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OBSERVATIONS ON VEGETABLE SEED PRODUCTION, MARKETING AND IMPORTATION IN BANGLADESH

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PREFACE

This report represents a collaborative effort between USAID/Nepal, No-Frills Consultants and the USAID, Bureau for Science and Technology funded Agricultural Marketing Improvement Strategies Project (AMIS), Contract No. DHR-5447-Z-00-7074. These three parties are undertaking a program of applied research on marketing of high-value commodities produced in hill regions of Nepal. This program of research began in August 1988 and will continue through March 1990.

The Bangladesh consulting mission of Samir Zaman (October 24-29, 1988), Abt Associates economist, was funded under a USAID/Nepal buy-in to AMIS. Zaman examined vegetable seed production, marketing, imports and regulations in Bangladesh through interviews with public officials and managers of private firms and collection of available secondary data and documentation.

AMIS is a five-year project which is being implemented by Abt Associates (prime contractor) in collaboration with the Post-Harvest Institute for Perishables (PIP) at the University of Idaho and Deloitte, Haskins and Sells. It seeks to:

1. Improve diagnosis of marketing system constraints.

2. Identify and design appropriate marketing system innovations and improvements, and

3. Build local capacity in both the public and private sector to do marketing systems analysis.

The collaborating research institutions invite comments and suggestions on this report. Comments may be directed to:

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1.0 Introduction

This report is based on one week of informal interviews with vegetable seed industry participants and data gathering in Bangladesh, carried out in late October 1988. It is a preliminary market profile of particular interest to Nepalese vegetable seed exporters. This profile is part of an applied research program on marketing of high-value agricultural commodities produced in hill areas of Nepal, funded by USAID/Nepal and implemented by AMIS and No-Frills Consultants, a Nepalese firm.

2.0 Vegetable Seed Production

Vegetable production in Bangladesh has increased over the past several years. Acreage and production have expanded for both tropical and temperate vegetables. The tropical varieties are generally grown in the summer and termed the "Kharif" crop. The winter vegetables, known as the "Rabi" crops, are generally of the temperate varieties.

Among the winter vegetables, cabbage, cauliflower, tomatoes, sweet peas, flat beans, radish, turnips, carrots, eggplant, spinach and seed pumpkins are widely grown. Eggplant and sweet pumpkins are also grown in summer. The Directorate of Agricultural Marketing reports that if potatoes (which is considered a vegetable in Bangladesh) are not included, the winter vegetables comprise almost 65 percent of total vegetable production.

Vegetables are grown in almost all areas of Bangladesh and mostly in small plots, but farmers in some areas specialize in vegetable production. Table 1 shows some of the major types of vegetables and the major areas of production. It also shows the markets or the areas to which they are primarily supplied. An administrative map of Bangladesh is attached with this table for ready reference (see Figure 1). Vegetables grown in Bangladesh are mostly domestically marketed and consumed. Only negligible quantities of mainly tropical varieties of vegetables, sometimes quite unique to this region, are exported to the U.K. and the Middle East. These are generally consumed by ethnic Bangladeshis and Indians living in these countries.

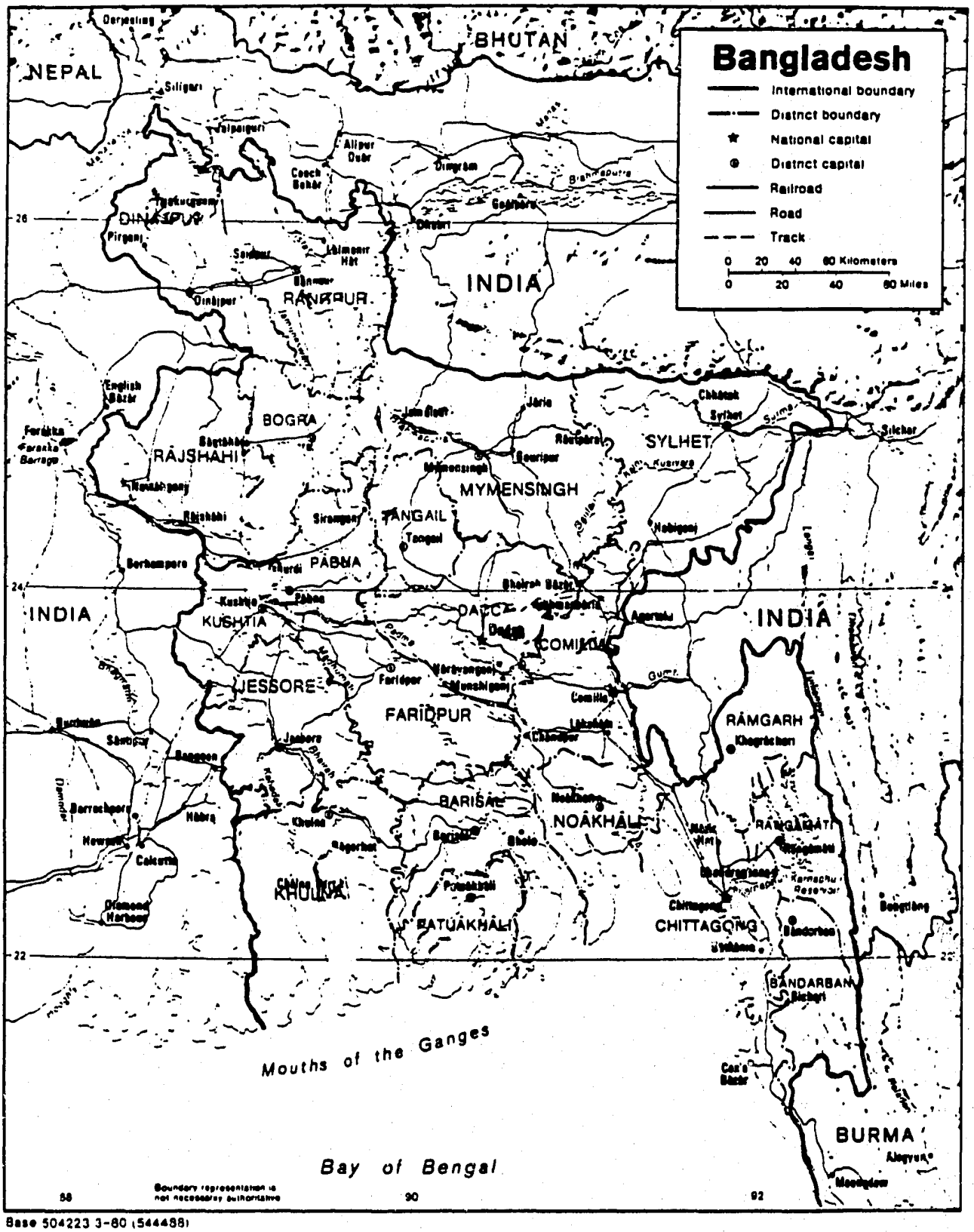
TABLE 1

Vegetable	Important Growing Areas	Markets/Areas
Tomato	Jessore, Jhenidah, Meherpur, Chaudanga Savar, Nawabganj, Keraniganj, Comilla Burichang, Sitakunda, Mirersarai, Nazirhat, Hathazari, Rangunia	Jessore, Kushtia, Dhaka Comilla, Chittagong and local markets.
Cabbage	Savar, Munshiganj, Sonargaon, Manikganj Rajshahi, Pabna, Jessore, Chuadanga and Satkhira	Dhaka, Rajshahi, Jessore and local markets.
Cauliflower	Munshiganj, Tongibari, Manikganj, Keraniganj Mymensingh, Kishoreganj, Satkhira, Jessore and Kushtia	Dhaka, Mymensingh, Tangail Khulna, Jessore,Kushtia, Chittagong, Sylhet, Comilla and local markets.
Beans	Dhaka, Sreenagar, Munshiganj, Savar Manikganj, Habiganj, Shaistaganj, Nandina Jamalpur, Jessore, Jhenaidah, Sitakunda and Mirersari	Dhaka, Sylhet, Tangail, Jamalpur, Jessore, Chittagong, Comilla, and local markets.
Radish	Savar, Keraniganj, Comilla	Dhaka, Comilla
Brinjal (Eggplants)	Gaffargaon, Jamalpur, Nandina Sherpur, Sararchar, Jessore, Kaliganj Shailakupa, Munshiganj, Sreenagar Keraniganj, Chuadanga, Joyrampur, Kholisherkundu, Baderganj, Pabna, Comilla	Mymensingh, Jamalpur, Jessore, Kushtia Rajshahi, Comilla, Chittagong and local markets.
Peas	Rajbari, Madaripur, Gopalganj, Shariatpur Pabna, Serajganj, Savar, Goalundo, Keraniganj, Nawabganj, Mymensingh, Comilla Daudkandi, Muradnagar, Manikganj, Gazipur Narsingdi, Pabna	Faridpur,Pabna,Dhaka, Comilla Sylhet, Mymensingh, Tangail, Chittagong and local markets.

Source: Directorate of Agricultural Marketing.

FIGURE 1

ADMINISTRATIVE MAP OF BANGLADESH



Due to the expansion in acreage under vegetable cultivation, there is a tremendous increase in vegetable seed requirements in Bangladesh. It is estimated that approximately 2,000 metric tons of vegetable seeds are required every year. However, no reliable estimates of requirement by types of seeds were available. The seeds come from various sources -- some are homegrown and some are imported. Almost all of the tropical varieties of vegetables are domestically produced. A small amount of tomatoes and watermelon seeds are imported. Experts at the Bangladesh Agricultural Development Corporation (BADC) and the Department of Agricultural Extension estimate that only about five to twenty percent of the seed requirements of the temperate climate vegetables are domestically produced, while the remaining required seed is imported. An insignificant amount of domestically produced seed is commercially produced. BADC maintains several vegetable farms in different parts of the country and produces the bulk of the commercially grown winter vegetable seeds. Some private firms, notably Mollika Seed Company, have started growing and marketing their own seeds (especially snowwhite, an all-season radish variety) in recent years. Most of the other domestically produced, temperate climate vegetable seeds are grown by vegetable producers themselves for their own use. These seeds are of poorer quality than commercially grown seed. Seeds of tropical varieties of vegetables are primarily domestically produced.

3.0 Vegetable Seed Imports

Bangladesh is not suitable for growing seeds for many of the temperate climate vegetables because of its tropical climate. Its winter is short, and cool temperatures do not prevail for the full period of growth and seeding of winter vegetables. More than eighty percent of the seed requirements of many of the winter vegetables are met through imports. Table 2 provides a list of winter vegetables and the estimated proportion of their seed requirement that is imported. Table 3 shows estimated quantities of seed required to produce winter vegetables in Bangladesh.

Several countries export seeds of temperate climate vegetables to Bangladesh. Japan, the U.K., Holland, Korea, Taiwan, Thailand and India are the major suppliers, but Japan supplies more than eighty percent of the imported seeds of the temperate vegetable varieties. Korea and Taiwan have started to increase their market share at the expense of Japan during the last three to four years, competing effectively on a price basis. As Table 4 shows, Japan is the highest cost supplier of vegetable seed to the Bangladesh market. Seeds, mainly radish of the Mino-early variety, were imported from Nepal by one major importer on a trial basis in 1988. The importer will receive feedback from growers regarding performance and acceptability of the Nepalese seed after this

year's winter vegetable season. The importer was very satisfied with seed the performance at his own farm and expressed optimism about its success and acceptance by vegetable growers.

TABLE 2

Imported Proportion of Selected Vegetable Seed Used in Bangladesh

Vegetables		% Imported
1.	Tomatoes	70
2.	Cabbage	100
3.	Cauliflower	100
4.	Beans	10
5.	Radish	90
6.	Brinjal (Eggplant)	5
7.	Peas	90
8.	Carrots	50
9.	Beets	50
10.	Bottle gourd	--
11.	Sheet gourd	--
12.	Spinach	10
13.	Lettuce	100
14.	Data	--
15.	Lal Shak	20
16.	Turnips	100
17.	Kohlrabis	100

Source: Estimates of officials at the Department of Agricultural Extension.

TABLE 3

Seed Requirements for Selected Winter Vegetables in Bangladesh

Vegetable	Area Cultivated[1] (acres in 1986-87)	Production[1] (MT in 86-87)	Required Seed Rate/Ha.[2]	Estimated Seed Requirmt. for 1988-1989
Cauliflower	18,445	57,465	250g.	1867 kg.
Cabbage	17,960	61,415	250g.	1,818 kg.
Tomato	24,590	72,345	85g.-170g.	846-1,692 kg.
Radish	41,965	143,380	5 kg.	85 MT
Spinach	7,960	14,660	30 kg.	97 MT
Brinjal (Eggplant)	42,720	112,585	150g.-200g.	2,594-3,459 kg.

Sources: (1) Bangladesh Bureau of Statistics (BBS), estimates.
(2) Department of Agriculture Extension (DAE), Ministry of Agriculture, Government of Bangladesh.

Notes: (1) 1988-89 production targets for all winter vegetables: 133,800 acres and 325,000 metric tons of vegetables. 2.47 acres = 1.0 hectare.

(2) Seed sources include DAE farms and nurseries; BADC agricultural estates and BADC imports; UNDP; FAO; foreign governments; private imports.

TABLE 4

CIF Prices of Selected Imported Vegetable Seed By Source of Supply

(Prices per kg. in Taka)

Vegetable	Exporter					
	Japan	Holland	India	Nepal	Korea	Taiwan
Cabbage	800/-900/NHB 4500/HB	600/-700/NHB	--	--	--	--
Cauliflower	1500/NHB 5000/HB	1000-1200/NHB	1000-1200/ NHB	-	-	-
Tomatoes	Round 18,000/HB rarely imported)	1200/NHB-- (imported from Denmark (also)	--	--	--	
		1200-1300/NHB	--	--	--	--
Radish	250/	-- --	170/- 180/	215/	230/	
Watermelon	500-600NHB 4500-5000/HB	-- --	--	3500/HB	3200/HB	

Note: One Dollar = Taka 32.87
NHB = Non Hybrid
HB = Hybrid

Seeds are imported into Bangladesh generally in two ways. BADC procures seeds by floating international tenders, which foreign exporters and producers bid on either directly or through their local agents. The seeds are then distributed by BADC approved agents and also sold in BADC retail centers. BADC also supplies seeds to its vegetable growing farms, which sell seedlings in addition to vegetables. The private importers import under the Wage Earner Scheme (WES), procuring seed directly from foreign exporters or producers and paying them with foreign exchange remitted by Bangladesh nationals working abroad. This process is considered simpler, and private importers believe that they have an advantage over BADC and can supply seed more efficiently and on a timely basis. Different importers distribute imported seeds in different ways. Some have agents in major vegetable producing areas, who supply wholesalers. Local seed retailers or rural all-purpose stores buy from wholesalers. Other importers take orders directly from wholesalers in different regions of the country.

There are nearly thirty private importers of vegetable seeds in Bangladesh. Some of the major ones are listed below:

Name of the Firm	Location
MALLIKA SEED CO.	149, D. I. T. EXTENSION AVENUE (1st Floor) Dhaka - 1000
SOCIETY NURSERY	K. C. DEY ROAD Chittagong
INTERNATIONAL SEED TRADERS	48, GREEN CORNER Dhaka, Bangladesh
SHAPLA NIER	SIR SYED AHMED ROAD Mohammadpur, Dhaka
CAPITAL SEEDHOUSE	Khulna
SHAHEEN TRADERS	KAPTAN BAZAR Dhaka, Bangiadesh
NADIM BIJ BHANDER	SIDDIQUE BAZAR Dhaka, Bangladesh
VOYAGE	9, D. I. T. AVENUE Dhaka, Bangladesh
ADMARK INTERNATIONAL	3/8 NAYA PALTAN Dhaka, Bangladesh

Seeds are imported both in bulk and in cans. The bulk imports come in polyethylene-lined gunny bags. The cans are usually 1 kg. and ½ kg. sealed aluminum/tin cans with bold markings of the producing companies and the name of the countries of origin. Seeds imported in bulk are either canned locally or made into smaller packages. At the retail level, shopkeepers sell seeds out of cans or other packages, weigh it in front of the customers (in grams or by local units), and package it in small paper bags.

4.0 Vegetable Producer Seed Preferences

Both retailers and growers express a definite preference for Japanese seed varieties, although growers who have used the Korean varieties are completely satisfied with them. Growers and retailers also prefer the color and design of seed containers used by the Korean and Taiwanese exporters and also by the local canning companies. All the cans closely resemble each other in design. The Nepalese radish seed, which is imported in bulk and canned here, is packaged in containers resembling the Japanese cans and mislabelled as a Japanese variety of radish. No mention is made of its Nepalese origin.

There has been no substantial feedback on the experience of the Nepalese radish seed from the growers yet, since this is the first season of use. Early reports from retailers indicate that farmers are generally satisfied with the productivity of the Nepalese seed, but that it does not provide the same level of consistency (in size and shape) as the Japanese variety. In addition, the Japanese variety can stay in the field for more days before turning tough and fibrous. However, Mollika Seed Company, which imported the seeds from Nepal and also has a seed multiplication farm, claims that its experience with Nepalese radish seed has been equally good, if not better than with the Japanese variety.

Even if Mollika's claim is true, the packaging of Nepalese seed in containers which resemble Japanese tins raises an important "truth in labelling" issue. As long as the Nepalese seed performs well, the issue will remain latent. If any of the Nepalese seed were impure, had a low germination rate or performed poorly in farmers' fields, growers would likely protest and Bangladesh regulatory agencies might impose severe restrictions on importation and packaging of Nepalese seed. Furthermore, it will be impossible for Nepalese exporters to establish a market niche as long as Mollika (and any other importers) try to pass off Nepalese seed as a Japanese product. Mollika's strategy may seem clever in the short run, but it is misleading, unprogressive and likely to work against Nepalese penetration of the Bangladeshi market in the long run.

When these points were raised in a follow-up interview with Mollika, the importer said that he imported Nepalese seed as generic brand seed and has no intention of marketing it as Nepalese brand seed unless the exporters in Nepal wish to promote their product as such. In that case, they would have to pay for the promotional expenses. Currently, Mollika is promoting the generic brand seeds, which include the Mino early variety of radish from Nepal and Mino all-season variety radish from its own farm, through price cuts and prize declarations. The Japanese seeds were popularized in Bangladesh through several years of promotional efforts. In the early years of entry into the Bangladesh market, Japanese exporters distributed free samples, purchased television and newspaper advertisements, and gave extra incentives to dealers to sell Japanese seed.

5.0 Vegetable Seed Storage

Besides BADC, no other importers or distributors have controlled storage facilities for vegetable seeds. Even BADC does not have separate cold storage and humidity-controlled storage facilities used exclusively for vegetable seeds. BADC officials believe they have adequate facilities and that seed damage due to moisture and temperature have not been a problem. The private importers have garage-like storage facilities (godowns). Since seed is stored in cans, damage has not been a major problem. The seeds that are imported in bulk are canned immediately.

6.0 Vegetable Seed Legislation

There are three agencies directly concerned with enforcing seed legislation in Bangladesh. These are the Directorate of Plant Protection under the Department of Agricultural Extension, the National Seed Certification Agency (NCA), and the Seed Advisory Board -- all in the Ministry of Agriculture. New seed, whether imported or local, cannot be selected for use in the field without a suitability report from the NCA and approval by the Seed Advisory Board. Any new variety of seed, exotic or indigenous, is tested by NCA, with the assistance of the Bangladesh Agricultural Research Institute, in different parts of the country for a period of two to three years. If NCA finds the seed variety appropriate (suitable) for Bangladesh and superior to existing varieties, then it recommends approval of that variety to the Seed Advisory Board. The Seed Advisory Board then approves it and instructs the Plant Protection Directorate to include the variety in the approved list and issue import permits to interested importers. The import permit may specify instructions as to quarantine or fumigation requirements. Quarantine certificates from authorities of the exporting countries are generally accepted by the

Plant Protection Agency. The mandate of the Plant Protection Directorate is specified in the Destructive Insects and Pests Rules of 1966. A copy of this document is provided in Appendix B. Appendix C shows the minimum feed purity and germination requirements and maximum permissible moisture content for 21 vegetables. The 1980 Seeds Rules are provided in Appendix D and the 1977 Seeds Ordinance in Appendix E. The 1976 Seed Certification Manual appears in Appendix F.

No testing is required for common and proven varieties of seed, even when the seed is imported from a new supplying country. There is no import restriction on those approved seed varieties which cannot be produced domestically. Nor are there any import duties or taxes on seeds. However, a two percent fee is levied on import permits by the government.

7.0 Bangladesh Agricultural Development Corporation (BADC)

BADC is an autonomous institution responsible for distribution of agricultural inputs in Bangladesh. Its staff of over 20,000 covers the whole country and manages production, procurement and distribution of agricultural inputs. Seed production and distribution, managed by the Seed Division, is one of BADC's major activities. A recent World Bank study recommended bifurcation of BADC into two separate parastatal organizations -- one for seeds and the other for other inputs. Among its activities, BADC imports seeds that cannot be produced in Bangladesh and operates a number of farms throughout the country, which produce seeds (primarily tropical varieties) and distribute them to the retail level. BADC is the largest importer of vegetable seeds, although its share has declined due to government emphasis on privatization and the ever-increasing number of seed importers importing under the Wage Earner Scheme.[1] In times of flood and other natural disaster, BADC is usually responsible for implementing government policy on agricultural inputs. In 1984 and in 1987 BADC imported and distributed large volumes of seed at a subsidized rate or free of charge. In the 1988-89 season BADC will also be responsible for distributing a large amount of seeds financed by donor agencies.

1. The Wage Earmer Scheme (WES) is currently the most convenient way to obtain foreign exchange for importation of products into Bangladesh, especially for small importers. A much wider variety of goods can be imported under WES than other methods. A list of commodities that can be imported under the scheme is published periodically. Importers wishing to import any of the listed products can easily obtain foreign exchange from banks that maintain foreign currency accounts of individuals working abroad. Importers can obtain the product from any country and are not limited to the country from which the funds were remitted.

In late 1988 BADC began distribution of 25,179 kg. of seeds of winter vegetables among farmers to increase vegetable production and to help make the post-flood rehabilitation program a success. Out of this amount 10,000 kg. were locally produced. 1,529 kg. were imported and the remaining 13,650 kg. were donated by France, Japan, Saudi Arabia and the FAO. This is the largest quantity of vegetable seeds ever distributed in Bangladesh. Last year, 21,737 kg. were distributed among farmers. The different kinds of seeds include tomato, radish, spinach, benjas, brinjal, sweet gourd, pegchi, china pegchi, bottle gourd, cucumber, papaya, laishak, cabbage, carrot, beet, knolkhol and turnip.

The 13,650 kg. of seed received as donations will be distributed free of cost under the agricultural rehabilitation project by the upazila[1] committees. The seeds are now being sold through all the upazilas and the Dhaka city sale centres of BADC, through van cars, and through thirteen Agro-Service Centres of BADC. In addition, the Agro-Service Centres will distribute 78 lakh seedlings of different kinds of vegetables and twenty lakh saplings of fruit trees (1 lakh = 100,000).

BADC maintains a network of storage facilities, some of which are especially designed for seeds. Due to large volume storage requirements, the facilities are designed for potatoes and wheat storage, but Dr. Hashim of BADC's Seed Division feels that they are suitable for vegetable seed storage as well. Dr. Hashim also believes that BADC has sufficient storage facilities for the current stock of vegetable seeds, but that these facilities are inadequate for reserve stocks necessary in view of the recurring bad floods. In the coming years they will continue to expand their storage facilities rather conservatively. Their next five year target includes separate storage facilities for pulses and other vegetables seeds. These will be funded by EEC, FAO and the World Bank.

Officials at BADC believe Nepal, Bhutan and Pakistan can produce the good quality seed that Bangladesh needs, particularly cabbage, radish, turnip and beet. Processing and packaging of seeds in these countries are, however, not very good by international standards. They could not provide any specifics in this regard.

Bangladesh is self-sufficient in many kinds of seeds including several varieties of tropical vegetables. Some of these seed varieties, such as jute and eggplant, can be exported to Nepal and other SAARC countries. Dr. Hashim mentioned that some kind of bilateral agreement between Nepal and Bangladesh can facilitate trade for mutual benefit. USAID could play a major role in getting the two parties together.

1. Upazilas are the lowest level of administrative unit where government administrative and development officers are posted.

8.0 Private Seed Importers

There are approximately thirty seed importers in Bangladesh. These are small firms, whose primary functions are importing seeds from foreign sellers and selling them to seed wholesalers. With the exception of one firm, none of them have their own seed multiplication farm or extension agents. Mollika Seed Company seems to be one of the largest and also the one most forthcoming with information. It is also the agent for several foreign seed companies, and as such promotes their products. Admark International is a sister importer; there seems to be a close relationship between the two firms. This section is based largely on an interview with Mr. A. R. Malik, the Managing Director of Mollika Seed Company.

Mollika imports several varieties of vegetable seeds, including cabbage, cauliflower, purple top turnip, onion and radish, but radish seems to be the most important one. The following is an estimate of Mollika's recent annual radish seed imports by exporting country:

Foreign Company	Quantity in Metric Tons
Sakata Seed Corporation, Yokohoma, Japan	25
Takii & Co. Ltd., Kyoto, Japan	
Topgreen Seed Co. Ltd., Taiwan	4
Hungnong Seed Co., Seoul, South Korea	7
Nepal Frontier Seed Co., Nepal	8

Some cabbage, cauliflower, carrot, okra, peas, and onions are imported from India and other countries. Jai Krishna Seed is Mollika's main supplier of seeds from India.

This year Mr. Malik has imported a substantial quantity of Mino early variety radish from Nepal, after testing a small amount of seed on his own farm. He is satisfied with the result and finds the Nepalese variety no different from the Japanese variety. However, growers are very happy with the Japanese product. It will be difficult for Mollika to shift customers away from an established product unless it can offer good prices for Nepalese seed. Mr. Malik feels the Nepalese seed is competitive, but not by much. In addition, since he had to set up a canning operation to package the Nepalese seed which arrived in bulk, he has incurred additional costs and taken greater risks with this variety. However, if Nepal maintains the same price or reduces prices slightly (from $3.50 per kg. to $3.00 per kg.), Mr. Malik believes it can create a good market in Bangladesh. The wholesale prices of various seeds are shown in Table 5.

Table 5

Wholesale Prices of Selected Winter Vegetables at Several Towns in Bangladesh

(during the harvest period)

Commodity	Market	Unit	Jan 86	Feb 86	March 86	Jan 87	Feb 87	March 87	Jan 88	Feb 88	March 88
Tomatoes	Dhaka	Per	189	160	134	553	349			231	195
	Jessore	Maund	156	180	68	246	96	52	394	141	178
	Comilla		250	110	123	235	116	63		413	194
	Chittagong		185	309	115	283	116	137	650	383	303
	Patiya		230	170	150						
Cabbage	Dhaka	Per	278	307	282	338	218	109	227	140	108
	Rajshahi	Hundred	57	68	32	61	48	73	180	76	62
	Jessore	Units	102	69	60	38	22	14	95	83	60
	Chuadanga	or Heads	110	80	60	93	53	42	122	94	57
	Satkhira		93	48		106	34	23	245	122	
Cauliflower	Dhaka	Per	285	297		365	204	145	247	230	198
	Munshigonj	Hundred				248	93				
	Kishoregonj	Units	157	102		336	163		420	418	
	Satkhira	or Heads	194	100		184	60	40	265	265	
	Tangail		136	125		227	133	40	325	488	
	Jessore		150	147		240	93	70			
	Kushtia					350					
Peas	Dhaka	Per	268			481	334		628	388	455
	Rajshahi	Maund	300			250			160		
	Sirajgonj		200			240					
	Munshigonj					312	177		402		
	Gazipur		257								

Source : Bangladesh Bureau of Statistics, Dhaka

Note : One Maund = 80 lbs.

Nepalese exporters are not very experienced in shipping seed to export destinations. Packing and shipping of the first batch of radish seed were not done correctly. The first shipment contained an unacceptable percentage of black seed. Mr. Malik instructed the Nepalese exporter to ship the seed in polyethylene-lined, well-knitted gunny bags. Subsequent shipments were better packaged. Since Mollika has already set up a canning operation, the company would like to continue importing in bulk. If Nepal exported its seed in cans, final seed prices in Bangladesh would probably be higher and therefore not competitive with the Japanese or Korean imports. Nepalese exporters' transport costs would increase significantly and likely offset any advantage of lower cost labor used to package the seed in tins in Nepal.

Mollika Seed Company has nine selling centers in various parts of the country, and Mr. Malik is quite happy with the way the Nepalese seeds are selling. He is very eager to receive feedback from the growers after this season, however. He is also interested in trying out other kinds of vegetable seeds from Nepal, including cabbage, cauliflower, okra, peas and other vegetables that Nepal could supply.

Private seed companies in Bangladesh do not have any seed association in Bangladesh. But most of them are members of the Chamber of Commerce and Industry through which organization they are able to protect their interest. They generally do not compete with BADC. Rather, by being agents or dealers of foreign seed companies, they often supply BADC with seed. As in other subsectors of the Bangladeshi economy, the role of the private sector is increasing in the seed industry. Both the number of firms and their volume of business have been increasing steadily in the last few years.

9.0 Conclusion and Suggestions for Further Research

The principal conclusions which emerge from this initial reconnaissance survey of vegetable seed marketing in Bangladesh are as follows:

1. There appears to be demand and favorable market conditions for winter production of selected temperate vegetable crops, such as tomatoes, cabbage, cauliflower, beans, radishes, brinjal and peas.

2. It is estimated that over 75% of the seed requirements of temperate climate vegetables are imported because climatic conditions (short duration winter) are not conducive to seed production of temperate vegetables.

3. A private seed company, Mollika Seed Company, has recently grown and marketed an all-season variety of radish thus indicating the biological feasibility and potential ability of Bangladeshi firms to compete with imports. However, the productivity of this variety is lower than the imported Japanese variety, whose advantage is its ability to grow in all seasons.

4. It would be appropriate to examine Nepal's comparative advantage for specific types of winter vegetable seeds, particularly relative to Japan's large share of that market.

5. Most foreign seed companies which do business in Bangladesh have agents and dealers in Bangladesh who not only import but promote their products. Nepal has no agent or dealer in Bangladesh.

6. The Nepalese exporters need to establish closer relationships with one or more firms in Bangladesh who will not only buy from them, but promote their products and provide feedback from users.

7. There is a need to evaluate alternative methods of trade in vegetable seeds, such as, (i) an intergovernmental bilateral agreement between Nepal and Bangladesh, (ii) private traders conducting their own trade, and/or (iii) some combination of those two forms.

The reconnaissance survey has raised several important issues, which require further monitoring and applied research. These include, but are not necessarily limited to:

1. An examination of why Japanese exporters have such a large share of the Bangladeshi and, by extension, other Asian country markets for vegetable seed. Key factors are likely to include seed purity and quality, the growing quality of vegetable crops, consumer preference for varieties exported by Japanese firms, the international reputation for Japanese quality, and Japanese packaging and presentation, and Japanese-funded promotional efforts.

2. An assessment of recent trends in the vegetable seed exports, imports and utilization in South Asian and Southeast Asian countries, with particular attention to any expansion of market share, relative to the Japanese, of Korean and Taiwanese exporters. How are relatively new entrants to the regional/international vegetable seed trade able to differentiate their products relative to the Japanese? Are they able to to compete primarily on a price basis? Or do they offer different varieties with desired characteristics? What are the lessons for a newcomer such as Nepal?

3. Monitoring and evaluation of the recent exportation of Nepalese radish seed to Bangladesh. What is growers' assessment of the quality, purity, packaging, varietal traits, field performance, and cost of Nepalese radish seed relative to competing suppliers? Are vegetable producers who bought Nepalese seed from Mollika aware that they were using Nepalese varieties (rather than Japanese)? Has Mollika received any complaints from growers? Has Mollika provided feedback to Nepal Frontier Seed Company in Nepal regarding vegetable seed quality, price, and performance. It is strategically important for the development of the Nepalese seed industry that Nepalese exporters receive constructive feedback on the 1988-89 experiment. Has Mollika or any other Bangladeshi private firm approached Nepalese exporters to negotiate contracts to supply radish seed for the next growing season?

4. Does Mollika Seed Company, or any other Bangladeshi firm, have a strategy for introducing Nepalese vegetable seed to local producers? How could Nepalese seed be differentiated from Japanese (and other competing) seed in order to gain farmer acceptance and market share? On the Nepalese side, is there scope for lowering production, marketing, handling/packaging or shipping costs, or for discounting seed prices, so that Nepalese seed is able to compete more effectively against some very stiff competition in Bangladesh? Or can Nepal differentiate its seed from competitors based on desirable varietal characteristics?

APPENDIX A

Officials, Entrepreneurs and Other People Interviewed during the Bangladesh Survey

1. Dr. Abdul Hashim
   Seed Division
   Bangladesh Agricultural Development Corporation

2. Mr. Nazmul Huda
   Manager, Contract Growers
   BADC

3. Mr. Moinuddin Ahmed
   Manager, Seed Processing
   BADC

4. Mr. Bazlur Rahman
   Director, Directorate of Agricultural Marketing

5. Mrs. Shahnaz Begum
   Deputy Chief, Research
   Directorate of Agricultural Marketing

6. Mr. Sadrulwala Choudhury
   Assistant Chief
   Directorate of Agricultural Marketing

7. Mr. A. R. Mallik
   Proprietor, Mollika Seed Company

8. Mr. Motiur Rahman
   Director, Horticulture Division
   Directorate of Agricultural Extension

9. Dr. Khawja Shamsul Huda
   Director, Association of Development Agencies
   in Bangladesh

10. Retail storage agent in Mymensingh District

11. Vegetable growers in Bhaluka Upazila in
    Mymensingh District

MINISTRY OF AGRICULTURE AND WORKS

(FOOD AND AGRICULTURE DIVISION)

(AGRICULTURE WING)

Islamabad, the 2nd January, 1967

S.R.O. 129(A)/67:

In exercise of the powers conferred by sub-section(1) of section 3, sections 4A and 4B of the Destructive Insects and Pests Act, 1914 (II of 1914) and in supersession of all other rules, orders and notifications in this behalf, the Central Government is pleased to make the following rules, namely

1. (1) These rules may be called the Destructive Insects and Pests Rules, 1966 (Plant Quarantine).

(2) They shall come into force at once.

2. Definitions- In these rules, unless there is anything repugnant in the subject or context-

(a) "Act" means the Destructive Insects and Pests Act, 1914 (II of 1914),

(b) "American cotton" means all cotton produced in any part of the western hemisphere (North, South and Central America and adjoining islands);

(c) "bale" means any pressed package of cotton of whatever size or density;

(d) "Cotton" includes ginned cotton and droppings, strippings, fly and other waste products of a cotton mill other than yarn waste, but does not include cotton seed or unginned cotton;

(e) "Department" means the Department of Locust Warning and Plant Quarantine under the Ministry of Agriculture & Works (Agriculture Division);

(f) "Director" means of the Director of the Department.

(g) "Disease" means any pathological or abnormal condition of a plant caused by insects, mites, nematodes, protozoa, fungi, bacteria and viruses, recognisable by the presence of symptoms or of the organism inciting it;

(h) "disinfestation or disinfection" means any scientific treatment applied for the purpose of destroying or reducing any infection or infestation that may occur on, in or amongst plant materials;

(i) "exporter" includes any person who, whether as owner, consignor, agent or broker, is in possession of, or in any way entitled to, the custody or control of the plant;

(j) "Form" means a form annexed to these rules;

(k) "Importer" includes any person who, whether as owner, consignee, agent or broker, is in possession of, or in any way entitled to, the custody or control of the plant;

(l) "official certificate" means a certificate of plant health granted by the appropriate officer or authority in the country of origin.

(m) "plant pest" means any living animal or plant in any stage of its development known, suspected or liable to be harmful to the existence or growth of economic plants or to plant materials, whether by direct infestation or attack or by causing or spreading diseases in economic plants and known to infest land or water thereby preventing or obstructing its possible agricultural uses;

(n) "plant or plant material" means all species of plants or parts thereof, whether living or dead, including stems, branches, tubers, bulbs, corms, stocks, budwood cuttings, layers, slips, suckers, roots, leaves, flowers, fruits, seeds, seedlings and any other product of plant origin which has not been processed, such as bark, husk and peelings;

(o) "Plant Quarantine Officer" means any person authorised in writing by the Director to act on his behalf;

(p) "Plant Quarantine Division" means the Plant Quarantine Division of the Department;

(q) "Prescribed port or point of entry" means the authorised routes, namely, Karachi harbour, Karachi Airport, Lahore Airport, Lahore Railway Stations, Wagah (Lahore Land Border, Jamrud (Peshawar) Land border, Peshawar Airport Chaman (Quetta) Land border, Quetta Airport, Dacca Airport, Chittagong Seaport, Chittagong Airport, Darsana Railway Station, Khulna (Shalna) Seaport or any other authorised land, sea or air routes as may be declared by the Director;

(r) "Quarantine Entomologist" means the Entomologist (Plant Quarantine) of the Department;

(s) "round bale" means a bale not exceeding 270 lbs. in weight; and

(t) "square bale" means a bale exceeding 270 lbs. in weight.

(2) All provisions referring to plant or plant material shall apply also to all packing material used in packing or wrapping such plant or plant material.

IMPORT

3. IMPORT OF PLANT OR PLANT MATERIAL:

No person shall import any plant or plant material which may be a source or medium of infection or infestation by diseases and plant pests destructive to agriculture or medium for the introduction of noxious weeds, except under a valid impo

8. FOREIGN CERTIFICATE OF INSPECTION:

(1) A plant or plant material the shipment of which originates from a country maintaining a plant quarantine service shall be accompanied by an official certificate.

(2) In the case of countries which do not maintain a plant quarantine service, the certificate of inspection of the plant or plant material must be accompanied by declaration of the exporter shipper concerned to the effect that the plant or plant mater does not originate from a place where injurious insects or pl diseases were prevalent and has not been kept or stored in infested with injurious insects or infested by diseases an pests, and that all treatment, fumigation, disinfestation req prior to shipment has been done under technical supervision.

(3) Persons who import any plant or plant material shall submit the official certificate or the declaration of the exporter or shipper to the effect mentioned in sub-rule(2) to the Plant Quarantine Officer for his perusal and records but this will, however, not preclude inspection by the Plant Quarantine Officer, if deemed necessary.

(4) The shipper or consignee shall submit an affidavit to the Plant Quarantine Officer to the effect that the required official certificate or declaration mentioned in sub-rule(2) will be presented within 30 days from the receipt of the shipment.

(5) Shipments arriving without a valid official certificate or declaration mentioned in sub-rule (2) and without permit shall either be confiscated and destroyed after making an order in Form II or returned to the port of origin at the expense of the importer.

(6) Shipments arriving at any prescribed port or point of entry accompanied with an official certificate or declaration but without import permit or vice versa may be released at the Director's discretion after post-entry examination and issuance of an import permit.

(7) Small consignments of plant or plant material brought as passenger's accompanied baggage with or without certificate or declaration and import permit may be released only if they conform to the requirements of these rules and after examination by the Plant Quarantine Officer and issuance of an import permit.

9. FREEDOM OF PLANT MATERIAL FROM SAND, SOIL OR EARTH:

An imported plant or plant material shall be free from sand, soil, saw dust or earth and the plant roots, rhizomes and tubers shall be washed thoroughly when possible and repacked in such sand, soil and earth as is certified by the duly authorised officer of the exporting country to have been sterilized and rendered safe.

10. PACKING MATERIAL:

All packing material employed in the importation of nursery stock and other plants, including any material of plant origin used for packing purposes, shall be examined and approved by the Plant Quarantine Officer as to their safety for such use.

permit obtained prior to such importation in Form I issued by the Director or the Quarantine Entomologist and except through the prescribed ports or points of entry.

4. PLANT MATERIAL FOR WHICH SPECIAL PERMIT IS REQUIRED:

Notwithstanding anything contained in rule 3, plant or plant material likely to carry new complex of pests or diseases may be imported into Pakistan in limited quantities by special permit in Form I for the purpose of introducing new varieties and propagating stock from countries which maintain regular plant quarantine and inspection service:

Provided that the importation of all plant material falling under this category shall be made only through Karachi Harbour, Karachi Airport, Chittagong Harbour or Dacca Airport and shall be subject to any restrictions imposed on the permit to import the same.

5. APPLICATION FOR PERMIT TO IMPORT PLANT OR PLANT MATERIAL:

(1) Before any plant or plant material is imported, an application for permit shall be submitted to the Director or to the Quarantine Entomologist.

(2) All such applications shall be signed by the person who intends to import the plant or plant material or his duly authorised agent and shall specify:-

(a) the kind and quantity of plant or plant material;

(b) the country and locality of origin;

(c) destination;

(d) the name and address of the consignor and the consignee;

(e) means of transport;

(f) the prescribed port or point of entry;

(g) purpose for which the plant or plant material is proposed to be imported, e.g. consumption, propagation or processing.

6. NOTICE OF ARRIVAL BY THE IMPORTER:

The importer shall inform the Director or the Plant Quarantine Officer, of the probable date of arrival of the plant or plant material at the prescribed port or point of entry and shall, on arrival of the plant or plant material, notify to the Director the number of the permit, name of ship or vessel, date of arrival, country of origin and locality where grown, and the character and quantity of the plant or plant material.

7. REFUSAL AND REVOCATION OF PERMITS:

A permit to import plant or plant material may be revoked if, in the opinion of the Director or the Quarantine Entomologist, the importer has wilfully contravened any provision of these rules or there is reason to believe that the plant or plant material will be imported in violation of the provisions of these rules.

11. PLANT MATERIAL IMPORTED BY POST:

Plant or plant material imported through the post shall be inspected by the Plant Quarantine Officer upon notification of their presence at the Post Office. The plant or plant material shall be handled in the same manner as those coming through authorised routes and may be released or confiscated after inspection and treatment through the Postal authorities.

12. IMPORTATION OF INSECTS AND OTHER ANIMALS, PESTS, PLANT DISEASES AND CULTURES FOR SCIENTIFIC AND ALLIED PURPOSES:

(1) No person shall import from any country any harmful living insects, animals, birds, fungi, fungus cultures, obnoxious weed plants or their propagating material except in accordance with the following provisions, namely:-

Any living stage of the numerous shall invertebrate animals elongated invertebrates lacking appendages, commonly referred to as worms, for example, nematodes, any form of protozoa; any form of fungi such as rusts, smuts and moulds; any form of bacteria; any form of viruses, or any form of similar or allied organisms which may directly or indirectly affect, injure or cause disease in plants, unless-

(a) the proposed importation is to be used for scientific, educational, commercial or industrial purposes only;

(b) an application is submitted to the Director stating the names and addresses of the consignor and consignee, the scientific name of pests or diseases, the institution or place of origin, quantity, number of containers, the purpose of the importation and the name and address of the person by whom or the institution where the material will be used;

(c) the importation is only to be routed through Karachi harbour, Karachi Airport, Chittagong Seaport, Chittagong Airport or Dacca Airport;

(d) the forwarding label issued with the permit designating the route through which the importation is permitted has been forwarded by the importer to the shipper and attached to the outside of each consignment; and

(e) every importation authorised under this sub-rule is subject to inspection at the prescribed port or point of entry and may be held for further examination and refused entry or destroyed if, in the opinion of the Plant Quarantine Officer, such importation is found to include insects or other organisms not specifically covered by the permit.

(2) No person shall import exotic beneficial insects, birds, animals both vertebrate and invertebrate (Mollusca, Crustacea, Myriopoda, Insecta) for scientific, educational, industrial or medicinal purposes except under, and in accordance with the terms of, an authority from the Director.

(3) No person shall import useful exotic plant species including useful micro-organisms and their propagating material unless he has obtained the prior permission of the Director and the articles imported are covered by an official certificate.

3

(1) Where on inspection, any imported plant or plant materi is found to be infested or infected with any plant pests or dise the plant or plant material and containers thereof shall be dest in the presence of the Plant Quarantine Officer or returned to th shipper after treatment, at the discretion of the Director, and where any carrier is found to be infested with any pests or is suspected to be so infested it shall be treated to the extent and in the manner deemed necessary by the Plant Quarantine Officer. When any such action is necessary due notice shall be given to the owner or his agent and any risks associated with such treatm shall be the responsibility of the owner.

(2) No person shall obstruct an Officer of the Department in the due discharge of his duties; and no person shall refuse to permit the making of any examination required under these rules or refuse to carry-out the instructions of an Officer relative to the effective control of any insect pests and diseas

IMPORT RESTRICTIONS OR PROHIBITIONS:

14. POTATO:

(1) Potatoes shall not be imported into Pakista[illegible] means from any country, where the three serious pests, Black Wart (Synchytrium endobioticum), Golden Nematode (T rostochiensis), Colorado potato beetle (Leptinotarsa de have either been prevalent or reported to have occured they are accompanied by official certificate from the c origin declaring that the crop from which the consignme derived was not grown in the vicinity of unhealthy pota and was inspected by a duly authorised official of Phyt Service of the country of origin and found free from a insect pests and diseases and that no case of the insect pests a diseases mentioned above was recorded within 2 kilometers radiu of the place where the potato crop was grown during the past twelve months.

(2) In order to guard against the importation of the pe and diseases mentioned in sub-rule (1) the Director shall take the following precautions, namely:-

(a) as far as possible, import only of seed potatoes resistant to wart disease shall be permitted;

(b) the importation of seed potatoes shall be permitted from those countries where the aforesaid pests and diseases are not present;

(c) import only of seed potatoes certified by the Phytopathological service of the exporting country to have been produced in areas within the country free from the pests and diseases shall be permitted;

(d) seed consignments should be free from shoots, leave roots and soil sticking to tubers;

(e) import of potato seeds should be restricted only t certified seed free from virus diseases except virus X; and

(f) import of shoots, roots, leaves and green parts of potato shall not be permitted.

15. RUBBER.

(1) Any plant of the genus Hevea shall not be imported into Pakistan, unless:-

(b) written permission has been granted for each consignment of plants by the Department and the importation is in accordance with such special conditions as may be imposed by the Director or the Quarantine Entomologist in granting such permission;

(c) the plant has been disinfected and freed of any original soil in the country of origin and is free from pests and diseases, and consignment of plants is accompanied or covered by an official certificate specifying clearly that the above requirements have been fulfilled; and

(d) each consignment is addressed to the Director or any person authorised by him.

(2) The importation into Pakistan of any plant of the genus Hevea capable of further growth or propagation ~~(excluding seed)~~ is prohibited from the American tropics or from any other country in which South American leaf blight (Dothidella ulei) is present, unless, in addition to the requirements of sub-rule (1), such plant has been grown for an adequate period at a plant quarantine station for Hevea at a place approved by the Director and situated outside the American tropics and any other country in which South American leaf blight (Dothidella ulei) is present, and each consignment of such plants is accompanied or covered by an official certificate to the effect that the above requirements have been fulfilled, and signed by the Officer-in-Charge for such quarantine station.

(3) The importation into Pakistan of any seed of any plant of the genus Hevea is prohibited from the American tropics or from any other country in which South American leaf blight (Dothidella ulei) is present, unless, in addition to the requirements of sub-rule (1), such seed, having been examined and again disinfected at a place approved by the Director and situated outside the American tropics and any other country in which South American leaf blight (Dothidella ulei) is present, has been repacked with new packing materials in new containers, and unless each consignment of such seed is accompanied or covered by an official certificate to the effect that the above requirements have been fulfilled and signed by the Officer-in-Charge of these operations.

(4) The importation in Pakistan of any plant or plant material of the genus Hevea not capable of further growth or propagation (such as fresh or dried herbarium specimens) is prohibited, unless, in addition to the requirements of clauses (a), (b) and (d) of sub-rule (1), the Director is satisfied that such plant or plant material is required for a legitimate special purpose and that such plant or plant material has been sterilized in the country of origin by a method satisfactory to the Director.

(5) The importation into Pakistan of any plant or plant material other than the genus Hevea, capable of further growth or propagation and originating in the American tropics or in any other country in which South American leaf blight (Dothidella ulei) is present, is prohibited unless written permission has been granted for each consignment of such plant or plant material by the Director and the importation is in accordance with such special conditions as may be imposed by the Director in granting such permission.

(6) The Department shall ensure that any plant of the genus Hevea imported through it for further growth or propagation

for such period as will ensure that it is free from all pests and diseases before it is released.

(7) All budwood and other propagating material of Hevea rubber shall be dusted with sulphur before shipment and the budwood shall be dipped in a Mercuric Chloride Solution for a brief period immediately before use to eliminate Oidium heveae and immediately after dipping the budwood shall be washed thoroughly in running water. A solution suitable for this purpose consists of 0.2 per cent mercuric chloride in 50 per cent methyl (or ethyl) alcohol).

(8) All the imported propagating material not used for budding and the packing material imported with it shall be destroyed by burning.

16. SUGARCANE:

Importation of sugarcane is prohibited provided that the Director may authorise the importation of small quantities of plant or plant material, subject to the following conditions:

(i) that the importation is made for scientific purposes;

(ii) that the imported planting material is grown at a recognized post entry quarantine station for an adequate period before release for large-scale planting; and

(iii) that the official certificate accompanying the consignment should bear an additional declaration to the effect that the planting material was inspected in the field and was found to be free from injurious pests and diseases and particularly from the following diseases, namely, Sugarcane Mosaic virus, Sugarcane Fiji disease virus, Pine apple disease (Ceratocystis paradoxe) Sereh disease, gummosis (Xanthomonos vasculorum) ratoon virus and grassy shoot virus.

17. TOBACCO:

Unmanufactured tobacco, either raw or cured, shall be imported into Pakistan unless, in addition to the usual official certificate required, it is accompanied by an additional declaration that it is free from Ephestia elutella or that the pest does not exist in the country of origin. The import of tobacco seedlings is prohibited. Seed should be accompanied with usual official certificate which must also declare that the seeds have been treated by immersion for 15 minutes 0.1% solution of silver nitrate.

18. CITRUS PLANTS:

Citrus plants and cuttings shall not be imported into Pakistan unless, in addition to the general requirements under rules 3 to 6, the following conditions are fulfilled:-

(i) the importation is made for scientific purposes;

(ii) the imported plants or cuttings are grown at an recognized post entry quarantine station for a period adequate to ensure their freedom from virus diseases; and

in which they are grown.

19. COFFEE PLANTS, SEEDS AND BEANS:

Coffee plants, coffee seeds and coffee beans shall not be imported into Pakistan except with the special permission of the Director who shall take all measures necessary to ensure that such coffee plants, seeds or beans as are permitted by him are free from plant diseases and injurious insect pests.

Provided that this prohibition shall not apply to roasted and ground coffee.

20. BANANA:

Importation of banana suckers and fruits is prohibited from South and South West of India and any other country where the diseases have been reported to have occurred to prevent the spread of Bunchy Top virus disease and Panama disease due to the fungus Fusarium oxysoporum var.

21. COCONUT:

Importation of coconut plant or plant material into Pakistan is prohibited from Caribbean area, Jamaica, Haiti, Florida, Ghana, Togoland, Phillippines, British Ghiana, West Indies, South India, Ceylon and any other areas where the following diseases or other diseases of obscure origin are known to occur:-

(a) Red Ring-(Aphelenchoides cocophilus).
(b) Lethal Yellowing;
(c) Kaincope disease;
(d) Cadang cadang;
(e) Bronze leaf Wilt;
(f) Root(Wilt) disease;
(g) Guam coconut disease;

but its import from other countries can be made subject to the following conditions:-

(i) importation of coconut materials shall under permit be made only in small quantities, restricted to unsprouted nuts from which the perianth has been removed.

(ii) the seed nuts shall be accompanied by an official certificate from an appropriate authority in the country of origin that the seeds came from trees showing no signs of diseases;

(iii) upon arrival, the seeds shall be fumigated or treated by any other method considered appropriate by the Director to remove the risk of introducing insects; and

(iv) the imported seednuts shall be planted in individual containers in isolated Quarantine for a period of one year. Any diseased seedlings, together with containers and planting media shall be burnt.

22. GROUNDNUT:

Importation into Pakistan of groundnut seedlings from U.S.A., U.S.S.R., West Indies, and China is prohibited, to prevent the introduction of groundnut rust (Puccinia arachidis), Sphaceloma arachidis and other pests. Decorticated seeds may, however, be imported only under permit and usual official certificate.

Importation into Pakistan of seedlings from Canada U.S.S.R., U.S.A., Mexico, Porto Rico and Italy is prohibited but the seeds may be imported under permit and if the consignment is accompanied with official certificate attesting that the crop was not infected by Xanthomonas stewarti.

24. TEA:

Importation into Pakistan of tea vegetative material from an area where the disease caused by Exobasidium reticulatum is known to occur(Japan) and from any country where phloem necrosis virus exists(Ceylon) is prohibited. Tea seed can be imported only under permit and shall be accompanied by an official certificate as well as by a certificate of field inspection. In addition, these shall be treated, before their shipment and after arrival, with an appropriate fungicide and insecticide.

25. ALLIUM SPP.

Allium Spp. plants and bulbs of onion, garlic, shallot, leek and chive shall not be imported into Pakistan unless these are certified as free from smut diseases(Urocystis cepulae).

26. COCOA AND THEOBROMA SPP.

Cocoa and other Theobroma Spp.(including seed in the unmanufactured state) may be imported for research and propagation by Government controlled institutions only from countries other Africa, and West Indies and Ceylon. The consignments shall be accompanied by a consignor's certificate stating fully the origin of the plants. Official certificate shall certify that they were inspected and found free of Pod rot(Moulia rorei), mealy pod (Trachysphaera fructigena) and witches broom (Marasmius perniciosus and that swollen shoot and other virus diseases do not occur in the country of origin. Plants are subject to inspection and fumigation at the prescribed port or point of entry.

27. SOIL AND ROOTED PLANTS:

The importation into Pakistan of soil or any other unsterilized rooting media such as compost, humus or forest litter, capable of carrying pathogens is prohibited.

28. COTTON:

(1) Unginned cotton shall not be imported into Pakistan.

(2) Cotton seed shall not be imported save for experimental purposes by officers in Pakistan authorised in this behalf by the Government at the ports of Karachi and Chittagong and shall not be imported in quantities exceeding one pound in weight in any one consignment and shall be fumigated at the port of entry with an appropriate fumigant:

/ Central

Provided that if the cotton seed is accompanied by a certificate from the Government Entomologist of the country of origin to the effect that the seed and its container have been treated in such a way as to destroy all insect life, the seed shall be examined on importation by Plant Quarantine Officer and shall not be required to be re-fumigated unless such examination shows that re-fumigation is necessary.

by any means except with the special permission of the Director and shall not be so imported save through the port of Karachi or Chittagong and subject to the following conditions:-

(a) on or before the departure of a ship carrying a consignment of American Cotton for Karachi or Chittagong/Chalna from the port from which the cotton is consigned, the consignee or shipper shall ascertain the name of the ship, the probable date of its arrival in Karachi or Chittagong and number of square and round bales of American Cotton contained in the consignment and shall furnish this information to the Director not less than fourteen days before the arrival of the ship at Karachi or Chittagong.

Provided that where the American cotton is loaded for Karachi Chalna Chittagong/at Port Said or at a European port the ordinary length of voyage from which is less than three weeks, it shall be sufficient to furnish the information not less than ten days before the arrival of the ship at Karachi.

(b) on arrival of the ship carrying consignment of American cotton at Karachi or Chittagong, the cotton shall be disinfected in such manner and by such authority as the Director may direct; and thereafter the release order in Form III shall be issued;

(c) no vessel shall discharge American cotton during a period of rain, mist or drizzle;

(d) no vessel carrying American cotton shall enter the territorial water of Pakistan, without the previous permission in writing of the Director in Form IV for which application shall be made to the Director at least fourteen days before the expected arrival of the vessel;

(e) no American cotton or any other cotton, the fumigation of which is required by these rules or any other cotton which may have been in contact therewith or in proximity thereto, shall be landed without fumigation, except at a special landing place provided by the Trustees of the Port of Karachi or the Port of Chittagong and approved by the Director for the reception of unfumigated American cotton.

(4) Cotton other than American cotton, which is imported into Pakistan in a vessel carrying American cotton and is loaded in the same batch as any bale or bales of American cotton shall be deemed to have been in contact therewith or in proximity thereto and shall be subject to the restrictions and conditions specified in these rules.

(5) Samples of American cotton imported by parcel post or as ships parcel, not exceeding 20 lbs.. each in weight, shall be fumigated at the Custom House on arrival by an approved fumigant of the Department.

(6) Transit movement or transhipment of American cotton or American cotton samples is permitted if shipments are accompanied by official certificates and are so packed that insects cannot enter or escape.

(7) All cotton the fumigation of which is required by these rules shall be at the sole risk of the importer during landing, transhipment and fumigation; and no liability for any loss or damage due to fumigation shall attach to the Government or its agents.

29. INSPECTION AND CERTIFICATE FOR EXPORT.

All persons who intend to export plant materials must submit to the Department, an application for inspection of plant or plant material before the despatch of such consignments. All such plant or plant material meant for export shall be inspected for any injurious insects and plant diseases, and plants and plant materials which are found to be free from injurious insects and diseases shall be certified in Form V and if found to be infested with injurious pest and diseases shall either be returned to the exporter or destroyed at the option of the exporter. In either case, the cost shall be borne by the exporter.

30. APPLICATION FOR INSPECTION OF PLANT MATERIAL FOR EXPORT.

All persons who intend to export plant or plant material shall submit to the Director or Quarantine Entomologist, an application for inspection of the plant or plant material they desire to export with a responsible time. The application should be made atleast a day before the shipment in the case of, perishable materials and a fortnight before the shipment in the case of, non-perishable goods, so as to allow proper inspection and certification.

31. CERTIFICATION OF PLANT MATERIAL FOR EXPORT.

(1) (a) If the plant or plant material upon inspection are found to be free from plant diseases and injurious insects, a certificate in Form V shall be issued by the Director or the Quarantine Entomologist to the exporter to accompany the shipment.

(b) No official certificate shall be granted for plant or plant material which have been taken from or mixed with other plants which are diseased or infected.

(c) The official certificate shall not be granted for any plant or plant material intended for shipment to a country in which their entrance is absolutely prohibited.

(2) All risks or damages of any kind associated with or resulting from fumigation or other treatment shall be at the risk of the owner.

(3) The certificate implies that the plant or other matter was inspected by a duly authorised officer of the Department and was found to conform with the inspection standards or procedures associated with the issuance of official certificates, tags or other documents.

32. The list of officers authorised to inspect and grant the official certificate is at Form VI.

33. PLANT MATERIAL IN TRANSIT:

(1) The provisions of these rules shall also apply to the plant and plant material under transit through Pakistan by land, air or sea or their transhipment at the discretion of the Director.

(2) The shipments and consignments must however, be accompanied by official certificate, issued by the proper officer or the authority from the country of origin and shall be so packed that there are no chances of any insect pests and diseases escaping from the packages or the containers.

APPENDIX C

SEED STANDARDS FOR BANGLADESH

	Crop	Purity (Minimum %)	Germination (Minimum %)	Moisture (Maximum %)
1.	Spinach	96	60	9
2.	Bottlglegouard	99	70	10
3.	Pumpkin	99	70	10
4.	Gourd	99	70	10
5.	Bittergourd	99	70	10
6.	Snakegourd	99	70	10
7.	Cucumber	99	70	8
8.	Watermelon	99	70	10
9.	Squash	99	60	10
10.	Cow peas	98	70	10
11.	Chilies	98	70	10
12.	Carrot	90	60	10
13.	Onion	98	60	10
14.	French Bean	95	70	9
15.	Pea	95	70	9
16.	Cauliflower	95	65	9
17.	Radish	95	70	8
18.	Turnip	95	70	8
19.	Brinjal	96	70	12
20.	Okra	96	65	10
21.	Tomato	96	65	9

Appendix D

The Seed Rules, 1980

: THE _____ : OF BANGLADESH

MINISTRY OF AGRICULTURE AND FORESTS

NOTIFICATION

Dhaka, the 22nd February, 1980

No. S.R.O. 51-L/80.—In exercise of the powers conferred by section 23 the Seeds Ordinance, 1977 (Ord. XXXIII of 1977), the Government is sed to make the following rules, namely :—

THE SEEDS RULES, 1980

1. **Short title.**—These rules may be called the Seeds Rules, 1980.

2. **Definitions.**—In these rules, unless there is anything repugnant in the ject or context,—

(a) "advertisement" means all representations, other than those on the label, disseminated in any manner or by any means relating to seed for the purposes of the Ordinance;

(b) "certification tag" means a tag or label of certain design to be specified by the Certification Agency which shall connote that a certificate in respect of the seed has been granted by the Certification Agency;

(c) "certified seed" means seed that fulfils all requirements for certification provided by the Ordinance and these rules and includes the container to which the certification tag is attached;

(d) "form" means a form annexed to these rules ;

(e) "ordinance" means the Seeds Ordinance, 1977 (Ord. XXXIII of 1977);

(f) "origin" means the country where the seed is grown, and in case seeds of different origin are blended, the label shall show the percentage of seed of each origin;

(g) "processing" means cleaning, drying, treating, grading and other operations which would change the purity and germination of the seed and thus requiring re-testing to determine the quality of seed, but does not include operations, such as, packaging and labelling; and

(h) "treated" means that the seed has been subjected to an application of a substance or process in such a manner as to reduce, control or repel certain disease organisms, insects or any other pests attacking such seeds.

3. [redacted] to the functions entrusted to the
oard

[redacted] ied for analysis of samples by Seed
e Certification Agency;

[redacted] ity of [redacted] ting laboratories ;

(c) send its recommendations and other concerning records to the Government;

(d) meet at least twice a year in first week of January and first week of July;

(e) meet on any other dates to dispose of urgent matters brought before the Board for decision;

(f) recommend to the Government to notify under section 5 of the Ordinance any kind or variety of seed for the purposes of the said Ordinance;

(g) consider and recommend to the Government proposals for multiplication targets, seed importation and fixation of prices of the imported seed;

(h) recommend to the Government the procedure and standards for certification, tests and analysis of seeds;

(i) carry out such other functions as are supplemental, incidental or consequential to any of the functions conferred by the Ordinance or these rules.

4. **Travelling and daily allowances payable to the members of the Board nd its committees.**—The members of the Board and its committees shall be ntitled to draw travelling and daily allowances as specified below when they ttend a meeting of the Board or a committee thereof—

(a) an official member shall be entitled to draw travelling and daily allowances in accordance with the rules of the Government and from the same source from which his pay and allowances are drawn;

(b) a non-official member shall be allowed travelling and daily allowances in accordance with the general orders issued in this behalf by the Government from time to time.

5. **Functions of the Seed Laboratory.**—In addition to the functions rusted to the Seed Laboratory by the Ordinance, the Seed Laboratory shall—

(a) initiate testing programmes in collaboration with other Seed Laboratories designed to promote uniformity in results between them and shall maintain records and samples in respect of seed of any notified kind or variety;

(b) train personnel concerned with the methods of seed testing;

(c) collect data continually on the quality of seeds found from other sources and make this dat Board;

(d) carry out other functions a to it by the Government from time to time.

6. **Functions of the** tion to the nctions entrusted to the (the Agency

y seed of an

(b) outline the procedure for growing, processing, storage and label of seeds intended for certification and to ensure that the seed finally approved for certification are true to variety and conform least to the minimum limits of germination and purity for certifica under these rules;

(c) maintain a list of recognised breeder's seeds;

(d) verify, upon receipt of an application for certification of any kind or variety of seed, that the seed source used for planting was authenticated by the Certification Agency and the record of purchase is in accordance with these rules and the fees have been paid;

(e) inspect seed processing plants to see that the admixtures of o kinds and varieties are not introduced;

(f) ensure that action at all st s, that is, field inspection, seed process plant inspection, analysis of samples and issue of certificate, inclu marking, labelling and sealing, is taken expeditiously;

(g) carry out educational programmes designed to promote the production of certified seed including a publication listing certified seed growers and sources of certified seed;

(h) maintain such records as may be necessary to verify that seed plants for the production of certified seed were eligible for such planting under these rules;

(i) inspect fields to ensure that the minimum standards for isolati roguing (where applicable) use of male sterility (where applicab and similar factors are maintained at all times, as well as ens that seedborne diseases are not present in the field to a greater ext than those provided in the standards for certification.

7. **Responsibility for marking or labelling.**— When seed of a notified ki or variety is offered for sale under section 7, each container shall be mark or labelled in the manner hereinafter specified.

8. **Contents of the mark or label.**—There shall be specified on every ma or label—

(a) indication that the seed conforms at least to the minimum limits germination and purity;

(b) particulars as may be specified by the Government under clause (" of section 6 of the Ordinance;

(c) a correct statement of the net content in terms of weight and expressed in metric and British systems;

(d) data of testing;

(e) r s been treated—

ing that the seed has been treated;

xcepted chemical or abbreviate chem substance; and

(i) that the use of seed after the expiry of the validity period by any person is entirely at his risk and the holder of the certificate shall not be responsible for any damage to the buyer of the seed;

(j) that no one should purchase the seed if the seal or the certification tag has been tampered with;

(iii) the colours of the certification tags shall be green for the Breeder's seed, white for the Foundation seed and blue for the Certified seed;

(iv) the container of the certified seed shall carry a seal of such material and in such form as the Certification Agency may determine and no container carrying a certification tag shall be sold by the person if the tag or seal has either been tampered with or removed;

(v) the holder of the certificate shall keep record of the details of each lot of the seed which is issued for sale in such form as to be available for inspection and to be easily identified by reference to the number of the lot as shown in the certification tag of each container and such record shall be retained in the case of a seed for which the expiry date is fixed for a period of two years from the expiry of such date;

(vi) the holder of the certificate shall allow any seed Inspector, authorised in writing by the Certification Agency in that behalf, to enter with or without prior notice the premises, where the seeds are grown, processed and sold and to inspect promises, plant and the process of processing at all reasonable hours;

(vii) the holder of the certificate shall allow the Seed Inspector, authorised in writing by the Certification Agency, to inspect all registers and records maintained under these rules and to take samples of the seeds and shall supply to the Seed Inspector, such information as he may require for the purposes of ascertaining whether the conditions subject to which the certificate has been granted have been complied with;

iii) the holder of the certificate shall on request furnish to the Certification Agency from every lot of the seed or from such lot or lots as the Certification Agency may from time to time specify, a sample of such quantity as the Agency may consider adequate for any examination required to be made;

(ix) the holder of the certificate shall not, if the certification agency so directs, sell or offer for sale any lot in respect of which a sample is furnished to the Agency under clause (VIII) until the Agency authorises the sale of such lot;

(x) the holder of the certificate shall, on being directed by the Certification Agency that any part of a lot has been found by the Agency not to conform to the standards of quality or purity specified by or under the Ordinance, withdraw the remainder of that lot from sale and so far as may, in the particular circumstances of the ca

(xi)

18. **Appeal**—(1) Every memorandum of appeal preferred under sub-section (1) of section 11 shall be in writing and shall be accompanied by a copy of the decision of the Certification Agency against which it has been preferred and shall set forth concisely and under distinct heads the grounds of objection to each decision without any argument or narrative.

(2) Every memorandum of appeal shall be accompanied by a treasury receipt for a sum of Taka fifty.

(3) Every memorandum of appeal may be presented either in person or through an agent duly authorised in writing in this behalf by the appellant or may be sent by registered post.

19. **Procedure to be followed by appellate authority.**—In deciding appeals under the Ordinance, the appellate authority constituted by the Board shall follow the same procedure which a court follows in deciding appeals from the decree or order of an original court under the Code of Civil Procedure, 1908 (Act V of 1908).

20. **Qualifications of Seed Analyst.**—A person shall not be qualified for appointment as Seed Analyst unless he possesses at least a Bachelor's degree in Agriculture of a University recognised for this purpose by the Government.

21. **Duties of a Seed Analyst.**—The Seed Analyst shall—

(a) on receipt of a sample for analysis, first ascertain that the mark and the seal or fastening as provided in clause (b) of sub-section (1) of section 15 are intact and shall not the condition of the seal thereon;

(b) analyse the sample according to the provisions of the Ordinance and these rules;

(c) deliver the report of the result of the analysis to the Director, Seed Certification Agency with copy to the persons, firm or agency from whom the seed samples have been taken;

(d) forward to the Director of Seed Certification Agency, monthly and annual reports giving the result of analytical work done by him for onward submission of the same to the Board;

(e) inform the results of the sub-standard seed lot or lots by telegraphic message or through messenger to the person from whom seed samples have been taken, if the period between analysis and distribution is marginal of that particular seed.

22. **Qualification of Seed Inspector.**—A person shall not be qualified for appointment as Seed Inspector unless he possesses at least a Bachelor's degree in Agriculture of a University recognised for this purpose by the Government.

23. **Duties of Seed Inspectors.**—In addition to the duties specified by the Ordinance, the Seed Inspectors shall—

(a) inspect as frequently as may be ation Agency
air-plants used for growing, proc ? any seed of
any notified kind or variety;

(b) 1 of any seed
cified by the

(i) that the use of seed after the expiry of the validity period by any person is entirely at his risk and the holder of the certificate shall not be responsible for any damage to the buyer of the seed;

(j) that no one should purchase the seed if the seal or the certification tag has been tampered with;

(iii) the colours of the certification tags shall be green for the Breeder's seed, white for the Foundation seed and blue for the Certified seed;

(iv) the container of the certified seed shall carry a seal of such material and in such form as the Certification Agency may determine and no container carrying a certification tag shall be sold by the person if the tag or seal has either been tampered with or removed;

(v) the holder of the certificate shall keep record of the details of each lot of the seed which is issued for sale in such form as to be available for inspection and to be easily identified by reference to the number of the lot as shown in the certification tag of each container and such record shall be retained in the case of a seed for which the expiry date is fixed for a period of two years from the expiry of such date;

(vi) the holder of the certificate shall allow any seed Inspector, authorised in writing by the Certification Agency in that behalf, to enter with or without prior notice the premises, where the seeds are grown, processed and sold and to inspect promises, plant and the process of processing at all reasonable hours;

(vii) the holder of the certificate shall allow the Seed Inspector, authorised in writing by the Certification Agency, to inspect all registers and records maintained under these rules and to take samples of the seeds and shall supply to the Seed Inspector such information as he may require for the purposes of ascertaining whether the conditions subject to which the certificate has been granted have been complied with;

(viii) the holder of the certificate shall on request furnish to the Certification Agency from every lot of the seed or from such lot or lots as the Certification Agency may from time to time specify, a sample of such quantity as the Agency may consider adequate for any examination required to be made;

(ix) the holder of the certificate shall not, if the certification agency so directs, sell or offer for sale any lot in respect of which a sample is furnished to the Agency under clause (VIII) until the Agency authorises the sale of such lot;

(x) the holder of the certificate shall, on being directed by the Certification Agency that any part of a lot has been found by the Agency not to conform to the standards of quality or purity specified by or under the Ordinance, withdraw the remainder of that lot from sale and so far as may, in the particular circumstances of the case, be practicable—

(xi)

18. **Appeal**—(1) Every memorandum of appeal preferred under su section (1) of section 11 shall in writing and shall be accompanied by a co of the decision of the Certification Agency against which it has been preferr and shall set forth concisely and under distinct heads the grounds of objecti to each decision without any argument or narrative.

(2) Every memorandum of appeal shall be accompanied by a treasu receipt for a sum of Taka fifty.

(3) Every memorandum of appeal may be presented either in person through an agent duly authorised in writing in this behalf by the appellant may be sent by registered post.

19. **Procedure to be followed by appellate authority.**—In deciding appe under the Ordinance, the appellate authority constituted by the Board sh follow the same procedure which a court follows in deciding appeals from t decree or order of an original court under the Code of Civil Procedure, 19 (Act V of 1908).

20. **Qualifications of Seed Analyst.**—A person shall not be qualified for appointment as Seed Analyst unless he possesses at least a Bachelor's degree in Agriculture of a University recognised for this purpose by the Government.

21. **Duties of a Seed Analyst.**—The Seed Analyst shall—

(a) on receipt of a sample for analysis, first ascertain that the mark and the seal or fastening as provided in clause (b) of sub-section (1) of section 15 are intact and shall not the condition of the seal thereon;

(b) analyse the sample according to the provisions of the Ordinance and these rules;

(c) deliver the report of the result of the analysis to the Director, Seed Certification Agency with copy to the persons, firm or agency from whom the seed samples have been taken;

(d) forward to the Director of Seed Certification Agency, monthly and annual reports giving the result of analytical work done by him for onward submission of the same to the Board;

(e) inform the results of the sub-standard seed lot or lots by telegraphic message or through messenger to the person from whom seed samples have been taken, if the period between analysis and distribution is marginal of that particular seed.

22. **Qualification of Seed Inspector.**—A person shall not be qualified for appointment as Seed Inspector unless he possesses at least a Bachelor's degree in Agriculture of a University recognised for this purpose by the Government.

23. **Duties of Seed Inspectors.**—In addition to the duties specified by Ordinance, the Seed Inspectors shall—

(a) inspect as frequently as may be Agency all places used for growing, proc seed of any notified kind or variety;

(b) any seed

(d) procure samples of any seeds under C wl reason to suspect are being pro or exhibited for sale in contravention of the provisions of the Ordinance or these rules;

(e) investigate any complaint which may be made to him in writing in respect of any contravention of the provisions of the Ordinance or these rules;

(f) maintain a record of all inspections made and action taken by him in the performance of his duties including the taking of samples and the seizure of stocks and submit copies of such records to the Director of Seed Certification Agency as may be directed in this behalf;

(g) when so authorised by the Government detain imported container which he has reason to suspect contain seeds, import of which is prohibited except and in accordance with the privisions of the Ordinance or these rules;

(h) institute prosecutions in respect of breaches of the Ordinance or these rules; and

(i) perform such other duties as may be entrusted to him by the Government and the Board.

24. **Manner of taking and handling samples.**—Samples of any notified kind or variety for the purpose of analysis shall be taken in a clean dry container which shall be closed sufficiently tight to prevent leakage and entrance of moisture and shall be carefully sealed.

25. **Containers to be labelled and addressed.**—All containers containing samples for analysis shall be properly labelled and the parcels shall be properly addressed. The label on any sample of seed sent for analysis shall bear—

(a) serial number;

(b) name of the sender with official designation;

(c) name of the person from whom the sample has been taken;

(d) date and place of taking the sample;

(e) kind and variety of the seed for analysis; and

(f) nature and quantity of preservative, if any, added to the sample.

26. **Manner of packing, fastening and sealing of samples.**—All samples of seed sent for analysis shall be packed, fastened and sealed in the following manner—

(a) the stopper shall first be securely fastened so as to prevent leakage of the container in transit;

(b) the container shall then be completely wrapped in fairly strong thick paper. The ends of the paper shall be neatly folder in and affixed

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2.. ler of sample for analysis shall be sent to the Seed Analyst by registered post or by hand in a sealed packet enclosed together with a memorandum in Form VI in an outer cover addressed to the Seed Analyst.

30. **Memorandum and impression of seal to be sent separately.**—A copy the memorandum and a specimen impression of the seal used to seal the pac shall be sent to the Seed Analyst separately by registered post or delivered him or to any person authorised by him;

31. **Addition of preservatives to samples.**—Any person taking a sam of seed for the purpose of analysis under the Ordinance may add a preservati as may be specified from time to time to the sample for the purpose maintaining it in a condition suitable for analysis.

32. **Nature and quantity of the preservative to be noted on the label.** Whenever any preservative is added to a sample, the nature and quantity the preservative added shall be clearly noted on the label to be affixed the container.

33. **Analysis of the sample.**—On receipt of the packet it shall be opened either by the Seed Analyst or by an officer authorised in writing in that behal by the Seed Analyst, who shall record the condition of the seal on the packet.

34. **Form of Notice.**—The notice to be given under clause (a) of sub-section (1) of section 15 of the Ordinance to the person from whom the Seed Inspector intends to take sample shall be in Form VII.

35. **Form of Report.**—The report of the result of the analysis under sub-section (1) or sub-section (2) of section 16 of the Ordinance shall be delivered or sent in Form VIII.

36. **Fees.**—The fees payable in respect of the report from the Seed Laboratory under sub-section (2) of section 16 of the Ordinance shall be Taka five per sample of the seed analysed.

37. **Retaining of the sample.**—The sample of any seed shall, under cl (c) of sub-section (2) of section 15 of the Ordinance, be retained under a and dry environment to eliminate the loss of viability and insect proof or proof container. The container shall be dusted with suitable insecticide the storage room fumigated to avoid infestation of samples by insects. sampl ality conditions of uniform stage and befor

3 ng out the business referred to in sect shall samples—

sub- he memorandum to be prepared under e Ordinance shall be in Form IX.

Appendix E

The Seeds Ordinance, 1977

lished in the Bangladesh Gazette, Extraordinary, dated the [illegible] July 1977.]

OVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF LAW AND PARLIAMENTARY AFFAIRS

NOTIFICATION

Dhaka, the 19th July, 1977

No. 619-Pub.—The following Ordinance made by the President of the le's Republic of Bangladesh, on the 13th July, 1977, is hereby published for al information:—

THE SEEDS ORDINANCE, 1977

Ordinance No. XXXIII of 1977

AN

ORDINANCE

rovide for regulating the quality of certain seeds for sale and for matters connected therewith.

WHEREAS it is expedient to provide for regulating the quality of certain s for sale for matters connected therewith;

NOW, THEREFORE, in pursuance of the Proclamations of the 20th August, , and the 8th November, 1975, and in exercise of all powers enabling in that behalf, the President is pleased to make and promulgate the following nance:—

. Short title.—This Ordinance may be called the Seeds Ordinance, 1977.

Price : 30 paisa

2. **Definitions.**—In this Ordinance unless there is anything repugnant in the subject or context,—

(*a*) "agriculture" means food and fibre crop production and includes horticulture;

(*b*) "Board" means the National Seed Board constituted under sub-section (*1*) of section 3;

(*c*) "Certification Agency" means a Seed Certification Agency established under section 8;

(*d*) "container" means a box, bottle, tin, barrel, case, receptacle, sack, bag, wrapper or other thing in which any article or thing is placed or packed;

(*e*) "export" means taking out of Bangladesh to a place outside Bangladesh;

(*f*) "import" means bringing into Bangladesh from a place outside Bangladesh;

(*g*) "kind" means one or more related species or sub-species or crop plants each individually or collectively known by one common name, such as, cabbage, paddy and wheat;

(*h*) "notified kind or variety", in relation to any seed, means any kind or variety thereof notified under section 5;

(*i*) "prescribed" means prescribed by rules made under this Ordinance;

(*j*) "Seeds" means any of the following classes of seeds used for sowing or planting—

(*i*) seeds of food crops including edible oil seeds and seeds of fruits and vegetables;

(*ii*) jute seeds;

(*iii*) cotton seeds;

(*iv*) seeds or cattle fodder;

under includes seedlings, and tubers, bulbs, rhizomes, root cuttings, all types of grafts and other vegetatively propagated materials, of food crops or cattle fodder;

(*k*) "Seed Analyst" means a Seed Analyst appointed under section 12;

(*l*) a Seed Inspector appointed under section 13;

(*m*) the Government Seed Laboratory established under section 4; and

(*n*)

...e Government shall, as soon as may be after ...nce, constitute a Board to be called the Nati...overnment on matters arising out of the administra... o carry out the other functions assigned to it by ...

(*2*) ... following members, namely:—

(*a*) the Secretary to the Government, Ministry of Agriculture (Agriculture Division), *ex-officio*, who shall also be the Chairman of the Board; and

(*b*) fifteen persons to be appointed by the Government.

(*3*) The members shall elect one person from amongst themselves to be the Secretary of the Board.

(*4*) The Government shall provide the Board with such clerical and other staff as it may consider necessary.

(*5*) The Government shall, by notification in the official Gazette, publish the names or designations of all the members of the Board and thereupon the Board shall be deemed to be constituted.

(*6*) Members of the Board shall, subject to the provisions of sub-sections (*7*) and (*8*), hold office for a term of three years, and shall be eligible for re-appointment.

(*7*) The Government may, at any time, terminate the appointment of a member of the Board without assigning any reason.

(*8*) When a member of the Board dies, resigns or otherwise ceases to be a member, the vacancy shall be filled by fresh appointment and any person so appointed shall hold office for the unexpired term of his predecessor.

(*9*) No person shall be, or shall continue to be, a member who—

(*a*) is or at any time has been convicted an offence which, in the opinion of the Government, is an offence involving moral turpitude; or

(*b*) is of unsound mind and stands so adjudged by a competent court; or

(*c*) is or has at any time been adjudged insolvent; or

(*d*) absents himself from three consecutive meetings of the Board without leave of absence from the Chairman.

(*10*) The Board may appoint one or more committees consisting wholly members of the Board or wholly of other persons or partly of members of t Board and partly of other persons, as it thinks fit, for the purpose of dischargi such of its functions as may be delegated to such committee or committees the Board.

(*11*) The Board may, subject to the previous approval of the Government, make by-laws for regulating its own procedure and the procedure of a committee

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5. **Power to specify kinds** ; Government after consultation with the Board, is ury or expedient to regulate the quality of seed of ar and used for the purposes of agriculture, it may, ial Gazette, specify such kind or variety to be a n he purposes of this Ordinance and different kinds or varieties may be notified for different areas.

6. **Powers to specify minimum limit of germination and purity, etc.**—After consultation with the Board, the Government may, by notification in the official Gazette, specify—

(*a*) the minimum limits of germination and purity with respect to any seed of any notified kind or variety;

(*b*) the mark or label to indicate that such seed conforms at least to the minimum limits of germination and purity specified under clause (*a*) and the particulars which such mark of label may contain.

7. **Regulation of sale of seeds of notified kinds or varieties.**—No agency or certified seed grower or certified seller of seed shall carry on the business of selling, keeping for sale, offering to sell, bartering or otherwise supplying any seed of any notified kind or variety, unless—

(*a*) Such seed is identifiable as to its kind or variety;

(*b*) Such seed conforms at least to the minimum limits of germination and purity and the container of such seeds bears, in the prescribed manner, the mark of label containing the correct particulars thereof specified under clauses (*a*) and (*b*) of section 6; and (*c*) he complies with such other requirements as may be prescribed.

8. **Seed Certification Agency.**—The Government may, by notification in the official Gazette, establish a Certification Agency to be called the Seed Certification Agency to carry out the functions entrusted to it by or under this Ordinance.

9. **Grant of certificate by the Certification Agency.**—(*1*) Any person selling, keeping for sale, offering to sell, bartering or otherwise supplying any seed of any notified kind or variety may, if he desires to have such seed certified by the Certification Agency, apply to the Certification Agency for grant of a certificate for the purpose.

(2) Every application under sub-section (*1*) shall be made in such form, shall contain such particulars and shall be accompanied by such fees as may be prescribed.

(3) On receipt of any such application for the grant of a certificate, the Certification Agency may, after such enquiry as it thinks fit itself that the seed to which the application relates confo minimum limits of germination and purity specified for that s of section 6, grant a certificate in such form and on su be prescribed.

ev ic is satisfied,
either on a r this behalf or otherwise, that—

(*a*) the y it under section 9 has been obtained by mis any essential fact, or

(*b*) the cate has, without reasonable cause, failed to con ons subject to which the certificate has been granted or has contravened any of the provisions of this Ordinance or the rules made thereunder.

then, without prejudice to any other penalty to which the holder of the certificate may be liable under this Ordinance, the Certification Agency may, after giv the holder of the certificate an opportunity of showing cause, revoke t certificate.

11. **Appeal.**—(*1*) Any person aggrieved by a decision of the Cert tion Agency under section 9 or section 10 may, within thirty days fro date on which the decision is communicated to him and on payment of s fees as may be prescribed, prefer an appeal to such authority as may specified by the Government in this behalf:

Provided that the appellate authority may entertain an appeal after t expiry of the said period of thirty days if it is satisfied that the appellant prevented by sufficient cause from filing the appeal in time.

(2) On receipt of an appeal under sub-section (*1*), the appellate autho shall, after giving the appellant an opportunity of being heard dispose of appeal as expeditiously as possible.

(3) Every order of the appellate authority under this section shall be final

12. **Seed Analyst.**—The Government may, by notification in the offi Gazette, appoint such persons as it thinks fit, having the prescribed qua tions, to be Seed Analyst and define the areas within which they shall exe jurisdiction.

13. **Seed Inspectors.**—(*1*) The Government may, by notification in official Gazette, appoint such persons as it thinks fit, having the prescri qualifications, to be Seed Inspectors and define the areas within which t shall exercise jurisdiction.

(2) Every Seed Inspector shall be deemed to be a public servant the meaning of section 21 of the Penal Code (Act XLV of 1860) and s be officially subordinate to such authority as the Government may specify i this behalf.

14. **Powers of Seed Inspectors.**—(*1*) Inspectors may—

(*a*) take samples of any seed of an ind or variety from—

(*i*) any person s

(*ii*) any persor nveying, delivering or pre er or a consignee; or

of such seed to him;

(*b*) send such sample for analysis to the Seed Analyst for the area within which such sample has been taken;

(*c*) exercise such other powers as may be necessary for carrying out the purposes of this Ordinance or any rule made thereunder.

(*2*) Where any sample of any seed of any notified kind or variety is taken under clause (*a*) of sub-section (*1*), its cost, calculated at the rate at which seed is usually sold to the public, shall be paid on demand to the person whom it is taken.

(*3*) The power conferred by this section includes power to break open container in which any seed of any notified kind or variety may be contained to break open the door of any premises where any such seed may be kept sale:

Provided that the power to break open the door shall be exercised only r the owner or any other person in occupation of the premises, if he is therein, refuses to open the door on being called open to do so.

(*4*) Where the Seed Inspector takes any section under clause (*a*) of sub-section (*1*), he shall, as far as possible, call not less than two persons to be present at the time when such action is taken and take their signatures on a memorandum to be prepared in the prescribed form and manner.

(*5*) The provisions of the Code of Criminal Procedure, 1898 (Act V of 8) shall, so far as may be, apply to any search or seizure made this section hey apply to any search or seizure made under the authority of a warrant ed under section 98 of the said Code.

15. **Procedure to be followed by Seed Inspectors.**—(*1*) Whenever a Seed ...tor intends to take sample of any seed of any notified kind or variety analysis, he shall—

(*a*) give notice in writing, then and there, of such intention to the person from whom he intends to take sample;

(*b*) except in special cases provided by rules made under this Ordinance, take t ...rescribed manner and mark and s ...such manner as its nature permit

(*2*) When ... or variety are taken ...er sub-sectic

(*a*) delive ...s been taken;

(*b*) ...nalysis to the Seed ...e been taken; and

(*c*) ...ner for production ... Seed ...y be.

(*3*) ...t ...e been t ...o accept ...ec... intimatio... Analyst one of th ... Seed Analyst receiving the sample for analysis of such ... shall seal or fasten up one of those parts and shall divi ... shall cause ... of the sample or when he delivers his report, to be deliv ...ector who shall retain it for production in case legal proceedings are taken.

(*4*) Where a Seed Inspector takes any action under clause (*c*) of sub-section (*1*) of section 14—

(*a*) he shall use all despatch in ascertaining whether or not the seed contravenes any of the provisions of section 7 and if it is ascertained that the seed does not so contravene, forthwith revoke the order passed under the said clause or, as the case may be, take such action as may be necessary for the return of the stock of the seed seized;

(*b*) if he seized the stock of the seed, he shall, as soon as may be, inform a Magistrate and take his orders as to the custody thereof;

(*c*) without prejudice to the institution of any prosecution, if the alleged offence is such that the defect may be removed by the possessor of the seed, he shall, on being satisfied that the defect has been so removed, forthwith revoke the order passed any record, register, document or any other material object under clause (*d*) of sub-section (*1*) of section 14, he shall, as soon as may be, inform a Magistrate and take his orders as to the custody thereof.

16. **Report of Seed Analyst.**—(*1*) The Seed Analyst shall, as soon as may be, after the receipt of the sample under sub-section (*2*) of section 15, analyse the ... prescribed, one ... nother c ...

... cused ... rt for ... sub- ... eceipt ... al or ... intact ... ratory ... within ... of the ... shall ... n any ... n any ... ort or ... unless

18. **Recognition of seed certification agenc** recommendation of the Board, the Governme official Gazette, recognise any seed certification country of the purposes of this Ordinance.

19. **Penalty.**—If any person contravenes [illegible] this Ordinance or any rule made thereunder, or prevents a Seed Inspector from taking sample under this Ordinance or prevents him from exercising any other power conferred on him by or under this Ordinance, he shall, on conviction, be punishable—

(*a*) for the first offence, with fine which may extend to Taka five hundred; and

(*b*) in the event of such person having been previously convicted of an offence under this section, with imprisonment for a term not more than thirty days and fine which may extend to Taka one thousand.

20. **Forfeiture of property.**—When any person has been convicted under this Ordinance for the contravention of any of the provisions of this Ordinance or the rules made thereunder, the seed in respect of which the contravention has been committed may, if the court so orders, be forfeited to the Government.

21. **Offence by companies.**—(*1*) Where an offence under this Ordinance has been committed by a company, every person who at the time the offence was committed was in charge of, and was responsible to, the company for the conduct of the business of the company as well as the company shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment under this Ordinance if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(*2*) Notwithstanding anything contained in sub-section (*1*), where an offence under this Ordinance has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence shall be liable to be proceeded against and punished accordingly.

Explanation.—For the purposes of this section,—

(*a*) "company" means anybody corporate and includes a firm or other association of individuals; and

(*b*) "director", in relation to a firm, means partner in the firm.

[illegible] no suit prosecution or other legal proceeding shall lie against any officer of the Government for anything done under this Ordinance.

22. The Government may, by notification in the Official Gazette, make rules for the purposes of this Ordinance.

(2) Without prejudice to the generality of the foregoing power, such rules may provide for—

(*a*) the travelling and daily allowances payable to the members and of the committee;

(*b*) the functions of the Seed Certification Agency;

(*c*) the functions of the Seed Inspectors;

(*d*) the manner of marking or labelling the container of seed of any kind or variety;

(*e*) the requirements which may be complied with by a person on the business referred to in section 7;

(*f*) the form of application for the grant of a certificate under section 7, the particulars it may contain, the fees which shall accompany such application, the form of the certificate and the conditions subject to which the certificate may be granted;

(*g*) the form and manner in which and the fee on payment of which an appeal may be preferred under section 11 and the procedure to be followed by the appellate authority in disposing of the appeal;

(*h*) the qualifications and duties of Seed Analysts and Seed Inspectors;

(*i*) the manner in which samples may be taken by the Seed Inspectors, the procedure for sending such samples to the Seed Analysts or the Seed Laboratory and the manner of analysing such samples;

(*j*) the form of report of the result of the analysis, and the fees payable in respect of such report;

(*k*) the records to be maintained by a person carrying on the business referred to in section 7 and the particulars which such records may contain; and

(*l*) any other matter which is to be or may be prescribed.

DACCA;
The 13th July, 1977.

ZIAUR RAHMAN,
MAJOR GENERAL
President.

A. K. TAL
Deputy

BGP-84/85-3014B-2,000—8-11-84.

Appendix F

SEED CERTIFICATION MANUAL

Prepared and Published
by
Director
Seed Certification Agency
Ministry of Agriculture
Bangladesh
1976

I. Legislation of Seed Certification Agency

Seed Certification was provided for by the 1975 Seeds Act, Section ent "Seed Certification Agency". The Act is explicit in setting forth pro vi regarding seed certification in Bangladesh. The Agency functions und Ministry of Agriculture with a Director and supporting staff, locate Headquarters and such Sub-Headquarters at locations as are designated Ministry of Agriculture.

No other agency, organization, company, person(s), or otherwise sh anyway duplicate or attempt to perform the functions of the Bangla Seed Certification Agency within Bangladesh.

The Seed Certification Agency performs the duties and functions of certification by assigning definite duties and responsibilities to its Headqua staff, to its Field Wing staff and to its Seed Quality Control staff.

II. Definition of Seed Certification :

Seed Certification is a system of inspections, using specific standards, by a certifying agency, and involving pedigree records on eligible crop var to make available sources of genetically pure seed and propagating mat for general distribution.

Seed Certification does this by means of inspections of fields and and regulations for checking on the production, harvesting and cleani each lot of seed.

Without such a system, seeds and propagating materials of crop var tend to become contaminated and mixed and to lose identity.

The term "Certified Seed" means all of the seed classes ; Breeders, Fo tion, Registered and Certified. "Certified Seed" refers to seed that has produced, processed, tagged, labelled and sealed in accordance with the cedures, rules, regulations of the Bangladesh Seed Certification Agency, any other officially recognized seed certification agency outside of Banglade

III. Purpose of Seed Certification :

The purpose of seed certification is to maintain and make available t public or the user, through certification, high quality seed of superior plant varieties so produced, handled, processed and identified as to i genetic identity and genetic purity. Also, to increase the supply of and lerate the distribution of new and improved varieties of crops.

In the ordinary distribution of commercial seed the buyer accepts the i mation shown or the label as to variety and source while with certified the variety and origin can be traced back to the producer through certi number and other information on the certification tag. Field inspectic the growing crop, sampling, laboratory analysis and proper labelling ct produced by careful growers are the best possible assurances of quality seed of known purity and heredity.

IV.

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for performing all services to
nner in all matters relating to
services, the following organi-
tion Agency denotes the orga-

V.

Th Na
Act s l—

and sanctioned by the Seed

1. serve as the advisory body to the Seed Certification Agency in co-operation with the Ministry of Agriculture,
2. designate, delete, or add to, as the Board deems meritable, notified varieties of all crops eligible for certification,
3. recommend the proposals for release and multiplication of new varieties and such procedures involving the seed certification agency as the Board deems appropriate,
4. define eligibility requirements of seedstocks of notified varieties for the production of the various classes of seed,
5. set or decide whatever fees, charges, levies, or other monetary matters, including prices, which are related to seed certification, and
6. advise, promulgate, or otherwise assist and advise in whatever provisionary manner, such other aspects related to seed certification as the Board may deem appropriate.

VI. Eligibility Requirements for Certification of Crop Varieties:

A. Eligible varieties—Only those notified varieties which have been designated by the National Seed Board shall be eligible for Seed Certification. Such varieties which may include public varieties or privately developed varieties shall be evaluated as to merit and eligibility as notified variety in the usual manner for evaluating public varieties.

The National Seed Board and the Seed Certification Agency will publicise the listing of the notified varieties well in advance of the planting season for such varieties.

B. Breeders Information required on a variety—The originator, developer, breeder, owner, or agent of a crop variety, designated as a notified variety or applied for to be a notified variety, must present certain information to the National Seed Board and the Seed Certification Agency on the variety—

1. *The name of the variety*—This name must be the established name if the variety has previously been marketed.
2. A statement concerning the origin of the variety and the breeding procedure used in its development, including the filial generation of the variety and any purification of the variety.

3. A [illegible] gical, physiologic characteristics of the plants and seed that distinguishes varieties of the same crop.
4. Evidence of performance of the variety, such as comparative yie data, insect and disease resistance, or other factors supporting t identity and claims for the variety.
5. A statement delineating the geographic area or areas of adaptati or season(s) of growing for the variety.
6. A statement of the plans and procedures for the maintenance stock seed, including the number of generations through which t variety may be multiplied and certified.
7. A description of the manner in which the variety is constituted, in the instance of a variety constituted from closely related li selected from the initial cross.
8. Any additional restrictions on the variety, specified by the breed such as seed classes permitted to be certified or other factors a ing genetic purity, such as genetic instability, which may affe certification procedures.
9. A one pound sample representative of the variety and of the lo the breeder truly declares represents the variety.

VII. Eligibility of Growers:

The production of seed for certification is open to producers/growers accoring to certain qualifications and restrictions set forth by the Seed cation Agency. Both Government (BADC) Seed Farms and Registered G are included in the Agency plan for certified seed production. Large n of producers/growers are needed in order to satisfy the seed needs of country. Educational efforts to acquaint all interested producers/growers rules and regulations will be the responsibility of the Agency.

A. Producer of Breeders Seed—The plant breeder of the particular cr variety will produce and provide necessary Breeders Seed.

B. Producer of Foundation Seed—Foundation seed production is restricted to Foundation Seed Farms designated by the Ministry of Agriculture and approved by the National Seed Board.

C. Producer of Registered Seed—No production of the Registered Se Class is to be undertaken until approved by the National Seed Board.

D. Producers of Certified Seed—The class of seed known as Certifi Seed will be produced by Seed Farms, designated by the Ministry of A culture in the initial stages of implementation of the seed certification sc Certified Seed production will also be performed by Registered Growers ac ing to plans, to be announced later when necessary processing equipment personnel are available to assist the Registered Growers with certified s production. The implementation of the Registered Growers Scheme will guided by the Seed Certification Agency and Ministry of Agriculture.

E. **Certification Agency to train Seed Producers**—The Seed Certification Agency shall undertake and carryout such educational work as may be necessary to train seed producers in all phases of certified seed production and certification. This shall include information on rules and regulations of the Seeds Act and the Seed Certification Agency.

VIII. Registration of Growers :

Each Registered Grower, before he may be so designated, must submit a written application to the Divisional Field Control Officer of the Division in which he resides, requesting that his name be approved and placed as a "Registered Grower". The applicant must state what crops he wishes to produce.

Approval action or action to disapprove will rest with the Divisional Field Control Officer. If approval is granted, the approved application will be submitted to the Director, Seed Certification Agency, with such growers name then to be placed on the approved Registered Grower List.

Each Registered Growers will be assigned a Registered Grower Number, which number must always be used in all applications, in all field inspection reports, samplings, testing and reporting and correspondence relating to matters involved in seed certification/such number shall also appear on the certification tags and the analysis labelling tags on lots of seed produced and approved for this grower, being a part of the lot number on such seed.

IX. Growers Responsibilities :

The various inspections, sampling, labelling and tests minimize the opportunity for carelessness and deception. However, the production and marketing of certified seed depends also on the honesty and integrity of the grower and merchant. The National Seed Board or the Director, SCA as sanctioned by the Seeds Act, will act on any case where the grower or any other person knowingly or intentionally violates the rules and regulations established by the Seeds Act or by the Seed Certification Agency. Any applicant for services, from the Seed Certification Agency, whose reputation is unsatisfactory will be refused the services or privileges of the Seed Certification Agency.

Penalties for violations of the Seeds Act or of rules and regulations of the Seed Certification Agency are set forth in the appropriate section of the Seeds Act.

X. Definition of Seed Classes :

A. **Breeders' Seed—Green Tag** : Breeder seed, sometimes called Basic seed, s[illegible] the originating or sponsoring plant [illegible]er, insti- t[illegible] the source of the first an[illegible] rec[illegible] increas- e[illegible] seed is never av[illegible]le [illegible]e by the [illegible] [illegible] o[illegible] ion seed.

B. **Foundation Seed—White Tag** : Foundation seed shall be the prog breeder seed or breeder approved foundation seed so handled as to most maintain specific genetic identity and purity. Production must be ac[illegible] the certifying agency. Foundation seed may be produced only by or u direct supervision of an Agronomist (1) on the breeder farms, headqu plots, or (2) on a farm operated under a contractual agreement with o the direct supervision of the crop plant breeder.

C. **Registered Seed—Yellow Tag** : Registered seed shall be the pro breeder or foundation seed. Registered seed shall be so handled as to tain satisfactory genetic purity and identity as prescribed in standards certifying agency.

D. **Certified Seed—Blue Tag** : Certified blue tag seed shall be the of breeder, foundation, or registered seed so handled as to maintain sat genetic purity and identity, and which has been acceptable to the ce agency.

E. **Substandard Emergency Seed—Red Tag** : Certain qualities of Se be affected by environmental conditions, such as unfavourable weat other reasons. It is recognized that certain lots of seeds which may able for advancement of crop improvement would be lost if regular ce standards were adhered to. Therefore, under certain circumstances, failing to meet certification standards other than those affecting may be certified as substandard, provided there is no injury to of certified seed. The certification tag attached to such seed shall the respects in which the seed does not meet the regular certificati and shall be of red colours. Examples of statement on tag (1) s low germination substandard Germination; (2) Substandard Inert matters

XI. Limitations of Generations :

The number of generations through which a variety may be multipli be limited to that, specified by the originating breeder or owner of the and shall not exceed two generations beyond the foundation seed cla the following exceptions :

1. Re-certification of the Certified class may be permitted for olde ties where Foundation Seed is not being maintained.

2. The production of an additional generation of Certified cla only may be permitted on a one year basis, when an [illegible] has been declared prior to the planting season or at any oth ropriate time by the National Seed Board. Permission of the nating plant breeder, institution, firm, or owner of the variety also be obtained.

XII. Establishing Source of seed :

The a[illegible] must at the time of a[illegible]ication for fie[illegible] insection and [illegible]fication [illegible] [illegible] [illegible] Ag[illegible] [illegible] of o[illegible]

seed, which are
red seed, which are yellow tags, and
ainers of the seed used for planting the field,
e Director, Seed Certification Agency, may, at
ese tags as proof of seed source, or he may
request only one tag of lot of seed used for planting the field to be submitted as proof of seed source. Such proof must be sent with the application for field inspection and certification.

The Director, Seed Certification Agency or his designated officer, will determine the eligibility of seedstocks used for planting the field. Assuming the seed source used is approved as being eligible seedstocks. the Agency will process the application for field inspection and certification. This will include issuing all necessary instructions for the various inspections of the applicants production.

The Seed Certification Agency will also have the right to request and obtain proof of purchase of the seed used for planting of the field. Proof of purchase means a receipt showing purchase of the seed.

XIII. Deadline dates for Submitting Applications for field Inspection and Certification :

The application for field inspection and certification on a field must be received at the offices of the Divisional Field Control Officer by the following dates :

For paddy :	Boro	September 1
	Aus	February 1
	Aman	April 15
For Wheat :		September 1

XIV. Application Procedures :

Application forms will be available from Field Officers, Divisional Field Control Officer offices, and from the Director, Seed Certification Agency. One application form consists of four copies to be filled out completely for each field.

Field Officers and Divisional Field Control Officers will assists the grower, whenever necessary, in completing the application for field inspection and certification.

The Divisional Field Control Officer will retain one copy of the completed application, submitting the three remaining copies and the documentary evidence of seed source to the Director, Seed Certification Agency.

The first inspection may be performed, if necessary, by the Field Officer serving the grower, during the time required to process and approve the application.

The Divisional Field Control Officer will assign to the grower the Fie Officer to perform the necessary inspections.

After the application has been approved at headquarters of the Seed Cer cation Agency, the approval notice will be forwarded to the Divisional Fi Control Officer for perfomance of all inspections by the assigned Field Cff

Two copies of the approved application will be sent to the Divisional Fi Control Officer who will forward both copies to the assigned Field Officer the grower.

The Field Officer shall deliver one copy of the approved application to grower, and, shall retain one copy for his files.

XV. Field Management and Isolation :

The production unit for certification shall be the field, a clearly defined a with boundaries properly isolated as required in the "Specific Field Standar for each crop.

XVI. Fees and Charges :

The National Seed Board shall determine and establish such fees and charg which may be needed for the conduct of Seed Certification Agency services functions. Notice of any such charges will be made by publicity at least thi days in advance of effective date of imposing such fees and charges.

XVII. Field Inspection :

Field inspections will be performed by properly trained Field Officers other officially designated personnel of the Seed Certification Agency. Su inspection may include pre-planting, planting, growing, pre-harvest, harve storage, and any other necessary inspections as instructed by the Director, Se Certification Agency.

The primary objective in conducting field inspections is to confirm that se produced from a crop grown for seed purposes is of the designated variet and that it has not been contaminated genetically or physically beyond certa specified limits as set forth in the field standards.

The inspector makes written report on conditions of the crop as to purit weeds, diseases, insects, and he will also inspect the plans for harvesting, dryin storing the harvested and the cleaned seed. Such report is known as the "Fie Inspection Report".

At least three inspections for paddy and two for wheat will be made pri to harvest :

For Paddy : First inspection— Pre-planting or pre-seeding.

Second inspection- Flowering time or before.

maturity.

For Wheat ; First inspection—Pre-seeding.

Second inspection--Headed out until near maturity.

Third inspection (if necessary)—for any doubtful matter fro earlier time.

If the grower harvests his field before final inspection has been made, h will do so at the risk of non-acceptance of his produce as certified seed. Th grower must inform the Field Officer or the Division Field Control Officer o the dates of flowering and harvesting of the crop in order to facilitate prope inspections in time.

The objective of field inspection is fulfilled by verifying that the seed crop is :

1. Raised from seed whose source is approved.
2. Grown on a field area which satisfies the prescribed land requirements as to previous crop(s), to prevent contamination by volunteer plants and disease spread by pathogens.
3. Provided with the prescribed isolation.
4. Properly rogued to remove contaminating factors such as other variety objectionable weeds, diseased plants and inseparable other crops so as to conform to the standards prescribed for these factors.
5. True to the varietal charactristics descriptive of the variety.
6. Harvested promptly to avoid mechanical admixture.
7. Grown in compliance with other special requirements for the crop concerned.

The field observations made for these are compared with a set of prescribed forms, called the Minimum Seed Certification Standards which are specific for each crop.

XVIII. Rogning and Spraying of Seed Fields :

"Roguing" means removing from the field such undesired plants the seed of which are undesirable in the seed and which are inseparable in the see processing equipment used in seec

Roughing must [illegible] e her [illegible] inspection or on the request o [illegible] cer per [illegible] t [illegible] Roguing of undesiral weec [illegible] ts, o [illegible] ts [illegible] s of certain diseas hou [illegible] an [illegible] s fully headed. S [illegible] y roguing must [illegible] ield inspection.

[illegible] n the advice o

IX. Weeds in the seed field :

The presence of certain objectionable weeds in a seed field or in seed i excessive amounts may results in a field rejection.

Weeds are classified in the Seeds Act as one of three groups, but in angladesh, the kinds of weeds under each grop have not been designated he three groups are:

1. Prohibited Noxious weeds—To be designated.
2. Restricted Noxious weeds—Ditto
3. Common Weeds— Ditto.

Until such time as specific designations of weeds are made, the Directo Seed Certification Agency, may at his discretion designate certain troubleso weeds which he has found to be undesirable, and instruct the Field Office o evaluate the seed field for such weed(s).

Roguing of the seed field to remove troublesome weeds should be a co mon practice in certified seed production. Specific seed standards and fi standards for the various crops restricted the percent and, numbers of wee permitted.

XX. Diseases in the seed field and on seed:

Plant diseases are caused by fungi, bacteria, viruses, or nematodes. Ma plant diseases become more noticeable under nutritional deficiencies. [illegible] of crops are known or believed to be partly or entirely responsible for [illegible] mitting the diseases causing organisms of some diseases from one generati to another.

Seed may carry the pathogen either internally (internally seed-borne) externally (externally seed-borne) or by both means. Careful inspection a identification of diseased plants in fields and evaluating the findings is o difficult. The Field Officer will report his findings on the "Report of Fi [illegible] or evalu [illegible] e agency Mycologist.

[illegible] which is known to carry certain trouble [illegible] not be mixed with seed which is disea [illegible] nts should be removed from the fi [illegible] althy plants. This is a necessity [illegible] timely removal of diseased plants will red

[illegible] a laboratory evaluation of each lot [illegible] ses. Fitness for final certification is [illegible] r each crop.

XXI. Definition of off-types :

Off-types are plants or seed which do not confirm to the characteristics a variety as described by the breeder.

Other varieties include plants or seeds of the same crop that can be differentiated from the variety being inspected. Variations which are enviornment or characteristic of the variety as described by the breeder shall be considered a part of the variety.

XXII. Field and Seed Standards for paddy :

A. **Field Requirements**: 1. Breeder and Foundation Paddy seed shall be grown on land on whcih the preceding crop was of another kind of crop or planted with seed of the same or higher class of the same variety in the preceding crop.

2. *Registered Paddy* : Same requirement as for one above.

3. Certified paddy, whenever possible in the first two years of seed certification in Bangladesh, shall be grown on land on which the preceding crop was of another kind of crop or planted with seed of the same or higher class of the same variety in the preceding crop;

(a) Since the lands of Bangladesh in the adapted paddy regions have been in continuous paddy culture without benefit of crop rotation or due to limited crop adaptation in these regions, the requirements set forth under 2 above shall be waived in the first two years of the implementation of the seed certification scheme in Bangladesh (1976 and 1977).

(b) Whenever possible, alternate cropping with jute, potatoes, or wheat, or other crops in the field shall suffice as a satisfactory preceding crop.

4. *Isolations* : Three yards all around the field.

5. *Unit of certification* : The entire field shall be the unit for field inspection and certification and shall have been planted with eligible seedstocks, presence of variations which are due to questionable seedstocks used for planting may be cause for rejection of the field.

6. At least two inspections shall be made during heading time until fully headed or before maturity.

7. he field Officer shall acc iself with charasteristics of each paddy rom descriptions provic he breeder bservation he pure variety.

B. **Fields Standards for Paddys :**

Factor	Maximum Permitted per cent.	
	Foundation	Certified
Other Varieties (Plants)[1]	0·05%	0·30%
Inseparable Other Crop plants	0·01%	0·05%
Wild Rice or Red Rice ((*Oryza sativa* var. fatua) ..	None	None
Objectionable Weed Plants[2] ..	0·01%	0·02%
Plants Affected by Seed Borne Diseases[3] ..	0·10%	0·50%

1 Other varieties shall not include variations which are characteristic of the variety.
2 As may be specified by the State Agronomist.
3 As may be specified by the Mycologist of plant pathologists.

C. **Seed Standards for Paddy:**

	Standards for each Class	
	Foundation	Certified
Pure Seed (Minimum)	98·0%	96·0%
Other Crop Seeds (Maximum)	10/Kg.	0·10%
Total Weed Seeds (Maximum)	10/Kg.	0·10%
Inert Matter (Maximum)	2·0%	4·0%
Other Varieties (Maximum)[1]	1%	3%
Wild Rice or Red Rice	None	None
Objectionable Weed Seeds (Maximum)[2] ..	None	5/Kg.
Moisture (Maximum)[3]	12·0%	12·0%
Germination (Minimum)	80·0%	80·0%
Diseased Seed[4]	..	..

1 Other varieties shall not include variations which are characteristic of the variety.
2 As may be specified by the State Agronomist.
3 For vapor proof containers, the maximum moisture content shall be 8·0
4 As may be specified by the Mycologist and plant pathologist.
5 Seed standards for Breeders seeds equal to or higher than foundation seed.

XXIII. Field and seed Standards for wheat:

A. **Field Requirements:**—1 Breeders, Foundation, Registered, and Certifie Classes of wheat for certification shall be grown on land on which the preced ing crop was of another kind of crop, or planted with seed of the same higher class of seed of the same variety in the preceding crop.

2. Field inspections will be made as specified under :

"FIELD INSPECTIONS" for wheat. Particular emphasis will be give to loose smut content if of a susceptible variety, as well as fo varietal and crop mixtures.

3. The inspector shall cross the field sufficiently to evaluate accurately and to make such counts as necessary which affect eligibility for certification.

4. The entire field shall be considered as the unit for field inspection and Certification. The entire field shall have been planted with eligible seed stocks. The presence of mixtures within the field attributable to questionable seed stocks shall be cause for rejection unless satisfactory roguing to remove the admixture will qualify the field for certification.

5. Isolation: three yards all around the field.

6. Requirements for loose smut isolations: For loose smut susceptible wheat varieties, the isolation shall be 150 yards from fields with loose smut infection more than 0·10% or 0·50% for foundation and certified classes, respectively.

B. **Field Standards for Wheat :**

Factor	Maximum permitted—Per cent.	
	Foundation	Certified
Other varieties (Plants)[1] ..	0·01%	0·10%
Inseparable other crop lants ..	None	20 plants per acre.
Objectionable weed plants [2] ..	0·01%	0·02%
Plants affected by seed borne diseases [3]	0·10%	0·50%
Loose smut diseased plants (Maximum) [4]	5 Plants per acre.	10 plants per acre.

1 Other varieties shall not include variations which are characteristic of the variety., as described by the breeder.

2 As may be specified by the State Agronomist.

3 As may be specified by the Mycologist and Plant Pathologist.

4 Loose smut plants shall be removed from the field as soon as they appear, usually early in the time of heading of the field and until the field is fully headed.

C. **Seed Standards for Wheat:**

Factor	Standard for each Class.	
	Foundation	Certified
Pure Seed (Minimum)	98·0%	97·0%
Total Weed Seeds (Maximum) ...	0·05%	0·10%
Other Crop Seeds (Maximum) ...	1 per pound	3 per pound
Other Varieties (Maximum)[1]	0·01%	0·05%
Inert Matter (Maximum)	2·0%	3·0%
Objectionable Weed Seeds (Maximum)[2]	None	3 pet pound
Moisture (Maximum)[3]	12·0%	12·0%
Germination (Minimum)	80·0%	80·0%
Diseased Seed[4] ...	.. ..	..

1 Other varieties shall not include variations which are characteristic of the variety as described by the breeder.

2 As may be specified by the State Agronomist. No. *Convulus arvens* i shall be permitted.

3 For vapor proof containers, the maximum moisture content shall be 8·0%.

4 As may be specified by the Mycologist and plant pathologist.

5 Seed standards for Breeders seed—equal to or higher than foundation.

XXIV. Harvesting Threshing, Drying. Labelling and Storing Pre-cleaned seed Require ments.

High quality certified seed is dependent on proper harvesting, threshing drying and storing practices.

A. **Harvesting** shall be done on mature crop on clear, sunny days. T producer/grower must be present during the harvesting of the field. The Fi Officer (Inspector) must be informed by the producer/grower of the date harvesting to permit supervision and inspections during harvesting, threshing drying and storing. The field workers must be strictly guided by the producer grower to ensure variety identity and purity to be maintained.

B. **Threshing** shall be done as soon as the crop is sufficiently air drie in the field. The threshing area and equipment must be thoroughly cleane and must be free of any contaminant.

The Field Officer shall be completely satisfied with the plan for threshin drying, and identifying and storing. Such plan will be required at the time o the last field inspection.

Harvesting, threshing and drying should be planned by the producer/ grow

Threshed seed shall be put into clean gunny bags labelled with a "PRO VISIONAL LABEL" and then sealed.

D. **Drying** shall be done immediately after threshing to preserve see germination qualities. Drying should commence the same day as threshi takes place or at the latest the very next day.

Safe storage moisture is 12·0 per cent or less. Three methods of dryi are possible ;

1. Sun drying.
2. Bag drying, particularly for the Registered Growers, production.
3. Batch drying, particularly for the Seed Farms where large quantiti are to handled.

Each bag placed in a "bag dryer" shall be properly labelled with the "pro visional label" and properly sealed. The exact "before" drying weight or "After drying weight of each producer/grower seed shall be recorded by the Dryin Officer, and a report issued to the producer/grower of such weights.

Drying air temperature must not be in excess of 100·F to avoid damage t germination qualities of the seed.

E. **Provisional labelling** shall be done on each bag of harvested seed, then sealed, and under the supervision of the Field Officer.

The "provisional label" shall contain the following information ;

Name of Grower.....

Variety Name.....

Grower Number.....Lot Number.....

Number of Bags in the Lot.....

Weight of Bagged Seed.....

Provisional labels and seals will be supplied to the producer/grower b the Seed Certification Agency through the Division Field Control Officer an the Field Officer.

The Provisional label and shall remain on the bagged/seed until th bag at he seed processing plant servin the Office serv ca ncy.

I at seed extr . Drie seed ons an may equirin sam ying the

Seed must be stored off the floor or ground on racks since moisture fro concrete floors and bare ground will move into the seed bags when in dire contact.

The use of moisture proof containers for seed requires that the seed d not contain in excess of 8·0 per cent. moisture.

XXV. Processing of Seed :

All seed crops require some cleaning before replanting. Seed cleani equipment removes dirt, chaff, leaves, steams, weeds seeds, and other fore material of a separable nature . Cleaning reduces the bulk to be h— moist material which may cause heating in storage, and culls unwanted se from the wanted seeds on the basis of one or more of their physical fferences.

A. **Seed Pfocessing Plants**—Eight official seed processing plants loca at BADC farms will perform seed cleaning for seed farms and regist producer/growers. Each processing plant will be served by one Field assigned for inspection services by the Seed Certification Agency. Inspect services include seed sampling, plant inspections, seed lot inspections of e producer/grower, tagging, labelling and sealing services.

B. **Obligations of seed processors :**

1. Facilities shall be available to perform drying and processing with introducing admixtures of any nature.
2. Processors shall be thoroughly familiar with the specific seed stand for the crop being processed, and to process each lot of seed meet such specified seed standards.
3. Identity of each lot must be maintained at all times.
4. Records of all operations relating to certification shall complete adequate to account for all incoming and final disposition of lot of seed.
5. Processors shall permit access to and inspection of all records taining to certified seed, by any official including the assigned Officer of the Seed Certification Agency or Ministry of Agricu
6. Deficiencies of any nature requiring correction shall be prou corrected.
7. All seed shall be stored properly and securely.
8. Seed processing plants shall be inspected by a Field Officer or designated Seed Certification Agency person at unannounced Written reports of findings on such inspections will be subu to the Director, Seed Certification Agency. The purposes of inspections are—

(a) To evaluate perf cessing.

(b) To inspect condition of processing equipment, legs, spouts, bins, dryers, boots, cleanliness of areas in the plant, storage, or other pertinent equipment.

(c) To order corrective measures or repairs which must be undertaken promptly.

(d) To inspect records, on lots of seed, dealings with producer/growers of seed, and disposition of seed in store.

(e) To inspect seed held in storage to include sampling for new moisture and germination tests to insure that processed seed meets measurements from earlier tests.

(f) To order, if necessary, re-drying of seed in storage to preserve the viability of such lot of seed.

(g) To order re-labelling of seed held in storage when such seed has a test result not within recognised tolerance of the original tests, as set forth in Tolerance tables of the Seeds Act.

XXVI. Sampling of seed before Processing:

A. **Harvested Seed Sampling:** (a) Immediately following harvest and drying of the harvested seed from each field and grower, the Field Officer will sample the lot of seed for moisture and germination tests. Samples are to be sent to the National Seed Testing Laboratory in sealed container tested, and filed for future reference.

(b) Results of tests will be sent to the grower, the Field Officer, Divisional Field Officer, and Quality Control Officer.

(c) This shall be known as the "harvest sample".

B. **Pre-Cleaning Sampling**—(a) At the time of delivery of the growers lot of seed for cleaning, the assigned Field Officer will sample the lot of seed again.

(b) Tests for moisture and germination will be made by the National Seed Testing Laboratory and these results and the sample compared with the first (harvest sample taken in A, above) sample taken.

(c) This n 'Pre-cleanning sample".

o the grower, the Field Officer, the Divi-
sion Control Officer.

) Each bag of processed seed sha be
inal cleaning and bagging until ta y

(2) "Provisional Lables" and seals shall be attached by the Fi Officer, ch label as described in Section XXIII, E.

(3) The movement of lots of seed or portions of lots of seed shall always e accompanied by a shipping invoice, to show all detail concerning the seed volved.

B. **Storage Conditions**—(1) Dry storage conditions must be used for certi- ed seed, and moisture proof containers must not contain in excess of 8·0% oisture content seed.

(2) Frequent moisture tests may be necessary, especially during rainy season o test for moisture and germination qualities of the stored seed. Excess moisture in the lot of seed may be very harmful to germination. Safe moisture content is 12·0% or below.

(3) Certified seed must be stored on racks above the floor or ground.

(4) Field Officers will be constantly alert to the needs for checking moisture n lots of seed in storage.

(5) The combined value of relative humidity + temperature in proper storage should not exceed the sum of 100.

XXVIII. Sampling lot of processed seed:

A. **Sampling procedures**—(1) Containers and mailing labels will be used by the Field Officers to perform official samplings.

(2) Sampling procedures as setforth in the International Rules of Seed Testing shall apply.

(3) Equal portions shall be taken from evenly distributed parts at random of the quantity of seed to be sampled.

(4) A probe or trier long enough to sample all portions shall be used in bag sampling.

(5) Processed seed being bagged may be sampled by the official sampler taking equal portions at intervals of approximately every fifth bag.

(6) Seed in bulk should be sampled at random locations and the samples should be drawn at varying depths.

(7) For sampling seed lots in bags or containers of equal size, the following sampling intensity shall be regarded as the minimum requirements:

Up to 5 Containers—sample each container.

6 to 30 containers—sample at least in every 3 containers, but neve less than 5.

31 containers or more—sample at least 1 in every 5 containers, bu never

r sample.

Seed—(1) Representative samples taken by the Field Officer (Inspector) from a lot of seed are to be divided into 3 equal parts :

(a) One part is to be kept by the Field Officer.

(b) One part is to kept by the producer/grower.

(c) One part is to be sent to the National Seed Testing Laboratory.

(d) All samples shall be identically marked by the Field Officer.

(e) All samples shall be sealed.

(2) In the event of any doubt or dispute over the test results obtained by the National Seed Testing Laboratory, the Field Officer, shall produce the sealed samples which were previously drawn, marked, and sealed.

(3) The samples kept by the producer/grower and by the Field Officer shall be opened by the same Field Officer, the two samples mixed thoroughly, and again three separate divisions made as in (1) (a) (b) (c) above.

(4) The National Seed Testing Laboratory, upon receipt of the second sample will verify if the sample is similar to that analyzed by them previously. If the two are proved to be different, the first sample will be taken to be mislabelled, and the second sample and its test results will be taken to be correct.

C. **Maximum Size of the Lot of Seed :**

1. For paddy—200 mds.

2. For wheat—250 bushels or 200 mds.

D. **Re-sampling of Seed**—Re-sampling of a lot of seed may be performed at the request of the producer/grower, or the National Seed Testing Laboratory or the quality Control Officer.

E. **Forwarding samples**—Official samples shall be forwarded in sample containers provided by the certifying agency to the National Seed Testing Laboratory by the Field Officer. Such container shall be sealed, and if necessary, sent registered.

Before mailing the sample or delivering the sample, the official seed sampling form shall be completed and sent with the sample for identification and information.

Samples shall be sent immediately after having been taken.

ery bag in the particular lot of seed shall
and general quality. The sampler shall
t of seed is homogeneous at the time the
of similar appear eneral quality
ed

F. **Sampling after issuance of Certificate of Certification**—The Seed Certification Agency reserves the right to re-sample any lot of seed at any time after the issuance of the certificate of certification and of tags, seals and labels.

XXIX. Seed Analysis for Certification :—

A. **Factors of Seed quality to be found by Tests**—The factors for quality as found by testing the official sample of a seed lot are compare the "Specific Seed Standards" for the crop. These include :

1. Percentage of pure seed.
2. Other crop seeds.
3. Weed seeds.
4. Inert matter.
5. Percentages of germination and hard seeds.
6. The rate of occurrence of designated seeds of objectionable weeds
7. Varietal purity.
8. Freedom from disease and disease organisms.
9. Moisture content.
10. Origin of production.
11. Test weight.

Successful testing for the factors named req ires adequate facilities, a staff, uniform methods or procedures, sample equipment, and a research gram that looks to imporvement of methods and procedures.

B. **Need for Analysis**—A complete laboratory analysis shall be require each lot of seed before certification and issuance of certificate. Official nition shall be given to the analysis results for the purposes of labelling lot of seed passed.

The National Seed Testing Laboratory of the Seed Certification Agency be the official laboratory. The e of test results from any other seed te
y t Authorised Officer of the Ministry of
labelling of the lot of seed.

te labelling of each lot and of all mate
s.

"pre-cleanin erve as
used for cor ith the
rtil

nati e the Inter-
The u eed testing
of esponsible for implementation and us
National Seed Testing Laboratory.

ans Its of Testing—(1) When two or mor
ces ithout having been recleaned or repro
mu ithin recognized tolerances, the result
lac . If the results are due to error or to
X2 result shall be omitted. (*See* section

(2) the report for reporting the test result
shall be "SEED ANALYSIS RESULTS".

(3) The results of seed analysis by the National Seed Testing Laboratory wil
be forwarded in sets of 4 copies for each sample to—

Principal Seed Certification Officer/Quality Control Officer.

(4) The Principal Seed Certification Officer and the Quality Control Office
will review the results of tests and apply the Specific Seed Standards for the
crop to the findings for purposes of approval or non-approval of the lot of
seed for certification.

(5) The "Seed Analysis Results" report shall also contain the findings of the
Mycologist as to seed borne diseases in the lot of seed.

The Mycologist and the Chief Seed Technologist shall jointly determine the
"Expiry Date" to be shown on the analysis report, and this decision shall appear
on the Seed Analysis Results report.

(6) Following approval or non-approval for certification, the following dis-
tribution is to be made of the Seed Analysis Results :

(a) One copy shall be placed in the producers file in the offices of the
Headquarters.

(b) One copy will be placed with the Divisional Field Control Officer.

(c) One copy will be sent to the producer/grower.

(d) One copy will be l

acc le Agronomist shall have
test sis for each lot of seed
and testing of Foundation
genetic purity.

see cleaning of the lot of
to s the decision as

(8) **Expiry date**—The "Expiry Date" shown on the certification tag, labelside
last date after which the certification tag and test are no longer valid.
Case is normally 8 months after the date of testing and approval of t
of seed. After the expiry date, new sampling is required if the seed is
kept and sold as certified seed, new tests made, and new certification tags iss
and applied to the lot of seed.

XXX. Bagging Requirements for Certified Seed :

All seed of all seed classes shall be sold in the sealed bag. Bulk sale
certified seed is illegal.

For processed seed ready for sale, new bags are required. Good and sound
jute, cotton or paper bags may be used. Polyethylene lined paper bags tightly
closed may be regarded as mositure proof containers. Other kinds of seed con
tainers may be approved by the Director, Seed Certification Agency.

The seed quality of all of the seed in all of the bags in a stated lot
seed shall be identical in appearance and general quality.

If done by any one other than the user of the seed or the Field O
breaking the seal on a bag carrying the certification tag automatically
(invalidates) the certification tag on such bag. Evidence of tampering
the contents of any bag of seed carrying a certification tag, automat
invalidates the bag and tag as certified seed.

For storing harvested seed after harvest and until the seed is cleaned,
sound and clean bags are permitted.

XXXI. Tagging, Labelling, and Sealing of Certified Seed :

A. **Basis for Issuance**—Approval of the lot of seed for certification by t
Principal Seed Certification Officer and the Quality Control Officer entitles t
producer/grower to be issued certification tags and seals for the lot of seed.

B. **How the Issuance is made**—The certification tags will be pri
Headquarters by the Seed Certification Agency, to contain all informations
by the Seeds Act. Printing of tags will be performed immediately on th
of one tag per bag of seed.

C. **To whom Tags and Seals are sent**—Tags and seals will be shi
the Field Officer assigned to p form all inspections for the producer.
r assigned to perform sampling, taggi
processing plants.

ealing—The Field Officer assigned to T
tag and le
em

E. **Information Required on Label of Every Container**—There shall appe on every label of every container of seed, the following informations:

(1) Crop.....(2) Variety .....

(3) Lot Number .....(4) Grower Number .....

(5) Pure Seed%.....(6) Germination %.....

(7) Hard Seed%..... (8) Date of Test .....

(9) Weed Seed %.....(10) Inert matter %.....

(11) Other Crop Seed %.....(12) Restricted Noxious Weed Seed .....

(13) Restricted Noxious Weed Seeds per pound .....

(14) Expiry date .....

(15) Name and Address of person offering Seed for Sale, Dealers Name:

F. **Details of the Official Certification Tag:**

1. *Color of tag*:

Breeders Seed—Green Tag.

Foundation Seed—White Tag.

Registered Seed—Yellow Tag.

Certified Seed--Blue Tag.

2. *Use of Emblem*—The Bangladesh Seed Certification Agency shall adopt such design for the official seed certification tag as it deems appropriate and fitting.

3. The name of the seed class shall be printed boldly across the top of the certification tag.

4. The words "OFFICIAL TAG--BANGLADESH SEED CERTIFICATION AGENCY" shall appear as the bottom line of the certification tag.

5. The central portion of the same side as 3 and 4, shall contain wording similar to the following:

Foundation IR 20 Rice.

Lot No. S.M.--1-75.

6. The following statement may also appear on this same side of the cation tag:

"Certification valid up to a period of eight months from the da issue of certificate provided the seed contained herein is stored controlled humidity and temperature conditions. Use of suc expiry of the validity period by any person is entirely at his ri the authority issuing the certificate shall not be responsible to th of the seed for any damage to the seed and no one should the seed if the seal or certification tag has been tempered with. tag signifies that the bag of seed to which it is attached has certified according to the standards prescribed for certification. Ho upon the seller rests the responsibility of delivering seed conform the minimum standards for certification".

G. **Attaching the Certification Tag**—The certification tag shall be att by sewing it into the bag of seed. Since the bag may be sewed earlie a provisional tag required to be attached and the bag previously sealed certification tag should be sewed and sealed separately. The provisior and the seal placed earlier may also remain on the bag of seed,

H. **Report of Tagging and Sealing**—The Field Officer shall report t Director, Seed Certification Agency the sealing and tagging of each lot of

Tagging and seeling of containers other than bags may be permitted. Si instructions for tagging and sealing of such container may be obtained the Director, Seed Certification Agency.

XXXII. Misuse of Certification Privilages:

Any seed grower/producer, processor, seedman, or other person(s) wl found guilty of misusing certification tags, missrepresenting seed, or who vi any of the rules and regulations governing the growing, processing, and ing of Foundation, Registered or Certified seed, or who is guilty of of the Bangladesh Seeds Act, may, at the discertion of the Certifying A the Ministry of Agriculture, or the National Seed Board, be denied the to produce seed under certification.

XXXIII. Marketing and Selling of Certified Seed :

(a) The Ministry of Agriculture or its designated authority may anroi time regulate the sale of certified seed for the purposes of fulfilling ce projected goals.

(b) Distribution polices governing sales and distribution of certified may be promulgated by the Ministry of Agriculture for the orderly us seed suppl ducer/grower is required to abide by such distrib policies as l from time to time.

XXXIV. ed Seed :

Seed Treatments are made to prevent or reduce losses from diseases associ
ed with the seed or in the soil. Some treatments kill organisms mixed wi
the seed or on its surface. Some destory pathogens within the seeds. Othe
kill or retard the activity of soil organisms near the planted seed.

B. **Authority to Use**—No seed treatment shall be done until permitted
the Authorised Officer of the Ministry of Agriculture.

XXXV. **Insects in Certified Seed:**

A. **Insect Problems in Storage**—Insects as well as fungi attack seed
storage, more so under certain conditions than otherwise to the extent that see
viability may be reduced or completely destroyed.

Moisture content of seed in storage greatly influences the rate of insec
activity. Moisture content of 8·0 per cent. results in nearly nil insect activity
Moisture content of 10·0 per cent. also greatly reduces insect activity. Whe
storage temperature is reduced to 50° to 55°F, insect activity ceases nearl
completely since reproduction does not take place for storage insects.

B. **Kinds of Insects Found In Storage**—The insects found most commonly
in stored seeds are—

Rice weevil (*Sitophilus oryza*).

Granary Weevil (*Sitophilus grantius*).

Lesser grain borer (*Rhyzopathera dominica*).

Augonmois grain moth (*Sitotroga cerealella*).

Cadelle (*Tenebroides mauritanicus*).

Saw Tooth grain beetle (*Oryzaephilus surinamensis*).

Flour beetles (*Tribolium species*).

Indian meal moth (*Plodia interpunctella*).

C. **Measures to Reduce Infestation:**

1. Clean seed soon after field harvest.
2. Harvest promptly, dry the seed, store in clean storage.
3. Maintain low moisture levels in stored seed.
4. I ts.
5. I n necessary with recommended fumigants.

K. N ested Certified Seed—The Seed Certification
Agency r ed storag m time to time to evaluate
insect pr sa

XXXVI. **Blending or Co-mengling of Lots**

Seed lots of the same variety and class may be blended and the seed class
ained. Such blending shall be performed under the supervision of the Feild
ficer assigned for such blending location.

Freshly harvested seed in bags from "contract" growers which may be small
size may be co-mingled for the purposes of either/both pre-cleaning (before
-ying) or if not first pre-cleaned, when bulking of such small lots are desired
r drying and subsequent processing, for the purpose of making larger lots
f seed of the variety. The Feld Officer shall supervise and be present when
ch operations are taking place.