is mostly met by hiring godowns. However, most of the hire godowns are kutcha and inadequate. As a result, loss of fertilizers both in quality and quantity are substantial. Middlemen and farmers further opine that lack of effective quality control at factory level results in poor quality of fertilizer.

### **03. Distribution Problems:**

Distribution is the vital part of marketing mix and crucial to firm's success and survival. Considering its importance, middlemen and farmers have been asked to mention the problems they face while distributing fertilizer. Table 3.20 shows opinion of the respondents in this regard.

It appears from the table that high cost of transport is the most important problem faced by the respondents and acts as disincentive to them. Majority of the respondents in both areas agree with the view. It appears further that middlemen and farmers in less accessible area suffer from acute high cost of transport throughout the year than those in accessible area. In case of Urea distribution, transport cost ranges from about 41% to 45% of the marketing cost at dealer's, wholesalers' and retailers level in accessible area while it ranges from about 44% to 50% in less accessible area. On an average, transport cost accounts for 8.69% of the consumer price in accessible area and 9.94% in less accessible area. This is perhaps due to shortage of transport and disrupted road condition in the less accessible area.

The inadequate network of distribution is another important constraint to the spread of fertilizer particularly in the less accessible area. As against cent percent dealers, 76% wholesalers, 60% retailers and 83.34% farmers in less accessible area mention this problem, about 50% dealers, 60% wholesalers, 80% retailers and 80.34% farmers in accessible area mention that they face this problem. Their responses reflect that in the past traders have tended to concentrate near market yards. The interior traders were few due to limited turnover in such area. Recognizing this trend, the Govt. of Bangladesh has liberalized rules and simplified form of registration. While such a pragmatic measure has made a deal of headway for private traders, it is still far from adequate to meet farmers' needs, particularly in the remote or inaccessible area. As a result, farmer goes to the market for picking up his fertilizer because no nearby dealer is there and there is no nearby dealer because of inadequate local demand. Thus dealers and private traders are not able to spot a viable marketing opportunity more quickly and convert it with little or no delay into retail outlets.

Storage problem seems to be more acute in less accessible area. While 75% dealers, 64% wholesalers and 72% retailers mention this problem in less accessible area, about 66.67% dealers, 64% wholesalers and 74% retailers mention this problem persists in accessible area. Respondents are of the opinion that storage is not sufficient to meet the requirement of the distribution programme. Traders mostly meet their storage requirements of fertilizers by hiring godowns. They argue that most of the hired godowns are kutcha and inadequate. As a result, loses of fertilizer both in quality and quantity are substantial.

Since the demand for fertilizer is largely seasonal and the yield of crops depends to a great extent on the timely application of fertilizer, availability of fertilizer required by the farmers is very important. But overwhelming majority of the respondents in less accessible area and large number of respondents in accessible area complain about the

acute shortage of fertilizer. They reply that output- delivery system including communication, transport and storage as well as economic function in the study area specially in less accessible area are often weak. These factors again associated with weaknesses in the policies and practices of the Government make distribution ineffective resulting in non-availability of fertilizer in time.

**Table -3. 20**  
**Opinion of the Respondents (in Percentage) about**  
**the Distribution Problems Faced by them.**

Problems	Accessible Area				Less Accessible Area			
	Dealer	Whole - saler	Retailer	Farmer	Dealer	Whole- saler	Retailer	Farmer
1. Lack of transport.	50.0	52.0	42.0	50.0	75.0	68.0	64.0	83.34
2. Disrupted road condition.	33.33	28.0	32.0	37.5	75.0	76.0	72.0	79.17
3. High transport Cost.	80.0	80.0	66.0	90.0	100.0	84.0	80.0	87.5
4. Lack of interest of trader to operate.	-	-	-	29.17	-	-	-	54.17
5. Inadequate network.	50.0	60.0	80.0	83.34	100	76.0	60.0	83.34
6. Dishonest traders.	-	-	-	58.83	-	-	-	45.84
7. Non- availability of fertilizer.	50.0	64.0	36.0	66.17	100	80.0	66.0	83.34
8. Shortage of storage accommodation.	66.67	64.0	74.0	-	75.0	64.0	72.0	-
9. Problem of handling/lifting	33.34	60.0	58.0	-	50.0	68.0	66.0	-
10. Inadequate Commission/ margin.	33.34	48.0	42.0	-	25.0	40.0	32.0	-
11. Dissatisfied with the services of middlemen.	-	-	-	90.0	-	-	-	83.34

Transportation is another major problem of fertilizer marketing. During the Old Marketing System, fertilizers were carried by the Government authority (BADC). BADC procured fertilizers from the factories or different points to send to their primary distribution points. In this respect the Government could acquire vehicles at any time or

they were able to confirm the booking of railway wagon. But at present traders have to lift fertilizers from the factories or importers. Now they are responsible to carry them to their selling points.<sup>21</sup>

In the study area, majority of the respondents specially respondents from less accessible area, suffer from more acute transportation crisis throughout the year than those of accessible area. It appears from table 3.20 that about 75% dealers, 68% wholesalers, 64% retailers and 83.34% farmers in less accessible area and about 50% dealers, 52% wholesalers, 42% retailers and 50% farmers in accessible area agree with this view. Respondents argue that shortage of required transport, its irregular service, delay in booking and corruption are the main obstacles in the way of quick movement of fertilizers from port, factory gate, transit godowns or intermediary godowns to different distribution points. There are inaccessible areas where vehicles and boats cannot reach throughout the year. For some places, movement is possible only in the dry season. As such, sufficient quantity of fertilizers can't be transported. Disrupted road condition is also a problem to make fertilizers available to the farmers and it seems to be more acute in less accessible area.

It is complained by the traders that they often face unexpected situation to lift fertilizers from the factory or godowns. In peak season, lifting is delayed and can't lift their fertilizers in proper time. Sometimes they have to buy their fertilizers from unauthorized party. Middlemen complain that in the peak season they do not get fertilizers in desired quantity. Retailers accuse the illegal hoarding of large traders.

So far middlemen's commissions/ margins are concerned, they are of the opinion that rates are low/inadequate although generally high in less accessible area compared to accessible area. It is complained by lower level middlemen that they are not adequately compensated for the services rendered by them and major portion of margin is retained by

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21. Habib, A.N.M Ahsan, Op. cit., P. 40

upper level middlemen. About 58.83% farmers in the accessible area and about 45.84% farmers in less accessible area are of the opinion that dishonesty of the traders acts as an obstacle in the way of proper distribution of fertilizer. Shrewd speculator enters fertilizer markets and does speculative storage. Fertilizers are sold at high prices. Majority of the farmers (54.17%) in less accessible area and moderate farmers (29.17%) in accessible areas complain that middlemen lack interest in doing fertilizer business. They argue that middlemen tend to concentrate in accessible area and are less interested to operate in less accessible area because of storage problems, transportation difficulties and higher cost of distribution. Majority of farmers in accessible and less accessible area are not satisfied with the services of middlemen .

#### 04. **Pricing Problems:**

Respondents have been asked to mention whether they face any problem with regard to pricing of fertilizer. Cent percent respondents mention that they face problem with regard to price. They have further been interrogated as to the types of problems and the reasons for that. Their responses reflect that high prices of fertilizer is the important problem faced by the respondents. The problem seems to be acute in less accessible area than accessible area. About 66.67% dealers, 80% wholesalers, 74% retailers and cent percent farmers in accessible area identify high prices as the main problem. On the other hand, 83.34% dealers, 75% wholesalers and cent percent retailers and farmers respectively in less accessible area mention high prices as the main problem. The opinion of the respondents is that per unit procurement cost of local Urea and TSP are high. The cause is that local fertilizer plants are run below capacities. Distribution costs are also high. Middlemen are of the opinion that imported prices of fertilizers, purchased with tied credit and grant, are generally higher than world market price. Prices of fertilizers are also high because the govt. is trying to reduce subsidy of fertilizers through increase in the farmers' prices and reduction in procurement and distribution costs. About 33.34% dealers , 60% wholesalers, 58% retailers and 66.17% farmers in accessible and 25% dealers, 40% wholesalers, 60% retailers and 79% farmers in less accessible area are of the



opinion that fertilizers are not available at control prices. As such they sometimes buy at higher prices from open market. Farmers are also of the opinion that traders sometimes charge higher prices than those fixed by the government. This amounts to black marketing and it prevails mainly during temporary scarcity situation. Commission allowed to the traders may be considered inadequate by them and this may be another reason for charging higher prices. Some small itinerant traders buy from appointed dealers and sell to farmers at higher prices. This might be an indication of inadequate number of appointed dealers. About 50% dealers, 60% wholesalers, 74% retailers and 58.83% farmers in accessible area and 50% dealers, 68% wholesalers, 60% retailers and 79.17% farmers in less accessible area also complain that prices of fertilizers fluctuate due to black marketing, scarcity situation or high demand. This creates problems in the purchase and sale of fertilizers.

Respondents have been asked to comment on the price fluctuation of fertilizers during the NMS and OMS periods. Table 3.21 shows the opinion of the respondents in this regard. It reveals that most of the respondents reply that price fluctuation increases under the NMS. Only 1.67% farmers in less accessible area mention that situation is improved while 33.33% dealers and 1.67% farmers in accessible area and 10% retailers and 0.83% farmers in less accessible area argue that the situation is unchanged. The extent of deterioration is high in the accessible area and also in less accessible area. Overwhelming majority of the respondents in both areas agree with the view.

**Table-3.21**

**Opinion of the Respondents on the Level of Price  
Fluctuation under NMS Compared to OMS.**

(In Percentage)

Accessi bilityof area	Middlemen/Farmers	Level of Price fluctuation		
		Improved	Deteriorated	Unchanged
Accessible	Dealer	-	66.67	33.33
	Wholesaler	-	100.00	-
	Retailer	-	100.00	-
	Farmer	-	98.23	1.67
Less Accessible	Dealer	-	100.00	-
	Wholesaler	-	100.00	-
	Retailer	-	90.00	10.00
	Farmer	1.67	97.50	0.83

**05. Promotion Problems:**

Respondents have been asked to mention whether they face any problem with regard to promotion of fertilizer. If yes, what are those? All farmers and middlemen reply in positive frame of mind. Out of all the farmers, about 66.67% in accessible area and about 87.5% in less accessible area are of the opinion that manufacturers and traders are unable to provide adequate knowledge about fertilizers to them. They mention that they can explain the actual functions of all fertilizers in aggregate but they cannot explain the actual functions of Urea, TSP and MP separately. Some how or other they amalgamate all functions to some degree. Further, about four-fifth farmers in accessible area and all the farmers in less accessible area argue that traders do not provide any assistance in getting loans from the bank, provide no information of product prices to help farmers realize better returns. Even they do not encourage farmers to cultivate profitable crops. As such, they are not in a position to play the role of guide, philosopher and friend to help farmers overcome their problems. Traders fail to develop rapport with the farmers and not able to provide a personalised service. Cent percent middlemen in accessible and less accessible areas mention that they lack training and promotional support. As a result, they can't provide the type of service which is required to make them an effective agent for improving their business. The manufacturers or the Government extension agencies do

not provide any informal training to them or offer any refresher course. Even the technical marketing staff of the manufacturers do not provide any assistance to respond to localized farmers' problems.

Another important problem is the financing of fertilizer. Respondents have been asked to mention their sources of financing and their responses are shown in table 3.22.

**Table-3.22**  
**Opinion of the Respondents about the Sources of Financing of Fertilizer.**

Accessibility of Area	Middlemen/ Farm	Sources of Financing(%)		
		Self Financing	Institutional Financing	Non-Institutional Financing
Accessible	Dealer	66.66	16.67	16.67
	Wholesaler	68.00	12.00	20.00
	Retailer	54.00	16.00	30.00
	Farmer	79.16	3.33	17.51
Less Accessible	Dealer	50.00	25.00	25.00
	Wholesaler	68.00	20.00	12.00
	Retailer	66.00	20.00	14.00
	Farmer	70.83	8.34	20.83

It appears that overwhelming portion of the working capital of the respondents are met by self financing with a small difference between accessible and less accessible area. Except farmers, institutional sources meet capital requirements ranging from 12% to 25% and non-institutional sources ranging from 12% to 30%. Respondents have also been asked to mention whether they face any problem at the time of getting loans. Table 3.23 shows the opinion of the respondents in this regard.

**Table-3.23**  
**Opinion of the Respondents about the Problem faced by Respondents According to Accessibility of Area.**

(In Percentage)

Respon-dents Access- ibility of Area	Yes				No			
	Dealer	Whole -saler	Retailer	Farmers	Dealer	Whole -saler	Retailer	Farmers
Accessible	33.33	44.00	34.00	33.33	66.67	56.00	66.00	66.67
Less Accessible	25.00	32.00	28.00	24.17	75.00	66.00	72.00	75.83
Average	29.16	38.00	31.00	28.75	70.83	61.00	69.00	71.25

On an average about 29.16% dealers, 38% wholesalers, 31% retailers and 28.75% farmers face problem at the time of getting loans. They have further been asked as to the types of problems they face while getting loan. Their responses are reflected in table 3.24.

The first and foremost problem faced by the respondents in obtaining loans is the high rate of interest specially when they take loan from village mahajons. It has been complained by cent percent respondents .The second important problem is the time taken in sanctioning loan. Sometimes it happens that sanctioned amount is of no use due to time killing. Respondents also do not get sufficient amount to buy or run the business. Still another problem is the fulfilment of a number of formalities. They have to run from village to thana or district headquarter for getting the loan sanctioned. Since the loans are mainly granted against authentic security, which specially farmers seldom possess except land, they have to depend on mercy of others for guarantee. They have to procure no due certificate before sanctioning of the loan, which means unnecessary expenses and harassment. Another big problem faced by the respondents is the corruption on the part of the personnel of the financial institutions. It is alleged that they have to part with the total amount of subsidy on the loan sanctioned specially to weaker farmers. It leads to arbitrary identification of the beneficiaries for the purpose of sanctioning of loan and subsidies under various schemes.<sup>22</sup> The distant location of the financial institutions is also a obstacle is the way of getting loans. They have to go to the farther places again and again for getting their loan sanctioned. It results in irritation, loss of time and unnecessary expenses. Sometimes they are so much harassed that they leave the idea of further approaching and prefer to depend on rural money lenders who charge exorbitant rate of interest. Political interference in sanctioning loan is also an obstacle. Some traders having political backing easily obtain credit even though they offer no security. Traders and farmers who have no political backing suffer most from this ailment. As a result, there arises discrimination in sanctioning loan.

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22. Jalan, Manohar Lal, Op.cit., p.133

Table - 3.24

Distribution of Respondents according to the Problems they face with regard to Financing of Fertilizer. (In percentage)

Accessibility of Area	Middlemen / Farmer	Problems of Financing								
		High rate of interest	Insufficient sanctioned loan	Takes time to take loan	Complex and require much formalities	Nepotism and Corruption	Discrimination	Harassment	Political interference	Distance location from banking
Accessible	Dealer	100.0	100.0	100.0	100.0	50.0	100.0	100.0	100.0	100.0
	Wholesaler	100.0	72.73	90.91	63.64	90.91	81.82	54.55	72.73	63.64
	Retailer	100.0	100.0	76.47	88.24	100.0	100.0	35.29	70.59	58.82
	Farmer	100.0	100.0	100.0	100.0	62.5	100.0	35.29	58.82	70.59
Less Accessible	Dealer	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Wholesaler	100.0	75.0	87.5	62.5	37.5	12.5	75.0	87.51	50.0
	Retailer	100.0	85.71	92.86	78.57	57.14	6.0	85.71	71.43	50.0
	Farmer	100.0	75.0	87.5	100.0	100.0	100.0	48.27	68.96	65.17

**Suggestions:**

Respondents have been asked to comment on possible solutions to overcome product problem. Their responses are shown in table 3.25.

**Table 3.25**  
**Suggestions given by Respondents (in percentage)**  
**to Overcome Product Problems**

Suggestions	Farmers	Dealer	Wholesaler	Retailer
1. Improving Market research and information	40.42	60.0	56.0	42.0
2. Control over trade and business	61.25	80.0	68.0	73.0
3. Imposition of fine	80.83	60.0	66.0	56.0
4. Well constructed storage	24.25	70.0	74.0	52.0

On an average, about 61.25% farmers, 80% dealers, 68% wholesalers and 73% retailers suggest that the government should control trade and business. It is essential to ensure that manufactured product or mixtures should conform to certain specific standards, in terms of minimum guaranteed percentage of plant nutrients, packed in containers and marked in the prescribed manner. About 80.83% farmers, 60% dealers, 66% wholesalers and 56% retailers suggest imposition of severe penalties by the Government on those who will be found guilty of selling substandard/adulterated fertilizers or indulging in black marketing. Quality control should be exercised both on imported or local products. About 24.25% farmers, 70% dealers, 74% wholesalers and 52% retailers are in favour of constructing fertilizer godowns to avoid the loss of fertilizer both in quality and quantity. About 40.42% farmers, 60% dealers, 56% retailers and 42% retailers advocate that traders and farmers must be kept informed of changing market conditions. Monitoring and research activities are required to collect, publish and disseminate data on fertilizer stock levels, production levels, import price at all market level availabilities, demand projections etc. Research on one products and mixtures is also required to help changing farm and market requirement<sup>23</sup>

<sup>23</sup> Ministry of Planning, The Government of Bangladesh. "The Fourth Five Year Plan, 1990-1995", Dhaka, 1990, p.V.A.27.

Respondents have also been asked to suggest some measures to overcome distribution and demand & supply problems. Their responses are shown in table 3.26. Average 83.34% farmers, 70% dealers, 84% wholesalers and 69% retailers in both accessible and less accessible area mention that distribution system can be made more effective if fertilizers are disposed to real group of traders. For implementing an efficient marketing and distribution system, the existence of a properly maintained and well distributed chain of storage for buffer stock of fertilizers is a must. This can ensure ready stock of fertilizers at the planting time and during top dressing. About 72.92% farmers, 90% dealers, 78% wholesalers and 64% retailers consider it to be an effective measure. The next important suggestion given by the respondents is the penetration of distribution system in rural area. They argue that private dealers having routes in the interior area are able to spot a viable marketing opportunity. To facilitate availability of fertilizer in interior areas, registration for carrying upto a certain quantity may be waved. Co-operative system can also help in stocking of fertilizer and ensuring its timely availability to the farmers. It can provide a widespread retail network through which fertilizer and other agricultural inputs can be made available<sup>24</sup>. About 67%92% farmers, 60.0% dealers, 84% wholesalers and 71% retailers are of the opinion that the local agricultural office should make realistic long term demand and supply projection. Efforts should also be made for efficient utilization of fertilizers. The unbalancing of supply mix can be minimised if home factories of Urea and TSP can be run at potential capacity so that dependence on import can be reduced. The appropriate doze of selected fertilizer for selected crops should be determined after conducting soil survey and tests.

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24. Tandon, H.L.S. (edited), Op., cit., pp.26&57.

**Table 3.26**  
**Suggestions given by Respondents (in percentage)**  
**to Overcome Distribution and Demand & Supply Problems**

Suggestions	Farmers	Dealer	Wholesaler	Retailer
1. Promoting competitive market	42.92	60.0	48.0	55.0
2. Penetration in rural area	65.84	80.0	74.0	61.0
3. Single window approach	51.67	50.0	64.0	43.0
4. Development of rural infrastructure	57.92	40.0	56.0	59.0
5. Disposal of fertilizers to real group of traders	83.34	70.0	84.0	69.0
6. Marketing realistic demand and supply projection and efficient use of fertilizers	67.92	60.0	84.0	71.0
7. Building buffer stock of fertilizers	72.92	90.0	78.0	64.0

About 51.67% farmers, 50% dealers, 64% wholesalers and 43% retailers are in favour of adopting single window approach. They argue that dealers/wholesalers in the interior areas should be encouraged to provide a whole range of agro inputs and services. This approach has the advantage of serving as a kind of union/village level agro super market for the farmers. This will help in marketing dealers'/wholesalers' own operation more viable by spreading overheads over a number of product lines with differing seasonal patterns.<sup>25</sup> Respondents also argue that the Government should take measures to develop infrastructural facilities such as improvement of roads and construction of bridges over the canals specially in less accessible area so that fertilizers can be distributed easily. Promotion of competitive market will also ensure effective distribution. Less than half of the farmers and wholesalers and more than half of the dealers and retailers argue with this view. The competitive market structure will include private sector and encompass all types of fertilizers. The direct factory lifting programme of Urea fertilizer by the private sector will be an effective way to improve Urea availability to farmers and to lower prices.

<sup>25</sup> Ibid., p.27



It can be extended to all domestic factories including TSP. However, efforts should be made to deter monopolies and cartels and guarantee free and open competition<sup>26</sup>

Respondents have also been asked to suggest some measures to overcome pricing problems. These are shown in table 3.27.

**Table 3.27**

**Suggestions given by Respondents (in percentage)  
to Overcome Pricing Problems**

Suggestions	Farmers	Wholesaler	Dealer	Retailer
1. Fixation of price	90.42	54.0	60.0	63.0
2. Reduction of price	94.17	76.0	70.0	67.0
3. Commission rate for the traders should be increased	-	94.0	80.0	83.0

Overwhelming majority of the dealers, wholesalers & retailers suggest that commission rates for the traders should be increased which may reduce malpractice and black marketing. The rate of commission should be on the basis of probable costs of transport and storage including transit and storage losses, interest on capital, other incidental charges and reasonable margin. About 94.17% farmers, 70% dealers, 76% wholesalers and 67% retailers mention that fertilizer price should be reduced. As a measure, the Government should take up price support and input subsidy<sup>27</sup>. It is said that with more of subsidy on fertilizer net output will be more than the losses<sup>28</sup>. About 90.42% farmers, 60% dealers, 54% wholesalers and 63% retailers are in favour of fixing up fertilizer price by the Government. Price may be fixed up in each year considering

<sup>26</sup> Ministry of Planning, The Government of Bangladesh, "The Fourth Five year Plan, 1990-1995", Op.cit.,p.V.A.27.

<sup>27</sup> Kahalon, A.S. and George, M.V., "Agricultural Marketing and price policies", Allied Publishers Private Ltd. New Delhi, 1995,p.142.

<sup>28</sup> Islam, Abu Reza Md. Shariful,Op.cit.,p.76.

demand and supply position. This will at least protect farmers from speculators who contrive large seasonal and spatial variations<sup>29</sup>.

Respondents also suggested a number of measures to overcome promotion problem. There are shown in table 3.28. All the dealers, wholesalers and retailers and more

**Table 3.28**  
**Suggestions given by Respondents (in percentage)**  
**to Overcome Promotion Problems.**

Suggestions	Farmer	Dealer	Wholesaler	Retailer
1. Educating farmers about proper fertilizer use	51.57	60.0	74.0	63.0
2. Farmer-friendly service	64.58	50.0	58.0	67.0
3. Provide training to traders	57.92	40.0	52.0	38.0
4. Fertilizer promotion	83.34	100.0	100.0	100.0

than four-fifth farmers advocate that aggressive promotional measures should be taken by the Government. They argue that fertilizer promotion can lead to an expansion of fertilizer use technically and economically sound. One way of promoting fertilizer is to demonstrate the effect of fertilizer on a farmer's land in a village. This should be organized by local agricultural officer with the farmer's active participation and at a site which is easily approachable. A demonstration plot is a living class room and should demonstrate an improvement over existing practices. Different written materials can also be used in fertilizer promotion. These are charts, posters, handbills, leaflets, brochures, wall painting, hoarding and tin plates. The language should be local and the farmer's need local. The Government should undertake promotional campaign on the market day through such media like slides, tape pluslide show. Audio-cassette, video-cassette and TV.

<sup>29</sup> Indian council for Agricultural Development, "A New Strategy in Agriculture", New Delhi, 1972,p.7.

More than half of the farmers, dealers, wholesalers and retailers also suggest that the Government should take steps to educate farmers about proper use of fertilizer by ensuring appropriate recommendation to cover the nutrient requirements to different crops with relevance to actual farmer conditions, reflecting needs and changes in markets and in the field. Dealer/trader may act as change agents to quickly disseminate information and recommendation to farmers<sup>30</sup>. About 64.58% farmers, 50% dealers, 58% wholesalers and 67% retailers mention that traders can increase their sales by providing friendly service to the farmers. The traders can assist farmers who have a marketing or credit requirement by supplying them with fertilizer on credit at the beginning of the season and buying their produce at the end of the season. The traders can play the role of a guide, philosopher and friend to help the farmer in overcoming problems like assisting the farmer in getting loans from the bank, providing information of produce prices to help farmer realise better returns and encouraging cultivation of profitable crops. In this way traders can develop rapport with the farmers. More than half of the farmers and wholesalers and less than half of the dealers and retailers think that traders should be provided training so that they can provide the type of service which is required to make them an effective change agent for improving farm practices. The traders can best be trained by combination of formal training and refresher courses to be organized by the manufacturer and also agencies like BADC. Besides training, the traders also need assistance from the technical marketing staff of the manufacturer to respond to localised farmer problems<sup>31</sup>.

Respondents facing problem are in favour of providing adequate credit to them. There are two types of credit which concern fertilizer traders and farmer. First type is distribution credit which traders require for buying fertilizers from manufacturer/wholesaler. The availability of adequate distribution credit leads to increase in selling pre-seasonal stocking, meeting peak season requirement and high turnover.

<sup>30</sup> Ministry of Planning, The Government of Bangladesh. "The Fourth Five year Plan 1993-1995"  
Op. cit., p.27

<sup>31</sup> Tandon, H.L.s., Op.cit.,p.29

Providing adequate distribution credit to the fertilizer trader or assistance in procuring it from bank, is an effective tool in the hands of the fertilizer manufacturer in promoting fertilizer use, particularly in the remote areas. The second type of credit is the production credit i.e. farmer requirements for financing inputs. Adequate production credit provides working capital requirement of the farmer, increased usage of fertilizers, better farming efficiency and productivity per unit area; improved cropping intensity help to convert knowledge to output and help to create surplus for the farmer. While production credit is meant for the farmer, its availability reduces the burden on the fertilizer traders of finding resources to fund fertilizer sales.<sup>32</sup>

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<sup>32</sup>

Ibid, pp..24&amp;25

## **CHAPTER-4**

# **MARKETING OF SEEDS**

### **Introduction:**

The seed is a basic input of agricultural products which depends to a great extent upon the use of quality seeds. Fertilizers, agricultural machineries and pesticides will be useless unless accompanied by improved and quality seeds. Increase in the yield of land depends to a large extent on seeds, provided other factors are available in proper time.<sup>1</sup> Improved seed has always been ranked to be the first of the five year plans for improved agriculture, which if it is not stepped up very soon, the spectre of chronic malnutrition for increased millions of people will be there and possibly a disastrous famine will confront the country, threatening the peace and well being as a whole. Perhaps the way to meet the challenge of increasing population growth and the food supply thereof, is to find out higher and higher yielding varieties of crops & better quality seeds. It is an irony of fate that per acre of land yield in our country is very low in comparison to advanced countries and every year Bangladesh faces food shortage. In the context of such a situation, a paramount need has arisen to increase agricultural production through improved seeds.<sup>2</sup> It is one of the most important components of strategic inputs.

### **Demand and Consumption:**

Unfortunately no proper attention was given to this input in early years of planning. Seed production, according to modern technology, has gained ground within the country during the last few decades. Although improved varieties were evolved as a result of research, these seeds were not available in large quantities for use. However, increased attention to quality seeds production started only during post-war liberation period. The Government has set up a large number of seed farms with a view to produce the required quantity of seeds. The Bangladesh Rice Research Institute produce high yielding varieties and high breeds of seeds. This resulted in the development of new strategy known as High Yielding Varieties(HYV) programmes.

1. Jalan, Manohar Lal, op. Cit, P.33

2. Malek, M.A, op.cit ., P.5-6

Demand and consumption for certified seeds in Gazipur district is shown in table-4.1. It appears from the table that total demand for certified paddy seeds after dwindling down from about 31.94 thousand kgs in 1992/93 to 19.15 thousand kgs in 1994-95 increased to 41.93 thousand kgs in 1996-97. Boro-HYV has always been dominating position in demand side accounting on an average about 50% of total demand. Demand for certified seeds of local Aus increased from 8.30% in 1992/93 to 29.33%. On the other hand, share of local T.Aman in total demand declined from 42.27% in 1992/93 to 21.23% in 1996/97. Consumption of certified seeds in Gazipur district lags behind the demand due to non-availability of seeds. Consumption showed a mixed trend. It declined from about 17.52 thousand kgs in 1992/93 to 11.50 thousand kgs in 1994/95 and then it increased to 19.24 thousand kgs in 1996/97. Among the paddy seeds, Boro-HYV occupied a dominant position accounting for more than half of the total consumption followed by local T.Aman and local Aus.

**Table-4.1**

**Demand and Consumption for Certified Paddy Seeds in Gazipur District**  
(1992/93 to 1996/97)

(in kg.)

Year	Demand				Consumption			
	Boro-HYV	Local Aus	Local T. Aman	Total	Boro-HYV	Local Aus	Local T.Aman	Total
1992-93	15,790 (49.44%)	2,650 (8.30%)	13,500 (42.27%)	31,940 (100%)	9,333 (53.26%)	990 (5.65%)	7,200 (41.09%)	17,523 (100%)
1993-94	9,430 (46%)	7,100 (34.63%)	3,970 (19.37%)	20,500 (100%)	5,810 (47.90%)	4,470 (36.85%)	1,850 (15.25%)	12,130 (100%)
1994-95	10,850 (55.61%)	3,590 (18.40%)	5,070 (25.99%)	19,510 (100%)	7,160 (62.26%)	1,840 (16.00%)	2,500 (21.74%)	11,500 (100%)
1995-96	17,500 (50.51%)	10,830 (31.26%)	6,320 (18.24%)	34,650 (100%)	10,050 (75.73%)	720 (5.43%)	2,500 (18.84%)	13,270 (100%)
1996-97 (estimated)	20,730 (49.44%)	12,300 (29.33)	8,900 (21.23%)	41,930 (100%)	12,200 (63.34%)	1,050 (5.45%)	5,990 (5.45%)	19,240 (100%)

Source: District Agricultural Office, Gazipur

Demand and consumption for certified paddy seeds in survey areas i.e., Joydebpur and Kaliakair thanas are presented in table-4.2. It appears from the table that both demand

**Table 4.2**  
**Demand and Consumption for Paddy Seeds (Certified) in Joydebpur and Kaliakair Thanas (1992/93-1996/97)**

Year	Joydebpur								Kaliakair							
	Demand				Consumption				Demand				Consumption			
	Boro-HYV	Local Aus	Local T. Aman	Total	Boro-HYV	Local Aus	Local T. Aman	Total	Boro-HYV	Local Aust	Local T. Aman	Total	Boro-HYV	Local Aus	Local T. Aman	Total
1992-93	1854 (52.24%)	295 (8.31%)	1400 (39.45%)	3549 (100%)	1020 (36.17%)	890 (31.56%)	910 (32.27%)	2820 (100%)	1470 (100%)	-	-	1470 (100%)	1000 (100%)	-	-	1000 (100%)
1993-94	1047 (45.78%)	790 (43.54%)	450 (19.45%)	2287 (100%)	700 (49.16%)	514 (36.10%)	210 (14.75%)	1424 (100%)	920 (100%)	-	-	920 (100%)	518 (100%)	-	-	518 (100%)
1994-95	1210 (55.68%)	400 (18.41%)	563 (25.91)	2173 (100%)	798 (61.81%)	215 (16.65%)	278 (21.53%)	1219 (100%)	1150 (100%)	-	-	1150 (100%)	510 (100%)	-	-	510 (100%)
1995-96	1700 (47.27%)	1206 (33.54%)	640 (19.19%)	3596 (100%)	1260 (78.60%)	72 (4.49%)	271 (16.91%)	1603 (100%)	1530 (100%)	-	-	1520 (100%)	975 (100%)	-	-	975 (100%)
1996-97	2100 (47.01%)	1367 (30.60%)	1000 (22.39%)	4467 (100%)	1310 (63.13%)	115 (5.54%)	650 (31.33%)	2073 (100%)	1950 (100%)	-	-	1950 (100%)	1003 (100%)	-	-	1003 (100%)



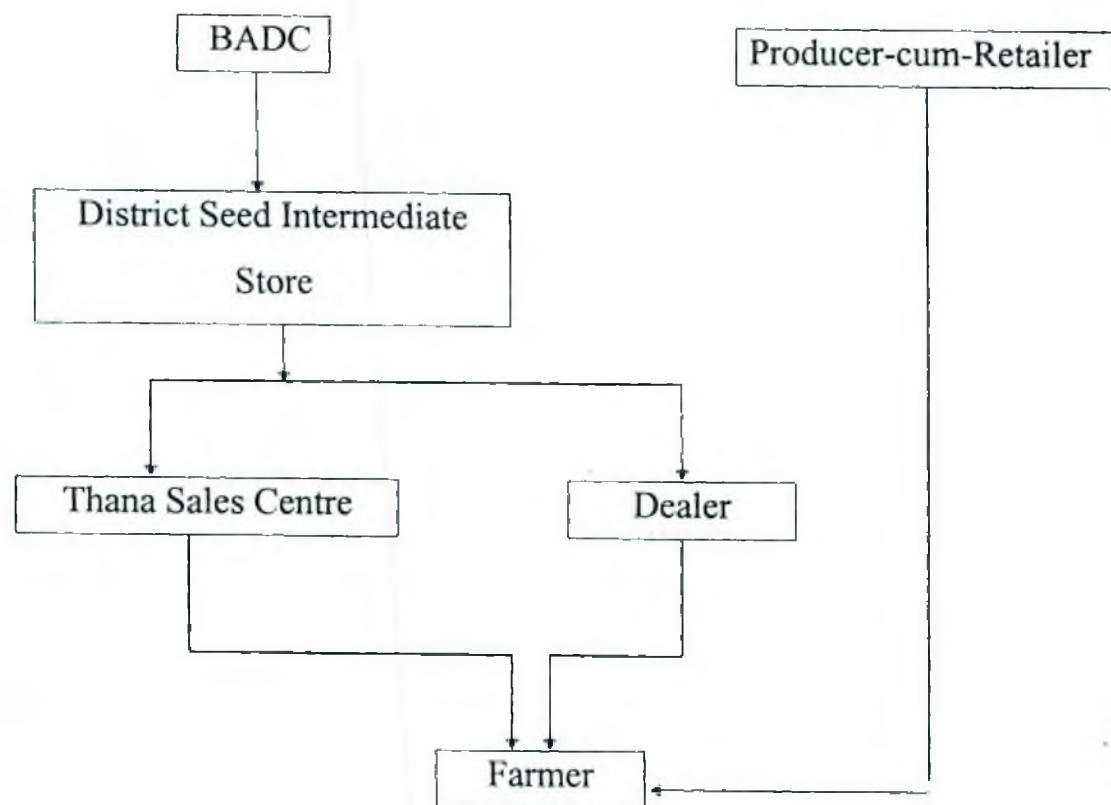
and consumption of certified paddy seeds in Joydebpur Thana are much higher than Kaliakair Thana. Demand for and consumption of certified paddy seeds in Joydebpur Thana after declining from about 3.55 thousand kgs and about 2.82 thousand kgs respectively in 1992/93 to about 2.17 thousand kgs and about 1.29 thousand kgs respectively in 1994/95 rapidly increased to about 4.46 thousand kgs and 2.07 thousand kgs respectively in 1996/97. Demand for and consumption of certified paddy seeds in Kaliakair Thana also showed similar trend. It is to be mentioned that farmers in Kaliakair Thana don't cultivate local Aus and local T. Aman. Demand for Boro-HYV sharply went down from about 1.47 thousand kgs in 1992/93 to about 0.92 thousand kgs in 1993/94, and consumption went down from about 1.00 thousand kgs in 1992/93 to about 0.51 thousand kgs in 1994/95. Then both increased to about 1.95 thousand kgs and about 1.00 thousand kgs respectively in 1996/97.

### **Distribution of Seeds:**

Channel of distribution of seeds in the study area is shown in figure-4A. Distribution of certified seeds among the farmers is a responsibility of the BADC. Seeds grown by BADC and other Government farms are procured by seed distribution department of BADC and directly sent in favour of District Seed Officer. Sometimes the District Seed Officer makes necessary arrangement to collect quality seeds from BADC farms, other Government farms and contract- growers according to the direction of BADC Headquarters. Seed committee at district level is the Government sponsored authority, the function of which is to arrange and collect seeds from BADC and other agencies and distribute them on thana basis and fix up the prices of seeds. The Deputy Commissioner acts as the chairman of the committee while the District Seed Officer acts as the member secretary. The other members of the committee are the District Extension Officer and District Manager (BADC). The District Seed Officer is responsible for selling quality seeds, germination and purity percentage of all variety of quality seeds collected from various points, inspection of growers' field & inspection of the condition of seeds.

Thana Seed Inspector is in charge of thana sales centre who collects seeds from District Seed Officer and then sells the seeds to the farmers on first come first serve basis. The

**FIG-4A**  
**Distribution Channels for Seeds**



District Seed Officer also sells a part of their products to the thana based dealers who then sell directly to the farmers. The responsibility of appointment of dealers at thana level lies with the district Deputy Director (Seed Marketing). Following conditions are to be fulfilled for appointment of dealers. These are (1) prescribed application to be filled up

(2) trade licence issued by District/ Thana/Pourashava or union authority (3) bank solvency certificate (4) introduction letter issued by the U.P chairman along with two recent photos. There are farmers who grow seeds at their own land. A part of seeds is used by them and the rest is sold in village hats on retail basis directly to the farmers. They are known as producer-cum-retailers. Most of the farmers buy seeds from producer-cum-retailers. Middlemen and farmers have been asked to mention their sources of supply. The responses are shown in Table 4.3. It reveals that all the dealers both in

**Table-4.3**  
**Opinion of the Respondents (in Percentage) about Their Sources of Supply of Seeds**

Accessibility of area	Types of Respondent	Sources				
		District seed Intermediate store	Thana sales centre	Dealer	Producer-Cum-etailer	Own source
Accessible	Dealer	100	-	-	-	-
	Producer - cum- retailer	-	-	-	-	100
	Farmers	-	8.34	-	13.34	100
Less Accessible	Dealer	100	-	-	-	-
	Producer-cum-retailer	-	-	-	-	100
	Farmers	-	5.00	-	10.00	100

Note: Respondents utilize more than one source.

accessible and less accessible areas get their supplies from district seed intermediate stores. All the producers-cum-retailers in both the areas also mention that they get their supplies from own sources. However, larger number of farmers in accessible area utilize BADC thana sales centre and producer-cum-retailers as their sources of supply than that of farmers in less accessible area. About 8.34% farmers get their supplies from BADC

and 13.34% farmers from producer- cum- retailers, while in less accessible area about 5% and 10% farmers utilize aforesaid sources respectively. All the farmers in both the areas also utilize own sources most. However farmers get major portion of their supplies from own sources. In response to a question it has been told that farmers in accessible area get on an average about 96.21% of their total supplies from own sources and about 9.79% from market. On the other hand, farmers in less accessible area get about 97.49% from own sources and about 2.51% from market.

Respondents have been asked to mention the various means of carrying paddy seeds. Table 4.4 shows the opinion of the respondents in this regard. It appears that majority of the farmers and producer- cum- retailers in both accessible and less accessible areas carry their own seeds. Truck is the most popular means of transport to the dealers in both areas followed by boat. While trucks and boats are preferred by three-fourth dealers and one-fourth dealers respectively in accessible area, they are preferred by half of the dealers in less accessible area.

**Table-4.4**  
**Opinion of the Respondents about the various Means of carrying Seeds**

(In percentage)

Accessibility of area	Types of respondents	Rickshaw	Truck	labour	Boat	Bullock cart	Own carriers	others
Accessible	Farmer	38.46	-	-	7.69	-	53.95	-
	Dealer	-	75.00	-	25.00	-	-	-
	Producer-cum-retailers	28.00	-	-	20.00	-	52.00	-
Less Accessible	Farmer	16.67	-	-	33.33	-	50.00	-
	Dealer	-	50.00	-	50.00	-	-	-
	Producer-cum-retailer	8.00	-	-	32.00	-	60.00	-

Rickshaw is mainly used by the farmers. About 38.46% farmers and 28.0% producer-cum-retailers in accessible area prefer rickshaw, while it is preferred by 16.76% farmers and 8% producer-cum-retailers in less accessible area. In contrast to accessible area, farmers, dealers and producer-cum-retailers in less accessible area prefer boats while carrying seeds. It is perhaps because the road communication network in the less accessible area is poor.

Marketing cost and margin of paddy seeds for dealer is shown in table-4.5. Dealers' purchase price account for more than four-fifth of their selling price both in accessible and less accessible areas in case of Boro-HYV seeds. The cost of marketing is about 2.85% of the selling price of dealer in accessible area as against 2.88% in less accessible area. It is mainly due to difference in wastage. Cost elements show that transport accounts for large share of marketing cost both in accessible and less accessible areas followed by store rent and loading and unloading. Selling price of dealers further reveals that dealers in accessible area enjoy a higher gross margin than those in less accessible area. Compared to price of Boro-HYV seeds, it is low in case of local Aus and local T.Aman. Dealers purchase price of local Aus is about the 432.00 per maund which is about 90% of the selling price. The cost of marketing is about Tk. 14.85 per maund which accounts for 3.09% of the selling price of dealers. Transport is the major cost element accounting for Tk.8.00 per maund followed by store rent(Tk.2.10) and loading & unloading(1.20). Compared to Boro-HYV, dealers get less margin which is about Tk.33.15 per maund(about 6.91% of selling price). Dealer's purchase price of local T. Aman is about 89.17% of selling price. The marketing cost is the same as local Aus. However, dealers get better margin compared to local Aus. It is about Tk.37.15 per maund which constituted about 7.74% of selling price.

Marketing cost and margin for producer-cum-retailer is shown in table-4.6. Selling price of producer-cum-retailer in case of Boro-HYV is the (Tk.430.00 per maund) both in accessible and less accessible areas. While purchase price accounts for 75.81% in

**Table 4.5****Dealer's Marketing Cost and Margin of Seed (per maund)**

Accessible Area			Less Accessible Area			
Cost elements	Cost	%	Cost elements	Cost	%	
<u>For Boro-HYV seed:</u>			<u>For Boro-HYV seed:</u>			
Dealer Purchasing price	455.40	87.58	Dealer Purchasing price	455.40	87.58	
<u>Marketing Cost:</u>			<u>Marketing Cost:</u>			
Transport	8.00		Transport	8.00		
Loading & unloading	1.20		Loading & unloading	1.20		
Shop/store rent	2.10		Shop/store rent	2.00		
Personnel/weighter	0.25		Personnel/weighter	0.25		
Electricity & Telephone	0.20		Electricity & Telephone	0.20		
Wastage	1.10		Wastage	1.20		
Others	2.00		Others	2.00		
	-----	14.85	2.85	-----	14.95	2.88
Margin	<u>49.75</u>	<u>9.57</u>	Margin	<u>49.65</u>	<u>9.54</u>	
Selling price of Dealer	<u>520.00</u>	<u>100</u>	Selling price of Dealer	<u>520.00</u>	<u>100</u>	
<u>For local Aus Seed:</u>			<u>For local Aus Seed:</u>			
Dealer purchasing price	432.00	90.00				
<u>Marketing Cost</u>			<u>Marketing Cost</u>			
Transport	8.00					
Loading & unloading	1.20					
Shop/store rent	2.10					
Personnel/Weighter	0.25					
Electricity & Telephone	0.20					
Wastage	1.10					
Others	2.00					
	-----	14.85	3.09			
Margin	<u>33.15</u>	<u>6.91</u>				
Selling price of dealer	<u>480.00</u>	<u>100</u>				
<u>For Local T Aman seed:</u>			<u>For Local T Aman seed:</u>			
Dealer Purchasing price	428.00	87.58				
<u>Marketing cost:</u>			<u>Marketing cost:</u>			
Transport	8.00					
Loading & unloading	1.20					
Shop store rent	2.10					
Personnel/Weighter	0.25					
Electricity & Telephone	0.20					
Wastage	1.10					
Others	2.00					
	-----	14.85	3.09			
Margin	<u>37.15</u>	<u>7.74</u>				
Selling price of Dealer	<u>480.00</u>	<u>100</u>				

**Table 4.6**  
**Marketing cost and Margin for Producer-cum-Retailer (per maund)**

Accessible Area			Less Accessible Area		
Cost elements	Cost	%	Cost elements	Cost	%
<u>For Boro-HYV seed:</u>			<u>For Boro-HYV seed:</u>		
Producer-cum-Retailer purchasing price	326.00	75.81	Producer-cum- Retailer purchasing price	330.00	76.74
<u>Marketing Cost:</u>			<u>Marketing Cost:</u>		
Transport	6.90		Transport	6.90	
Loading & unloading	1.00		Loading & unloading	1.20	
Shop/store rent	2.00		Shop/store rent	2.00	
Personnel/weighter	0.22		Personnel/weighter	0.22	
Electricity & Telephone	0.18		Electricity & Telephone	0.18	
Wastage	1.20		Wastage	1.20	
Others	1.00		Others	1.00	
	-----			-----	
	12.50	2.91		12.50	-2.91
Margin	<u>91.50</u>	<u>21.28</u>	Margin	<u>87.50</u>	<u>20.65</u>
Selling price of producer-cum-Retailer	<u>430.00</u>	<u>100.00</u>	Selling price of Producer-cum-Retailer	<u>430.00</u>	<u>100.00</u>
<u>For local Aus Seed:</u>					
Producer-cum-Retailer purchasing price	284.00	76.34			
<u>Marketing Cost</u>					
Transport	6.90				
Loading & unloading	1.00				
Shop/store rent	2.00				
Personnel/Weighter	0.22				
Electricity & Telephone	0.18				
Wastage	1.20				
Others	1.00				
	-----				
	12.50	3.36			
Margin	<u>75.50</u>	<u>20.30</u>			
Selling price of Producer-cum-Retailer	<u>372.00</u>	<u>100.00</u>			
<u>For Local T Aman seed:</u>					
Producer-cum-Retailer purchasing price	370.00	84.09			
<u>Marketing cost:</u>					
Transport	6.90				
Loading & unloading	1.00				
Personnel/Weighter	2.00				
Shop/store rent	0.22				
Electricity & Telephone	1.18				
Wastage	1.20				
Others	1.00				
	-----				
	12.50	2.84			
Margin	<u>57.50</u>	<u>13.07</u>			
Selling price of producer-cum-retailer	<u>440.00</u>	<u>100.00</u>			

accessible area, it is about 76.74% in less accessible area. Marketing cost is the same both in accessible and less accessible areas (2.91% of the selling price). Selling price of producer- cum- retailers shows that retailers in accessible area get the opportunity to claim a higher price to the farmers and this is why they enjoy a higher gross margin than those in less accessible area. Marketing cost in accessible area is the same (Tk. 12.50 each per maund) both for local Aus and local T. Aman. Cost elements indicate that cost of transport per maund is about Tk. 6.90 in both the cases, followed by store rent (Tk. 2.00), wastage (Tk. 1.20) and loading and unloading (Tk. 100). However, producer cum retailers in accessible area enjoy gross margin of Tk. 75.50 per maund by selling local Aus as against Tk. 57.50 in case of local T. Aman.

Like fertilizer, farmers' cost of carrying seeds could not be added with their purchase price of seeds. Exhibit-3 shows that, cost of carrying seeds (per maund per mile) ranges from Tk. 8.00 to Tk. 10.00 in both the areas. Cost of carrying seeds by boat is around Tk.7.00 in accessible area and Tk.8.00 in less accessible area. Exhibit-3 further indicates that boat is the cheapest means of carrying seeds.

Farmers have been asked to mention the percentage of cost of seeds to the total cost of production of rice (per acre of land). On the basis of information provided by the respondents, it comes to average 21.48% in accessible area and 23.18% in less accessible area in case of Boro-HYV. Whereas it is about 19.27% and 27.48% in case of local Aus and Local T. Aman respectively in accessible area. Thus cost of seeds to the total production appears to be high in case of Boro-HYV and local T. Aman.

### **Availability and Accessibility of Seeds :**

Some indirect techniques such as adoption and period of experience stock information, price and adaptability of seed are used to know about the availability and accessibility of seeds in the study areas.



The adoption and period of experience with seeds use as reported by respondents are shown in table 4.7. About 92.74% farmers in accessible area and cent percent in

**Table 4.7**

**Opinion of Farmers(in percentage) about the Extent of Adoption and Period of Experience with Seeds Use**

Accessibility of Area	Size of holding	Up to 2 years	Up to 4 years	More than 4 years
Accessible	Large	6.90	3.45	89.65
	Medium	1.96	1.96	96.08
	Small	5.00	2.50	92.50
	All Farmers	4.62	2.64	92.74
Less accessible	Large	-	-	100.00
	Medium	-	-	100.00
	Small	-	-	100.00
	All Farmers	-	-	100.00

less accessible area mention using seeds for more than four years. About 4.62% and 2.64% respondents in the accessible area have the experience of using seeds for upto 2 years and 4 years respectively. None of the respondents in less accessible area has the experience of using seeds upto four years. Thus farmers in less accessible area are the early adopters compared to those in accessible area. However, higher proportion of medium and small farmers in accessible area are early adopters compared to large farmers. However, it remains the same in less accessible area.

Farmers' decisions as to the use of seeds for cultivation of rice depend on crop mix which in turn is determined by economic and physical factors. Table 4.8 shows number of farmers by size using seeds. It reveals that all the respondents of both accessible and less accessible areas use Boro-HYV seeds for cultivation. This is followed by local Aus (average 21.27%) and local T. Aman (average 7.22%). None of the respondent in less accessible area is found to cultivate local Aus and local T Aman. It is perhaps less accessible area which is more suitable for cultivation of Boro-HYV seeds. Crop wise pattern further indicates that large, medium and small farmers in accessible area use more of Boro-HYV and local Aus seeds than local T.Aman. In both the areas,

number of large, medium seeds than local T.Aman. In both the areas, number of large, medium and small farmer is higher in case of Boro-HYV seeds than that of others. An effort has been made to identify as to the amount of seeds used by the farmers on a given piece of land and if size of holding has any influence on the extent of utilization of fertilizers. Table 4.9 shows the views of the respondents in this regard.

**Table 4.8**

**Proportion of Farmers using Seeds for Rice cultivation (In percentage)**

Kg. per acre of land

Accessibility of Area	Size of holding	Boro-HYV	Local T. Aman	Local Aus
Accessible	Large	100.00	7.55	40.00
	Medium	100.00	10.35	14.29
	Small	100.00	5.77	9.53
	All Farmers	100.00	7.22	21.27
Less accessible	Large	100.00	-	-
	Medium	100.00	-	-
	Small	100.00	-	-
	All Farmers	100.00	-	-

**Table 4.9**

**Opinion of Farmers about the use of Seeds (per acre) by Farm Size**

Kg. per acre of land

Accessibility of Area	Size of holding	Boro-HYV	Local T. Aman	Local Aus
Accessible	Large	30.30	26.50	38.28
	Medium	30.86	27.85	36.41
	Small	31.63	25.40	39.22
	Average	30.93	26.58	37.97
Less Accessible	Large	28.20	-	-
	Medium	27.76	-	-
	Small	26.33	-	-
	Average	27.43	-	-

The table exhibits that farmers in accessible area generally use larger quantity of local Aus seeds, Boro-HYV and local T. Aman. On an average, farmers in accessible area use about 37.97 kgs local Aus seeds, 30.93 kgs Boro-HYV seeds and 26.58 kgs local T. Aman seeds per acre of land. In contrast, farmers in less accessible area use about 27.43 kgs. Boro-HYV seeds per acre of Land. The findings further reveal that large, medium and small farmers use larger quantity of Boro-HYV and local Aus seeds than that of local T. Aman.

Tenurial status, infact, has no influence on the rate and mix of seeds application. The amount of seeds used per acre of land by Tenurial status as reported by farmers is shown in table 4.10.

**Table 4.10**

**Utilization of Seeds by Tenurial Status and Farm Size**

Kg. per acre of land

Size of holding	Tenurial Status		
	Owner-Cum-Tenants		
	Owner cultivator	Owned Land	Share cropped land
Large	30.69	30.86	30.26
Medium	30.70	30.65	30.48
Small	30.47	30.90	30.50

It is evident from the table that size of holding has no influence as to the amount of seeds used for cultivation of their own or share-cropped land. Table 4.11 further reveals that farmers apply varying quantity of Boro-HYV, local Aus and Local T. Aman seeds, but they apply almost equal quantity of seeds for cultivation of their own and share-cropped land.

**Table 4.11****Opinion of the Farmers about the Uses of Seeds by Tenurial Status**

Kg. per acre of land

Types of Seeds	Tenurial Status		
	Owner-Cum-Tenants		
	Owner cultivator	Owned Land	Share cropped land
Boro-HYV	30.18	30.42	30.26
Local Aus	35.80	36.10	36.19
Local T. Aman	27.08	26.80	26.20

This signifies that tendency effect on seed use is negative subsistence farming and fear of losing the rented land have no influence on the quantity of seeds to be applied for cultivation. An effort has been made to determine adequacy of seeds stock per trader with a view to know whether stock holding levels of seeds are sufficient enough to meet local demand. Table 4.12 shows stock of seeds with different traders at the time of interview.

**Table 4.12****Stock of Seeds with the Middlemen at the Time of Interview**

Accessibility of Area	Types of middlemen	Quantity in kg.			
		Boro-HYV	Local Aus	Local T. Aman	Total
Accessible	Dealer	219	85	19	323
	Producer-cum-Retailer	104	56	25	185
Less Accessible	Dealer	208	-	-	208
	Producer-cum-Retailer	317	-	-	317

Compared to the demand for seeds, stock of various seeds with the traders both in accessible and less accessible areas appear to be inadequate. Stock of Boro-HYV seeds appears to be better than that of local Aus and local T. Aman. Average stock of seeds with the retailers in the less accessible area seems to be better than that in accessible area. Out of average stock of 323 kgs. seeds with the dealers in accessible area, Boro -HYV seeds account for 219 kgs, Local Aus 85 kgs. and Local T. Aman 19 kgs. At retail level,

it is about 104 kgs, 56 kgs, and 25 kgs. respectively. Dealers and retailers in less accessible area maintain stock of only Boro-HYV seeds. However, there appears no difference between accessible and less accessible area in terms of stock of Boro-HYV seeds at dealers' level but marked difference is observed in terms of stock of Boro-HYV at retail level.

Prices of seeds would give some light on the regularity of supply in different areas and accessibility of various size of farms. Table 4.13 shows traders' selling price of different seeds. Discrepancy is found between the selling prices reported by dealers and producer-cum-retailers. It is perhaps the later one is the producer of seeds and sells directly to the farmers. No price discrepancy is found as to the selling price of dealers both in accessible and less accessible areas. Differences between average and maximum prices of seeds are also observed. In accessible area per kg price differential between average and maximum price at dealers' level shows that it is higher in case of local T. Aman (Tk. 1.30 per kg.) and Boro-HYV (Tk. 1.30 per kg.) than that of local Aus (Tk. 1.20 per kg.). On the other hand, price differential between average and maximum price widened greater at retail level in case of Local Aus (Tk. 2.20 Per kg.) and Local T. Aman

**Table-4.13**  
**Traders' Average and Maximum Selling Price of Seeds**

Accessibility of Area	Types of seeds	Dealer		Producer-cum-Retailer	
		Average	Maximum	Average	Maximum
Accessible	Boro-HYV	11.70	13.00	10.25	11.20
	Local Aus	10.80	12.00	7.10	9.30
	Local T. Aman	10.70	12.00	9.25	11.00
Less Accessible	Boro-HYV	11.70	13.00	10.10	11.00
	Local Aus	-	-	-	-
	Local T. Aman	-	-	-	-

(Tk. 1.75 per kg.) than that of Boro-HYV (Tk. 0.95 per kg.). In less accessible area, price differential between average and maximum price at dealers' level in case of Boro-HYV is Tk. 1.30 per kg. and Tk. 0.90 per kg. at retailers' level. Average and maximum prices at

dealer's and retail's level further indicate that price differential in case of local Aus and Local T. Aman at retail's level is higher than that of dealer's level and in case of Boro-HYV, it is higher at dealer's level than that of retail level. Due to high prices of seeds at dealers' level, farmers mostly buy seeds from open market. Table 4.14 shows farmers' average and maximum purchase price of seeds.

**Table-4.14****Farmer's Average and Maximum Purchase Price of Seeds**

Per kg. (in Taka)

Accessibility of Area	Types of seeds Size of holding	Boro-HYV		Local Aus		Local T. Aman	
		Average	Maximum	Average	Maximum	Average	Maximum
Accessible	Large	10.00	11.00	7.10	9.30	9.70	11.10
	Medium	10.20	11.20	7.17	9.35	9.80	11.10
	Small	10.05	11.20	7.16	9.42	9.75	11.30
Less Accessible	Large	9.92	11.00	-	-	-	-
	Medium	10.07	11.00	-	-	-	-
	Small	9.95	11.10	-	-	-	-

Discrepancy is found between the prices reported by retailers and the farmers. The difference can be attributed to over or under reporting prices by either of the sides. The level of price fluctuation between average and maximum price indicates that farmers in accessible area appear to be somewhat in a disadvantage as they are paying higher prices for Boro-HYV seeds. In both accessible and less accessible areas, small farmers generally pay higher prices than that of large and medium farmers. Price differential between average and maximum price of local Aus further indicates that it is high at small farmers' level followed by large and medium size farmers. Same is true in case of Local T. Aman.

## **Problems in Seeds Marketing:**

Various problems are faced by different middlemen and farmers. The problems as mentioned by the respondents are discussed below:

### **01. Demand and Supply Probles:**

Respondents have been asked to mention the problems they face with regard to demand and supply. Table 4.15 shows opinion of the respondents in this regard. The table shows that non-availability of seeds at right time in all or many parts of the study area is the most important problem faced by the respondents. Sometimes certain type of seed like Boro-HYV becomes unavailable. This problem seems to be more critical in less accessible area than that of accessible area. More than three-fifth respondents in accessible and less accessible areas mention this problem. Next important problem faced by the respondents is the lag of demand and supply. About 63.22% respondents in accessible area and about 68.34% respondents in less accessible area mention this problem. They are of the opinion that availability of Boro-HYV is unstable and low because of the poor supply of seeds by the Government. More than three-fifth respondents in accessible area and less than three-fifth respondents in less accessible area are of the opinion that authorities fail to make clear and realistic estimation of the seed requirements.

They further complain that authorities don't dig into detail about production needs, crop variety, crop size and water availability while estimating seeds requirements. Artificial scarcity is the next problem faced by the respondents. Average about 50.61% respondents in accessible area and 73.5% respondents in less accessible area stated this problem. The problem seems to be serious in less accessible area. Respondents argue that unscrupulous traders make hold of seeds during shortage of supply or high demand, tantamounting to artificial scarcity. This results in high price or poor availability of seeds.

**Table 4.15**  
**Opinion of the Respondents (in percentage) about the Problems**  
**They face regarding Demand and Supply**

Problems	Accessible area				Less accessible area			
	Farmers	Dealers	Producer - Cum- Retailers	Average	Farmers	Dealers	Producer -cum- Retailers	Aver- age
a) Lag of demand and supply	66.67	50.00	72.00	63.22	75.00	50.00	80.00	68.34
b) Lack of realistic estimation of requirements	50.00	75.00	60.00	61.67	56.66	50.00	70.00	58.88
c) Artificial Scarcity	45.84	50.00	56.00	50.61	52.50	100.00	68.00	73.50
d) Non available at right time	70.60	75.00	57.14	67.58	62.50	100.00	60.00	74.17

## 02. Product Problems:

Respondents have been asked to know about the quality of seeds. Table 4.16 shows the opinion of the respondents in this regard. A large majority of the middlemen and farmers in accessible and less accessible area mention that the quality of seeds to be good one. Moderate respondents show indifferent attitude towards the quality of seeds. None of the dealers and producer-cum- retailers in both the areas is found to mention quality of



seeds as bad one. However, about 13.33% farmers in accessible area mention quality to be bad one. Farmers who mention quality to be poor one, have further been asked to mention reasons for poor quality of seeds. Their responses are shown in table 4.17.

**Table 4.16**

**Opinion of the Respondents (in percentage) about the Quality of Seeds**

Accessibility of Area	Middlemen/Farmer	Good	Neither good nor bad	Bad
Accessible	Dealer	50.00	50.00	-
	Producer-Cum-retailer	72.00	28.00	-
	Farmer	76.44	10.23	13.33
Less Accessible	Dealer	100.00	-	-
	Producer-Cum-retailer	92.00	8.00	-
	Farmer	86.67	13.33	-

**Table 4.17**

**Distribution of Farmers (in percentage) according to Reasons for Poor Quality of Seeds**

Reasons	Accessible Area	Less Accessible Area
1. Inadequate storage facility	81.25	-
2. Lack of standard bags to maintain quality	87.5	-
3. Lack of quality control	62.5	-
4. Adulteration	75.0	-
5. Others	-	-

Respondents argue that seeds are mainly kept in gunny bags, big earthen pots or drums that affect the quality of seeds. About 87.5% respondents in accessible area mention that there is lack of standard bags to maintain quality of seeds. More than four-fifth respondents further complain that storage accommodation is not sufficient to meet the

requirement. As a result, loss of seeds both in quality and quantity are substantial. More than three-fifth respondents also express their opinion that lack of effective quality control at production level or dealer's level results in poor quality of seeds. About three-fifth percent respondents further argued that quality of seeds is deteriorated due to adulteration of seeds, both at production and trader's level.

### 03. Distribution Problems :

Middlemen and farmers have been asked to mention whether they face problem with regard to distribution of seeds. In accessible area cent, percent dealers, 80% producer-cum-retailers and 83.34% farmers mention that they face problems with regard to distribution of seeds. While cent percent dealers, cent percent producer-cum-retailers and about 91.67% farmers in less accessible area mention distribution problem faced by them. Respondents who face distribution problems have further been asked to mention types of distribution problems. Their responses are shown in table 4.18. It appears from the table that lack of transport is the most important problem faced by them and acts as disincentive to them. About 50% dealers, 75% producer-cum-retailers and 90% farmers in accessible area and about cent percent dealers, 80% producer-cum-retailers and 77.22% farmers in less accessible area agree with this view. They argue that shortage of required transport & its irregular services are the main obstacles in the way of quick movement of seeds from transit godowns or intermediary godowns to different distribution points. There are in accessible areas where vehicles can't reach throughout the year. Disrupted road condition is also a problem to make quality seeds available to the farmers and it seems to be more acute in less accessible area.

Since the demand for improved seed is largely seasonal and the yield of crop depends to a great extent on the timely application of seed, availability of better seed is very important. About three-fourth dealers, producer-cum-retailers and farmers in

accessible area, and about half of the dealers, about three-fourth producer-cum-retailers and farmers in less accessible area complain about the non-availability of better seeds. They are of the opinion that out-put delivery system including transport and storage including policies and practices of the Government make distribution ineffective, resulting in non-availability of better seeds in time.

**Table 4.18**

**Distribution of Respondents according to the Problems They face with regard to Distribution (In percentage)**

Problems	Accessible Area			Less Accessible Area		
	Dealer	Producer-cum-Retailer	Farmer	Dealer	Producer-cum-Retailer	Farmer
1. Lack of transport	50.00	75.00	90.00	100.00	80.00	77.22
2. High transport cost	75.00	50.00	82.00	100.00	68.00	68.18
3. Inadequate network	100.00	50.00	100.00	50.00	56.00	90.91
4. Dishonest traders	-	-	75.00	-	-	63.64
5. Non-availability of better seeds	75.00	85.00	80.00	50.00	84.00	72.73
6. Shortage of storage accommodation	100.00	65.00	-	100.00	72.00	-

High transport cost is also an important problem faced by the respondents and acts as disincentive to them. About 75% dealers, about 50% producer-cum-retailers and about 82% farmers in accessible area and about cent percent dealers, about 68% producer-cum-retailers and about 68.18% farmers in less accessible area suffer from acute high cost of transport throughout the year. Transport accounts more than half of the marketing cost in case of Boro-HYV, Local Aus and Local T. Aman at dealer's level in accessible area. It also accounts for more than half of the dealer's marketing cost in case of Boro-HYV in less accessible area. On the other hand, transport cost at retail level accounts for about 55.2% of the marketing cost for Boro-HYV, local Aus Local T. Aman in accessible area. Transport cost at dealer's level is also the same in less accessible area, in case of

Boro-HYV. The high cost of transport is due to non-availability of transport and disrupted road condition.

The inadequate network of distribution is also a constraint to the proper distribution of seeds. As against cent percent dealers, about 50% producer-cum-retailers and cent percent farmers in accessible area mention this problem, about 50% dealers, about 56% producer-cum-retailers and about 90.91% farmers in less accessible area mention that they face this problem. They are of the opinion that traders are concentrated near market place, and interior traders are few due to limited turnover. Farmer goes to the market place or to the thana headquarters for picking up better or quality seeds. Thus traders are unable to spot marketing opportunity more quickly.

Shortage of storage accommodation is also an important problem. While cent percent dealers and 65% producer-cum-retailers in accessible area mention this problem, about cent percent dealers and about 72% producer-cum-retailers in less accessible area mention this problem to be persisting in less accessible area. They argue that storage accommodation is not sufficient to meet the requirements of the distribution programme. They meet storage requirements by hiring godowns or keeping big drums, posts or ordinary bags in their own houses. They further argue that most of hired godowns are kutcha and inadequate. As a result, quality of the seeds deteriorates. Dishonesty of trader also acts as an obstacle in the way of proper distribution of seeds. About three-fourth farmers in accessible area and more than four-fifth farmers in less accessible area express positive attitude towards this problem. Farmers mention that shrewd traders make speculative storage and charge high prices.

#### **04. Pricing Problem :**

Respondents have been asked to mention whether they face any problem with regard to pricing of seeds. Cent percent respondents belonging to different categories replied in a positive frame of mind. They have further been interrogated as to the types of problems and reasons for that. High price of seeds is the important problem faced by them. The problem appears to be deeper in less accessible area than accessible area. All

the dealers and more than three-fourth percent producer-cum-retailers and farmers in accessible and less accessible areas blame high prices as the main problem. Farmers complain that price charges by the dealers are generally higher than that of producer-cum-retailers and as such they mainly buy from open market. Dealers argue that they sell at high prices because per unit procurement cost is high. On the other hand, producer-cum-retailers themselves grow seeds and sell directly to the farmers at a cheaper price. Cent percent farmers both in accessible and less accessible area further complain that dealers sometimes charge higher prices than those fixed by the Government. This leads to black marketing and it prevails mainly during scarcity situation. About 75% dealers, about 68% producer-cum-retailers and about 71.67% farmers in accessible area and about cent percent dealers, 84% producer-cum-retailers and about 79.17% farmers in less accessible area further complain that fluctuation in the prices of seeds due to black marketing, scarcity situation and changes in demand creates problem in the purchase and sale of seeds. Respondents have been asked to comment on the price fluctuation of seeds under New Marketing System compared to Old Marketing System. Their responses are shown in table-4.19. It reveals that majority of the respondents both in accessible and

**Table-4.19**  
**Opinion of the Respondents (in percentage) about the Level of Price**  
**Fluctuation under New Marketing System**  
**Compared to Old Marketing System**

Accessibility Area	Farmers/ Middlemen	Level of Price Fluctuation		
		Improved	Deteriorated	Unchanged
Accessible	Farmer	-	85.64	14.36
	Dealer	-	75.00	25.00
	Producer-cum-Retailer	-	72.00	28.00
Less Accessible	Farmer	-	100.00	-
	Dealer	-	50.00	50.00
	Producer-cum-Retailer	-	64.00	36.00

less accessible area mention that price fluctuation under New Marketing System has deteriorated compared to Old Marketing System. Only moderate respondents mention price fluctuation to be unchanged. None of the respondents have been found to mention price fluctuation to be improved under New Marketing System.

**05. Promotion Problems :**

Dealers, producer-cum-retailers and farmers have been asked to mention whether they face any problem with regard to promotion. If yes, what are those? It appears from their responses that all of them face problems relating to promotion of seeds. Out of the farmers, about three-fourth in accessible area and more than four-fifth in less accessible area mention that traders are unable to provide adequate knowledge about improved variety of seeds. Traders don't provide adequate information to help farmers cultivation of profitable crops. About 75% dealers and about 96% retailers in accessible area and almost all the dealers and retailers in less accessible area reply that they lack any formal training. All the dealers and retailers further argue that they lack promotional support. As a result, they can't provide the type of service which is required to make them an effective agent for improving their business.

Dealers, producer-cum-retailers and farmers have also been asked to mention whether they face financing problem. None of the producer-cum-retailers is found to face any problem relating to finance. However, all the dealers belonging to both the areas mention facing financing problems. They often face short of the capital and as such find it difficult to run business. They also mention that they do not get required capital from financial institution. It also requires much formalities and much time. Banks also do not show much interest in financing their business. On the other hand, around three-fourth farmers in accessible and less accessible areas also mention that they can't use improved seeds due to shortage of capital.

**Suggestions :**

When asked to comment on the measures to be taken to overcome product problems, respondents put forward a number of measures. These are shown in table 4.20. All the dealers and more than four-fifth farmers and producer-cum-retailers mention that certified seeds should be distributed among the farmers. They argue that quality seeds up to required quantum can easily be produced through contract growers under systematic supervision in seeds growers zones. Efforts should be made to rely on hybrid, high yielding varieties which possess high yield potential but can be grown from seed retained by cultivators. In this respect marketing information system must be used in product planning. There should be close co-ordination among BADC, Agricultural University, Government Departments and Private agencies for development of seed industry. The seed industry should be made an attractive enterprise for production of seeds and thereby opening new opportunities for employment and income. Small seed growers should be encouraged to form compact areas for seed production where the Government assistance can be directed with ease and effectively.

**Table 4.20**  
**Suggestions given by Respondents (in percentage)**  
**to Overcome Product Problems.**

Types of Middlemen/ Farmer Suggestions	Farmers	Dealers	Producer-cum -Retailers
1. Construction of seed godowns and seed processing plants by BADC.	55.0	66.67	54.0
2. Use of standard bags to improve quality .	47.92	83.34	66.0
3. Distribution of certified seeds.	81.67	100.0	82.0
4. Research and development.	33.34	50.0	24.0

About 47.92% farmers, about 83.34% dealers and about 66.0% producer-cum-retailers also argue that standard bags preferably moisture proof bags should be used to maintain

quality of bags. Each and every package should bear certification marks on the stich to avoid pilferage and adulteration. The BADC should set up seed processing plants, seed stores and cold storage at thana level for scientific processing, prescribing and storing of seeds. More than half of the farmers, dealers and producer-cum-retailers agree with this view. About half of the dealers and more than one-fifth farmers and producer-cum-retailers suggest future research to be undertaken for varietal improvement of growing diversified seeds under irrigated conditions.

Respondents have also been asked to suggest some measures to overcome distribution & demand and supply problems. Their views are presented in table 4.21. On an average about more than four-fifth farmers and dealers and more than three-fifth producer-cum-retailers suggest to establish more selling centres to make seeds available at the farmers' door steps. They are of the opinion that the Government should set up distribution centres at thana level. Thana centre should be entrusted with the responsibility of opening temporary centres at each union level during the sowing season. The infrastructural facilities should also be expanded. Efforts should be made by the Government to distribute seeds through co-operative system where the Government

**Table 4.21**  
**Suggestions given by Respondents (in percentage) to Overcome**  
**Distribution and demand and Supply Problems.**

Types of Middlemen/Farmer Suggestions	Farmers	Dealers	Producer-cum- retailers
1. Establishing more selling centres	89.58	83.34	68.0
2. Ensuring seeds in proper time at proper place.	97.92	66.67	58.0
3. Enacting law	70.84	50.0	72.0



lacks trained manpower, processing equipments, storage facilities and marketing arrangements. Private traders can play a major role in the distribution network. Their utility in the set up cannot be undermined. To cater to the demand of an enlarged seed distribution programme through a network of supply points require establishment of storage by the Government. This will ensure distribution according to targeted programme in proper time at proper place. This is suggested by about 97.92% farmers about 66.67% dealers and about 58% producer-cum-retailers. It is also said by majority of the respondents that the Government should enact law to check on activities of unscrupulous and profiteering traders. This will protect interest of the farmers.

Price charged by the traders is very high due to lack of adjustment between demand and supply and black marketing. A proper estimation of demand and supply can mitigate this problem to a great extent. Side by side, the Government should give active consideration to vigorously enforce the control prices through law enforcing machinery. More than four-fifth farmers and about half of the dealers and producer-cum-retailers consider it to be an appropriate measure to overcome pricing problem.

The use of fertilizers, pesticides and agricultural machineries will not bear fruits unless farmers are associated with the use of certified/improved seeds. But most of the farmers in the study area have little or no knowledge about the importance and advantages of use of improved seeds. Farmer's education and consciousness can play an important role in this respect. All the farmers, dealers and producer-cum-retailers advocate this programme. This can be done by the Government through frequent programmes reacting to agriculture on Bangladesh Television and Bangladesh Betar. Agricultural fair and exhibition should be organized by BADC at thana level at least once in a year to educate the farmers about the benefits of using improved seeds. Promotional measure like seed crop insurance is also desirable. Poor financing is also an obstacle in the way of use of improved seeds. To overcome this problem the Government should resort to the distribution of minikits among small and marginal farmers. Moreover, liberal credit facility through official distribution agencies should also be provided to the dealers and farmers to increase trade and use of improved seeds.

## **CHAPTER-5**

# **MARKETING OF PESTICIDES**

## **Introduction :**

Insects, pathogens, weeds, rodents, etc. throw a stiff challenge to man in the path of increasing agricultural production. They have developed special adaptation to life under varied environmental conditions. A crop is usually attacked by a number of pests and their virulence varies widely<sup>1</sup>. Table 5.1 shows serious insects pests and diseases of some of the important crops. In Bangladesh, high humidity, plentiful rains and hot temperature encourage the growth and multiplication of insects, fungi and bacteria. Annually 600 kinds of insects and 200 plant diseases cause recurring loss to economic plants in Bangladesh.<sup>2</sup> The crop losses caused by insect pests sometimes exceed 3.6 million tons<sup>3</sup> and this is 25% of the total rice production.<sup>4</sup> Timely and judicious use of pesticides can save the crop from such disaster. In Bangladesh where population continues to increase at phenomenal rate, land cannot stretch. In such a situation, the only way is to increase the productivity of land. Pesticides are handy tools to save the losses from pests and to increase crop yield.<sup>5</sup> The use of pesticides makes possible the production of adequate amounts of foods with satisfactory nutritional value and at reasonable prices. The pesticides also alleviate the problems of scarce agricultural land and produce certain savings in labour and energy.<sup>6</sup>

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1. Jalan, Manohar Lal, op.cit., p. 76.
  2. Islam, Md. Nafizul, op.cit., p. 34.
  3. Hossain, M.D., Alam, M., Hoque, M.R., and Khan, A.B., "Present Status of Pesticides and Sprayer use in Bangladesh", Bangladesh Journal of Agriculture Sciences, Vol. 19, No. 1, January 1991.
  4. Hossain, M.A.A. and N.N. Sarkar, "Development of Hand Sprayer Suitable for the Farmers of Bangladesh", (Research Report: FPM No. 3.2), pp.1-3, 1980.
  5. Jalan, Manohar Lal, op. cit., p.78.
  6. Green, M.B., Pesticides: Boon or Bane ? "Westview Environmental Studies"; vol. 1, Westwin Press Inc, England 1976, p. 41.

**Table-5.1**  
**Serious Insect Pests and Diseases of some of the Important Crops**

Crops	Insect	Diseases
Paddy	Gundhy bugs, green leaf-hoppers, white leaf-hoppers, swarming caterpillar, case-worm, gallmidge, hispa, grasshoppers, stemborer, mealy bug, army worms, ear cutting caterpillar.	Blast, stem rot, root rot, bacterial leaf blight, footrot, helminthosporium.
Wheat and Barley	Cutworms (wheat), bluebeetle (wheat), termites, earcockle	Yellow rust, covered smut (barley) black rust, stripe disease (barley).
Cotton	White fly, pink bollworm, spotted boll-worms, stemborer, jassides, semiloopers, aphids, field cricket, grey weevil, gram weevil, leaf-roller	Wilt, black arm, anthrac nose, grey mildew.
Jute	Smilooper, mealy bugs, stem foot rot, weevil, cricket, mites	
Sugarcane	Pyrrilla, topborer, stem borers	Red rot, smut

Source: Jalan, Manohar Lal, op.cit., p. 77

### **Channels of Distribution:**

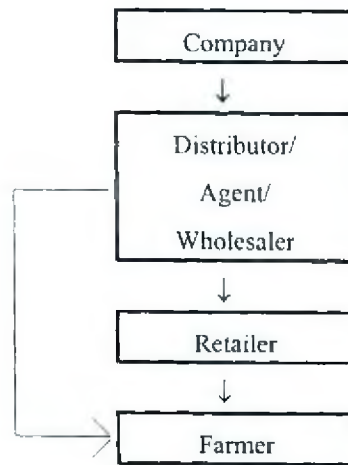
Prior to 1995, application of modern scientific plant protection measures in the field condition was virtually unknown to farmers in the territory now comprising Bangladesh. Farmers adopted and applied primitive measures to control pests. They accepted pestilence as an inevitable curse and lost a substantial quantity of plants and plant products annually. Recognizing its importance, the Government launched plant protection programme as early as in 1955-56. Since inception to March 1974, the insecticides were directly distributed to the farmers by the Agriculture Department, free of cost from Thana/Union seed godowns. In the month of April 1974, the Government introduced pricing for insecticides. Now there is considerable changes in the distribution system as has been reflected in **Fig. - 5A.**

The figure indicates that distributors/agents/wholesalers and private retailers are the principal sources of the supply of pesticides in the study area. The Agriculture Department or Corporation do not play any role in the physical distribution of pesticides. Table 5.2 shows opinion of the respondents about their sources of supply. It reveals that



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**FIG-5A**  
**Channels of Distribution of Pesticides**



all the distributors/agents/wholesalers in both the areas get their supplies from the companies who then sell to the retailers. All the retailers in both accessible and less accessible area reply that they get their supplies from distributors/wholesalers/agents. However, traders must have to obtain a pesticides licence in order to do pesticide business. Application must be sent to the office of District Deputy Director of Agricultural Extention through Thana Agriculture Office. The District Plant Protection Unit will issue pesticides licence subject to the fulfilment of following conditions. (a) trade licence (b) pucca house (c) arrangement of keeping pesticides (d) a certificate from pesticides company to the effect that the company is willing to do business with the stated- person. It is customary that District Plant Protection Unit will supervise occasionally the activities of pesticide stores at Thana Level. However, Thana Plant Protection Unit is mainly involved with this activity. The company will sell to those agents/wholesalers/distributors who have pesticides licences. Retailers get whole of their supplies from distributors/wholesalers/agents and distribute those to the farmers. Distributors /wholesalers/agents sometimes sell a part of their supplies directly to the farmers and the rests to the retailers. In accessible area, 87.5%farmers get their supplies from retailers and 12.5% from distributors/wholesalers/agents. On the other hand

,92.5%farmers in less accessible area get their supplies from retailers and the rests from distributor/ wholesalers/agents.

**Table-5.2**  
**Opinion of the Respondents ( in percentage)**  
**about Their Sources of Supply**

Accessibility of Area	Middlemen/ Farmer	Sources			
		Company	Importer	Distributor/ wholesaler/ agent	Retailer
Accessible	Distributor/ wholesaler/ agent	100	-	-	-
	Retailer	-	-	100	-
	Farmers	-	-	12.5	87.5
Less Accessible	Distributor/ wholesaler/ agent	100	-	-	-
	Retailer	-	-	100	-
	Farmers	-	-	7.5	92.5

Respondents use various means in carrying pesticides. Table 5.3 shows opinion of the respondents in this regard. It reveals that the distributors/wholesalers/ agents use no means in carrying pesticides as the companies directly supply to their business places. Retailers mainly use rickshaw in carrying pesticides. About 96 % retailers in accessible area use rickshaw and only 04% use labourers for carrying pesticides. Farmers mainly themselves carry pesticides (about 75%) followed by rickshaw (21.66 %). A negligible percentage uses labourers and boats for carrying pesticides. Like accessible area, retailers in less accessible area mainly use rickshaw (about 84 %) followed by boats (12% and labourers (04%). Majority of the farmers (54.17%) themselves carry pesticides followed by boat (25 %) and rickshaw (20.83 %).

Marketing costs and margins of the distributors/wholesalers/agents for different pesticides are showing table 5.4. It reveals that distributors/wholesalers/ agents' purchase price of Basudin 10g (100 Kg) accounts for about 89.% of their selling price in accessible

and less accessible areas. Loading /unloading and shop/store rent account large share of marketing cost. However, marketing cost in less accessible area is somewhat higher than accessible area, although it remains the same in terms of percentage of selling price. Compared to accessible area, distributors/wholesalers/agents in less accessible area enjoy greater margin due to high selling price.

**Table-5.3**

**Opinion of the Respondents ( in percentage)  
about the Means of Carrying Pesticides.**

Farmer/ Middlemen	Rickshaw	Truck	Labourer	Boat	Bullock cost	Own carrying
Distributor/ wholesaler/agent	-	-	-	-	-	-
Retailer	96.0	-	4.0	-	-	-
Farmer	21.66	-	1.67	1.67	-	75.00
Distributor/ wholesaler/agent	-	-	-	-	-	-
Retailer	84.0	-	4.0	12.0	-	-
Farmer	20.83	-	-	25.0	-	54.17

In case of Furadan 5g (100Kg), purchase price of wholesaler/distributor/ agent accounts for 84.58% of their selling price in accessible area and 83.97 % in less accessible area. Marketing cost in less accessible area is somewhat higher (0.08% of selling price) than accessible area (0.07% of selling price). Wholesalers/distributors/agents in less accessible area are in advantageous position with regard to margin as it accounts 15.95 % of selling price compared to 15.35 % of selling price in accessible area.

For Dymocron 125 ml, purchase price of distributors/wholesalers in term of percentage of their selling price is higher in accessible area (91.70%) than that of less accessible area (90.02 %). Marketing cost is somewhat higher (0.30% of selling price) in less accessible area compared to accessible area (0.28 % of selling price) due to high cost

**Table 5.4**  
**Wholesaler's/Agent's/Distribution's Marketing Cost and Margin**

Accessible Area			Less Accessible Area		
Cost Element	Cost	%	Cost Element	Cost	%
<b>For Basudin 10g :</b>			<b>For Basudin 10g :</b>		
Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	7,947.00	88.79	Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	7,947.00	88.20
<b>+Marketing cost :</b>			<b>+Marketing cost :</b>		
Transport	--		Transport	--	
Loading & unloading	2.00		Loading & unloading	2.00	
Shop/store rent	2.05		Shop/store rent	2.08	
Personnel/weigher	0.25		Personnel/weigher	0.25	
Electricity & Telephone	0.19		Electricity & Telephone	0.20	
Wastage	0.05		Wastage	0.08	
Others	<u>1.50</u>		Others	<u>2.00</u>	
	6.61	0.07		6.61	0.07
Margin	996.96	11.14	Margin	1,056.39	11.73
Selling price of distributor/agent/wholesaler	<u>8,950.00</u>	<u>100.00</u>	Selling price of distributor/agent/wholesaler	<u>9,010.00</u>	<u>100.00</u>
<b>For Furadan 5.g :</b>			<b>For Furadan 5.g :</b>		
Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	6,976.00	84.58	Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	6,976.00	83.97
<b>+Marketing cost :</b>			<b>+Marketing cost :</b>		
Transport	-		Transport	---	
Loading & unloading	2.00		Loading & unloading-	2.00	
Shop/store rent	2.05		Shop/store rent	2.08	
Personnel/weigher	0.25		Personnel/weigher	0.25	
Electricity & Telephone	0.19		Electricity & Telephone	0.20	
Wastage	0.05		Wastage	0.08	
Others	<u>1.50</u>		Others	<u>2.00</u>	
	6.04	0.07		6.61	0.08
Margin	1,265.96	15.30	Margin	1,325.39	15.95
Selling price of distributor/agent/wholesaler	<u>8,248.00</u>	<u>100.00</u>	Selling price of distributor/agent/wholesaler	<u>8,308.00</u>	<u>100.00</u>



contd./97

## Wholesaler's/ Agent's/ Distribution's Marketing Cost and Margin

Accessible Area			Less Accessible Area		
Cost element	Cost	%	Cost element	Cost	%
<b>For Dymocron-125M.L. :</b>			<b>For Dymocron-125M.L. :</b>		
Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	1,994.50	91.7	Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	1,994.50	90.02
+Marketing cost :			+Marketing cost :		
Transport	--		Transport	---	
Loading & unloading	2.00		Loading & unloading	2.00	
Shop/store rent	2.05		Shop/store rent	2.08	
Personnel/weigher	0.25		Personnel/weigher	0.25	
Electricity & Telephone	0.19		Electricity & Telephone	0.20	
Wastage	0.05		Wastage	0.08	
Others	<u>1.50</u>	0.28	Others	<u>2.00</u>	0.30
Margin	----- 174.46	8.02	Margin	----- 214.59	9.68
Selling price of distributor/agent/wholesaler	<u>2,175.00</u>	<u>100.00</u>	Selling price of distributor/agent/wholesaler	<u>2,215.70</u>	<u>100.00</u>
<b>For Diazinon-60 E C :</b>			<b>For Diazinon-60 E C :</b>		
Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	1,100.00	86.83	Wholesaler/distributor/agent purchase price (percarton-10x10=100kg.)	1,100.00	85.94
+Marketing cost :			+Marketing cost :		
Transport	---		Transport	--	
Loading & unloading	2.00		Loading & unloading	2.00	
Shop/store rent	2.05		Shop/store rent	2.08	
Personnel/weigher	0.25		Personnel/weigher	0.25	
Electricity & Telephone	0.19		Electricity & Telephone	0.20	
Wastage	0.05		Wastage	0.08	
Others	<u>1.50</u>	0.48	Others	<u>2.00</u>	0.52
Margin	----- 160.76	12.69	Margin	----- 173.39	13.55
Selling price of distributor/agent/wholesaler--	<u>1,266.80</u>	<u>100.00</u>	Selling price of distributor/agent/wholesaler----	<u>1,280.00</u>	<u>100.00</u>

of store, electricity; wastage and others, Profit margin is however higher in less accessible area than accessible area. Like Dymocron, distributors, wholesalers and agents dealing with Diazinon 60 EC in less accessible area enjoy more profit (13.55% of their selling price) than accessible area (12.69% of selling price) although marketing cost in less accessible area is higher than accessible area.

Retailers' marketing costs and margins for different pesticides are shown in table 5.5. It reveals that purchase price of retailers in case of Basudin 10g (per 100Kg) is higher in less accessible area than that of accessible area. It accounts for 88.65 % of selling price in less accessible area compared to 87.63% in accessible area. Marketing cost is higher by Tk. 0.24 per 100 Kg in accessible area although it remains the same in terms of share of the selling price. Marketing cost is high due to high cost of transport and shop/store rent. Cost elements exhibit that transport, store rent, loading/unloading and other costs are major cost elements in both the areas. However, retailers in accessible area enjoy high profit margin. It accounts for 12.25 % of their selling price in accessible area as compared to 11.22% in less accessible area.

Retailer's purchase price of Furadan 5g (per 100 Kg) is somewhat higher in less accessible area. Marketing cost, is however, higher in accessible area compared to less accessible area due to high cost of transport and shop/store rent on both areas. Transport, shop/store rent and loading/unloading occupy the major share in total cost. Low purchase price of retailers in accessible area bring them high margin which accounts for 6.78% of their selling price. In less accessible area, it accounts for 6.47% of selling price. Purchase price of Dymocron per carton accounts for 95.58 % of their selling price in accessible area and 97.79 % in less accessible area. Marketing cost is somewhat higher in accessible area (0.53% of selling price) than that of less accessible area (0.52% of selling price) due to high cost of transport and shop/store rent. Retailers in accessible area are in a advantageous position as they get high profit margin of Tk. 87.93 per carton. In contrast, retailers in less accessible area get profit margin of Tk. 38.17 by selling equal quantity.

**Table-5.5**  
**Retailer's Marketing Cost and Margin**

Accessible Area			Less Accessible Area		
Cost element	Cost	%	Cost element	Cost	%
<b>For Basudin :</b>			<b>For Basudin 10g :</b>		
Retailer's purchase price (percarton-10x10=100kg.)	8,500.00	87.63	Retailer's purchase price (percarton-10x10=100kg.)	8,600.00	88.65
<b>+Marketing cost :</b>			<b>+Marketing cost :</b>		
Transport	8.05		Transport	7.67	
Loading & unloading	1.20		Loading & unloading	1.20	
Shop/store rent	1.35		Shop/store rent	1.25	
Personnel/weigher	0.20		Personnel/weigher	0.21	
Electricity & Telephone	0.21		Electricity & Telephone	0.20	
Wastage	0.06		Wastage	0.05	
Others	<u>1.00</u>		Others	<u>1.25</u>	
	12.07	0.12		11.83	0.12
Margin	<u>1,187.93</u>	<u>12.25</u>	Margin	<u>1088.17</u>	<u>11.22</u>
Selling price of Retailer	<u>9,700.00</u>	<u>100.00</u>	Selling price of Retailer	<u>9,700.00</u>	<u>100.00</u>
<b>For Furadan 5.g :</b>			<b>For Furadan 5.g :</b>		
Retailer's purchase price (percarton-10x10=100kg.)	8,100.00	93.10	Retailer's purchase price (percarton-10x10=100kg.)	8,125.00	93.39
<b>+Marketing cost :</b>			<b>+Marketing cost :</b>		
Transport	8.05		Transport	7.67	
Loading & unloading	1.20		Loading & unloading	1.20	
Shop/store rent	1.35		Shop/store rent	1.25	
Personnel/weigher	0.20		Personnel/weigher	0.21	
Electricity & Telephone	0.21		Electricity & Telephone	0.20	
Wastage	0.06		Wastage	0.05	
Others	<u>1.00</u>		Others	<u>1.25</u>	
	12.07	0.14		11.83	0.14
Margin	<u>587.93</u>	<u>6.78</u>	Margin	<u>563.17</u>	<u>6.47</u>
Selling price of Retailer	<u>8,700.00</u>	<u>100.00</u>	Selling price of Retailer	<u>8,700.00</u>	<u>100.00</u>

**Contd/100**  
**Retailer's Marketing Cost and Margin**

Accessible Area			Less Accessible Area		
Cost element	Cost	%	Cost element	Cost	%
<b>For Dymocron-125M.L.:</b>			<b>For Dymocron-125M.L.:</b>		
Retailer's purchase price (per carton-10x10=100kg.)	2,160.00	95.58	Retailer's purchase price (per carton-10x10=100kg.)	2,210.00	97.79
<b>+Marketing cost:</b>			<b>+Marketing cost:</b>		
Transport	8.05		Transport	7.67	
Loading & unloading	1.20		Loading & unloading	1.20	
Shop/store rent	1.35		Shop/store rent	1.25	
Personnel/weigher	0.20		Personnel/weigher	0.21	
Electricity & Telephone	0.21		Electricity & Telephone	0.20	
Wastage	0.06		Wastage	0.05	
Others	<u>1.00</u>	0.53	Others	<u>1.25</u>	0.52
Margin	----- <u>87.93</u>	<u>3.89</u>	Margin	----- <u>38.17</u>	<u>1.69</u>
Selling price of Retailer	<u>2,260.00</u>	<u>100.00</u>	Selling price of Retailer	<u>2,260.00</u>	<u>100.00</u>
<b>For Diazinon-60 E C:</b>			<b>For Diazinon-60 E C:</b>		
Retailer's purchase price (per carton-10x10=100kg.)	1,236.00	82.40	Retailer's purchase price (per carton-10x10=100kg.)	1,280.00	85.33
<b>+Marketing cost:</b>			<b>+Marketing cost:</b>		
Transport	8.05		Transport	7.67	
Loading & unloading	1.20		Loading & unloading	1.20	
Shop/store rent	1.35		Shop/store rent	1.25	
Personnel/weigher	0.20		Personnel/weigher	0.21	
Electricity & Telephone	0.21		Electricity & Telephone	0.20	
Wastage	0.06		Wastage	0.05	
Others	<u>1.00</u>	0.81	Others	<u>1.25</u>	0.79
Margin	----- <u>251.93</u>	<u>16.80</u>	Margin	----- <u>208.17</u>	<u>13.88</u>
Selling price of Retailer	<u>1,500.00</u>	<u>100.00</u>	Selling price of Retailer	<u>1,500.00</u>	<u>100.00</u>

Like Dymocron, retailers selling Diazinon in accessible area get high profit margin than that of less accessible area although marketing cost is high in accessible area. Profit margin accounts for 16.80% of selling price in accessible area and 13.88 % in less accessible area. As a whole, retailers in accessible area are in a better position than that of retailers in less accessible area.

Like fertilizer and seeds, farmers' cost of carrying pesticides are shown in exhibit-3. The exhibit shows that cost of carrying pesticides is around Tk.9.00 in accessible area while it varies from about Tk. 9.00 to Tk. 10.00 in less accessible area. Cost of carrying pesticides by boat varies from about Tk.6.00 to 7.00 in accessible area while it is around Tk.7.00 in less accessible area.

### **Availability and Accessibility of Pesticides:**

It is difficult to measure the availability and accessibility of pesticides to the farmers as relevant statistics are not available. As such, some indirect measures are made to know about the availability and accessibility of pesticides in the study area.

The adoption and period of experience with pesticides use vary at farm level. Table 5.6 shows the opinion of the respondents in this regard. About 92.98% respondents in accessible area and about cent percent respondents in less accessible area reported using pesticides for more than 4 years. This indicates that accessibility of area has less influence on adoption of pesticides. However, farmers in less accessible area are the early adopters compared to accessible area. In both the areas, farmers belonging to all categories are the early adopters.

Number of farmer using pesticides by size of holding in table 5.7 exhibits that, on an average, about 97.03 % respondents in accessible area and 79.89% respondents in less accessible area use Basudin. This is followed by Furdan and Diazinon. The proportionate numbers of farmers using Dymocron are generally low in both accessible and less accessible area. This indicates that Basudin is the most popular pesticide among the

farmers. Size of holding indicates that almost all large farmers in accessible area use Basudin followed by medium size farmers and small size farmers. In less accessible area,

**Table-5.6**  
**Opinion of the Respondents about the Extent of Adoption and Period of experience with Pesticide use.**

(In percentage)

Accessibility of area	Size of Holding	Extent of Adoption and Period of Experience		
		Up to 2 years	Up to 4 years	Above 4 years
Accessible	Large	3.43	3.45	93.10
	Medium	1.96	-	98.04
	Small	5.00	2.50	92.50
Less Accessible	Large	-	-	100.00
	Medium	-	-	100.00
	Small	-	-	100.00

proportionate numbers of medium size farmers using Basudin are high followed by small farmers and large farmers. In case of Furadan, almost all large farmers in accessible area use this pesticide followed by small farmers and medium farmers. In less accessible area, medium farmers are the large users followed by small farmers. The proportionate numbers of large farmers using Furadan are very low. Diazinon is the most preferred by the large & medium size farmers followed by small farmers. This is true both in case of accessible and less accessible area. Dymocron is somewhat popular among the users of large & medium size farmers in accessible area and large & small farmers in less accessible area.

**Table-5.7**  
**Proportion of Farmers using Pesticides by Size of Holding**

(In percentage)

Accessibility of Area	Size of Holding	Types of Pesticides			
		Basudin-10g	Furadan-5g	Dymocron-125ml	Diazinon-60Ec. 125 gm.
Accessible	Large	100.00	100.00	13.79	68.97
	Medium	96.08	62.75	13.73	65.52
	Small	95.00	85.00	7.5	37.5
	Average	97.03	82.58	11.47	57.33
Less Accessible	Large	66.67	4.75	33.33	71.43
	Medium	95.65	69.56	8.70	65.22
	Small	77.36	66.04	11.32	58.50
	Average	79.89	46.77	17.78	65.05

Tenurial status on the rate of pesticides application as reported by farmers is shown in table 5.8. It is evident from the table that owner cultivators (except medium farmers) use higher amounts of pesticides per acre of land than owner-cum-tenants. The difference is higher for large farmers followed by small farmers. On the other hand, owner-cum-tenants use higher quantity of pesticides on owned land than share-cropped land. This is true in case of large, medium and small farmers. Here the difference is higher for medium size farmers. Thus, tenurial status appears to have some negative impact on pesticide application. It is, perhaps, due to the fact that the cost of pesticides is high. Application of pesticide also varies according to length of tenure. Table 5.9 shows opinion of the respondents in this regard. It shows that a large proportion of tenants is found to operate the shared land for four years and more both in accessible and less accessible area. The larger is the period of tenure, the lower is the quantity of pesticides used on the shared land and the rate of proportion is relatively high in accessible area. In accessible area, tenants who have been cultivating land for upto two years use 3.24 Kgs

**Table-5.8**  
Utilization of Pesticides by the Tenurial Status and Farm size

Size of Holding	Tenurial status		
	Owner cultivator	Owner-Cum-tenants	
		Owned land	Share cropped land
Large	3.18	3.06	3.02
Medium	2.95	3.0	2.66
Small	2.90	2.83	2.67

**Table-5.9**  
Opinion of the Farmers about the Quantity of Pesticides Uses According to Length of Tenure

Length of Tenure	Accessible Area		Less Accessible Area	
	Percentage of respondents	Kg. per acre of land	Percentage of respondents	Kg. per acre of land
Upto 2 years	28.30	3.24	20.83	3.04
Up to 4 years	23.9	3.10	33.34	3.00
Above 4 years	47.8	2.98	45.83	2.89

pesticides per acre compared to 2.98 Kgs for tenants having length of tenure for above four years. Tenants in less accessible area having length of tenure for upto two years use 3.04 Kgs in contrast to 2.89 Kgs per acre having length of tenure for above four years. This signifies that fear of losing the rented in land compel the tenants to use more pesticides.

An effort is made to know whether stock holding levels of pesticides per trader are sufficient enough to meet local requirements. Table 5.10 shows stock of pesticides per trader at the time of interview. It indicates that stock positions of pesticides at traders' level are inadequate both in accessible and less accessible area. Stock of Basudin, Furadan, Dymocron and Diazinon per wholesaler/agent is about 20, 16, 19, 14 cartons respectively in accessible area while it is about 21, 18, 16 and 15 cartons in less accessible area. At retail level, it is about 4,3,3 and 2 cartons respectively in less accessible area. Thus little difference between accessible and less accessible area is observed in terms of stock of different pesticides. It also indicates that accessible area suffers relatively more from inadequate supply than less accessible area. Stock position of Basudin, Furadan and Diamocron at wholesale and retail level appears to be better than Diazinon both in accessible and less accessible area.

**Table-5.10**  
**Stock of Pesticides with the Traders at the**  
**Time of Interview**

Accessibility of Area	Types of Pesticides	Quantity in per carton	
		Wholesaler/ agent	Retailer
Accessible	Basudin -10g per carton - 100 Kg	20	4
	Furadan - 5g (100Kg.)	16	3
	Dymocron - 125 M.L (125 M.L x 20)	19	3
	Diazinon - 125 M.L (125 M.L x 20)	14	2
Less Accessible	Basudin 10 g	21	5
	Furadan 5g	18	3
	Dymocron - 125 M.L	16	4
	Diazinon - 125 M.L	15	2



Prices of pesticides could give some light on the regularity of supply in different areas and accessibility of various size of farms. Table 5.11 shows average and maximum selling price as reported by traders. The table, however, shows that selling prices of pesticides by the traders in less accessible are higher than that of accessible area. The price differential between the two areas is due to high transport cost. Average prices of pesticides both in accessible and less accessible areas as reported by /distributors /agents /

**Table-5.11**

**Average and Maximum Selling Price of Different Pesticides as Reported by Traders**

Per Kg. ( in Tk.)

Accessibility of Area	Types of Pesticides	Average Price		Maximum price	
		Distributors /Agents/ Wholesalers	Retailers	Distributors/ Agents/ Wholesalers	Retailers
Accessible	Basudin-10g	85.00	97.00	94.00	100.00
	Furadan	80.25	87.00	84.70	99.14
	Dymocron	108.50	113.00	109.00	125.75
	Diazinon	61.67	75.00	65.00	75.00
Less Accessible	Basudin-10g	86.00	97.00	95.00	102.00
	Furadan	81.15	87.00	85.00	99.00
	Dymocron	110.58	113.00	111.00	125.60
	Diazinon	62.00	75.00	66.00	75.00

wholesalers reveal that price differential widened greater for Dymocron followed by Basudin, Furadan and Diazinon. No price differential is observed at retail level between the two areas in case of average price but some variation is observed in case of maximum selling price. The level of price fluctuation between distributors/agents/wholesalers average and maximum price indicates that price varies at a lower rate in accessible area in case of Basudin and Diazinon while it is lower in less accessible area in case of Furadan, and Dymocron. At retail level, price varies at a lower rate in accessible area than that of less accessible area in case of Basudin while it varies at a lower rate in less accessible area in case of Furadan and Dymocron. No differentiation is observed in case of Diazinon.

**Marketing problems:**

The marketing problems as perceived by the respondents are as follows :

**01. Demand and Supply Problems:**

Respondents have been asked to mention the problems they face with regard to demand and supply. Table 5.12 shows opinion of the respondents in this regard.

**Table-5.12**

**Opinion of the Respondents (in percentage) about the Problems regarding Demand and Supply**

Problems	Accessible Area				Less Accessible Area			
	Farmer	Distributor/ wholesaler /agent	Retailer	Average	Farmer	Distributor/ wholesaler /agent	Retailer	Average
Lag of demand and supply	75.0	50.0	80.0	68.34	72.5	100.0	70.0	80.83
Unbalanced mixes of pesticides	95.5	100.0	78.0	91.17	82.5	100.0	80.0	87.5
Artificial scarcity	91.34	50.0	92.0	77.78	89.17	100.0	84.0	91.06
Not available at right time	62.5	50.0	70.0	60.83	66.67	50.0	74.08	63.58

It reveals from the table that unbalanced mixes of pesticides is the most important problem faced by respondents. More than four-fifth respondents in accessible and in less accessible area agree with this view. The supply mix is unbalanced due to sources of supply. The slow growth of balance sales may be due to lesser acceptance of Dymocron to the users. The unbalance use of pesticides may be due to lack of publicity, lack of required amount of pesticides and wrong distribution system.

Artificial scarcity is the next important problem faced by the respondents. In average about 77.78 % respondents in accessible area and about 91.06 % respondents in less accessible area replied in positive frame of mind. The problem seems to be serious in less accessible area. Respondents argue that unscrupulous traders make hold of pesticides during political unrest, shortage of supply or high demand, tantamounting to artificial scarcity. This results in high prices or poor availability of pesticides.

It appears from the responses that there is a lag of demand and supply of pesticides. In average about 68.34 % respondents in accessible area and 80.83% respondents in less accessible area mention this problem. Availability of pesticide is unstable and low because of problems in the local factories. Even authorities are unable to make clear and realistic estimation of the pesticide requirements. Sometimes adequate pesticides are not available in time in all or many parts of the study area. This problem seems to be more critical in less accessible area (Table 5.12).

## **2. Quality Problems:**

Respondents have been interrogated with a view to know about the quality of pesticides. Table 5.13 shows the views of the respondents. A large majority of the middlemen and farmers in both accessible and less accessible area mention quality of the pesticides to be inferior one. More than moderate respondents show indifferent attitude towards the quality. Only 12 % respondents in less accessible area mention quality to be good one. Those who mention quality to be poor one, have further been asked to mention the reasons for poor quality of pesticides. Their responses are shown in table 5.14. It reveals from the table that about cent percent distributors/wholesalers/agents, 66.67 % retailers and 85.56 % farmers in accessible area and about cent percent distributors/wholesalers/agents, 73.34 % retailers and 76.19 % farmers in less accessible area argue that pesticides mainly kept in paper bags, pots or drums are not suitable to maintain quality in tact. Thus quality of the pesticides deteriorates. Quality is also deteriorated due to adulteration. This is mainly done at the level of distribution channel. About cent

percent distributors/wholesalers/agents, 80 % retailers and 96.67% farmers in accessible area and about 50 % distributors/wholesalers/agents, 93.34 % retailers and 95.24 % farmers in less accessible area agree with this view. Large number of middlemen and farmers further reply that lack of effective quality control at factory level results in poor quality of pesticides.

**Table-5.13****Opinion of the Respondents about the Quality of Pesticides (In Percentage)**

Accessibility of Area	Middlemen/ Farmer	Good	Neither good nor bad	Bad
Accessible	Distributor/ Wholesaler/ agent	-	50.0	50.0
	Retailer	-	40.0	60.0
	Farmer	-	25.0	75.0
Less Accessible	Distributor/ Wholesaler/ agent	-	-	100.0
	Retailer	12.0	28.0	60.0
	Farmer	-	12.5	87.5

**Table-5.14**

**Distribution of Respondents (in percentage) according to  
Reasons for Poor Quality of Pesticides**

Accessibility of Area	Respondents	Reasons		
		Lack of standard bags to maintain quality	Lack of quality control	Adulteration
Accessible	Distributor/ Wholesaler/ agent	100.0	100.0	100.0
	Retailer	66.67	53.34	80.0
	Farmer	85.56	77.78	96.67
Less Accessible	Distributor/ Wholesaler/ agent	100.0	100.0	50.0
	Retailer	73.34	46.67	93.34
	Farmer	76.19	66.67	95.24

**03. Distribution Problems:**

Middlemen and farmers have been asked to mention about distribution problem relating to pesticides faced by them. Table 5.15 shows the views of the respondents. It

appears from the table that high cost of transport is the most important problem faced by the respondents and acts as disincentive to them. Majority of the respondents in both the areas agree with the view. Transport accounts for 66.69% of the total marketing cost at retail level for all pesticides in accessible area while its accounts for 64.84% in less accessible area (Table 5.5). The high cost of transport is perhaps due to shortage of transport and disrupted road condition in both the areas. About half of the distributors/wholesalers/agents, near about three-fifth retailers and more than three-fourth farmers in accessible area and about half of the distributors/wholesalers/agents, more than three-fifth retailers and four-fifth farmers in less accessible area mention that acute transportation crisis and disrupted road condition are also constraints to make pesticides available in the remote areas.

**Table-5.15**

**Opinion of Respondents (in percentage) about the  
Distribution Problems relating to Pesticides Faced by Them**

Problems	Accessible Area			Less Accessible Area		
	Distributor/ wholesaler/ agent	Retailer	Farmer	Distributor/ wholesaler/ agent	Retailer	Farmer
Lack of transport	50.0	56.0	78.34	50.0	64.0	80.0
High transport cost	-	72.0	84.17	-	80.0	82.5
Inadequate network	50.0	68.0	90.83	56.0	76.0	86.67
Dishonest traders	-	32.0	80.0	50.0	40.0	77.5
Non-availability of Pesticides	50.0	60.0	72.5	50.0	75.0	71.67

The inadequate network of distribution is also another constraint to the spreading of pesticides. As against half of the distributors/wholesalers/agents, more than three-fifth retailers, and more than four-fifth farmers in accessible area, about half of the distributors/wholesalers/farmers, slight over three-fourth retailers and more than four-fifth farmers in less accessible area mention this problem. They argue that traders are few

and concentrated near market place. Moreover, interior traders are scarce due to limited turn-over. Thus, it is far from adequate to meet farmers' needs particularly in the remote areas. It is also complained by 32.0% retailers and 80.0% farmers in accessible area and 50 % distributors/wholesalers/agents, 40 % retailers and 77.5 % farmers in less accessible area that dishonesty of the traders acts as an obstacle in the way of proper distribution of pesticides. They argue that shrewd speculators do speculative storage during the shortage of supply to high demand. It tantamount to high price or non-availability of pesticides. Large number of respondents in both accessible area and less accessible area further complain that output - delivery system is weak. This makes distribution ineffective resulting in non-availability of pesticides in time.

#### **04. Pricing Problems:**

Respondents have been asked to mention whether they face any problem with regard to pricing of pesticides. Cent percent respondents mention that they face problems. They have further been interrogated with a view to know the types of pricing problems and the reasons for that. Their responses reflect that high price of pesticides is the important problem faced by them. The problem seems to be acute in less accessible area. About cent percent distributors/wholesalers/agents, 84 percent retailers and cent percent farmers in accessible area blame high price as the main problem. On the other hand, cent percent distributors/wholesalers/agents, 92 percent retailers and cent percent farmers in less accessible area also express the same view. Respondents are of the opinion that prices of pesticides are high due to high procurement cost. The govt. of Bangladesh also reduces subsidy of pesticides through increase in the farmers' price and reduction in procurement and distribution costs. Distributors/wholesalers/agents get their supplies directly from the factory and as such they do not face any problem of availability at control price; cent percent retailers and farmers respectively in both the areas argue that they don't get pesticides at control price. They buy at higher prices from open market. It also amounts to black marketing and prevails mainly during temporary scarcity situation. All respondents belonging to different categories also complain that prices of pesticides

fluctuate due to black marketing and scarcity situation. These create problem in the purchase and sale of pesticides. Respondents are further asked to comment on the price fluctuation of pesticides during the NMS and OMS periods. Their responses are shown in table 5.16.

**Table-5.16**

**Opinion of the Respondents (in percentage) about the  
Level of Price Fluctuation under NMS compared to OMS**

Accessibility of area	Middlemen/ Farmer	Level of Price Fluctuations		
		Improved	Deteriorate d	Unchanged
Accessible	Distributor/ Wholesaler/ agent	-	-	100
	Retailer	-	60	40
	Farmer	-	100	-
Less Accessible	Distributor/ Wholesaler/ agent	-	50	50
	Retailer	-	76	24.0
	Farmer	-	91.66	8.34

It appears from the table that majority of the respondents belonging to retailers and farmers in both the areas mention that price fluctuation deteriorates under NMS compared to OMS. However, cent percent distributors/wholesalers/agents and 40% retailers in accessible area and 50% distributors/wholesalers/agents, 24% retailers and 8.34% farmers in less accessible area mention that the situation is unchanged. None of the respondents mention that the situation has improved.

**05. Promotion Problems:**

Middlemen and farmers have been asked to mention whether they face any problem of promotion. If yes, what are those? They all answered in a positive frame of mind. Out of the farmers, about 84.17% in accessible area, and about 92.5% in less accessible area are of the opinion that they lack knowledge of pesticides uses and that manufacturers and traders are unable to provide adequate knowledge about pesticides to them. They mention that they can explain actual functions of pesticides but can't explain

actual functions of various pesticides like Basudin, Furadan, Dymocron and Diazinon. Even they do not know the proper doses to be applied. They amalgamate all functions to some degree. Thus traders fail to develop rapport with the farmers. All distributors/wholesalers/agents mention that they get promotional support from manufacturers but they do not provide the type of service which is required to make them an effective agent for improving their business. Manufacturers do not provide any formal training to them or offer any refresher course. Cent percent retailers in both the areas mention that they get neither promotional support nor formal training to improve their business.

Respondents have been asked to mention whether they face any problem of financing business Table 5.17 shows opinion of the respondents in this respect. None of the distributors/wholesalers/agents face problem of financing the business. Moderate number of retailers and small number of farmers in accessible and in less accessible area mention facing problem of financing the business. Respondents who face problems, have further been interrogated to identify types of financing problems. Their responses are shown in 5.18. The first problem faced by the retailers and farmers in obtaining loans is the high rate of interest specially when they take loan form village mahajnas. The second important problem is that respondents do not get sufficient amount to buy or run the business. It happens that sanctioned amount is of no use due to time billing in sanctioning loan. They also observe that getting loan is a complex process and requires much formalities. It is alleged by the respondents that corruption on the part of personnel of the financial institution is an obstacle in the way of getting loans. They also allege that political interference in sanctioning loan creates discrimination in sanctioning loan.

**Table-5.17**  
Frequency Distribution of Respondents (in percentage) facing Problems of Financing

Accessibility of Area	Yes			No		
	Distributor/ wholesaler /agent	Retailer	Farmers	Distributor/ wholesaler/ agent	Retailer	Farmers
Accessible	-	28	2.5	100	72	97.5
Less Accessible	-	36	5.84	100	64	94.16



**Table-5.18**

**Distribution of Respondents (in percentage ) according  
to the Types of Problems with Regard to Financing**

Accessibility of Area	Middlemen/ Farmer	Problems							
		High rate of interest	Insuffi- cient sanctioned loan	Takes time to take loan	Complex and require much formalities	Nepotism and corruption	Discrimin- ation	Distant location from banking	Harass- ment and political interference
Accessible	Whole-saler	-	-	-	-	-	-	-	-
	Retailer	100	85.71	42.86	28.57	52.86	71.43	57.14	14.29
	Farmer	100	66.67	100	100	66.67	66.67	-	-
Less Accessible	Whole-saler	-	-	-	-	-	-	-	-
	Retailer	88.89	100	55.56	44.44	100	33.33	77.78	22.22
	Farmer	100	71.43	85.71	100	85.71	57.14	42.86	28.57

**Suggestions:**

Following are the suggestions given by the respondents. Respondents have been asked to mention suggestions to overcome product problem. Their responses are shown in table 5.19. About three-fourth wholesalers/distributors/ agents, about half of the retailers and more than four-fifth farmers mention that adequate measures should be taken by the Government to check malpractices and ensure quality control. The Government should specify conditions for storage of pesticides in such a way that there should not be any deterioration in quality during the course of storage. About half of the retailers and all the farmers suggest that small amount of pesticides should be made available in temper proof containers to reduce risk of adulteration and thereby enable small farmers to buy pesticides, which they cannot afford otherwise.<sup>7</sup> The Government should enact law and impose it more vigorously with a view to control adulteration and black marketing. The need is to streamline the law enforcing machinery which should act honestly and with circumspection. This is viewed by 50 % wholesalers/distributors/agents, 62% retailers and 95.24% farmers. Farmers' education about the quality of pesticides is also necessary. They should be educated with regard to the existing facilities available for testing of pesticides and in distinguishing the standard materials from the spurious one. As many as 50 % wholesales/ distributors/ agents, 30 % retailers and 76.19% farmers are in favour of this recommendation.

**Table 5.19**  
**Suggestions given by the Respondents (in percentage)**  
**to Overcome Product Problems**

Suggestions	Wholesaler/ Distributor/Agent	Retailer	Farmer
1. To check malpractices and ensure quality control	75.0	54.0	89.17
2. Farmers education	50.0	30.0	76.19
3. Use of temper proof containers	50.0	64.0	100.0
4. Enacting law	50.0	62.0	95.24

Suggestions given by the respondents to overcome distribution and demand & supply problems are shown in table 5.20.

7. Jalap, Manohar Lal, op. cit., p. 84

**Table 5.20**  
**Suggestions given by the Respondents (in percentage)**  
**to Overcome Distribution and Demand & Supply Problems**

Suggestions	Wholesaler/ Distributor/Agent	Retailer	Farmer
1. Adequate and timely supply of pesticides.	75.0	66.0	86.67
2. Maintain emergency stock	50.0	64.0	57.92
3. Penetration to interior area	100.0	92.0	83.34
4. Matching supply with demand	50.00	74.0	66.17

Since present distribution network is far from adequate to meet farmers' needs, particularly in the remote area, the manufacturers should try to penetrate in interior area through private traders. The private traders having roots in the remote area are able to spot viable marketing opportunities more frequently and control it with little or no delay into a retail outlet. To save the crops from diseases, pesticides have to be applied in time. Therefore, adequate and timely supply of pesticides to the farmers is important for getting maximum benefit. An estimate of requirements of the pesticides has to be made to match supply with demand, thereby balancing mixes of pesticides. The plant protection department of the Government should maintain emergency stock at district level to face natural calamities and unforeseen situation. The department should be manned by trained personnel, equipments and machineries to fight such situations.

There is no price control on pesticides. These prices are very high. The farmers often find it difficult to use pesticides due to high price. All the wholesalers/distributors/agents, retailers and farmers, therefore, suggest to keep the pesticides prices lower by providing either subsidy or reducing import or excise duty.

All the wholesalers/distributors/agents, retailers and farmers mention farmers awareness and education as an important device for promotion of pesticides sale. Farmers need to be educated about the advantages of use, safety and judicious use of pesticides. The responsibility must be shared by the Government through making plant protection department more active and manufactures through special training programme.

## **CHAPTER-6**

# **MARKETING OF AGRICULTURAL MACHINERIES AND IMPLEMENTS.**

## **Introduction:**

Although the economy of Bangladesh is predominantly based on agriculture, yet the actual output of agriculture is not sufficient even to keep pace with the population growth, which in turn, leads to adverse socio-economic consequences in the country.<sup>1</sup> The present policy of attaching the greater importance to the agricultural sector, particularly to the production of food has emerged out of realisation of this situation. Extensive method of cultivation is not possible in Bangladesh. Intensive method of cultivation is the only way to increase crop production in Bangladesh. Realising the importance, the Government of Bangladesh has given high priority to mechanical aids to agriculture.

Agricultural machinery and implements bring about desirable changes in the intensities of cropping and land use. Irrigated farms obtain better crops yields than the non-irrigated farms. Irrigation facilities also provide an additional support to raise the income levels of farmers.<sup>2</sup> It may also provide an additional support to the solution of the unemployment problem of the country.

Agricultural machinery and implements are composed of both traditional and essential implements. Low lifting Pump (LLPs), Shallow Tubewell (STWs) and Deep Tubewell (DTWs) are considered modern irrigation equipments. These are called heavy machinery and implements. Some small equipments are also used for cultivation like harrow cultivators, iron plough, seed driller, spade etc.

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1. Hussain, Mahmud Kaysar, "A study on the Trend of Irrigated Land use and Cropping Pattern (1979-80 and 1980-81)", Jahangirnagar University, Savar, 15th July 1977, p. (Mimeographed)
  2. Jain, W.M. H and Sarker, R.L.M. "Irrigation Issues in Bangladesh " - (Workshop Proceedings,) Human Resource Development Program, Winrock International, Dhaka and Rural Development Academy, Bogra, March, 11, 1991, p. 52.

## **Section-A**

### **Heavy Machinery and Implements**

Heavy machinery includes LLPs, STWs and DTWs. Tractors are not included in the study. Irrigation development after independence of Bangladesh is divided into four phases. In the first phase, until 1979-80, public sector LLPs and DTWs provided most of the increase in irrigation area. LLPs was on a rental programme during the period. In 1971-72, sales of STWs were started through Bangladesh Krishi Bank and BADC initiated a rental programme similar to LLPs. BADC started selling STWs from 1974. In the second phase, LLP sales programme was introduced in 1980-81. During this period, there was a liberalized expansion of minor irrigation mainly with STWs in the private sector. The private firms entered the market for STWs with IDA financing in 1981-82. Private firms were allowed to import and sell imported STWs through Krishi Samabaya Samiti. In the third phase, 1985-86 to 1986-87, an embargo on import of diesel engines was imposed. The fourth phase began in 1987 with the removal of the import ban on diesel engines leading to the rapid increase in private sector of STWs and LLPs. New policy in 1988-89 to remove duties and restrictions on import of small diesel engines encouraged rapid expansion of private sales of STWs and LLPs.<sup>3</sup> Understanding the importance of irrigation equipment, the Government of Bangladesh has taken measures to stimulate competition in the irrigation equipment market by allowing private firms to import without import tax and other restrictions. To this effect, most of the BADC owned DTWs have been sold to NGOs, Grameen Bank, a number of informal group and individual farmer.<sup>4</sup>

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3. Raha, Shankar Kumar and Akbar, Md. Ali, "Marketing of Minor Irrigation Equipment and Its Economic Implications in Some Selected Areas of Bangladesh, Winrock International, Dhaka, June 1, 1993, pp. 4,5 and 7.
  4. International Irrigation Management Institute and Bureau of Socio-Economic Research and Training of the Bangladesh Agricultural University, "Study on Privatization of Minor Irrigation in Bangladesh." (Draft Final Report - TA; BAN 1822), Ministry of Agriculture of the People's Republic of Bangladesh, Asian Development Bank, June 1995, p.13

### **Distribution System:**

Modern irrigation technology was introduced to the then East Pakistan during the early sixties. The machines and spare parts were procured by BADC and BKB from overseas. BADC was entitled to import all the three machineries while BKB used to import only STWs till 1979-80. BADC used to distribute DTWs on rental basis. Tubewells were distributed to the managers of the farmer groups approved by the Thana Irrigation Team. The group remained responsible for the operation and maintenance and utilization of irrigation water. There was no provision of selling DTWs. On the other hand, BADC used to sell STWs directly to the farmer/farmers on cash payment or on instalment basis. The Corporation was responsible for sinking and commissioning of the tubewell and the sinking cost was borne by the corporation. Any farmer having 5 acres of land and a farmer group having a minimum of 10 acres of land could purchase shallow tubewell. BKB's distribution system for STWs was executed in the country through normal credit administration of the bank. Terms, conditions and distribution programmes of the Bank for STWs were quite different from that of the BADC. The branch manager of BKB after receiving loan application filled up by the farmer/group used to send the same for investigation and study the feasibility of the scheme. If positive, allotment was given in the form of STW materials. Before handing over the STWs to the farmers, a mortgage deed (about 1.5 acre of land) was executed by the farmer with the bank. The bank had to make arrangements for sinking STWs through drilling contractors appointed by the bank. The farmer had to repay loan within 5 years in five equal instalments from the date of the commissioning of the tubewell. For this season, the farmer had to pay 13 percent interests.<sup>5</sup>

BADC distributed LLPs among the farmers under two systems (i) rental system (ii) sale system. Farmers formed a group and applied for power pumps to the unit officer, BADC. The unit officer, after completion of the feasibility study had to place application

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5. Malek, M.A., op.cit., p. 58

before the Thana Approving Authority for approval. The Thana Approving Authority, after scrutinising and approving the scheme, forwarded to the District Approving Authority for final approval. The farmer group took delivery of LLPs from unit officer after approval by the District Authority by paying rental charges. LLPs were also sold to co-operative groups and individual farmers to be used for irrigation purpose only. A certificate issued by Thana Agricultural Officer/Thana Extension Officer/District Extension Officer to the effect that LLPs would be used for irrigation purpose was also necessary to have a power pump. Buyer was required to give an undertaking to the effect that pumps would be used for irrigation purpose and a certificate regarding availability of water sources and land.<sup>6</sup> BKB's distribution system for LLPs is same as the distribution system for STWs of BKB as discussed earlier. After 1979-80, there was a change in the Government Policy towards privatization. As a result, DTWs sales programme was started in 1979-80 & LLPs in 1980-81. Private firms were also allowed to import STWs in 1981-82.<sup>7</sup> Marketing channels of irrigation equipment before and after privatization are shown in Fig 6A and 6B. At present role of BADC in the distribution of irrigation equipments diminishes to a great extent. Most of its equipments are sold out to individual buyers/co-operative societies. Now BADC does not distribute any STWs and LLPs. Co-operative societies and farmers rarely collect equipments from BKB. Private importers and local manufacturers are playing dominant role in the distribution of STWs and LLPs. They distribute equipments to the individual buyer called retailer through wholesaler and agent/dealer. The buyers/retailers sometimes use for cultivation of their own land and mostly allow the farmers to use on rental basis. Agents/dealers sometimes directly sell STWs and LLPs to the farmers.

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6. Ibid, p. 64

7. Raha, Shankar Kumar, *op.cit*, p. 13



FIG- 6 A :

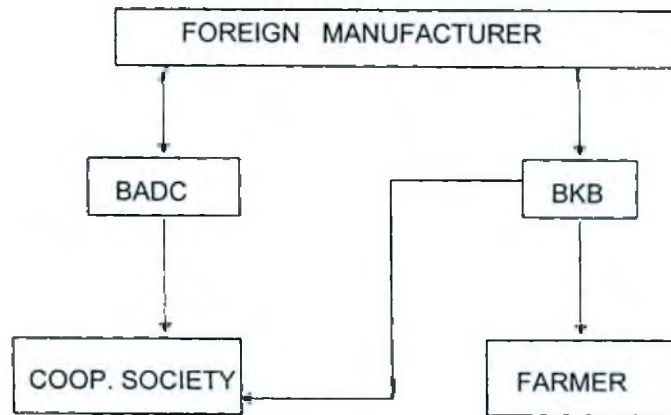
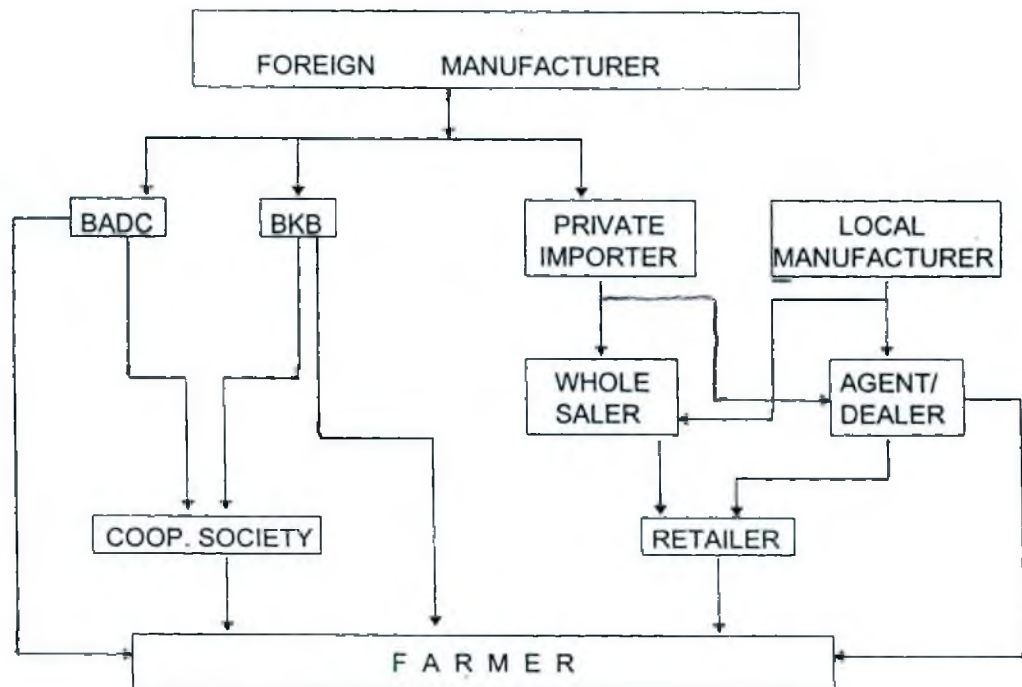
Marketing Channel of Irrigation Equipment before Privatization

FIG- 6 B :

Marketing Channel of Irrigation Equipment after Privatization

Source : Raha, Shankar Kumar, Op. cit., p. 14

Farmers in the study area have been asked whether they use any irrigation equipment in cultivation of their land. All the respondents in both accessible and less accessible area answer in positive frame of mind. They have further been asked to mention types of equipments used for cultivation, Table 6.1 shows the opinion of the respondents in this regard. It reveals from the table that about 93.10 % large farmers, 78.43 % medium farmers and 70 % small farmers in accessible area use DTWs. In less accessible area, about 90.48 % large farmers, 71.74 % medium farmers and 71.70 % small farmers use the same equipments. This indicates that large farmers are the major users of DTWs. Large farmers (55.17 %) in the accessible area are the major uses of LLPs followed by medium (41.18%) and small farmers (25%). In less accessible area medium farmers (26.09%) are the large users followed by small (20.76%) and large farmers (19.05%). This indicates that farmers in less accessible area lag behind in using LLPs. Large number of farmers in less accessible area are using STWs than that of the farmers in accessible area. In contrast to 80.95% large, 45.65 % medium and 32.08 % small farmers in less accessible area use STWs for irrigation purpose, only 6.90% large, 5.88 % medium and 7.5% small farmers use the said equipments for irrigation purpose.

**Table 6.1**  
**Opinion of the Respondents (in percentage) about**  
**the Uses of Various Equipments by Size of Holding**

Accessibility of Area	Size of Holding	Irrigation Equipments		
		DTWs	LLPs	STWs
Accessible	Large	93.10	55.17	6.90
	Medium	78.43	41.18	5.88
	Small	70.0	25.0	7.5
Less Accessible	Large	90.48	19.05	80.95
	Medium	71.74	26.09	45.65
	Small	71.70	20.75	32.08

Respondents in the study area have also been asked to mention their sources of supplies. Table 6.2 shows the opinion of the respondents in this regard. It shows that in accessible area, large farmers (34.48%) procure DTWs from BADC, followed by small farmers (27.5%) and medium farmers (15.69%). In less accessible area only 7.5 % large farmers and 3.77 % small farmers get DTWs from BADC. Medium farmers in less accessible area do not get DTWs from BADC. Moreover, farmers in both accessible and

**Table 6.2**  
**Opinion of the Respondents (in percentage) about Their**  
**Sources of Supply by Size of Holding**

Accessibility of Area	Size of Holding	Sources						
		BADC	Co-operative			Individual/Group		
		DTWs	DTWs	STWs	LLPs	DTWs	STWs	LLPs
Accessible	Large	34.48	31.03	-	-	27.59	6.90	55.17
	Medium	15.69	37.25	-	-	25.49	5.88	41.18
	Small	27.5	17.5	-	-	25	7.5	25.0
Less Accessible	Large	7.5	37.5	2.50	-	2.5	42.5	10.0
	Medium	-	67.39	4.35	-	4.35	41.30	26.04
	Small	3.77	64.15	5.66	-	3.77	26.42	20.75

less accessible area, do not get LLPs and STWs from BADC. It also reveals that about 37.25 % medium farmers in accessible area obtain DTWs from co-operatives, followed by large farmers (31.03%) and small farmers (17.5%). None of the farmers in accessible area gets supply of LLPs and STWs from co-operatives. On the other hand, as many as about 67.39 % medium farmers in less accessible area get supply of DTWs from co-operatives followed by small farmers (64.15%) and large farmers (37.5%). Few small, medium and large farmers get STWs from co-operatives. None of the respondents in accessible and less accessible areas procure LLPs from co-operatives. Moderate percentage of large (27.59%), medium (25.49%) and small (25%) farmers in accessible area utilize source of individual/retailer in obtaining DTWs. In contrast, only negligible percentage of large, medium and small farmers in less accessible area utilize the same source. Number of respondents utilizing individual source for obtaining LLPs is higher

in accessible area than that of less accessible area. While 55.17 % large, 41.18 % medium and 25% small farmers in accessible area utilize individual source, about 10 % large, 26.09% medium and 20.75 % small farmers in less accessible area utilize same source. However, opposite picture is found in case of STWs. Here large number of respondents in less accessible area get STWs from individual. About 42.5 % large, 41.30 % medium and 26.42 % small farmers utilize individual source. As against that, only small number of large, medium and small farmers in accessible area utilize same source. The above discussion indicates that co-operative is the most important source for obtaining DTWs, followed by BADC and individual, while individual/ retailer is the best source of obtaining LLPs and STWs.

Machine owners have also been asked to mention their sources of supply. Their responses are shown in table 6.3. It appeared that BADC machine owners in both

**Table 6.3**  
**Opinion of the Machine Owners (in percentage) about**  
**Their Sources of Supply**

Accessibility of Area	Ownership pattern	Types of machine	Sources		
			IRDP	BADC	Wholesaler/ Agents/ Distributor
Accessible	BADC	DTWs	100	-	-
		STWs	-	-	-
		LLPs	-	-	-
	Co-operative	DTWs	-	100	-
		STWs	-	-	-
		LLPs	-	-	-
	Individual/Group owner	DTWs	-	100	-
		STWs	-	-	100
		LLPs	-	-	100
Less Accessible	BADC	DTWs	100	-	-
		STWs	-	-	-
		LLPs	-	-	-
	Co-operative	DTWs	-	100	-
		STWs	-	-	100
		LLPs	-	-	-
	Individual/Group owner	DTWs	-	100	-
		STWs	-	-	100
		LLPs	-	-	100

accessible and less accessible areas received all of their DTWs from I.R.D.P. Co-operatives got all of their DTWs from BADC. None of the co-operative owners was found to receive STWs from wholesalers/agents/distributor in accessible area. While co-operative owners in less accessible area got all of their STWs from wholesalers/agents/distributors. BADC was the only supplier of DTWs to the individual owners in both the areas. Wholesaler/agents/distributor is the only supplier of STWs and LLPs to the individual owners in both accessible and less accessible areas.

It is very difficult to identify cost of operation and marketing cost. Even then researcher tried his level best to collect necessary data. Both machine owners and farmers are covered. Data on water charges are obtained separately for electrically and diesel and mobil operated machines used for HYV-Boro by ownership and size of holding. Table 6.4 shows opinion of the farmers in this regard.

It reveals from the table that charges vary widely between electrically operated and diesel & mobil operated machines. The cost of electrically operated DTWs is around 52% of those of the diesel & mobil machine, while LLPs is around 42% and STWs is around 65% calculated on the basis of information given in table 6.4. Of the three types of irrigation machines, DTWs are found to be the costliest followed by STWs. The LLPs are the cheapest requiring less fuel to lift surface water compared to ground water.<sup>8</sup> In terms of ownership, BADC owned machine owners charge the highest amount for DTWs, while individual machine owners charge the highest for STWs. LLPs charges for different owners are not available. Water charges for use of different machines under different ownership in both accessible and less accessible areas further reveal that water charges by BADC for diesel and electrically operated DTWs machines in accessible area are lower than that of less accessible area. In case of co-operative, charges for DTWs diesel operated machine are lower in accessible area as compared to less accessible area, while it is higher in electrically operated machine in accessible area. While individual

8. Quasem, Md. Abul, "Impact of the New System of Distribution of Fertilizer and irrigation Machines in Bangladesh Survey Findings", op.,cit., p. 29

**Table 6.4**  
**Per Acre Water Charges paid by Farmers by Size of**  
**Holding and Ownership**

For Boro-HYV (in Tk.)

Accessability of Area	Size of Holding	BADC		Co-operative				Owner/Individuals/Group					
		Diesel and Mobil	Electric	Diesel and Mobil		Electric		Diesel and Mobil			Electric		
		DTWs	DTWs	DTWs	STWs	DTWs	STWs	DTWs	STWs	LLPs	DTWs	STWs	LLPs
Accessible	Large	2810.00	1475.00	2650.00	-	1385.70	-	2575.00	2400.00	1900.00	1440.00	-	830.00
	Medium	2800.00	1450.00	2750.00	-	1320.00	-	2550.00	2300.00	2008.00	1500.00	-	-
	Small	2790.00	1350.00	2700.00	-	1200.00	-	2450.00	2200.00	2005.00	1479.00	-	824.00
	Average	2796.67	1433.34	2700.00	-	1302.00	-	2525.00	2300.00	1971.00	1473.00	-	827.00
Less Accessible	Large	2800.00	1450.00	2780.00	-	1350.00	1475.00	2525.00	2350.00	1850.00	-	-	-
	Medium	-	-	2800.00	2230.00	1290.00	-	2550.00	2375.00	1975.00	1475.00	1475.00	-
	Small	-	-	2850.00	2200.00	1227.00	-	2575.00	2325.00	1923.00	1525.00	1525.00	-
	Average	2800.00	1450.00	2810.00	2215.00	1289.00	1475.00	2550.00	2350.00	1916.00	1500.00	1500.00	-

owners in accessible area charge lower amount for diesel & mobil operated DTWs and STWs, they charge lower amount for LLPs in less accessible area. In case of electrically operated DTWs, individual owners generally charge lower amount in accessible area than that of less accessible area. In general, the water rates charged by Co-operatives for STWs are the lowest, while for DTWs, these are the lowest for individual owners. This indicates that services provided by cooperatives in case of STWs and individual owners in case of DTWs are relatively cheaper. So for the water charges paid by different farm sizes are concerned, no marked difference is observed among them. Differences if any is caused by discriminatory rates due to payments at different times.<sup>9</sup> Large farmers in accessible area are found to pay higher rates in case of BADC owned diesel operated DTWs machine while small farmers pay the lowest rates. In the case of co-operative, medium farmers in accessible area pay the highest rate for diesel operated DTWs. Lowest price is paid by large farmers. In less accessible area, small farmers pay the highest price while the lowest price is paid by large farmers. In the case of individually owned machine, small farmers in accessible area pay the lowest price for DTWs and large farmers pay the highest price. In less accessible area, large farmers pay the lowest price while small farmers pay the highest price. Small farmers in accessible area pay the lowest price for STWs and large farmers pay the highest rates. As against this, medium farmers in less accessible area pay the highest price while small farmers pay the lowest. In case of LLPs, medium farmers in both the areas pay the highest price while large farmers pay the lowest rate.

Water charges reported by machine owners are lower than that reported by the farmers, in the case of both diesel operated and electrically operated machine (Table 6.5). Records as indicated in table 6.5 reveal that DTWs are more expensive to run. According to ownership of machine, BADC owned DTWs are the most expensive. Co-operative charges are the lowest for STWs.

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9. Ibid, p. 29.

**Table 6.5**  
**Water charges for HYV-Boro as Reported by Machine Owners**

Accessibility of Area	Types of Equipment	Per acre of land (in Tk.)					
		BADC		Co-operative		Individual/Group	
		Diesel & Mobil	Electric	Diesel & Mobil	Electric	Diesel & Mobil	Electric
Accessible	DTWs	2,260.00	1,116.00	2,218.00	1,079.00	2,200.00	1,102.00
	STWs	-	-	-	-	1,937.00	-
	LLPs	-	-	-	-	1,580.00	675.00
Less Accessible	DTWs	2,335.00	1,223.00	2,156.00	1,079.00	2,550.00	1,500.00
	STWs	-	-	2,215.00	1,475.00	2,350.00	1,533.00
	LLPs	-	-	-	-	1,543.00	-

The components of costs associated with the operation of diesel and mobil operated machine under different ownerships are shown in table 6.6. It appears from the table that diesel, mobil, spare parts, charges of mechanics, salaries of drivers and canals for irrigation and drainage are the major components of costs. Diesel accounts for about 41% to 45% of total cost in accessible area in contrast to about 45% to 47% in less accessible area. Mobil accounts for 20% to 24% in accessible area. As against this, it accounts for about 21% to 24% in less accessible area. Cost of spare parts ranges from about 8% to 14% in accessible area and about 10% to 11% in less accessible area. While cost of mechanic varies from about 6% to 8% in accessible area, it accounts for about 5% to 6% in less accessible area. Salaries of the drivers account for 5% to 9% in accessible area and 5% to 8% in less accessible area. Cost of canal for irrigation ranges from about 6% to 7% in both the areas. This indicates that cost of diesel is low in accessible area. On the other hand, costs of spare parts, mechanics and drivers are low in less accessible area. However, costs of mobil and canals for irrigation remain more or less similar in both the areas. Per acre total cost of diesel and mobil operated machine under different ownership in accessible area indicates that cost of DTWs under individual owner is low while it is high in case of BADC owned machine. In less accessible area cost of co-operative owned DTWs is low while it is high in case of BADC. A comparison of the cost of STWs under individual ownership in accessible and less accessible area further indicates that it is slightly low in accessible area. In less accessible area, individually owned STWs is



cheaper than that of co-operative owned STWs. A comparative cost of individually owned LLPs in both accessible and less accessible area reveals that it is somewhat lower in less accessible area.

A comparison of Table 6.6 and 6.7 indicates that cost of electrically owned machine is half of the total cost of diesel & mobil operated machine. Cost of electricity, salaries of the drivers, canals for irrigation, charges for mechanics and spare parts are the major components of electrically operated machine.

Cost of electricity for DTWs accounts for about 44% to 46% of total costs in accessible area and about 42% to 51% in less accessible area. Salaries of the drivers account for 13% to 15% in accessible area and 12% to 15% in less accessible area. While costs of mechanics and spare parts vary from 12% to 14% and 10% to 11% respectively in accessible area, they vary from 9% to 11% and 9% to 10% respectively in less accessible area. Cost components of DTWs under different ownership in accessible area indicate that they are low in case of co-operative owned machines and high in case of BADC owned machines. Same is the case in less accessible area. A comparison of total cost components of DTWs between accessible and less accessible area under different ownership indicates that it is higher in case of BADC owned machine in less accessible area and higher in accessible area under individual ownership. Total cost of BADC owned DTWs machine in less accessible area is high due to high cost of electricity and salaries of the driver. On the other hand, individually owned DTWs in accessible area is high due to high cost of salaries and mechanics. However, cost of STWs under co-operative ownership seems to be lower than individually owned machine.

Cost and margin of diesel/mobil and electrically operated machine under different ownership in both the areas are shown in table 6.8. It reveals that BADC owned DTWs in accessible area are found to generate higher profit for both diesel/mobil and electrically operated machine than less accessible area. Profit margin under co-operative owned

Table 6.6  
The Cost Components of Diesel and Mobil Operated Machine  
Under Different Ownership

Accessibility of Area	Types of equipment	Ownership Status	Diesel	Mobil	Lubricants	Spare parts	Cost of Mechanics	Salaries of Driver/Distributor	Canals for irrigation & Drainage	Transportation & Communication	Others	Total	(Figure in the bracket indicates percentage) Per Acre of Land (in Tk.)											
Accessible	DTWs	BADC	957.00 (42.34)	524.50 (23.21)	9.50 (0.42)	210.00 (9.29)	158.30 (7.01)	175.70 (7.77)	125.00 (5.53)	-	100.00 (4.43)	2260.00 (100)												
		Co-operative	900.00 (40.58)	530.00 (23.90)	10.00 (0.45)	216.00 (9.74)	152.00 (6.85)	185.00 (8.34)	130.00 (5.86)	-	95.00 (4.28)	2218.00 (100)												
		Individual/Group	979.00 (44.5)	518.00 (23.55)	8.00 (0.36)	158.00 (7.18)	143.70 (6.53)	159.00 (7.23)	129.30 (5.88)	-	105.00 (4.77)	2200.00 (100)												
Less	STWs	Individual/Group	862.50 (44.53)	430.00 (22.20)	9.50 (0.49)	210.00 (10.84)	100.00 (5.16)	125.00 (6.45)	120.00 (6.20)	-	80.90 (4.13)	1937.00 (100)												
		Individual/Group	700.00 (44.30)	325.00 (20.57)	5.00 (0.32)	220.00 (13.92)	70.00 (4.44)	75.00 (4.75)	85.00 (5.38)	70.00 (4.43)	30.00 (1.89)	1580.00 (100)												
		BADC	1075.00 (46.03)	528.00 (22.62)	11.00 (0.47)	220.00 (9.42)	130.00 (5.57)	176.00 (7.54)	120.00 (5.14)	-	75.00 (3.21)	2335.00 (100)												
Accessible	DTWs	Co-operative	1000.00 (46.38)	517.00 (23.98)	10.00 (0.46)	200.00 (9.28)	97.00 (4.50)	145.00 (6.73)	115.00 (5.33)	-	72.00 (3.34)	2156.00 (100)												
		Individual/Group	1010.00 (46.03)	521.00 (23.74)	9.00 (0.41)	207.00 (9.44)	120.00 (5.47)	125.00 (5.70)	122.00 (5.56)	-	80.00 (3.65)	2194.00 (100)												
		Co-operative	910.00 (46.22)	420.00 (21.33)	9.00 (0.47)	200.00 (10.16)	110.00 (5.58)	130.00 (6.60)	115.00 (5.84)	-	75.00 (3.80)	1969.00 (100)												
Accessible	STWs	Individual/Group	870.00 (44.66)	415.00 (21.30)	8.00 (0.41)	210.00 (10.78)	100.00 (5.14)	120.00 (6.16)	125.00 (6.42)	-	100.00 (5.13)	1948.00 (100)												
		Owner	712.00 (46.14)	310.00 (20.09)	6.00 (0.39)	165.00 (10.69)	80.00 (5.19)	75.00 (4.86)	85.00 (5.51)	75.00 (4.86)	35.00 (2.27)	1543.00 (100)												

**Table 6.7**  
**The Cost Components of Electrically Operated Machine**  
**Under Different Ownership** Per Acre of Land (in Tk.)

Accessi- bility of Area	Types of equipment	Ownership Status	Electricity	Lubricants	Spare parts	Cost of Mechanics	Salaries of Driver/ Distributor	Canals for irrigation & Drainage	Transport -ation & Communic -ation	Others	Total
Accessible	DTWs	BADC	507.50 (45.47)	9.50 (0.85)	110.00 (9.86)	128.30 (11.50)	135.70 (12.16)	125.00 (11.20)	-	100.00 (8.96)	1116.00 (100)
		Co-operative	470.00 (43.56)	10.00 (0.93)	116.20 (10.77)	132.80 (12.31)	145.00 (13.44)	130.00 (12.04)	-	75.00 (6.95)	1079.00 (100)
		Individual/ Group	500.00 (45.37)	8.00 (0.73)	106.80 (9.69)	143.70 (13.04)	159.00 (14.43)	129.50 (11.75)	-	55.00 (4.99)	1102.00 (100)
	STWs	BADC	-	-	-	-	-	-	-	-	-
		Co-operative	-	-	-	-	-	-	-	-	-
		Individual/ Group	-	-	-	-	-	-	-	-	-
	LLPs	BADC	-	-	-	-	-	-	-	-	-
		Co-operative	-	-	-	-	-	-	-	-	-
		Individual/ Group	280.00 (41.48)	5.00 (0.74)	60.00 (8.89)	70.00 (10.37)	75.00 (11.11)	85.00 (12.59)	70.00 (10.37)	30.00 (4.45)	675.00 (100)
Less Accessible	DTWs	BADC	590.00 (48.25)	11.00 (0.90)	120.00 (9.81)	130.50 (10.67)	176.50 (14.43)	120.00 (9.81)	-	75.00 (6.13)	1223.00 (100)
		Co-operative	540.00 (50.05)	10.00 (0.93)	100.00 (9.27)	97.00 (8.99)	145.00 (13.44)	115.00 (10.65)	-	72.00 (6.67)	1079.00 (100)
		Individual/ Group	530.00 (48.49)	9.00 (0.83)	107.00 (9.79)	120.00 (10.98)	125.00 (11.44)	122.00 (11.16)	-	80.00 (7.31)	1093.00 (100)
	STWs	BADC	-	-	-	-	-	-	-	-	-
		Co-operative	500.00 (47.76)	9.00 (0.86)	100.00 (9.55)	115.00 (10.98)	123.00 (11.75)	125.00 (11.94)	-	75.00 (7.16)	1047.00 (100)
		Individual/ Group	510.00 (46.76)	8.00 (0.74)	110.00 (10.09)	108.00 (9.91)	129.00 (11.83)	125.00 (11.47)	-	100.00 (9.17)	1090.00 (100)

**Table 6.8**  
**Cost and Margin of Diesel/Mobile and**  
**Electrically operated Machine**

Per acre of land (in Tk.)

Ownership Status	Types of Equipments	Cost Elements	Accessible area		Less Accessible area	
			Diesel and Mobil	Electric	Diesel and Mobil	Electric
BADC	DTWs	Cost of Diesel and Mobil/ Electric + Other Marketing Cost	1,481.50 778.50	507.50 608.50	1,603.00 732.00	590.00 633.00
		Total Cost	2,260.00	1,116.00	2,335.00	1,223.00
		Margin	540.00	309.00	465.00	227.00
		Rental Price	2,800.00	1,425.00	2,800.00	1,450.00
Co-operative	DTWs	Cost of Diesel and Mobil/ Electric + Other Marketing Cost	1,430.00 788.00	470.00 609.00	1,517.00 639.00	540.00 539.00
		Total Cost	2,218.00	1,079.00	2,156.00	1,079.00
		Margin	482.00	223.00	654.00	210.00
		Rental Price	2,700.00	1,302.00	2,810.00	1,289.00
	STWs	Cost of Diesel and Mobil/ Electric + Other Marketing Cost			1,330.00 639.00	500.00 547.00
		Total Cost Margin			1,969.00 246.00	1,047.00 428.00
Rental Price				2,215.00	1,475.00	
	Individual/ Owner	DTWs	Cost of Diesel and Mobil/ Electric + Other Marketing Cost	1,497.00 703.00	500.00 602.00	1,531.00 663.00
Total Cost			2,200.00	1,102.00	2,194.00	1,093.00
Margin			325.00	371.00	356.00	407.00
Rental Price			2,525.00	1,473.00	2,550.00	1,500.00
STWs		Cost of Diesel and Mobil/ Electric + Other Marketing Cost	1,292.50 644.50		1,285.00 663.00	510.00 580.00
		Total Cost	1,937.00		1,948.00	1,090.00
	Margin	363.00		402.00	443.00	
Rental Price	2,300.00		2,350.00	1,533.00		
LLPs		Cost of Diesel and Mobil/ Electric + Other Marketing Cost	1,025.00 555.00	280.00 395.00	1,022.00 521.00	
		Total Cost	1,580.00	675.00	1,543.00	
		Margin	391.00	152.00	373.00	
		Rental Price	1,971.00	827.00	1,916.00	

diesel/mobil operated DTWs is higher in less accessible area and it is higher for electrically operated machine in accessible area. Except LLPs, the amount of profit earned is higher for individually owned DTWs and STWs in less accessible area.

### Accessibility to Irrigation:

It is very difficult to measure accessibility to and availability of irrigation equipments to the farmers. However, some indirect techniques are used to measure in this regard.

Coverage and access of irrigation equipments are affected by the time spent in installation and operation. Table 6.9 shows the opinion of the respondents in this regard. The table shows that BADC owned machine in accessible area takes about 3 months to be installed from the time of application to operation and 2 months from the time of application to installation of DTWs. In the past BADC owned DTWs took about 23 months and 16 months respectively.<sup>10</sup> In the past, both co-operatively and individually owned DTWs machines took 17 months between application and operation and 11 months

**Table 6.9**  
**Time Spent Between Application and Operation of**  
**Irrigation Machine**

Accessibility of Area	Ownership Status	(Months)				
		DTWs		STWs		LLPs
		Time spent between application and operation	Time spent between application and Installation	Time spent between application and Operation	Time spent between application and Installation	Time spent between application and Installation
Accessible	BADC	3	2	-	-	-
	Co-operative	2	2	-	-	-
	Individual/group	3	2	3	2	2
Less Accessible	BADC	3	2	-	-	-
	Co-operative	3	3	2	1	-
	Individual/group	4	3	3	2	2

<sup>10</sup> Ibid, p.23

between application and installation.<sup>11</sup> Presently, co-operative takes 2 and 2 months and individual owner takes 3 and 2 months respectively. In the case of STWs, 3 months are required between application and operation and 2 months between application and installation. Individual/group applicants receive LLPs within 2 months from the date of application under present system compared to an average of 5 months in the earlier period.<sup>12</sup> This indicates irrigation machines are being distributed at a faster rate. The table further shows that except LLPs, more time is required in the less accessible area in fielding irrigation machines. In the case of co-operatively and individually owned DTWs, the time requirement increased by one month and one month respectively.

The average farm size of farmer is not found to vary between renting out arrangement of the BADC (old system) and the co-operatives and individual/group called new system as shown in table 6.10. It is perhaps due to the fact that machines are used by similar groups of farm.<sup>13</sup> It appears from the table that farm size of farmer using individually/group owned machines is the highest both in accessible area (4.53 acres) and less accessible area (4.80 acres). However, it is the lowest for those farmers who are using co-operatively owned machines. This indicates that individual/group owned machines are more accessible for the relatively larger farms, while the smaller farms tend to have greater access to the co-operatively owned ones.

The distribution of farmers and their owned land as shown in table 6.11 reveal that out of the total area irrigated by BADC machine, large farms account for 66.97% followed by individual/group owned machine (59.98% of irrigated area). Medium and small farmers are largely benefited from co-operatively owned machine. A comparison of the distribution of farmers and their owned land under old and new systems reveal that access to irrigation of small and medium farms together, has increased, largely due to increased participation by medium farms. It also indicates that under new system, medium farmers are benefited more than the small farmers.

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11. Ibid,

12. Ibid., p.22

13. Ibid, p.23

**Table 6.10**  
**Average Size of Farmers by Ownership of Machine**

Accessibility of Area	(In acres)		
	BADC Owned Machines	Co-operatively Owned Machines	Individual/group
Accessible	3.89	3.04	4.53
Less Accessible	4.29	4.14	4.80

**Table 6.11**  
**Distribution of Area Cultivated and Irrigated by Ownership of Machines & Size of Farms**

Size of Farms	BADC Machine (old System)		Co-operatively Owned Machine		Individual/ group Owned Machine	
	% of Cultivated Area	% of Irrigated Area	% of Cultivated Area	% of Irrigated Area	% of Cultivated Area	% of Irrigated Area
Large	74.96	66.97	41.16	34.71	61.37	59.98
Medium	15.36	21.76	36.59	39.39	29.29	29.65
Small	9.68	7.87	22.25	25.60	3.34	10.37
All farm	100.00	100.00	100.00	100.00	100.00	100.00

Irrigation coverage by different machines under different ownership as shown in table 6.12 reveals that BADC owned DTWs cover the highest areas (51.72 acres). In case of SWTs, co-operatives cover the highest areas. Individually/group owned machine seems to be ahead of co-operatively owned machine in case of DTWs. The efficiency of utilization is lower in the case of individually owned machines due to acreage left unirrigated within the machine command area.<sup>14</sup>

The extent of adoption and period of experience indicates the accessibility of irrigation equipments to the farmers. Table 6.13 shows the opinion of the respondents in this regard. It appears from the table that overwhelming majority of the respondents in accessible (86.21%) and all the respondents in less accessible area mention using irrigation equipments for more than 4 years. Farmers in the less accessible area are the early adopters compared to those of accessible area. However, higher proportion of large farmers are the early adopters in both the areas.

14. Ibid, pp. 32-33

**Table 6.12**  
**Irrigation Coverage by Irrigation Machines by**  
**Ownership as Reported by Machine Owner**

(In acre)

Types of Equipment	BADC Owned	Co-operatively Owned	Individually/ Group
DTWs	51.72	39.11	48.27
STWs	-	13.06	11.14
LLPs	-	-	9.50

**Table 6.13**  
**Opinion of the Farmers about the Extent of Adoption and**  
**Period of Experience with Irrigation Equipments**

(In percentage)

Accessibility of Area	Extent of Adoption and Period of Experience		
	Upto 2 years	Upto 4 years	Above 4 years
Accessible	10.34	3.45	86.21
Less Accessible	---	---	100.0

Machine owners receive technical assistance for operating and maintaining irrigation equipments from various sources. Their responses are shown in table 6.14. It reveals from the table that PDB engineer, REB engineer, BADC engineer, local mechanics and vocational training institute are the sources of technical know-how. However, there is a variation in sources of assistance for different equipments. Although DTWs owners get assistance from all sources, BADC engineer and local mechanics are

**Table 6.14**  
**Opinion of the Owners about the Sources of Technical**  
**Knowledge for Operation and Maintenance of Equipments**

(In Percentage)

Sources	Types of Equipments		
	DTWs	STWs	LLPs
PDB Engineer	4.41	5.56	-
REB Engineer	17.65	5.55	-
BADC Engineer	44.12	16.67	17.65
Local Mechanics	25.0	61.31	70.59
Vocational Training Institute	8.82	11.11	11.76
All Sources:	100.0	100.0	100.0



the principal sources of technical know-how. Local mechanics play a dominant role in case of STWs and LLPs. LLPs owners receive no assistance from PDB and REB engineers. This indicates that machine owners receive assistance from various sources. Machine owners are of the opinion that the sources lag behind to meet up their demand.

The purchasing decisions of the machine owners are influenced by a number of factors. Their responses are presented in table 6.15. It appears from the table that the important factors that influence the owners to purchase DTWs is the motivation by BADC personnel (69.12%), followed by influence of other owner (61.76%), area covered (58.82%), service and maintenance (50%). In case of STWs, the purchasing decision is influenced mainly by influence of other owners (72.23%) followed by availability (38.89%), influence of extension worker and advice of bank personnel (22.23%), while influence of other owners (82.35%) and price (70.59%) influence to a great extent in the purchase of LLPs. It is to be mentioned that bank personnel and extension workers have influence on the decision making process of the purchaser but are unable to influence DTWs purchasers. On the other hand, BADC personnel plays important role in the decision of DTWs machines but fail to influence the purchasing decisions of STWs and LLPs owners. This indicates that deregulated system has been made easier and quicker for machine owners to adopt irrigation technology at least to a certain extent.

**Table 6.15**  
**Opinion of the Owners about the Factors**  
**Influencing the Purchasing Decision**

(In Percentage)

Factors	DTWs	STWs	LLPs
Technical efficiency	36.76	16.67	5.88
Price	22.06	11.12	70.59
Service and maintenance	50.0	16.67	23.53
Past experience	41.18	44.47	11.76
Influence of other owner	61.76	72.23	82.35
Availability	32.35	38.89	11.76
Advice of bank personnel	-	22.23	23.53
Motivation by BADC personnel	69.12	-	-
Influence of extension worker	-	29.78	11.76
Area covered	58.82	11.12	29.41

## **Marketing Problems:**

Following are the marketing problems faced by the farmers and machine owners :

### **01. Product Problems :**

Respondents have been asked if they face any product problem. Cent percent respondents mention that they face product problems. They have further been asked to mention types of product problems. Their responses are shown in table 6.16. The responses reflect that product development receives little attention from the manufacturers.

As such they fail to allure users' acceptance and enhance product promotion. It appears from the table that frequent break down of the machine is the most important problem faced by the farmers and machine owners. They argue that co-operatively owned machine have lesser breakdowns with fewer days lost. Individual/ group owned machines have higher breakdown compared to BADC machines, although time cost is lower. Frequent breakdown of BADC owned LLPs is due to older age. The breakdown of machine causes crop damage and it is perhaps lower under new marketing system.<sup>15</sup> They are of the opinion that adulteration of fuel, infrequent changes of mobil engines, no over-hauling when in use and use of poor quality spare parts are responsible for frequent breakdown of machines. The next important problem faced by the respondents is the poor quality of machine. About three-fourth farmers, DTWs owners, STWs owners and more than three- fifth LLPs owners in the accessible area and about four- fifth farmers, DTWs owner, near about three-fourth STW owners and all the LLPs owners in the less accessible area agree with the view. They further mention that defective engine and defective spare parts/equipments are responsible for poor quality of machines. Thus product quality is not in consonance with the market condition and users' requirements. The next important problem relates to spare parts. About 75.5 % farmers, 65.79%DTWs owners, 50% SWTs owners and 73.34% LLPs owners in accessible area and about 65.83 % farmers, 70 % DTWs owners, 85.71% STWs owners and cent percent LLPs owners

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15. Ibid.,p. 57

**Table 6.16**  
**Distribution of Respondents (in percentage) According to Product**  
**Problems Faced by Them**

Problems	Accessible Area				Less Accessible Area			
	Farmers	Machine Owners			Farmers	Less Accessible Area		
		DTWs	STWs	LLPs		DTWs	STWs	LLPs
1. Poor quality of Machine	75.0	76.32	75.0	66.67	80.83	80.0	71.43	100.0
2. Frequent breakdown of machine	89.17	86.84	75.0	80.0	83.34	66.67	92.86	100.0
3. Problem relating to spareparts	72.5	65.79	50.0	73.34	65.83	70.0	85.71	50.0
4. Poor functioning of product	60.84	80.53	50.0	60.0	73.34	50.0	57.14	100.0
5. Incomplete tool box	-	23.68	25.0	20.0	-	16.67	21.42	50.0
6. Seasonal use	55.0	84.21	50.0	66.67	43.34	50.0	57.14	100.0
7. Repairing of machine	83.33	28.95	75.0	80.0	91.67	43.34	85.71	100.0
8. Under utilization of capacity	43.34	65.79	50.0	66.67	47.5	40.0	71.43	50.0

in less accessible area mention problem of spare parts. They complain that high price, non-availability and inferior quality of the spare parts are constraints in the proper use of machines.

Another big problem relates to the poor functioning of the product. They further reply that LLPs can't work well due to shortage of surface water. DTWs are experiencing reduced discharge of water during the peak irrigation period. Non-availability and frequent failure of electricity are also an obstacle in the way of proper functioning of irrigation equipments. Another problem relating to the product is the repairing of machines. The problem seems to be a serious in the less accessible area. Non-availability and lack of trained mechanics seem to be serious problem in repairing the equipments. Respondents reply that some trained mechanics are available with the BADC. Private mechanics are not sufficiently skilled in their job, specially in operating DTWs because of complex system. Another problem faced by the respondents is the under utilization of machine capacity. The reasons for under utilization of equipments as reported by the respondents are not the same. Farmers mention seasonal use, non-availability of electricity, fear of breakdown and lack of initiative as important reasons for under utilization of capacity. DTWs owners mention that seasonal use and lack of capital are responsible for under utilization of capacity. While LLPs owners blame seasonal use and lack of capital, STWs owners blame lack of capital, fear of machine breakdown, seasonal use, non-availability of electricity and high price of fuel as the main reasons for under utilization of capacity. Incomplete tool box supplied by the traders and seasonal use of machine are also product problem faced by the respondents. These two problems seem to be less serious than those mentioned above.

## **02 . Distribution Problems:**

Farmers and machine owners have been asked whether they face any distribution problem. If yes, what are those? All farmers and machine owners mention distribution problem. They face various distribution problems. These are presented in table 6.17. The responses reflect that machine owners are unable to provide service standard and failure

**Table 6.17**  
**Distribution of Respondents (in percentage) According to Types**  
**of Distribution Problems Faced by Them**

Problems	Accessible Area				Less Accessible Area			
	Farmers	Machine Owners			Farmers	Machine Owner		
		DTWs	STWs	LLPs		DTWs	STWs	LLPs
1. No. of machines not sufficient	50.0	-	-	-	60.83	-	-	-
2. Matching supply with farmers' need	25.0	-	-	-	17.5	-	-	-
3. Delay in arrival of irrigation machine	77.5	-	-	-	58.34	-	-	-
4. Absence of extension service	72.5	47.37	50.0	20.0	65.84	36.67	50.0	50.0
5. Local influence	82.5	78.95	100.0	80.0	75.0	70.0	75.0	100.0
6. Conflict and chaos among farmers	95.0	92.11	100.0	93.34	87.5	86.67	100.0	100.0
7. Inadequate supply of oil and spareparts	78.34	71.05	75.0	46.67	58.34	30.0	21.42	50.0
8. Carrying problem								
9. Delay in return of irrigation equipments by farmers	-	34.21	50.0	26.67	-	43.34	25.0	-
	-	39.47	50.0	26.67	-	33.34	50.0	50.0

whereof results in ineffective distribution. The most important problem faced by the farmers and machine owners is the conflict and chaos of the farmer groups. This adversely affects distribution and efficiency of irrigation. The next important problem faced by the farmers and machine owners is the local influence. This is equally applicable to both accessible and less accessible area. They opine that due to local influence, irrigation machines can't be sunk or commissioned at proper places. As a result, maximum benefits cannot be derived. Inadequate supply of oil and spare parts also adversely affect proper distribution of irrigation. About 78.34 % farmers, 71.05 % DTWs owners, 75% STWs owners and 46.67 % LLPs owners in accessible area and about 58.34% farmers, 30% DTWs owners, 21.42% STWs owners and 50% LLPs owners in less accessible area mention this problem.

Absence of extension service designed to meet the requirements of irrigation equipment also acts as an obstacle in the way of proper distribution. However, this problem seems to be less serious compared to above mentioned problem. Over three-fourth farmers in accessible area and more than half of the farmers in less accessible area allege that machines owners are unable to supply irrigation equipments in time. Delay is occurred due to negligence of machine operator or being otherwise busy. About 39.47% DTWs owners, 50% STWs owners and 26.67% LLPs owners in accessible area and about 33.34% DTWs owners, 50% STWs owners and 50% LLPs owners in less accessible area complain that farmers do not return irrigation equipments in time. This causes misunderstanding between farmer and machine owner and ultimately hampers distribution. The distribution network in the study area is not too wide as the irrigation equipments are not sufficient to meet overall demand of the farmers. Machine owners except LLPs in less accessible area are critical about the carrying of equipments. They allege that high cost of transport and non-availability of suitable transport hamper carrying of irrigation equipments to the users.

marketing decisions aiming at the desired impact on target market. Farmers allege that it is very difficult for them to bear high cost of operation. Another important problem faced by the machine owners is the high prices of equipments. There is no statutory measures to regulate the prices of agricultural machinery. The producers /traders indulge in high pricing practices & charge whatever they like. As against about three-fourth DTWs and STWs owners and more than three-fifth LLPs owners in accessible area, more than four-fifth DTWs and STWs owners and half of the LLPs owners in less accessible area mention that they are facing this problem. Machine owners allege that they are unable to afford high cost of equipments due to shortage of capital. A large number of farmers and machine owners further reply that charges made by the machine owners are subject to much instability. Farmers complain that it acts as an obstacle in the way of taking decision. Machine owners argue that fluctuations in charges are largely consequences of volatile price of fuel/mobil and high demand during irrigation season. Distance between farmer and machine owner further adds to the fluctuation of charges.

#### 04. Promotion problems:

Machine owners have been interrogated to know whether they face promotion problems. They are also asked to comment on the promotion programmes adopted by the manufactures/traders. All the machines owners both in accessible and less accessible area answer in the affirmative. Their comments on the promotion programmes taken by the traders are shown in table 6.19. Their responses reflect that manufactures/traders do not

**Table 6.19**

**Opinion of the Machine Owners (in percentage) about the Promotional Programmes Adopted by manufacturers/Traders**

Opinions	Accessible Area	Less Accessible Area
1. Absence of adequate advertising	47.36	60.87
2. Lack of personal touch	85.96	91.30
3. Absence of adequate sales promotion	73.68	86.96
4. Lack of good dealing	49.12	54.35
5. Lack of motivation by manufacturers/Traders	59.65	71.74

properly blend elements of promotion mix to complement each other and hardly select promotion tools in the light of distribution push or pull strategy. In spite of the fact that manufacturers/traders do some advertising, about 47.36% machine owners in accessible area and 60.87% respondents in less accessible area mention absence of adequate advertising.

Slackness on the part of manufacturers/traders in less accessible area is more visible. About 85.96% respondents in accessible area and 91.30% respondents in less accessible area further complain that manufacturers/ traders do not establish personal contact with them. Traders neither visit their places nor invite them to visit shops. Thus manufacturers/traders have little knowledge about buyer's preferences and problems. Large number of respondents in accessible area (73.68%) and less accessible area (86.96%) argue that there are lacks of adequate sales promotion devices. Manufacturers/traders provide for returning defective equipments and free service (one year). They make no use of gift. They neither organize sales rallies and contests nor offer premium or use coupons to enhance sale of irrigation equipments to the buyers. Even manufacturers/ traders are unable to provide prompt service to the buyers. About 49.12% respondents in accessible area and 54.35% respondents in less accessible area mention that their dealings with the traders are not satisfactory. Slackness of motivation on the part of manufacturers/traders is also visible. As many as 59.65% respondents in accessible area and 71.74% respondents in less accessible area mention this problem. In response to a question, about one-third (19 owners) machine owners in accessible and less accessible areas further mention inadequate financing. They face a number of financial problems. These are shown in table 6.20. It appears from the table that insufficient sanctioned loan is the most important problem faced by the respondents followed by high rate of interest, nepotism and corruption and political interference in financing. Other important problems are long time in getting loan, discrimination in financing, harassment by the bank employees & complex system in getting loan.



**Table 6.20**  
**Distribution of Respondents (in percentage)**  
**According to Types of Financing Problems**  
**Faced by Machine Owners**

Problems	Accessible Area	Less Accessible Area
1. High rate of interest	68.42	68.75
2. Insufficient sanctioned loan	78.95	81.25
3. Takes time to take loan	52.63	43.75
4. Complex and require much formalities	42.11	31.25
5. Nepotism and corruption	63.16	75.0
6. Discrimination	52.63	37.5
7. Distant location from banking	21.05	43.75
8. Harassment	31.58	50.0
9. Political interference	57.89	75.0

**Suggestions to Overcome Marketing Problems:**

Following are the suggestions given by the respondents to overcome marketing problems:

Respondents have been asked to comment on the probable solutions of the product problems they face. Table 6.21 shows the opinion of the respondents about the solution of the problems. About 87.08% farmers, 91.18% DTWs owners, 72.23% STWs owners and 70.57% LLPs owners belonging to both the areas advocate for manning irrigation equipments by trained operators to improve efficiency of operation. The Government of Bangladesh may set up training centre at thana headquarter to facilitate training to the machine operators about basic operational method and day to day maintenance. The owners/managers will bear cost of short term training for their drivers/operators. About 79.17% farmers, 82.35% DTWs owners, 61.12% STWs owners and 76.47% LLPs owners recommend for supply of quality machines. The Govt. must ensure that uniform and standard machines are available throughout the country. This can be overcome by extending BSTI standards for all machines manufactured in our

**Table-6.21**  
**Measures Suggested by Respondents to Overcome Product Problems**

(In percentage)

Suggestions	Farmer	Machine Owner		
		DTWs	STWs	LLPs
1. Supply of quality machine	79.17	82.35	61.12	76.47
2. Improving functions of irrigation machine	43.34	36.76	33.34	47.06
3. Provision for technical training	87.08	91.18	72.23	70.57
4. Easy availability of spare-parts	67.08	69.12	55.57	47.06
5. Setting service centre	45.84	36.76	27.78	35.29
6. Supply of complete tool box	-	19.12	16.67	11.76

country. On an average, more than half of the respondents suggest supply of adequate and better quality of spare parts to improve efficiency of irrigation machines. Sometimes it is difficult to distinguish between imitation spares from the original ones. This is obviously a case for building up a system of quality control by the Government for both imported and home produced spares. As many as 43.34% farmers, 36.76% DTWs owners, 33.34% STWs and 47.06% LLPs owners mention in favour of improving functions of irrigation machine. This can be done by providing better quality of fuel and oil, constructing irrigation field canals, supervising effectively, ensuring electricity and extending services to meet requirements of irrigation equipments. About 47.5% farmers, 36.84% DTWs owners, 25% STWs owners and 60% LLPs owners also suggest establishment of service centre by Thana Agricultural Extension Centre to facilitate repairing and maintaining of irrigation equipments. Repair and maintenance charge be paid by machine owners at a price fixed by the Government. Private parties should also be encouraged by the Government to undertake the service. Manufacturers/ traders should provide complete tool box to the machine owners while selling to them.

Respondents also suggested a number of measures to improve the distribution system. These are shown in table 6.22. Farmers in our country are poor and have a low operational holding. They are unable to buy heavy equipments. Therefore, to make the equipments available to the farmers, arrangements be made available on hire at union

level by BADC. Side by side, co-operatives should be encouraged to increase their stocks and let it out to farmers on hire. Community centres may also be opened for this purpose. The Government should also liberalize import policy and provide necessary facilities to import irrigation equipments. Formulation of liberal investment policy backed by adequate incentives can motivate private entrepreneurs to come forward for investment.

**Table-6.22**  
**Suggestions given by Respondents (in percentage)**  
**to Overcome Distribution Problems**

Suggestions	Farmer	Machine Owner		
		DTWs	STWs	LLPs
1. Adequate supply of machines at door steps	72.12	65.79	83.34	82.35
2. Improvement in infrastructural facilities	80.42	73.53	50.0	64.71
3. Removal of corruption	62.5	-	-	-
4. Liberal import policy and encourage private investors	57.5	66.17	55.56	58.82

Respondents also believe that improvement in infrastructural facilities like road communication, canal facilities, electrification and effective organization can enhance distribution system to a great extent. This will encourage farmers to buy and use more equipments. Majority of the farmers in both the areas also suggest that distribution system can be made more effective if machine owners are more conscious to remove the corruptions involved in the sanction of irrigation equipments during the irrigation season.

Respondents also suggest a number of measures to overcome pricing problems. These are shown in table 6.23. More than four-fifth DTWs and LLPs owners and slight lower four-fifth STWs owners are of the opinion that the Government should try to keep prices of agricultural machineries within the purchasing power of the farmers. Statutory price control should be enforced to regulate the price of agricultural machinery, keeping in view the standard specifications of machinery. Control implementation machinery should be set up at Government level for this purpose. The Government may think over

to fix up statutory price in each year keeping in view of the price of fuel and oil to regulate the charges to be paid by farmers for use of agricultural machinery. About 87.5% farmers, 69.12% DTWs owners, 61.12% STWs owners and 76.48% LLPs owners also suggest that cost of operation can be reduced to a great extent by ensuring supply of fuel and oil at a reasonable price. More than three-fifth DTWs owners and about half of the STWs and LLPs owners think that credit facility to be provided by manufactures/dealers will increase sale of agricultural machineries: About 64.17% farmers also believe that credit facility to be provided by machine owners to the farmers will encourage them to use more machineries.

**Table-6.23**

**Suggestions given by Respondents (in percentage) to Overcome Pricing Problems**

Suggestions	Farmer	Machine Owner		
		DTWs	STWs	LLPs
1. Supply of machinery at reduced price	-	85.29	77.78	88.24
2. Reduce cost of operation	87.5	69.12	61.12	76.48
3. Credit sale/facility	64.17	66.67	50.0	52.94

Machine owners also suggest a number of measures to overcome promotion problem, which are presented in table 6.24. In response to another question about 92.65 % DTWs owners, 94.45%STWs owners and 94.12 %LLPs owners suggest that finance has important role to play in promotion of equipments. They argue that existing procedures and administrative system of Krishi Bank/Commercial Bank for lending loan be streamlined for timely execution of ventures. Interest rate should be reduced. Political interference and corruption of bank employees be removed.

**Table-6.24**

**Suggestions given by Machine Owners (in percentage) to Overcome Promotion problems.**

Suggestions	Machine Owners		
	DTWs	STWs	LLPs
1. Improve service facility	89.71	72.23	82.33
2. To make farmer familiar with machineries	96.12	55.56	64.71

More than four-fifth DTWs, and LLPs owners and more than three- fourth STWs owners suggest that producers/traders should improve their service facilities like after sales service, training to the machine owners and extending existing free service period. About 69.12% DTWs owners, 55.56% STWs owners and 64.71% LLP owners argue that vigorous efforts should be made by the government to make the farmers familiar with the irrigation equipments and their utility to them. It can be done by better coverage on Radio and TV. Fairs and exhibitions should be organized at thana level. Moreover, handbills and small pamphlets should be distributed on market days.

## **Section - B:**

### **Light Equipments and Implements**

Various light equipments and implements used in agriculture in the study area are shown in table 6.25. To create favourable soil conditions for germination of seeds sown and for proper growth of plants, land has to be tilled with various tools. This is mainly done by plough and harrow blade. All the respondents in accessible and less accessible areas mention that they own and use plough for cultivation of land. Wooden plough shod with small piece of iron is a common implement. However, considerable variation is observed in size and shape of plough in different parts of the study area. The plough is mainly driven by bullocks. Harrow blades are also used to prepare the land. About 98.34 % respondents in accessible area and cent percent respondents in less accessible area hold this view. It is used for breaking the clods and smoothening. In some cases, harrow blade is used as levellers after putting a plank or rope between head piece and blade. The preparation of the ripe crop that reaches the hands of the farmers after harvest depends on the efficiency of harvesting, threshing and winnowing. These operations are considered important not because they help in increasing the yield directly, but because if done properly they reduce harvesting losses and also improve the quality of the produce<sup>16</sup>. Crops are harvested in different ways. Sickle and spade are mainly used for this purpose. Few crops are harvested by hands. Almost all farmers in accessible and less accessible area mention that they own and use these equipments. Thrashing is done to make the grain separate from other parts of the plant. This is mainly done by hand or under animals feet. The later one is the most common method followed in the study area. Winnowers are also used for separating grain from chaff. About 95.5% farmers in accessible area and cent percent farmers in less accessible area use this equipment. About 9.17% farmers in accessible area and 3.34% farmers in less accessible area mention that they have sprayers for plant protection measures. Small farmers do not have their own sprayers. They generally hire by paying charges.

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<sup>16</sup>Jahan, Manohar Lal, Op. cit., p.93

**Table -6.25**  
**Opinion of the Farmers (in percentage) about the**  
**Types of Light Equipments owned/used by Them for Cultivation of Land.**

Accessibility of Area	Types of Equipments				
	Plough	Harrow Blade	Harvester	Winnowers	Sprayers
Accessible	100.0	98.34	99.17	95.5	9.17
Less Accessible	100.0	100	100.0	100.0	3.34

The survey conducted by the author in the study area reveals the following channel as shown in Fig-6C through which light equipments reach to the farmers. Small implements like plough, harrow, cultivators, sickle, spade and winnowers are indigenously manufactured by village smith on the order of the farmers. Sometimes it is manufactured and sold by them directly to the farmers in hats and bazars. The village smith also sell to the retailers who then sell directly to the farmers. Farmers buy sprayers directly from the wholesaler/distributor locating either in Gazipur district headquarter or Dhaka. Some big farmers have their own sprayers but in maximum cases, sprayers are available to them on customer service basis. Opinion of the respondents about their sources of light equipments as shown in table 6.26 reveals that village smiths get their supplies from their own sources. Retailers in both the areas obtain all their supplies from village smiths. About 80.84 % farmers in accessible area get their supplies of plough

**Fig - 6 C**  
**Channels of Distribution of Light Equipments**

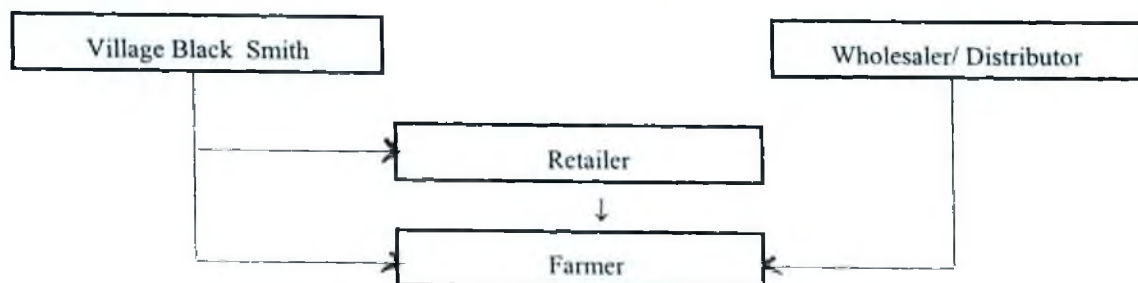


Table - 6.26

Opinion of the Respondents (in percentage) about Their Sources of Ligth Equipments

Accessi- bility of Area	Middleme n/ Farmer	Souce															Wholesale r/ Distributor
		Manufactured by Village Black Smith					Ratailer					Own Source					
		Plough	Harrow Blade	Harves- ter	Winno- wers	Sprayers	Plough	Harrow Blade	Harve- ster	Winno- wers	Sprayers	Plough	Harrow Blade	Harve- ster	Winno- wers	Sprayers	
Acce- ssible	Manufac- tured by Village black smith	-	-	-	-	-	-	-	-	-	-	100	100	100	100	-	-
	Retairler	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-
	Farmer	80.84	73.33	66.67	40.83	-	10.0	14.17	27.5	38.34	-	9.16	12.6	5.83	20.83	-	100
Less Acce- ssible	Manufac- tured by Village black smith	-	-	-	-	-	-	-	-	-	-	100	100	100	100	-	-
	Retairler	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-
	Farmer	71.67	77.5	69.17	58.33	-	25.0	14.17	29.17	25.83	-	3.33	8.33	1.66	15.84	-	100



from village smith followed by harrow bade (73.33%), harvester (66.67%) and plough (40.45%). Some farmers manufacture and use light equipments. About one-fifth farmers in accessible area mention that they manufacture and use winnowers followed by harrow blade, plough and harvester . In less accessible area, about 77.50% farmers get supplies of harrow blade from village smith followed by plough (71.67%) harvester (69.17%) and winnowers (58.33%). About 29.17% farmers further reply that they get harvesters from retailers followed by winnowers (25.83%), plough (25%) and harrow blade (14.17%). About 15.84 % farmers also mention that they themselves produce and use winnowers followed by harrow blade (8.33%), plough (3.33%) and harvester (1.66%).

Cost of production/purchase price and selling price of different light equipments as shown in table 6.27 reveals that except retailer's selling price of harrow blade, selling prices of other light equipments at manufacturer's and retailer's level are higher in less accessible area as compared to accessible area. Margin retained by the manufacturer reveals that it is lower by Tk.1.00 per harrow blade in less accessible area while it is higher by Tk.2.00 for harvester and Tk.1.00 for winnower in less accessible area. No difference is observed in case of plough. At retail level, it is higher by Tk.3.00 for harvester and Tk.1.00 for winnower in less accessible area than that of accessible area while it is lower by Tk.4.00 for plough in accessible area. Margin retained by the retailer is higher by Tk.5.00 for harrow blade in accessible area as compared to less accessible area. As a whole, margin retained by the retailer is lower than that of village smith.

Opinion of the Respondents (in percentage) about the Marketing Problems faced by them are shown in table 6.28. More than four- fifth farmers and retailers, and about three- fifth village smith in both accessible and less accessible areas mention that prices of light equipments are very high. Farmers blame that manufacturers and retailers indulge in high pricing practices and charge whatever they like from them. Medium and small farmers have merger resources and unable to buy costly small implements. Manufacturers argue that price of small implements are high due to high cost of production. About 82.08

**Table - 6.27****Cost of Production/Purchase Prices and Selling Prices of Different Light Equipments as Reported by Manufacturers and Retailers**

(Tk. Per unit)

Accessibility of Area	Types of Light Equipment	Manufactured			Retailer		
		Cost of Production (1)	Selling Price (2)	Difference (2)-(1)=3	Purchase price (1)	Selling Price (2)	Difference (2)-(1)=3
Accessible	Plough	400.0	500.0	100.0	427.0	510.0	83.0
	Harrow blade	165.0	205.0	40.0	185.0	225.0	40.0
	Harvester	20.0	30.0	10.0	25.0	33.0	08.0
	Winnower	13.0	18.0	5.0	17.0	20.0	03.0
Less Accessible	Plough	410.0	510.0	100.0	438.0	525.0	87.0
	Harrow Blade	169.0	208.0	39.0	188.0	223.0	35.0
	Harvester	19.0	31.0	12.0	23.0	34.0	11.0
	Winnower	14.0	20.0	06.0	17.0	21.0	04.0

% farmers, 66.67 % manufacturers and 70 %t retailers are of the opinion that quality of small equipments are poor because manufacturers do not use standard raw materials. The black smiths/ carpenters do not conform to any standard. They have little idea about standard shape and size which can give a better efficiency. However, moderate number of farmers and retailers mention that there is shortage of some small equipments such as sprayers and harrow blade and as such these products can't be made available at right time. Very often manufacturers fail to supply required equipments in time due to their illness, otherwise busy or shortage of capital.

**Table-6.28****Opinions of the respondents about the marketing problems.**

Problems	Farmer	Village Black Smith	Retailer
1. Poor quality	82.08	66/67	70.0
2. Shortage of supply and non availability at nigh time	25.34	-	20.0
3. High price	88.75	60.0	85.0

Following are some of the measures to be taken to overcome marketing problems as suggested by the respondents- 6.29. Respondents argue that the problem of quality can be overcome by extending BSTI standards. Testing of the implements made by village smith should be done by agro industries. The Govt should ensure uniform standards and testing and evaluation of implements. In order to facilitate the adoption of better cultivation technique, it is essential that the use of improved implements with greater efficiency be popularised. The Government may encourage private investors to set up

**Table - 6.29****Suggestions given by Respondents(in percentage) to Overcome Marketing Problems.**

Suggestions	Farmer	Village Black Smith	Retailer
1. Improvement in quality	88.34	63.33	55.0
2. Credit facility	65.84	76.67	80.0
3. Encourage private entrepreneurs to establish agro industries	40.84	26.67	60.0

agro -industries for production and distribution of such implements. In order to make the improved tools available at low prices, the Government should take initiative for production of steel equipments. Credit facilities may be extended to the farmers to purchase such equipments.

## **CHAPTER-7**

# **CONCLUSIONS AND RECOMMENDATIONS**

## **Conclutions and Recommendations:**

Agriculture is the largest and most important sector of the Bangladesh economy. The place of agriculture in our economy is such that Bangladesh can well be described as an agricultural country par excellence. About 31 percent of the country's GDP at current price is derived from agriculture. About 69 percent of the working population is engaged in agriculture. In village, about 80 percent of the people earn from cultivation and allied agro-industries. A good number of labour force in cities too find jobs in marketing and other activities connected with agriculture. Agriculture also meets large portion of food requirements of the country. It contributes 60 percent of the country's exports. The importance of agricultural exports lies in enabling the country to buy development goods and essential commodities.

Notwithstanding, agriculture promotes economic development of the country, yet it is the most underdeveloped part of the economy. The slow growth rates in agricultural productivity adversely affects the continuous food shortage in the country. Yield per acre of land is low as compared with other developed and developing countries. Therefore, a strong foundation of agriculture is necessary for sustained and rapid development of Bangladesh.

Agriculture development can be achieved in different ways. Firstly-increase in productive capacity through more investment. However, this involves large amount of capital expenditure. Financing of such capital is beyond the capacity of individual farmers. Role of the government in this regard is very important. Secondly, development and application of new technology and modern management practice. This requires modernizing the attitude of the farmers and demonstration of new methods. However, much of the technology requires import with high cost. Thirdly, use of adequate inputs. Increased productivity cannot be achieved merely through better know-how. The development of an adequate agro industrial base is necessary if agriculture is to register a major advance. The most important step may be to guarantee adequate and sustained

availability of inputs through effective marketing system which is imperative if productivity in agriculture is to increase.

Considering the importance of agriculture in the economy of Bangladesh, the Government brought in various institutional changes and formulated programmes to overcome the problems in production and marketing. Despite that, performance in agricultural sector is not satisfactory. The growth of the agricultural sector during the Third Plan period was below the rate envisaged in the plan. The contribution of agriculture to the GDP at current price declined from about 36.85% in 1989-90 to about 30.47% in 1992-93. Index of agricultural production also dwindled down from 129 in 1981-82 to 116 in 1990-91. The poor performance of agriculture results from the existence of a variety of factors like ineffective marketing of agricultural inputs and many other serious gaps which do not permit efficient conduct of agriculture. Notwithstanding, the markets for agricultural inputs in Bangladesh are large marketing of these inputs is highly difficult and complex operation. Obviously marketing of agricultural inputs in Bangladesh must be understood as a specialized job. The curiosity of the researcher in the subject arose out of the criticisms pertaining to the maladies of agricultural inputs marketing. Consequently, researcher selected two thanas of Gazipur district - one accessible area and the other less accessible area. An effort has been made in this study to identify pattern of marketing system of agricultural inputs, accessibility of inputs to the farmers and marketing problems. The researcher has also concentrated attention as to how the operation of input marketing could be solidified so that sour lemon of failure be turned into success. These are discussed below:

### **Fertilizer:**

The study shows that both demand and consumption in the accessible area are much higher than less accessible area due to easily accessibility with the district headquarter and large farm size, crop variety and crop size. Demand and consumption in both the areas showed fluctuating trend. The distribution of TSP and MP differs to some extent from distribution pattern of urea. However, urea is distributed in the study area

mainly through Government appointed dealers, wholesalers and retailers. In both the cases, retailers play crucial role in the distribution. The tendency of the farmers towards the purchase of fertilizers from dealers is high in accessible area. While the tendency of the farmers to purchase fertilizers from wholesaler is high in accessible area due to easy accessibility to those middlemen. Moreover, the tendency of the large and medium farmers to buy from dealers and wholesalers appears to be higher than small farmers. Respondents use various means of transports while carrying fertilizers. However, tractor/truck is the most popular transport to the dealers, wholesalers and retailers in both the areas. While farmers mention rickshaw to be their popular transport in carrying fertilizers.

Marketing cost in the study area shows that accounts for about 7.45% of the consumer price in accessible area and 8.05% in less accessible area. The difference is mainly due to transport cost. All other marketing costs almost remained the same. Dealers in the accessible area charge higher margin than that of less accessible area. Marketing cost and margin account for 6.77% and 1.99% of the farmers price respectively in accessible area and they account for 7.20% and 2.66% respectively in less accessible area. At retail level, the costs of trading and margin in less accessible area are higher than accessible area. Thus retailers in the less accessible area enjoy a higher gross margin than accessible area. Marketing cost and margin of TSP at dealers' wholesalers' and retailers' level in less accessible area are higher than accessible area, although not significant. Cost elements in both the areas indicate that transportation is the single largest element followed by wastage, loading & unloading, and shop/store rent. Like urea and TSP, marketing cost of MP fertilizer is high in less accessible area. However, the price to be paid, cost involved in marketing and margin to be charged depend much on types of channel they use. Farmers' cost of carrying fertilizers by rickshaw ranges from about Tk.7.00 to Tk.8.00(per bag per mile) in accessible area while it varies from about Tk. 8.00 to Tk.9.00 in less accessible area. Cost of carrying fertilizers by boat ranges from about Tk. 7.00 to 8.00 in accessible area while it is around Tk. 8.00 in less accessible area. Truck and labourer appear to be the costliest of all means of carrying fertilizer. The



cost of fertilizer to total cost of production (per acre of land) comes to average about 26.96% in accessible area and 27.96% in less accessible area.

Data collected from the study area indicates that there is increase in the number of traders under NMS compared to OMS. There appears a significant difference in terms of the degree of accessibility of an area. Accessibility of area has influence on adoption of fertilizer. It is perhaps due to better literacy rate and earlier availability of irrigation. Farmers in the less accessible area are the late adopters compared to accessible area. In both the areas, high proportion of large farmers are the early adopters. Farmers generally apply Urea, TSP and MP for cultivation of Boro-HYV. The proportionate number of farmers using Urea, TSP and MP are generally low in case of local Aus and local T. Aman respectively. Farmers in both the areas apply higher quantity of Urea and TSP for cultivation of land as compared to MP fertilizer.

The effect of size of holding on the extent of utilization of fertilizer is not found systematic. The positive size effect is found in less accessible area with the exception of TSP for medium size holdings. Large farmers are using larger amount of fertilizers and small farmers apply fertilizers in a smaller proportion. In accessible area, the size effect is found negative. The medium and small farmers are using larger amount of fertilizers per acre of land than large size farmers. Tenurial status has influence on the rate and mix of fertilizer application. Tenants use higher amounts of fertilizers per acre of land than owner - cultivators. The difference is higher for medium and small farmers but for large farmers there is narrow difference. On the other hand, owner-cum-tenants use higher quantity of fertilizers on the share-cropped land than owned land. This is true in case of small and medium size tenants but in case of tenants belonging to large size holding, the quantity of fertilizer used per acre of land is lower on share-cropped land than on owned land.

Tenants use larger quantity of fertilizers for cultivation of Boro-HYV and local T Aman than owners. The difference of fertilizer application for local Aus seems to be insignificant. Tenants use more fertilizers on share-cropped than on owned land in case of Boro-HYV. Reverse picture shows in cases of local T Aman and Local Aus where tenants

use more fertilizers on owned land than share-cropped land. Tenants use more fertilizers than that of owner cultivators due to the insecurity of tenure and implicit pressure on the part of land owner to cultivate rented land more intensively. Application of fertilizer varies according to length of tenure. The longer is the period of tenure, the lower is the quantity of fertilizer used on the share-cropped land and the rate of proportion is high in less accessible area than accessible area.

Stock of fertilizer with the traders is not satisfactory, specially in less accessible area. There appears difference to some extent between accessible and less accessible area in terms of stock of urea per trader but little difference between accessible and less accessible area is observed in terms of stock of TSP and MP per trader. Some discrepancy is found among the selling prices that are reported by dealers, wholesalers and retailers or by the farmers. The difference can perhaps be attributed to the traders' bias for under-reporting prices or farmers' bias for over reporting. Selling prices of fertilizers (except MP) by different traders in less accessible area are higher than that of accessible area. The price differential between the two areas appears due to the higher transport or handling cost. The level of price fluctuation between average and maximum price indicates that farmers in accessible area appear to be at somewhat of a disadvantage as they are paying higher prices for Urea and TSP while farmers in less accessible area are paying a higher price for MP.

The problems as perceived by the respondents relate to demand and supply, product, place, price and promotion. Large number of respondents mentioned lag of demand and supply. Respondents argue that unscrupulous traders make hold of fertilizers during political unrest, shortage of supply or high demand tantamounting to artificial scarcity. This results in high price or poor availability of fertilizer. The supply mix is also unbalanced due to sources of supply. The authorities also fail to make clear and realistic estimation of the fertilizer requirements. Sometimes adequate fertilizers are not available in time in all or many parts of the study area. The problem seems to be more critical in less accessible area. Respondents also face a number of distribution problems. High cost of transport acts as disincentive to the respondents, specially in less accessible

area. The inadequate network of distribution is also a constraint to the spreading of fertilizer particularly in less accessible area. Traders tend to concentrate near market place. The interior traders are few due to limited turnover. Dealers and private traders are not able to spot a viable marketing opportunity more quickly and convert it, with little or no delay, into retail outlets. Storage accommodation is not sufficient to meet the requirements of the distribution programme. Most of the hired godowns are kutcha and inadequate. As a result, losses of fertilizer both in quality and quantity are substantial. The problem seems to be more acute in less accessible area. Output - delivery system including communication, transport and storage as well as economic function in the study area are often weak. All these make distribution ineffective resulting in non-availability of fertilizer in time. Disrupted road condition is also a problem to make fertilizers available to the farmers and it seems to be more acute in less accessible area. Dishonesty of the traders also acts as an obstacle in the way of proper distribution of fertilizer. Shrewd speculator enters fertilizer markets and does speculative storage.

For implementing an efficient marketing and distribution system, the existence of a properly maintained and well distributed chain of storage for buffer stock of fertilizers is a must. This can ensure ready stock of fertilizers at the planting time and during top dressing. Distribution system should be penetrated in rural areas. Private traders having routes in the interior area are able to spot a viable marketing opportunity more quickly and convert it with little or no delay into a retail outlet. Co-operative system can also help in stocking of fertilizers and ensure its timely availability to the farmers. Authorities should make realistic long term demand and supply projection. The unbalancing of supply mix can be minimised if home factories of Urea and TSP can be run at potential capacity. Adoption of single window approach in the interior areas should be encouraged to provide a whole range of agro-inputs and services. This approach has the advantage of serving as a kind of union/village level agro- super- market for the farmers. The government should take measures to develop infrastructural facilities; specially in less accessible area where fertilizers can be distributed easily. Promotion of competitive market will also ensure effective distribution. The direct factory lifting programme of

urea fertilizer by the private sector will be an effective way to improve Urea availability to farmers and to lower prices. It can be extended to all domestic factories including TSP. However, efforts should be made to deter monopolies and cartels and guarantee free and open competition.

Large number of respondents also mentioned quality of fertilizer to be poor one. Quality of fertilizer is deteriorated due to adulteration, lack of standard bags and storage facilities and lack of effective quality control. It is suggested that the Government should have control over trade and business. It is essential to ensure that fertilizers should conform to certain specific standards, in terms of minimum guaranteed percentage of plant nutrients, packed in containers and marked in prescribed manner. The Government should think over imposition of severe penalties to the traders who are found guilty of selling substandard/adulterated fertilizers or indulging in black marketing. Quality control should be exercised both on imported and domestic products. Well constructed fertilizer godowns can avoid the loss of fertilizer both in quality and quantity. Monitoring and research activities are required to collect, publish and disseminate data on fertilizer stock levels, production levels, imports, prices at all market levels, availabilities demand projections.

Farmers complain that prices of fertilizers are high and traders sometimes charge higher prices than those fixed by the Government. This amounts to black marketing and it prevails mainly during temporary scarcity situation. Commission allowed to the traders is considered inadequate and this may be a reason for charging higher prices. Prices of fertilizers also fluctuate due to black marketing, scarcity situation or high demand. This creates problems in the purchase and sale of fertilizers. The extent of price fluctuation is high under New Marketing system. As a remedial measures, the Government should take up price support and input subsidy. With more of subsidy on fertilizer net output will be more than the losses. The Government may fix up fertilizer price each year considering demand and supply position. This will at least protect farmers from speculators who contrive large seasonal and spatial variations. Rate of commissions should be increased which may reduce malpractices and black marketing.

All farmers and middlemen mention problem of promotion. Farmers blame that manufacturers and traders are unable to provide adequate knowledge about fertilizers to them. Traders are not in a position to play the role of guide, philosopher and friend to help farmers overcome problems. Traders fail to develop rapport with the farmers and not able to provide personalised service. Even middlemen lack training and promotional support. As a remedial measures, the Government should take aggressive promotional measures. One way of promoting fertilizer is to demonstrate the effect of fertiliser on a farmer's land in the village to be organised by local agricultural officer. Different types of written materials like charts, posters, handbills, leaflets, brochures, wall painting and hoarding may be used in fertiliser promotion. The Government should undertake promotional campaign on the market day through such media like slides, tape plus slide shows, audio and video cassettes and TV. The Government should take steps to educate farmer about proper use of fertiliser by ensuring appropriate recommendation to cover the nutrient requirements to different crops with relevance to actual farming conditions, reflecting needs and changes in markets and in the field. Traders can increase sales by providing friendly service to the farmers. The traders can assist farmers who have a marketing or credit requirements by supplying them with fertiliser on credit at the beginning of the season and buying their produce at the end of the season. Traders can develop rapport with the farmers by assisting the farmer in getting loans from the bank, providing information about produce prices to help farmers realise better returns and encouraging cultivation of profitable crops. Traders should be provided with training so that they can provide the type of service which is required to make them an effective change agent for improving farm practices. The traders can best be trained by combination of formal training and refresher courses organised by the manufacturer as also agencies like BADC. Besides, training, traders also need assistance from the technical marketing staff of the manufacturer to respond to localised farmer problems.

Overwhelming portion of the working capital of the respondents are met by self financing, Institutional sources meet capital requirements ranging from 12 to 25 percent. The important problems faced by the respondents in obtaining loans are high rate of

interest, time taken in sanctioning loan, insufficient sanctioned amount, observing a number of formalities, corruption in sanctioning loan, harassment and political influence. Respondent facing financial problems are in favour of providing credit to them. Two types of credits concern fertiliser traders and farmers. First type is distribution credit, which traders require for buying fertilisers from manufacturers/wholesalers. The second type of credit is the production credit ie, farmers requirements for financing inputs.

### **SEEDS:**

Seed is one of the most important components of strategic inputs. Improved seed has always been ranked to be the first of the Five Year Plans for improved agriculture which, unless it is stepped up very soon, the spectre of chronic malnutrition for increasing millions of people, possibly with disastrous famine, will confront the country, thus threatening the pace and well being as a whole.

Demand and consumption for certified seeds in the accessible area are much higher than that of less accessible area. Demand and consumption in both the areas showed fluctuating trend. Boro-HYV occupied a dominant position among the certified seeds accounting for about 47% of total demand and about 63 % of consumption in accessible area. Distribution of certified seeds among the farmers is the responsibility of the BADC. BADC distributes seeds to the farmers through their sale centre and dealers. There are farmers who grow seeds at their own land. Some are used by them and the rests are sold in village hats on retail basis, directly to the farmers. They are known as producer-cum-retailers. Farmers get major portion of their supplies from own sources. The tendency of the farmers to buy seeds from the market is high in accessible area. Respondents use various means of transport in carrying seeds. Majority of the farmers and producer-cum- retailers in both accessible and less accessible areas carry their own seeds. Farmers, dealers and producer-cum-retailers in less accessible area prefer boats while carrying seeds. It is perhaps the road communication network within the less accessible area which is poor.

Dealer's purchase price account for about 87.58% of their selling price in case of Boro-HYV Seeds. The cost of trading is about 2.85% of the selling price of dealer in accessible area as against 2.88% in less accessible area. Dealer in accessible area enjoys a higher gross margin than that in less accessible area. Dealer's purchase price of local Aus is about 90% of the selling price. The cost of marketing is about 3.09% of the selling price of dealers; compared to Boro-HYV, dealer gets less margin. Dealers' purchase price of local T. Aman is about 89.17% of their selling price. The marketing cost is the same as local Aus. Dealers gets better margin compared to local Aus. Purchase price of producer- cum- retailers in case of Boro-HYV accounts for about 75.81% of their selling price in accessible area and 76.74% in less accessible area. Marketing cost is about 2.91% of their selling price in both the areas. However, producer- cum- retailers in accessible area get the opportunity to claim a higher margin than less accessible area. Marketing cost in accessible area is the same both for Local Aus and Local T. Aman. Transport accounts for large share of marketing costs followed by store rent and loading & unloading at dealers' and retailers' level. Farmers' cost of carrying seeds (per maund per mile) ranges from Tk. 8.00 to Tk. 10.00 in both the areas. Cost of carrying seeds by boat is around Tk.7.00 in accessible area and Tk.8.00 in less accessible area. Exhibit-3 further indicates that boat is the cheapest means of carrying seeds. The cost of seeds of the farmers to the total cost of production (per acre of land) is about average 21.48% in accessible area and 23.18% in less accessible area, in case of Boro-HYV. Whereas it is about 19.27% and 27.48% in case of Local Aus and Local T. Aman respectively in accessible area.

The adoption and period of experience with seed use vary at farm level. Overwhelming majority of the farmers in both the areas have the experience of using seeds for more than 4 years. However, farmers in less accessible area are the early adopters. Farmers' decision as to the use of seeds for cultivation of rice depend on crop mix. All the farmers in both the areas use Boro-HYV seeds. None in the less accessible area is found to cultivate Local Aus and Local T. Aman.. Perhaps less accessible area are more suitable for cultivation of Boro-HYV. Cropwise pattern indicates that large,

medium and small farmers in accessible area use more of Boro-HYV and Local Aus seeds than Local T. Aman. In both the areas, number of large, medium and small farmers are high in case of Boro-HYV seeds. Farmers in the accessible area use large quantity of Local Aus, Boro-HYV and Local T. Aman than that of less accessible area. Large, medium and small farmers use large quantity of Boro-HYV and Local Aus seeds than that of Local T. Aman. The amount of seeds to be used per acre of land by tenurial status reveals that it has no influence as to the amount of seeds used for cultivation of their own or share-cropped land. Subsistence farming and fear of losing the rented land have no influence on the quantity of seeds to be applied for cultivation. Compared to the demand for seeds, stock of various seeds with the traders both in accessible and less accessible areas appear to be inadequate. Stock of Boro-HYV seeds appears to be better than that of Local Aus and Local T. Aman. However, there appears no difference between accessible and less accessible area in terms of stock of Boro-HYV seeds at dealers' level but market difference is observed in terms of stock of Boro-HYV at retail level. Discrepancy is found among the selling prices reported by dealers, producer-cum-retailers and farmers. In accessible area, per kg. price differential between average and maximum price at dealers' level is higher in case of Local T. Aman and Boro-HYV than that of Local Aus. Price differential between average and maximum price widened greater at retail level in case of Local Aus and Local T. Aman than that of Boro-HYV. In less accessible area, price differential between average and maximum price indicates that it is higher at dealer's level than that of retail level. The level of price fluctuation at farmer's level indicates that farmers in accessible area appear to be at somewhat of a disadvantage as they are paying higher prices for Boro-HYV seeds. In both the areas, small farmers pay higher prices than that of medium and large farmers.

The marketing problems faced by the respondents relate to product, place, price and promotion. Majority of the dealers and producer-cum-retailers mention quality to be good one. Only few farmers mention quality of seeds to be inferior. The main reasons for poor quality of seeds are lack of standard bags, insufficient storage facilities, lack of effective control and adulteration of seeds. Respondents are of the opinion that certified



seeds should be distributed among the farmers. Standard bags preferably moisture proof bags should be used to maintain quality of bags. Each and every package should bear certification marks on the strich to avoid pilferage and adulteration. The BADC should set up seed processing plants, seed stores and cold storage at thana level for scientific processing, preserving and storing of seeds. Research to be undertaken for varietal improvement of growing diversified seeds under irrigated conditions. Marketing information system should be used for product planning.

The main problem relating to demand and supply is the non-availability of seeds at right time in all or many parts of the study areas. The problem seems to be critical in less accessible area. There is also lag of demand and supply of seeds. Availability of Boro-HYV is unstable and low because of the poor supply of seeds by the Government. Authorities also fail to make clear and realistic estimation of the seed requirements. Unscrupulous traders make hold of seeds during the shortage of supply or high demand tantamounting to artificial scarcity. This results in high price or poor availability of seeds.

Overwhelming majority of the respondents in both the areas face distribution problems. Shortage of required transport and its irregular service are the main obstacles in the way of quick movement of seeds from transit godowns or intermediary godowns to different distribution points. The problem seems to be acute in less accessible area. Delivery system including transport and storage and policies & practices of the Government make distribution system ineffective resulting in non-availability of better seeds in time. High cost of transport is also a problem. It accounts for about 53.87% of the marketing cost at dealer's level in accessible area and about 53.51% in less accessible area. At retail level, it accounts for about 55.2%. The distribution network is also inadequate. Interior traders are few due to limited turnover. Storage accommodation is not sufficient to meet the requirements of the distribution programme. Shrewed traders make speculative storage and charge high prices.

To overcome distribution and demand and supply problems, respondents suggest to establish more selling centres to make seeds available at the farmer's door steps. The Government should set up distribution centres at thana level. The centres should be

entrusted with the responsibility of opening temporary centres at each union level during the sowing season. The infrastructural facilities should also be expanded. Efforts should be made by the Government to distribute seeds through co-operative system. Private traders can play a major role in this regard. Establishment of adequate storage will ensure distribution according to targeted programme in proper time at proper place. The Government should enact laws to check up activities of unscrupulous and profiteering traders. This will protect the interest of the farmers.

Respondents also mentioned a number of pricing problem faced by them. High price of seeds is the most important problem faced by them. The problem appears to be deeper in less accessible area. Farmers mainly buy seeds from the market due to high price charged by the dealers. Even dealers charge higher prices than those fixed by the Government. This leads to black marketing and it prevails mainly during scarcity situation. Prices of seeds also fluctuate. Price fluctuation under New Marketing System is deteriorating, compared to Old Marketing System. It is suggested that the Government should give active consideration to vigorously enforce the control of prices through law enforcing machinery. Adjustment of demand and supply can keep seeds price within the purchasing power of farmers.

As regards promotion problems, farmers mention that traders are unable to provide them with adequate knowledge about improved variety of seeds. Traders lack any formal training. Even they lack promotional support. As a result, they, can't provide the type of service which is required to make them an effective agent for improving their business. It is suggested that farmers' education and consciousness about the use of improved seeds can mitigate promotion problems to a great extent. This can be done by the Government through programmes relating to agriculture on TV and Betar. Agricultural fair and exhibition should be organised by BADC at thana level once in a year to educate the farmers about the benefits of using improved seeds. Promotional measures like seed crop insurance is also desirable. Poor financing is also an obstacle in the way of using improved seeds. To overcome this problem, the Government should resort to the distribution of minikits among small and marginal farmers. Liberal credit

facility through official distribution agencies should also be provided to the dealers and farmers to increase trade and use of improved seeds.

### **Pesticides:**

Pesticides are handy tools to save the losses from pests and to increase crop yield. The use of pesticides makes possible the production of adequate amounts of foods with satisfactory nutritional value and at reasonable prices.

Recognizing its importance, the Government launched plant protection programme as early as in 1955-56. Since inception upto March 1974, the insecticides were directly distributed to the farmers by the Agriculture Department free of cost from Thana/Union seed godowns. In the month of April 1974, the Government introduced pricing for insecticides. Now there is considerable changes in distribution system. Distributors / agents / wholesalers and private retailers are the principal sources of the supply of pesticides in the study area. The Agriculture Department or Corporations do not play any role in the physical distribution of pesticides. However, traders have to obtain a pesticides licence in order to do pesticide business. Distributors / wholesalers / agents use no means in carrying pesticides as the companies directly supply to their business places. Retailers mainly use rickshaw in carrying pesticides. Farmers mainly themselves carry pesticides.

Marketing cost and margin vary for different pesticides. Distributors/ wholesalers' / agents' purchase price of Basudin is around 89% in both the areas. Even the marketing cost in less accessible area is somewhat higher than accessible area. Distributors/ wholesales enjoy greater margin. In case of Furadan, it accounts for about 85% of selling price in accessible area and about 84% in less accessible area. Distributors /wholesalers/ agents in less accessible area are in a advantageous position with regard to margin. In case of Dymocron, it accounts for about 92%in accessible area and about 90% in accessible area. As with Dymocron, Distributors / wholesalers / agents in less accessible area dealing with Diazinon, enjoy more profit than accessible area, although marketing cost in less accessible area is higher than accessible area.

Retailers' purchase price of Basudin is high in less accessible area while marketing cost is high in accessible area. It is due to high cost of transport and shop / store rent. However, retailers in accessible area enjoy high profit margin. In case of Furadan, price is high in less accessible area while marketing cost is high in accessible area. Purchase price of Dymocron to total selling price is lower in accessible area than that of less accessible area. Marketing cost is somewhat higher in accessible area. Like that of Dymocron, retailers in accessible area get high profit margin than that of less accessible area although marketing cost is high in accessible area. As a whole, retailers in accessible area are in a better position than that of retailers in less accessible area. Farmers' cost of carrying pesticides is around Tk.9.00(per carton per mile) in accessible area while it varies from about Tk. 9.00 to Tk. 10.00 in less accessible area. Cost of carrying pesticides by boat varies from about Tk.6.00 to 7.00 in accessible area while it is around Tk.7.00 in less accessible area.

Although, the number of retailers increased under New Marketing System over Old Marketing System, there appeared no marked difference in terms of the degree of accessibility of an area. The adoption and period of experience with pesticide use indicate that accessibility of area has less influence on adoption of pesticides. Farmers in less accessible area are the early adopters compared to accessible area. In both the areas, farmers belonging to all categories are the early adopters.

Basudin is the most popular pesticide among the farmers followed by Furadan and Diazinon. The proportionate numbers of farmers using Dymocron are generally low in both accessible and less accessible areas. While Basudin is largely used by the large farmers in accessible area, it is mostly used by medium size farmers in less accessible area. In case of Furadan and Diazinon, large and medium farmers are the major users. Dymocron is somewhat popular among the users of large and medium size farmers in accessible area and large and small farmers in less accessible area.

Tenurial status appears to have some negative impact on pesticide application. It is, perhaps, because cost of pesticides is high. Application of pesticides also vary according to length of tenure. The larger is the period of tenure, the lower is the quantity

of pesticides used on the shared land and the rate of proportion is relatively high in accessible area.

Stock positions of the pesticides at traders' level are inadequate in both accessible and less accessible area. There is little difference between accessible and less accessible area in terms of stock of different pesticides. However, accessible area suffers relatively more from inadequate supply than less accessible area.

Selling prices of pesticides by the traders in less accessible area are higher than that of accessible area. Average price of pesticides as reported by wholesalers/distributors reveal that it widened greater for Dymocron followed by Basudin, Furadan and Diazinon. No price differential is observed at retail level between the two areas in case of average price but some variation is observed in case of maximum selling price.

The marketing problems faced by the respondents relate to demand and supply, product, place, price and promotion. As regards demand and supply problem, respondents mention that unbalanced mix of pesticides is the most important problem faced by them. The supply mix is unbalanced due to sources of supply. Unscrupulous traders also make hold of pesticides during political unrest, shortage of supply or high demand tantamounting to artificial scarcity. Availability of pesticides is unstable and low; even authorities are unable to make clear and realistic estimation of the pesticide requirements. Sometimes adequate pesticides are not available in time in all or many parts of the study area. The problem seems to be serious in less accessible area. As regards distribution problems, respondents mention that acute transportation crisis, disrupted road condition and high cost of transport are constraints to make pesticides available in the remote areas. The inadequate network of distribution is also another constraint to the spread of pesticides. Interior traders are scarce due to limited turnover. Dishonesty of the traders acts as an obstacle in the way of proper distribution of pesticides. Shrewed speculators do speculative storage during the shortage of supply or high demand. The output delivery system is weak and makes distribution ineffective resulting in non availability of pesticides in time. It is suggested that manufacturers should try to penetrate into interior area through private traders. Adequate and timely

supply of pesticides to the farmers are important for getting maximum benefit. Proper estimation of requirements of pesticides has to be made to adjust supply with demand thereby balancing mixes of pesticides. The Plant Protection Department of the Government should maintain emergency stock at district level to face natural calamities and unforeseen situation. The department should be manned by trained personnel, equipments and machineries to fight such situations.

Majority of the middlemen and farmers in both the areas mention quality of the pesticides to be inferior one. The reasons for poor quality are the defective storage system, adulteration and lack of effective quality control. The Government should take adequate measures to check malpractices and ensure quality control. The Government should specify conditions for storage of pesticides so that there is no deterioration in quality during the course of storage. Pesticides should be made available in temper proof containers to reduce risk of adulteration. The Government should enact law with a view to control adulteration and black marketing. Farmer's education about the quality of pesticides is also necessary.

High price of pesticides is the important problem faced by the respondents. High procurement cost, black marketing and reduction of subsidy of the pesticides are responsible for high prices of pesticides. Fluctuation in the price of pesticides creates problem in the purchase and sale of pesticides. Price fluctuation deteriorates under NMS compared to OMS. It is suggested that the Government should try to keep pesticide prices lower by providing either subsidy or reducing import or excise duty.

As regards promotion problems, farmers are of the opinion that they lack in knowledge of pesticide uses and that manufacturers and traders are unable to provide adequate knowledge about pesticides to them. They do not know the proper doses to be applied. Manufacturers do not provide the type of service which is required to make them an effective agent for improving their business. Distributors /wholesalers/ agents do not face any financing problem. Few retailers and farmers mention facing financing problems. The problems relating to finance are high rate of interest, insufficient sanctioned amount, complex process and much formalities, corruption of financial

institutions and political interference. It is suggested that farmer's awareness and education is an important device for promotion of pesticide sale. Farmers need to be educated about the advantages of use, safe and judicious use of pesticides. The responsibility must be shared by the Government through making plant protection department more active and manufacturers through special training programme.

### **Agricultural Machineries :**

Agricultural machineries are composed of both traditional and essential implements. LLPs, STWS and DTWs are considered heavy equipments while harrow, cultivators, iron plough and seed driller etc. are considered as small machineries.

Irrigation technology was introduced in this country during the early sixties. BADC was entitled to import all the irrigation machineries. However, BKB was allowed to import STWs till 1979/80. BADC used to distribute DTWs on rental basis. Tubewells were distributed to the managers of the farmer groups approved by thana Irrigation Team. There was no provision of selling DTWs. BADC used to sell STWs directly to the farmer / farmers on cash payment or on instalment basis. The corporation was responsible for sinking and commissioning of the tubewell. BKB's distribution system for STWs was executed in the country through normal credit administration of the bank.

At present, role of BADC in the distribution of irrigation equipments diminishes to a great extent. Most of the equipments are sold out to the individual buyer and co-operativate societies. Private importers and local manufacturers are playing dominant role in the distribution of STWs and LLPs.

All the farmers in the study area use heavy equipments. Large farmers are the major users of DTWs followed by medium size and small farmers in both the areas. In accessible area, large farmers are the major users of LLPs followed by medium and small size farmers. In less accessible area, medium size farmers are the major users followed by small and large farmers. The number of small farmers seems to be slightly higher in case of LLPs in accessible area while it is higher in case of large farmers in less accessible area. It appears from farmers' responses that co-operative is the most important source

obtaining DTWs followed by BADC and individual while individual / retailer is the best source for obtaining LLPs and STWs.

The cost of operation indicates that water charges vary widely between electrically and diesel / mobil operated machine. The cost of electrically operated DTWs is around 52% of those of the diesel / mobil machine while LLPs is around 42% and STWs is around 65 % of the three types of machines, DTWs are found to be the costliest followed by STWs. In terms of ownership, BADC machine owners charge the highest amount for DTWs while individual machine owners charge the highest for STWs. Machine owners argue that DTWs are more expensive to run. BADC owned machines are the most expensive. Co-operative charges are the lowest for STWs. Diesel, mobil, spare parts, charges for mechanics, salaries for drivers, canals for irrigation and drainage are the major components of costs. Cost and margin of diesel / mobil and electrically operated machine reveals that BADC owned DTWs in accessible area are found to generate higher profit for both diesel / mobil and electrically operated machine than in less accessible area. Profit margin under co-operative owned diesel / mobil operated DTWs is higher in less accessible area and it is higher for electrically operated machine in accessible area. Except LLPs, the amount of profit earned is higher for individually owned DTWs and STWs in less accessible area.

Coverage and access of irrigation equipments are affected by the time spent in installation and operation. Except LLPs, more time is required in the less accessible area in fielding irrigation machines. In the case of co-operatively and individually owned DTWs, the time requirements increased by one month and one month respectively. The farm size of the farmers is not found to vary between renting out arrangement of the BADC and the co-operatives and individual / group. Individual / group owned machines are more accessible for the relatively larger farmers while the smaller farms tend to have greater access to the co-operatively owned one, As regards the irrigation coverage, BADC owned DTWs machines cover the highest area. In case of STWs, co-operatives cover the highest acres. Individually / group owned machine seems to be ahead of co-operatively owned machine in case of DTWs. As regards the extent of adoption and



period of experience, farmers in the less accessible area are the early adopters, compared to accessible area. However, higher proportion of large farmers are the early adopters in both the areas.

The purchasing decisions of the machine owners are influenced by motivation of BADC personnel, influence of other owner, area covered, service and maintenance, availability & influence of extension workers and advice of bank personnel. Deregulated system has made easier and quicker for machines owners to adopt irrigation technology at least to a certain extent. Although, machine owners receive technical assistance from PDB engineer, REB engineer, BADC engineer, local mechanics and vocational training institute, the source lag behind to meet up their demand.

Marketing problems faced by the respondents relate to product, place, price and promotion. The important problem relates to product is the frequent breakdown of the machine. The adulteration of fuel, infrequent changes of mobil, engines not over hauled when not in use and use of poor quality are responsible for frequent breakdown of machine. Defective engines and defective spare parts / equipments are responsible for poor quality of machines. High price, non-availability and inferior quality of the spare parts are constraints in the proper use of machines. Another important problem relates with the poor functioning of the product. LLPs can not work well due to shortage of surface water. DTWs are experiencing reduced discharge of water during the peak irrigation period. Non-availability and frequent failure of electricity are also obstacle in the way of proper functioning of the irrigation equipments. Non-availability and lack of trained mechanics seem to be serious problem in repairing the equipments. There is also underutilization of equipments. Seasonal use, non-availability of electricity, fear of breakdown and lack of initiative are responsible for underutilization of capacity. As a remedial measures, respondents advocate for manning irrigation equipments by trained operators to improve the efficiency of operation. The Government of Bangladesh may set up training centre at each thana headquarter to facilitate training to the machine operators about basic operational methods and day-to-day maintenance. The machine owners will bear cost of training. The Govt. must ensure uniform and standard machines. This can

be overcome by extending BSTI standards for all machines manufactured in our country. Adequate and better quality of spare parts can improve efficiency of irrigation machines. The Govt. may build up a system of quality control for both imported and home produced spares. The functions of irrigation machines can be improved by providing better quality of fuel and oil, constructing irrigation field canals, supervising effectively, ensuring electricity and extending services to meet requirements of irrigation equipments.

The conflict and chaos of the farmers groups affect distribution and efficiency of irrigation. Irrigation machines cannot be sunk or commissioned at proper place due to local influence. Inadequate supply of oil and spare parts also adversely affect proper distribution of irrigation. Absence of extension service designed to meet the requirements of irrigation equipments also act as an obstacle in the way of proper distribution. The distribution network is not too wide as the irrigation equipments are not sufficient to meet over all demand of the farmers. High cost of transport and non-availability of suitable transport hamper carrying of irrigation equipments to the users. To make the equipments available to the farmers, arrangements should be made available on hire-basis at union level by BADC, Side by side, Co-operatives should be encouraged to increase their stocks and let it out to farmers on hire-basis. Community centres may also be opened for this purpose. The Govt. should liberalize import policy and provide necessary facilities to import irrigation equipments. Liberal investment policy can motivate private entrepreneurs to come forward for investment. Improvement in infrastructural facilities can enhance distribution system to a great extent. This will encourage farmers to buy and use more equipments. Distribution system can be made more effective if machine owners are more conscious to remove the corruptions involved in the sanction of irrigation equipments during the irrigation season.

The most important pricing problem is the lack of credit facility. Even machine owners do not offer discounts to elicit larger order or cash discounts for prompt and timely payments. The cost of operation is also high due to high cost of diesel and mobil. This leads machine owners to charge high prices. There is no statutory measures to regulate the prices of agricultural machineries. Producers / traders indulge in high pricing

practices and charge whatever they like. Moreover, Charges made by the machine owners are subject to much instability. It acts as an obstacle in the way of taking decisions. Fluctuations in charges are largely consequences of volatile price of fuel / mobil and high demand during irrigation season. Distance between farmers and machine owners further adds to the fluctuation of charges. To overcome pricing problems, it is suggested that the Governments should try to keep prices of agricultural machineries within purchasing power of the farmers. Statutory price control should be enforced to regulate the price of agricultural machinery, keeping in view the standard specifications of machinery. Control and implementation machinery should be set up at the government level for this purpose. The Government may think over to fix up statutory price each year keeping in mind the prices of fuel and oil to regulate the charges to be paid by farmers for use of agricultural machinery. The cost of operation can be reduced by ensuring supply of fuel and oil at a reasonable price. Credit facilities, to be provided by manufacturers / dealers to the machine buyers and machine owners to farmers, will increase the sale and use of agricultural machineries respectively. Manufacturers / traders do not properly blend elements of promotional mix to complement each other and hardly select promotional tools in the light of distribution push or pull strategy. There is absence of adequate advertising specially in less accessible area. Manufacturers / traders do not establish personal contact with the machine owners. Even they lack in adequate sales promotion devices. They make no use of gift. They neither organize sales rallies and contests nor offer premium or use coupons to enhance sale of irrigation equipments to the buyers. Even manufacturers / traders are unable to provide prompt service to the buyers. Their dealings with the traders are not satisfactory. Machine owners also face financing problems. There are insufficient sanctioned amount, high rate of interest, nepotism and corruptions, political interference in financing, long time in getting loans, discrimination in financing, harassment by the bank employees and complex system in getting loans. Machine owners suggest that credit and finance have important role to play in promotion of equipments. Existing procedures and administrative system of bank lending loans should be streamlined for timely execution of ventures. Interest rate should be reduced.

Political interference and corruption of bank employees ought to be removed. Producers and traders should improve their service facilities like after- sales service, training to machine owners & extending free service period. Vigorous efforts should be taken by the Government to make the farmers familiar with the irrigation equipments & their utility to them. It can be done by better coverage on radio and TV. Fairs and exhibitions should be organized at thana level. Handbills and small pamphlets should be distributed on market days.

Except sprayers, overwhelming majority of the farmers in both the areas use light equipments. Small farmers do not have their own sprayers. They generally hire by paying charges. Small implements like plough, harrow, cultivators, sickle, spade and winnowers are indigenously manufactured by village smith on the order of the farmers. Sometimes it is manufactured and sold by them directly to the farmers in hats and bazars. The village smiths also sell to the retailers who sell them directly to the farmers. Farmers buy sprayers directly from the wholesalers / distributors locating either in Gazipur district or Dhaka. Some big farmers have their own sprayers but in maximum - cases, sprayers are available to them on customer service basis. Cost of production / purchase price and selling price of different light equipments indicate that except retailer's selling price of harrow blade, selling prices of other light equipments at manufacturer and retail level are higher in less accessible area as compared to that of accessible area. Though there is a variation, margin retained by the retailer is generally lower than that of village smiths.

Manufacturers and retailers mention that prices of light equipments are high. Farmers blame that manufacturers and retailers indulge in high pricing practices and charge whatever they like from them. Manufacturers argue that prices of small implements are high due to high cost of production. Quality of small equipments are poor because manufacturers do not use standard raw materials. Black smith / carpenters have little idea about standard shape and size which can give a better efficiency. There is shortage of sprayers and harrow blade. Even manufactures, fail to supply required equipments in time. The problem of quality can be overcome by extending BSTI standards. The Government should ensure uniform standards and testing and evaluation

of implements. The Government may encourage private investors to set up agro industries for production and distribution of such implements. In order to make the improved tools available at lower prices, the Government should take initiative for production of steel equipments. Credit facilities may be extended to the farmers to purchase such equipments.

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# APPENDICES

**EXHIBIT-1**

**When retailers' purchase fertilizer directly from dealer,  
the Marketing Cost and Margin will be as follows:**

Accessible Area			Less Accessible Area		
Cost Elements	Cost	%	Cost Elements	Cost	%
<b>For Urea:</b>			<b>For Urea:</b>		
Retailer's purchase price	217.00	82.82	Retailer's purchase price-	218.10	82.89%
<b>+ Marketing Cost:</b>			<b>+ Marketing cost:</b>		
a) Transportation -	6.90		a) Transportation -	6.80	
b) Loading & unloading	2.00		b) Loading & unloading -	2.00	
c) Shop/store rent -	2.00		c) Shop/store rent -	2.10	
d) Personnel or weighcr -	0.20		d) Personnel or weigher	0.20	
e) Electricity & Telephone -	0.10		e) Electricity & Telephone	0.12	
f) Wastage -	4.00		f) Wastage -	4.10	
g) Others -	<u>0.10</u>	5.84	g) Others -	<u>0.10</u>	5.86
Margin	<u>29.70</u>	<u>11.34</u>	Margin	<u>29.58</u>	<u>11.25</u>
Selling price of Retailer-----	<u>262.00</u>	<u>100.00</u>	Selling price of Retailer-----	<u>263.00</u>	<u>100.00</u>
<b>For T.S.P:</b>			<b>For T.S.P:</b>		
Retailer's purchase price---	596.00	90.58	Retailer's purchase price	598.40	90.25
<b>+ Marketing cost:</b>			<b>+ Marketing Cost:</b>		
a) Transportation -	6.90		a) Transportation -	6.80	
b) Loading & unloading -	2.00		b) Loading & unloading	2.00	
c) Shop/store rent -	2.00		c) Shop/store rent -	2.10	
d) Personnel or weigher -	0.20		d) Personnel or weigher -	0.20	
e) Electricity & Telephone -	0.10		e) Electricity & Telephone	0.12	
f) Wastage -	4.00		f) Wastage -	4.00	
g) Others -	<u>0.10</u>	2.32	g) Others -	<u>0.10</u>	2.33
Margin	<u>46.70</u>	<u>7.10</u>	Margin	<u>49.18</u>	<u>7.42</u>
Selling price of Retailer -----	<u>658.00</u>	<u>100.00</u>	Selling price of Retailer -----	<u>665.00</u>	<u>100.00</u>
<b>-For M.P:</b>			<b>For M.P:</b>		
Retailer's purchase price			Retailer's Purchase price	378.55	88.45
<b>+ Marketing cost:</b>			<b>+ Marketing cost:</b>		
a) Transportation -	6.90		a) Transportation -	6.80	
b) Loading & unloading	2.00		b) Loading & unloading -	2.00	
c) Shop/store rent -	2.00		c) Shop/store rent -	2.10	
d) Personnel weigher -	0.20		d) Personnel or weigher -	0.20	
e) Electricity & Telephone -	0.10		e) Electricity & Telephone -	0.12	
f) Wastage -	4.00		f) Wastage -	4.10	
g) Others -	<u>0.10</u>	3.69	g) Others -	<u>0.10</u>	3.60
Margin	<u>31.75</u>	<u>7.47</u>	Margin	<u>34.03</u>	<u>7.95</u>
Selling price of Retailer's or purchase price of Farmers.	<u>425.00</u>	<u>100.00</u>	Selling price of Retailer's/purchase price of farmers.	<u>428.00</u>	<u>100.00</u>

**EXHIBIT-2**

**When Retailers' purchase MP and TSP directly from importers/traders,  
then Marketing Cost and Margin will be as follows:-**

Accessible Area			Less Accessible Area		
Cost Elements	Cost	%	Cost Elements	Cost	%
<b>For M.P.:</b>			<b>For M.P.:</b>		
Retailer's purchase price	350.00	82.35	Retailer's purchase price-	350.00	81.78
<b>+ Marketing Cost:</b>			<b>+ Marketing cost:</b>		
a) Transportation -	8.00		a) Transportation -	10.00	
b) Loading & unloading -	2.00		b) Loading & unloading -	2.00	
Shop/store rent -	2.00		c) Shop/store rent -	2.00	
d) Personnel or weigher -	0.20		d) Personnel or weigher	0.20	
e) Electricity & Telephone -	0.10		e) Electricity & Telephone -	0.12	
f) Wastage -	5.00		f) Wastage -	5.10	
g) Others -	<u>2.00</u>		g) Others -	<u>2.15</u>	
	19.30	4.34		21.57	5.03
Margin	<u>55.70</u>	<u>13.11</u>	Margin	<u>56.43</u>	<u>13.90</u>
Selling price of Retailer -----	<u>425.00</u>	<u>100.00</u>	Selling price of Retailer -----	<u>428.00</u>	<u>100.00</u>
<b>For T.S.P.:</b>			<b>For T.S.P.:</b>		
Retailer's Purchase price			Retailer's Purchase price		
<b>+ Marketing cost:</b>			<b>+ Marketing Cost:</b>		
a) Transportation -	8.00		a) Transportation -	10.00	
b) Loading & unloading -	2.00		b) Loading & unloading	2.00	
c) Shop/store rent -	2.00		c) Shop/store rent -	2.00	
d) Personnel or weigher -	0.20		d) Personnel or weigher -	0.20	
e) Electricity & Telephone -	0.10		e) Electricity & Telephone	0.12	
f) Wastage -	5.00		f) Wastage -	5.10	
g) Others -	<u>2.00</u>		g) Others -	<u>2.15</u>	
	19.30	2.93		21.57	3.25
Margin	<u>78.70</u>	<u>11.96</u>	Margin	<u>81.43</u>	<u>12.28</u>
Selling price of Retailer	<u>658.00</u>	<u>100.00</u>	Selling price of Retailer--	<u>663.00</u>	<u>100.00</u>

**EXHIBIT-3****Farmers' Cost of Carrying Different inputs**

Accessibility of Area	Size of Holding	Types of Inputs	Means of Transport				
			Rickshaw	Bullock cart	Tractor / Track	Labourer	Boat
Accessible	Large	Fertilizers(Per bag per mile)	6.38	7.50	10.00	10.00	7.75
		Seeds (Per mound per mile)	9.08	-	10.00	10.00	7.00
		Pesticides(Per carton per mile)	8.74	-	-	7.50	6.00
	Medium	Fertilizers(Per bag per mile)	7.41	-	-	10.00	7.25
		Seeds (Per mound per mile)	8.67	-	10.00	-	7.00
		Pesticides(Per carton per mile)	8.17	-	-	7.50	7.00
	Small	Fertilizers (Per bag per mile)	-	-	-	10.00	7.00
		Seeds (Per mound per mile)	9.73	-	-	-	-
		Pesticides (per carton per mile)	8.20	-	-	-	-
Less Accessible	Large	Fertilizer (per bag per mile)	8.75	7.50	-	-	7.55
		Seed (Per mound per mile)	-	-	-	-	-
		Pesticides(Per carton per mlie)	9.60	-	-	-	7.11
	Medium	Fertilizer(Per bag per mil)	9.05	8.00	-	-	8.00
		Seed (per mound per mile)	8.00	-	-	-	8.00
		Pesticides(Per carton per mile)	9.06	-	-	-	6.69
	Small	Fertilizers (Per bag per mile)	7.77	-	-	10.00	7.65
		Seeds (Per mound per mile)	10.00	-	-	-	-
		Pesticides (Per carton per mile)	9.00	-	-	-	6.47

## **EXHIBIT-4**

### **"MARKETING OF AGRICULTURAL INPUTS: A STUDY ON SELECTED THANAS OF GAZIPUR DISTRICT"**

**(Questionnaire for Farmers)**

Date of interview :.....

**Survey Area:** Accessible /Less Accessible

#### **SECTION-1 : GENERAL INFORMATION**

01. Name:
02. Address: a) Village: b) Union: c) Thana
03. Education a) No education  b) Upto Primary   
c) Upto Secondary  d) Above Secondary
04. Age :
05. No. of persons engaged in agriculture :
06. What is your size of holding?  
(a) Large (5.1 acre and above) (b) Medium (2.51 to 5 acre) (c) Small (Up to 2.5 acre).
07. How long you are engaged in agriculture ?
08. Annual income from agriculture (in Tk.) :-----
09. What is your main occupation? (a) Only farming  (b) Farming and business   
c) Farming and service

#### **SECTION-2 : FERTILIZER**

01. Please specify the types of manure used for cultivation of land :  
a) Chemical fertilizer  b) Indigenous  c) Both
02. If you use chemical fertilizer, please mention the sources of fertilizers.  
a) BCIC  b) Govt. appointed dealer  c) Wholesaler   
d) Retailer  e) Importer  f) Other
03. Please mention the extent of adoption and period of experience with fertilizer use.  
i) Upto 2 years  ii) Upto 4 years  iii) More than 4 years
04. Please specify the amount of fertilizer used by you for cultivation of land (Kg. per acre of land).



05. Please specify the types of fertilizers used for cultivation on major crops by size of farm.

Size of Holding	Boro HYV			Local Aus			Local T Aman		
	Urea	TSP	MP	Urea	TSP	MP	Urea	TSP	MP
Large									
Medium									
Small									

06. Please specify the amount of fertilizer used by you for your own cultivated land or under tenurial system. (Kg. per acre of land)

Types of Fertilizers	Owner cultivator	Tenurial Status	
		Owner Cum tenants	
		Owned land	Share Cropped land
Urea			
T.S.P			
MP			

07. Please specify the quantity of fertilizers (Kg. per acre of land) used in different crops by tenurial status.

Types of Product	Owner cultivator	Tenurial Status	
		Owner Cum tenants	
		Owned land	Share Cropped land
Boro HYV			
Local Aus			
Local T Aman			

08. If you are owner cum tenant, please mention the amount of fertilizer used by you according to length of tenure (Kg. per acre of land)

a) Upto 2 Years  b) Upto 4 Years  c) More than 4 years

09. a) Do you get fertilizers at control price? Yes  No

b) If yes, please mention the price paid by you for different fertilizer (Tk. per Kg)

a) Urea  b) TSP  c) MP

10. If you purchase from open market, please mention the average and maximum price paid by you for different fertilizer (Tk. per kg)

Types of Fertilizers	Average Price	Maximum Price
Urea		
TSP		
MP		

11. Please specify expenditure on fertilizer to total cost of production (Tk.per acre of land).

a) Total Cost of production  b) Cost of fertilizer

12. a) Do you face any problem with regard to demand and supply?

Yes  No

b) If yes, what are those?

- i) Lag of demand and supply      ii) Unbalanced mixed of fertilizers
- iii) Lack of clear and realistic estimation of requirements
- iv) Artificial scarcity    v) Right type of fertilizer and volume not available
- vi) Not available at right time    vii) Any other.

c) Please suggest some measures to overcome demand and supply problems : -----

13. a) What is your opinion about the quality of fertilizer?

Good  Neither good nor bad  Bad

b) If poor, what are the reasons for poor quality of fertilizer?-----

c) Please suggest some measures to overcome product problems:-----

14. a) Do you face any problem with regard to distribution?    Yes  No

b) If yes, what are those?

- i) Lack of transport    ii) Disrupted road condition      iii) High transport cost
- v) Lack of interest of traders to operate    v i) Inadequate net work
- vi) Dishonest traders    vii) Not availability of fertilizer
- viii) Shortage of storage accommodation) Problem of handling/lifting
- x) Inadequate commission/margin    xi) Dissatisfied with the services of middlemen    xii) Any other.

c) How would you overcome distribution problems ?-----

15. a) Do you face any problem with regard to pricing of fertilizer ? Yes  No

b) If yes, what are those ?

- i) High price ii) Not available at control price iii) Fluctuation in prices.  
 c) Please mention the reasons for high prices.-----  
 d) What is your opinion about the level of price fluctuation under New Marketing System compared to Old Marketing System ?  
 Improved  Unchanged  Deteriorated   
 e) Please suggest some measures to overcome pricing problems.-----  
 16. Please mention various means of carrying fertilisers and the cost involved therein(per bag per mile).

Own carrying	Rickshaw	Bullock cart	Tractor / Truck	Labourer	Boat	Others

17. a) Do you face any problem with regard to promotion of fertilizer? Yes  No   
 b) If yes, what are those ?-----  
 c) Please suggest some measures to overcome promotion problems .-----  
 18. a) Please mention the sources of financing fertilizer .  
 Own Fund  Institutional  Non Institutional   
 b) Do you face any problem with regard to financing fertilizer? Yes  No   
 c) If yes, What are those ?-----

**SECTION-3: SEEDS**

01. From where do you procure seeds? Own source  From Market  Both   
 02. If you procure seeds from the market, then from where do you procure?  
 i) District seed intermediate store ii) Thana sales centre iii) Dealer  
 iv) Producer cum retailer v) Co-operative society vi) Others.  
 03. Please mention the extent of adoption and period of experience with seeds use.  
 Upto 2 years  Upto 4 years  More than 4 years   
 04. Please mention the types of seeds used for rice cultivation:  
 Boro HYV  Local T. Aman  Local Aus   
 05. Please specify quantity of seeds (kg. per acre of land) used for cultivation by farm size. Boro HYV  Local T Aman  Local Aus   
 06. Please specify the amount of seeds used by you for your own cultivated land or under tenurial system (kg per acre of land)  
 a) Owner cultivator  b) Owner-Cumtenant  
 (i) Owned land  (ii) Share cropped land.

07. Please specify the quantity of seeds (by tenurial status) by major crops (kg per acre of land)

Type of Seeds	Owner Cultivator	Tenurial status	
		Owner cum tenants	
		Owned Land	Share Cropped land
Boro-HYV Local T Aman Local Aus			

08. a) Do you face any problem with regard to demand and supply of seeds?

Yes  No

b) If yes, what are those ? i) Lag of demand and supply ii) Lack of realistic estimation of requirements iii) Artificial scarcity iv) Not available at right time v) Others.

c) Please suggest some measures to overcome demand and supply problems.-----

9. a) What is your opinion about the quality of seeds?

Good  Neither good nor bad  Bad

b) If poor, what are the reasons?-----

c) Please suggest some measures to overcome product Problems.-----

10. a) Do you face any problem with regard to distribution of seeds? Yes  No

b) If yes, what are those?-----

c) Please suggest some measures to overcome distribution problems.-----

11. a) Do you get seeds at control price? Yes  No

b) If yes, please mention the price paid by you (Tk. per kg)?

Boro-HYV  Local Aus  Local T Aman

12. If you purchase seeds from the market, please mention the price paid by you (Tk. per kg)

Types of Seeds	Average Price	Maximum Price
Boro-HYV		
Local Aus		
Local T. Aman		

13. Please specify expenditure on seeds to total cost of production (Tk. per acre of land)  
 Total cost of production  Cost of seeds

14. a) Do you face any problem with regard to pricing of Seeds? Yes  No   
 b) If yes, what are those?-----  
 c) What is your opinion about the level of price fluctuation under new Marketing System compared to Old Marketing System?  
 i) Improved  ii) Unchanged  iii) Deteriorated   
 d) Please suggest some measures to overcome pricing problems-----
15. Please mention various means of carrying seeds from middlemen to your house and the costs involved therein (per mound per mile).

Own Carrying	Rickshaw	Bullock Cart	Tractor /Truck	Labourer	Boat	Others

16. a) Do you face any problem with regard to promotion of seeds? Yes  No   
 b) If yes, what are those?.....  
 c) Please suggest some measures to overcome promotion problem.....
17. a) Do you face financing problem? Yes  No   
 b) If yes, what are those? .....

**SECTION-4: PESTICIDES**

01. a) Do you use pesticides? Yes  No   
 b) If yes, what type of pesticides do you use? .....
- 02 .From where do you get pesticides ?a) Manufacturer b)Thana Agriculture Deptt.  
 c)Plant Protection unit d)Cooperative e) Distributor/Wholesalers/Agents  
 f)Retailers g)Any other.
3. a) Please mention the means of carrying pesticides by you and the cost involved therein(Tk. Per carton per mile).

Own carrying	Rickshaw	Bullock cart	Tractor /Truck	Labourer	Boat	Others

04. Please mention the extent of adoption and period of experience with pesticides use.  
 Upto 2 years  Upto 4 years  Above 4 years
05. Please specify the amount of pesticides used by you for your own cultivated land and under tenurial system (kg. per acre of land)

Types of Pesticides	Owner  cultivator	Tenurial Status		
		Owner Cum tenants		
		Owned land	Share land	Cropped

06. Please specify the quantity of pesticides used by you according to length of tenurial system .

Length of tenure	Quantity(kg per acre)
Up to 2 Years	
Upto 4 years	
Above 4 years	

7. From where do you buy pesticides? Open Market  Govt. Controlled shops
08. a) Do you face and problem with regard to demand and supply of seeds?  
 Yes  No
- b) If yes, what are those ?  
 i) Lag of demand and supply ii) Unbalanced mixes of pesticides iii) Artificial scarcity  
 iv) Not available at right time v) Any other:
- c) How would you overcome demand and supply problems.-----
09. a) What is your opinion about the quality of pesticides.  
 Good  Neither good nor bad  Bad
- b) If not good, what are the reasons for poor quality of pesticides?
10. a) Do you face any problem with regard to distribution of pesticides?  
 Yes  No
- b) If yes, what are those?  
 i) Lack of transport ii) High transport cost iii) Inadequate net work iv) Dishonest traders  
 v) Non availability of pesticides vi) Any other:
- c) Please suggest some measures to overcome distribution problem.-----
11. a) Do you get pesticides at control price? Yes  No
- b) If yes, please mention the price paid by you (Tk. per kg)-----

12. If you purchase pesticides from open market, please mention the price paid by you  
(Tk.per kg)

Name of Pesticides	Average Price	Maximum Price

13. a) Do you face any problem with regard to pricing of pesticides? Yes  No
- b) If yes, what are those?-----
- c) What is your opinion about the level of price fluctuation under New Marketing System compared to Old Marketing System?  
Improved  Unchanged  Deteriorated
- d) Please suggest some measures to overcome pricing problem,-----
14. a) Do you face any promotion problem? Yes  No
- b) If yes, what are those?-----
- c) Please suggest some measures to overcome promotion problems,-----
15. a) Do you face financing problem? Yes  No
- b) If yes, What are those?-----

**SECTION-5 : AGRICULTURE MACHINERY AND IMPLEMENTS**

**SUB SECTION-A : HEAVY MACHINERY**

01. a) Do you use equipments for irrigation of your land? Yes  No
- b) If yes, what type of irrigation equipments do you use?  
DTWs  STWs  LLPs

02. Please mention your source of obtaining equipments

Types of Equipments	Sources					
	BADC	BKB	IRDIP	Co-operative	Individual /Group	Others
DTWs						
STWs						
LLPs						

03. Please mention the extent of adoption and period of experience with irrigation equipments.  
Upto 2 years  Upto 4 years  More than 4 years
04. Please mention average size of your holding (in acre) by ownership of machine.  
a) BADC Owned machine  b) Co-operatively owned machine   
c) Individual/group

05. Please mention the area cultivated and irrigated by you by ownership of machine.

Ownership of machine	Cultivated Area (acre)	Irrigated Area (acre)
BADC		
Co-operative		
Individual/Group		

06. Please mention per acre water charges paid by you for electrically and diesel operated machine. (For Boro HYV)

(In Tk.)

Types of machine	Diesel & Mobil	Electric
DTWs		
LLPs		
STWs		

07. a) Do you face any product problem relating to heavy machinery? Yes  No

b) If yes what are those?

- i) Poor quality of machine    ii) Frequent breakdown of machine
- iii) Problem relating to spare parts    iv) Poor functioning of product    v) Seasonal use
- vi) Repairing of machine    vii) Underutilization of capacity
- viii) Any other-----

c) Please suggest some measures to overcome product problems.-----

08. a) Do you face any problem with regard to distribution of heavy equipments ?

Yes                       No

b) If yes, what are those?

- i) Number of machines not sufficient    ii) Problem of matching supply with farmers' need
- iii) Delay in arrival of irrigation machine    iv) Absence of extension service
- v) Local influence    vi) Conflict and chaos among farmers    vii) Inadequate supply of old and spare parts
- viii) Any other-----

c) Please suggest some measures to overcome distribution problems.-----

09. a) Do you face any pricing problem ? Yes  No

b) If yes, please mention the types of pricing problems.

- i) High price of equipments    ii) High cost of operation
- iii) Variation in charge    iv) Lack of credit sale/facility    v) Any other.



- c) How would you overcome pricing problems?.....
10. a) Do you face any promotion problem?    Yes         No
- b) If yes, what are those?-----
- c) Please suggest some measures to overcome promotion problems-----
11. a) Do you face any financing problem?    Yes         No
- b) If yes, what are those ? -----

**SUB SECTION-B: LIGHT EQUIPMENTS AND IMPLEMENTS**

01. Which of the following do you own and use?

Plough	Harrow Blade	Cuff Cutters	Crushes	Levell ers	Seed Drill	Harvesters	Thresher	Winnow -ers	Spra yers	Duster	Others

02. From where do you procure equipments?

Source	Equipments										
	Plough	Harrow blade	Cuff Cutters	Crus hers	Leve llers	Seed Drill	Thre shers	Winnowers	Dusters	Harvester	
1. Manufactured by village smith 2. Company 3. Dealers/Distributors 4. Agricultural dept. 5. Wholesaler 6. Retailers 7. Own manufactured											

03. Please mention the purchase price of different equipments (Tk.per unit)

<u>Type of Equipments</u>	<u>Price</u>
1.	1.
2.	2.
3.	3.

04. a) Do you face any marketing problem?    Yes     No
- b) If yes, What are those ?-----
- c) Please suggest some measures to overcome those problems.-----

**EXHIBIT-5**

**“MARKETING OF AGRICULTURAL INPUTS: A STUDY ON  
SELECTED THANAS OF GAZIPUR DISTRICT”**

Date of interview :.....

Survey Area: Accessible / Less Accessible

**SECTION-1: QUESTIONNAIRE FOR DEALERS/WHOLESALEERS/RETAILERS  
OF FERTILIZERS/SEEDS/PESTICIDES:**

01. Name : .....
02. Address:.....
03. What is your primary occupation? .....
04. What is your education level? .....
05. Mention the period of experience with your business:.....
06. Are you doing business under  
a) Old Marketing System    b)New Marketing System
07. Please mention whether you are  
a) Registered with PDP    b) Active with business
08. From where do you purchase :

Name of inputs	Source

09. To whom you sell inputs :

Inputs	Types of Buyers

10. Please mention stock of different -----with you at the time of interview.

Types of Inputs	Quantity (maund/bag/kg/carton)

11. Please specify the purchase and selling price (per bag/Kg/maund/carton)

Types of Inputs	Purchase Price	Selling Price

12. Please mention average and maximum sales price of different-----inputs.(per bag/Kg/maund/carton).

Types of Inputs	Price	
	Average	Maximum

13. Mention various means of carrying inputs

Own carrying	Rickshaw	Bullock cart	Tractor /Truck	Labourer	Boat	Others

14. Please mention cost of trading your business (per maund/bag/kg/carton)

Types of Inputs	Cost elements							
	Trans-port	Loading and unloading	Shop/Store rent	Personnel and weigher	Cost of contracting	Electricity and Phone	wastage	others

15. a) Do you face any problem with regard to demand and supply of .....inputs

Yes

No

b) If yes, what are those ?-----

c) Please suggest some remedies to overcome those problems.-----

16. a) Do you face any product problem .....? Yes  No

b) If yes, What are those? -----

17. a) What is your opinion about the quality of .....inputs?

Good

Neither good nor bad

Bad

b) If not good, What the reasons for poor quality?-----

18. Please suggest some measures to overcome product problems.-----

19. a) Do you face any distribution problem? Yes  No

b) If yes, What are those ?-----

c) Please mention some measures to overcome those problems.-----

20. a) Do you face any pricing problem? Yes  No

b) If yes, What are those?-----

21. What is your opinion about the level of price fluctuation under New Marketing System compared to old Marketing System?

Improved

Deteriorated

Unchanged

22. Please suggest some measures to overcome pricing problems.-----

23. a) Do you face any promotion problem? Yes  No   
 b) If yes, What are those?-----  
 c) Please suggest some measures to overcome those problems.-----
24. a) How do you finance your business? -----  
 b) Do you face any financing problem? Yes  No   
 c) If yes, What are those? -----  
 d) Please suggest some remedies.-----

**SECTION-2**

**SUB SECTION-A : QUESTIONNAIRE FOR OWNER/MANAGER/  
 SECRETARY OF HEAVY EQUIPMENT**

01. Name:-----  
 02. Address: Village:----- Union-----  
 03. What is your main occupation?-----  
 04. Education Level:-----  
 05. How long you are engaged in business?-----  
 06. Are you doing business under  
 a) Old Marketing system b) New Marketing system  
 07. a) Do you use heavy equipment? Yes  No   
 b) If yes, what are those? DWTs  STWs  LLPs   
 08. Please mention the source of obtaining heavy equipments.

Types of Equipments	Source					
	BADC	BKB	IRDP	Co-operative	Individual/group	Others
DTWs						
STWs						
LLPs						

09. Please mention area irrigated (in acre) by your machine.  
 DTWs..... STWs.....LLPs.....
10. Please mention time spent (in month) between application and operation of irrigation machine.

Types of Machines	Application and Installation	Application and operation
DWTs		
SWTs		
LLPs		

11. Please mention water charges (Tk per acre) for HYV operated by diesel& mobil and electric machine.

Types of Machines	Diesel & Mobil	Electric
DWTs		
SWTs		
LLPs		

12. (a) From where do you get technical knowledge for operation and maintenance of equipments? - -----  
 (b) What is your opinion about the availability of service from above sources:-----
13. Please mention cost components of diesel and electrically operated machine (Tk. per acre of land)

Types of machines	Diesel & Mobil/ Electric	Lubr-icants	Spare-parts	Mecha-nics	Driver/ Distributor	Canals/ Drainage	Transpor-tation & Commu-nication	Others
DTWs								
STWs								
LLPs								

14. Which of the following factors influence you in purchasing a particular machine?

Factors	DTWs	STWs	LLPs
Technical efficiency			
Price			
Service and Maintenance			
Past experience			
Influence of other owners			
Availability			
Area covered			
Motivation by BADC personnel			
Others			

15. a) Do you face any product problem? Yes  No   
 b) If yes, What are those?  
 i) Poor quality of machine ii) Frequent breakdown of machine iii) Problem relating to spare parts iv) Poor functioning of product v) Incomplete tool box  
 vi) Seasonal use  
 vii) Repairing of machine viii) Underutilization of capacity ix) Any other-----  
 c) Please suggest some measures to overcome those problems.-----
16. a) Do you face any distribution problem? Yes  No   
 b) If yes, What are those?

- i) Absence of extension service (ii) Local influence (iii) conflict and chaos among farmers (iv) Inadequate supply of oil and spare parts (v) carrying problem (vi) Delay in return of irrigation equipments by farmers (vii) Any other-----
- c) Please suggest some measures to overcome distribution problems.-----
17. a) Do you face pricing problem?      Yes       No
- b) If yes, What are those?
- i) High prices of equipments    ii) High cost of operation
- iii) Variation in charges    v) Lack of credit sale/facility    v) Any other-----
- c) Please suggest some measures to overcome pricing problems.-----
18. a) Do you face promotion problems?      Yes       No
- b) If yes, What are those?
- i) Absence of adequate advertising    ii) Lack of personal touch    iii) Absence of adequate sales promotion    iv) Lack of good dealing    v) Lack of motivation by manufacturers/traders    vi) Any other-----
- c) Please suggest some measures to overcome promotion problems.-----
19. a) Do you face financing problem?      Yes       No
- b) If yes, What are those?-----

**SUB - SECTION-B: LIGHT EQUIPMENTS AND IMPLEMENTS**

01. Please mention sources of obtaining equipments
- | <u>Types of equipments</u> | <u>Sources</u> |
|----------------------------|----------------|
| 1.                         | 1.             |
| 2.                         | 2.             |
02. To whom you sell?
- | <u>Types of equipments</u> | <u>Types of buyers</u> |
|----------------------------|------------------------|
| 1.                         | 1.                     |
| 2.                         | 2.                     |
03. Please mention purchase & selling price of different equipments (Per unit)
- | <u>Type of equipment</u> | <u>Purchase price</u> | <u>Cost of production</u> | <u>selling price</u> |
|--------------------------|-----------------------|---------------------------|----------------------|
| a)                       |                       |                           |                      |
| b)                       |                       |                           |                      |
- 04.a) Do you face any marketing problem?      Yes       No
- b) If yes, What are those?-----
- c) Please suggest some measures to overcome those problem.-----