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STATUS OF FRUIT SEED TRADE IN BANGLADESH AND TRADERS' PRACTICE FOR SEED QUALITY

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ABSTRACT

Seed is the vital component in the production of quality planting materials (QPM). A survey was carried out in 260 upzilla under 52 districts of Bangladesh during 2005-06 to study the status of seed trade of different fruit species in the country. The survey revealed that more than 20 fruit species traded in 531 seed stores and a total of 16288.10 kg seeds were sold out amounting Tk. 35.90 million. Variations in different fruit seeds traded in surveyed districts of Bangladesh were also observed. Significant number of seed traders expressed their awareness about the deterioration of seed due to attack of pathogens but did not take any measurement to protect their seeds. The present investigation showed that considerable amount of seeds of fruit species are being traded every year, as such, the issue of fruit species demands attention of the concerned authorities to take necessary action.
Key words: Seed, fruit, health, trade, pathogens,

INTRODUCTION

Seeds of different fruit species are frequently affected by physical and physiological disorders as well as diseases caused by fungi, bacteria, and viruses (Mittal and Mathur, 1990). Seed borne pathogens affect nursery seedlings and reduce seed germination and seedling vigor (Abdelmonem and Rasmi, 2003). Seeds are particularly susceptible to a number of diseases. Health and vigor of seedlings largely depend on the quality of seeds. Since seedlings grown from the seeds, the primary source of planting stock and improved seeds is expensive. Therefore, it is an utmost requirement to investigate the different aspects of seed trade in the country. Sowing healthy seeds of high quality is essential for improving crop yields and thereby increasing food production. Seed health is a matter of great concern to farmers and seed producing agencies. There are many studies relating to various aspects of seed health status, supply and management of seed borne diseases of cereal, pulses and oil seeds have been carried out and reported in journals in home and abroad. But reports on the market status of seeds of fruit species and the traders' practice for the health condition of seeds have been so far not available in the journals of Bangladesh. Few reports are available in respect of seedling diseases of fruit species in nurseries of the country. The status of seed market of fruit species remained unexplored till to date. The health status of these seeds traded was also totally ignored though millions of farmers using these planting materials. The issue of quality healthy planting material is disregarded due to lack of sanitary and certification system at the government level. Currently, little information is available about the presence and prevalence of seed borne diseases of fruit species in Bangladesh. Since diseases pose a potential threat to seedling of fruit species production by causing enormous loss in plant quality and disruption of production schedules, it is imperative to investigate seeds of fruit species to get information on the volume of seed trading, market situation, knowledge status and practice of traders to organize the market up to a certain standard. Understanding the market situation and potential of the market are also important so that effective measures can be developed and implemented.

MATERIALS AND METHODS

Selection of the survey location

Altogether 260 Upazilla under 52 districts of Bangladesh were selected for the survey of status of seed and seedling trade of different fruit species. A total of 531 seed trading stores were randomly selected

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for survey study. A baseline survey was conducted at nine seed stores - six in Dhaka and three in Dinajpur district in September to December 2005 prior to beginning of nationwide survey to test the interview schedule – the instrument for data collection. Interview schedule was pretested and used for final data collection.

Sources of data and sampling procedure

A purposive sampling procedure was used for both baseline and nationwide surveys. In each Upazilla two to three seed stores were selected with the help of Upazilla Agriculture Officer and Sub Assistant Agricultural Officer, Department of Agricultural Extension (DAE) – the national organization for Agricultural extension service.

Data processing, analysis and output generation

All the collected data were coded, tabulated, checked and analyzed. Specialized software was used to analyze the survey data and get the information instantly regarding status of fruit seed market (Chowdhury 2009).

RESULTS AND DISCUSSION

Trade of seeds

The variations were observed in terms of seeds of more than 20 fruit species traded in 531 seed stores located at 260 Upazila in 52 districts of Bangladesh (Table 1 and Table 2).

Species wise fruit seeds trade

In total 16288.10 kg seeds of different fruit species were sold out in the surveyed shops and the total price of this amount of seeds was 35.902 million Taka (Table 1).

Table 1. Status of seed trade of different fruit species in Bangladesh during 2005-2006

Name of Fruits	No. of seed store surveyed	Quantity of seed sold (kg)	Average quantity. of seed sold per store (kg)	Average price of seed (Tk./kg)[a]	Total price of seed (million Tk.)
Bel	29	52.75	1.82	436.30	0.023
Bullocks heart	39	130.60	3.35	240.02	0.031
Carambola	42	132.45	3.15	1511.63	0.200
Guava	122	564.10	4.62	321.37	0.181
Hog Plum	54	513.45	9.51	283.15	0.145
Jackfruit	61	1179.30	19.33	34.31	0.041
Jamun	48	701.40	14.61	127.63	0.099
Jujube	29	523.50	18.05	146.18	0.077
Lime	36	291.90	8.11	357.67	0.104
Litchi	20	171.50	8.58	338.60	0.058
Mango	48	4378.50	91.22	146.66	0.642
Olive	64	1194.50	18.66	156.86	0.187
Orange	4	120.70	30.18	359.77	0.043
Papaya	358	1828.17	5.11	13583.73	24.833
Pomegranate	41	74.45	1.82	360.92	0.027
Sapota	23	114.00	4.96	313.46	0.036
Shaddock	40	190.95	4.77	295.33	0.056
Tamarind	34	182.95	5.38	412.30	0.075
Water melon	261	1517.79	5.82	5466.81	8.298
Wax jambu	20	42.15	2.11	783.23	0.033
Others	84	2383.00	28.37	302.29	0.720
Total		**16288.1**			**35.902**

[a]Average price means mean price of all over Bangladesh

Among 20 kinds of fruit species, the amount of fruit seeds traded ranged from 42.15 kg to 4378.50 kg, where the highest amount of fruit seed was traded in case of mango followed by papaya (1828.17 kg).

This was also followed by water melon seeds (1517.79 kg). On the other hand, the lowest amount of fruit seeds was traded in case of wax jambu followed by bel (52.75 kg) and pomegranate seeds (74.45 kg) (Table 1). Considering the price of seed per kg, the papaya seed was the costliest one (Tk.13583.73/kg) followed by water melon seed (Tk.5466.81 /kg). On the other hand, the cheapest (Tk.34.31 /kg) fruit seed was jackfruit (Table 1). Considering the total price (million Tk.) of fruit seeds traded in Bangladesh, the highest transaction (Tk.24.83 million) was made in case of papaya followed by water melon (Tk. 8.30 million). On the other hand, the lowest transaction (Tk.0.023 million) was made in case of bel followed by pomegranate (Tk.0.027 million).

District-wise fruit seeds trade

The variations in different fruit seeds traded in 52 districts of Bangladesh were observed. In terms of amount of seeds traded (Table 2), in total 16288.11 kg seeds of different kinds of fruit species were sold out in the surveyed stores and the total price of this amount of seeds was 35.902 million Taka (Table 2). In case of performance among 52 districts, the amount of fruit's seed traded ranged from 1.00 kg to 1342.85 kg, where the highest amount of fruit seeds was traded in the district of Bogra followed by Narayangonj (1208.40 kg). This was also followed by Hobiganj (1124.50 kg), Dhaka (1096.70 kg), Kishorganj (978.40 kg). On the other hand, the lowest amount of fruit seeds was traded in the district of Madaripur followed by 2.00 kg in Lalmonirhat and Bandarban.

Considering the total price (million Tk.) of fruit seeds traded in 52 districts of Bangladesh, the amount transaction ranged from Tk.0.011 million to Tk.3.387 million, where the highest transaction was recorded in the district of Bogra followed by Chittagong (Tk.2.962 million) as shown in Table 2. On the other hand, the lowest transaction was done in Madaripur district followed by Bandarban (Tk.18.00 thousand).

Table 2. District-wise status of seed trade in Bangladesh during 2005-2006

District	No. of seed store surveyed	Quantity of seed sold kg/ store	Total price of seed (million Tk)
Bagerhat	4	12.00	0.093
Bandarban	2	2.00	0.018
Barguna	9	10.80	0.059
Bogra	76	1342.85	3.387
Brahmonbaria	17	62.00	0.311
Chandpur	42	314.00	0.501
Chittagong	60	602.40	2.962
Chuadanga	3	8.50	0.065
Comilla	59	435.30	1.572
Cox's Bazar	35	307.00	0.948
Dhaka	90	1096.70	1.830
Dinajpur	55	347.05	2.019
Faridpur	6	37.00	0.345
Feni	3	4.00	0.049
Gaibandha	17	41.85	0.415
Gazipur	31	317.00	0.494
Gopalgonj	16	138.25	0.144
Hobigonj	60	1124.50	0.663
Jaipurhat	9	174.20	0.501
Jamalpur	58	496.45	0.524
Jessore	53	636.20	1.523
Jhenaidah	13	212.50	0.600
Khagrachhari	3	51.30	0.022
Khulna	18	243.50	0.728

District	No. of seed store surveyed	Quantity of seed sold kg/ store	Total price of seed (million Tk)
Kishorgonj	114	978.40	1.775
Kurigram	10	74.30	0.223
Kushtia	12	193.00	0.150
Lalmonirhat	2	2.00	0.025
Luxmipur	2	25.00	0.092
Madaripur	1	1.00	0.011
Magura	20	134.70	1.392
Manikgonj	14	18.60	0.188
Meherpur	7	35.20	0.084
Moulvibazar	67	520.88	1.891
Munshigonj	16	839.00	0.602
Mymensingh	22	167.50	1.083
Naogaon	16	152.40	0.326
Narayangonj	58	1208.40	0.484
Narsingdi	15	233.00	1.026
Natore	7	37.00	0.274
Nawabgonj	7	3.45	0.027
Netrokona	19	153.87	0.257
Noakhali	18	251.04	0.198
Pabna	13	76.40	0.164
Panchagarh	21	122.00	0.460
Pirojpur	42	460.45	1.408
Rajshahi	13	150.00	0.249
Rangamati	5	31.50	0.133
Rangpur	17	159.03	0.265
Satkhira	28	642.70	0.511
Sunamgonj	19	360.60	0.543
Sylhet	41	178.95	0.744
Tangail	52	592.70	0.667
Thakurgaon	40	467.70	0.879
Total		**16288.11**	**35.902**

The seed trade survey generated important information pertaining to different aspects of fruit seed trade that was earlier unveiled. The interview schedule were mainly designed to collect the information on seed trade of fruit species and to evaluate the level of knowledge of traders on market situation and health aspects of planting materials they dealt with. Using specialized software "Fruit seed and seedling trade (FSST)" analyzed the survey data and gave the information instantly regarding status of fruit seed market. FSST is a database software developed based on Microsoft Access – a database management tool of Microsoft office XP (Chowdhury, 2009).

The survey revealed that more than 20 fruit species traded in 531 seed stores located at 260 Upazila in 54 districts of Bangladesh. In total 16288.10 kg seeds of different fruit species were sold out in the surveyed stores in a year and the total price of this amount of seeds was about Tk. 35.90 million. This is a part of the total scenario since all the seed trading shop could not bring under survey. Among 20 kinds of fruit species, the highest amount of fruit seed was traded in mango followed by papaya. Papaya seed was the costliest one (Tk.13583.73/kg) followed by water melon seed (Tk.5466.81/kg) and the cheapest fruit seed was jackfruit (Tk. 34.31/kg). In the surveyed stores the highest transaction (Tk. 24.83 million) was made in case of papaya followed by water melon (Tk 8.30 million) and the lowest transaction (Tk. 0.023 million) was made in case of bel (*Aegle marmelos*). The highest amount of fruit

seeds was traded in the district of Bogra and the lowest amount of fruit seed was traded in the district of Madaripur.

Seed trader's practice for quality seed of different fruit species

Seed traders engaged in trading of fruit seed

Out of surveyed 531 seed trading stores, highest 37% engaged in vegetable seed trading followed by crop seed trading (34%). Only 22% traders sold fruit seed and lowest 7% trader sold fodder seed (Fig. 1).

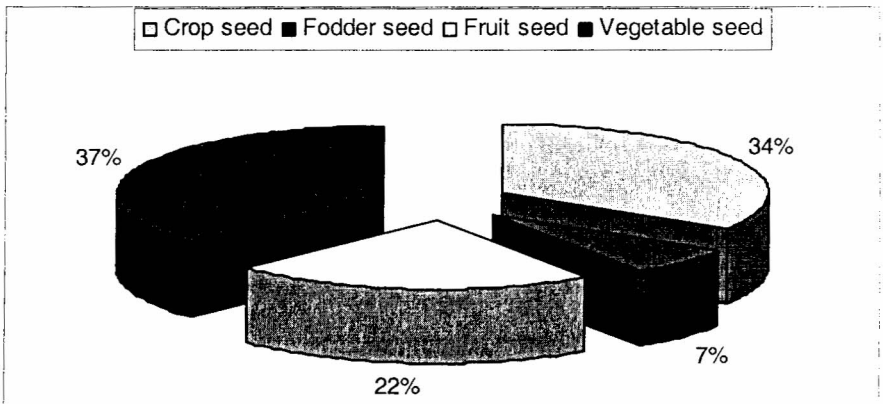

Fig. 1. Distribution of seed traders according to seed or seedling sell

Source of collection of seeds by the traders

The highest (40%) source of collection of seed trader collected their seeds from seed companies followed by 30% from BADC, while 17% trader collected seed from farmers and 13% collected seed from common suppliers (Fig. 2).

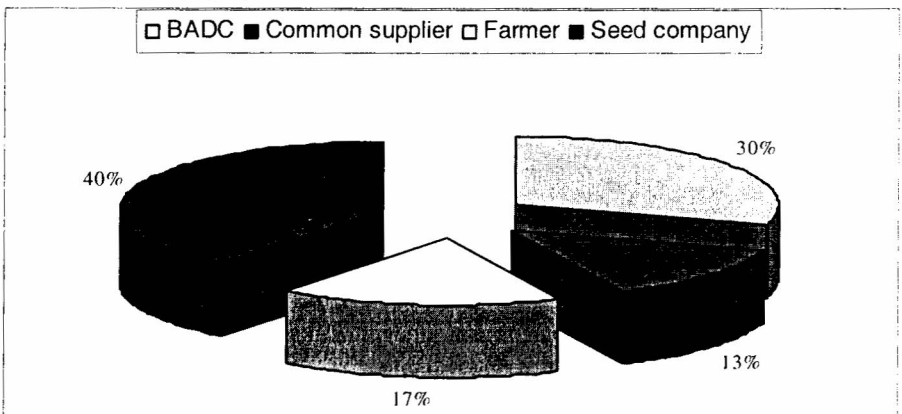

Fig. 2. Distribution of traders according to source of collection of seed

Storage of seed

Highest 53% trader stored seeds in poly pack followed by 26% stored their seeds in jute bag and 18%

in normal container (like plastic container or bottle) and the lowest 3% seed was stored in special method innovated by themselves (Fig. 3).

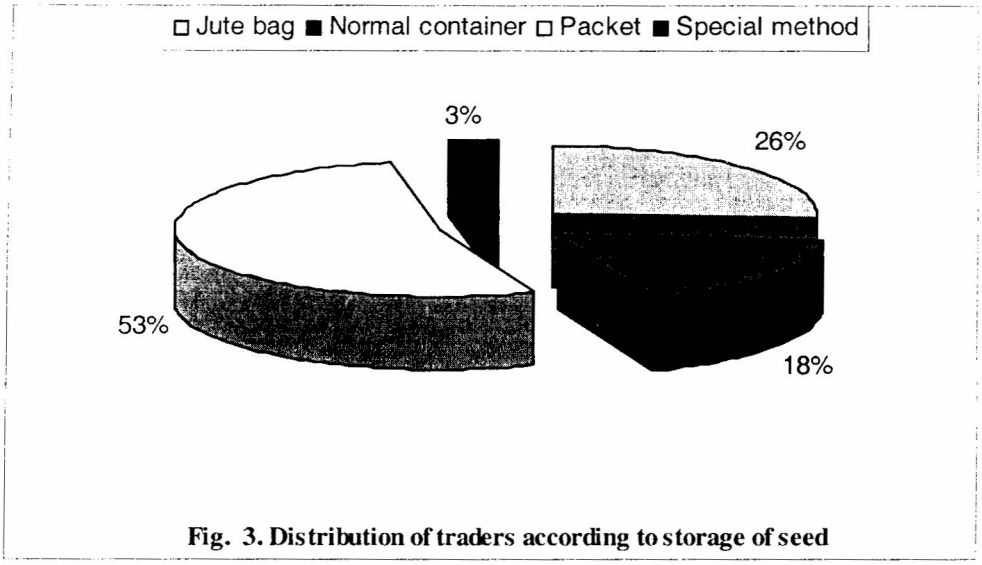

Fig. 3. Distribution of traders according to storage of seed

But it was observed that farmers in Bangladesh have insufficient knowledge to maintain and improve the quality of retained seed and lack of seed storage facilities (DANIDA, 2003). Farmers' practice regarding seed quality and seed storage have not been studied in depth (Bodker *et. al.*, 2006).

Seed treatment before sale

Among the seed trading shops investigated, 86% reported that they had conducted cultural practices to protect the seeds in the storage followed by 14% respondent mentioned the use of chemicals (fungicide and insecticide). No traders used seed treatment by botanicals to protect their seeds (Fig. 4).

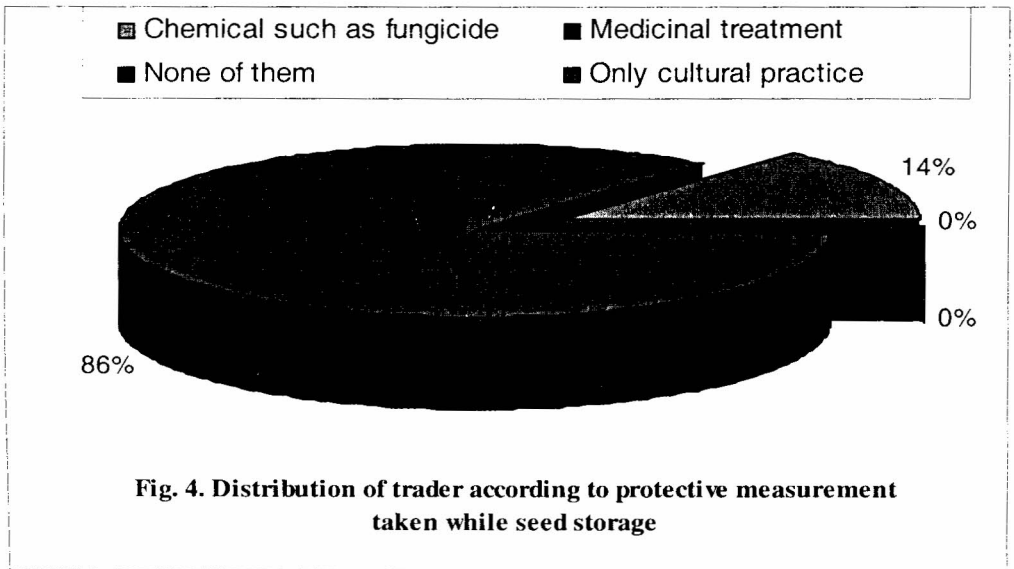

Fig. 4. Distribution of trader according to protective measurement taken while seed storage

Knowledge of traders on seed deterioration due to attack of pathogen

It has been found that 84% seed traders were aware about the deterioration of seed due to attack of pathogens, while 16% expressed their ignorance about the issue (Fig. 5).

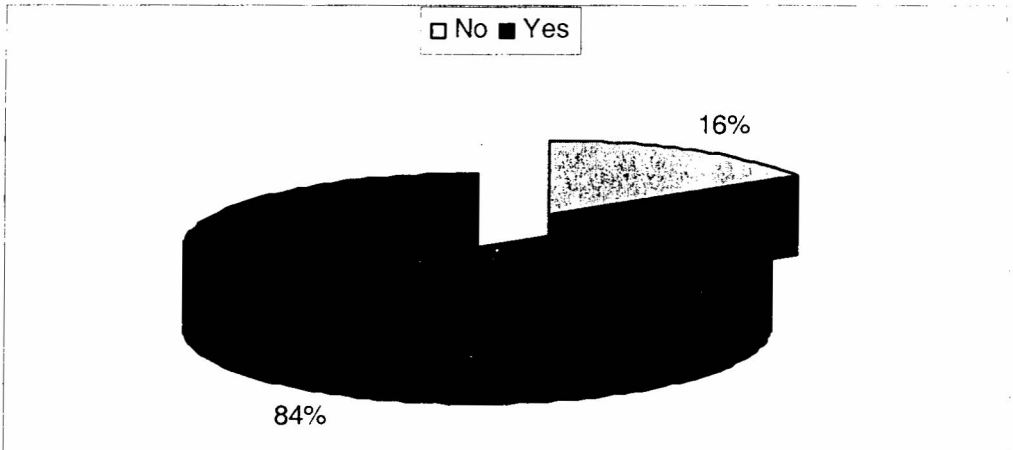

Fig. 5. Seed trader's perception about the quality of seed deterioration due to attack of pathogen

Testing seed for the presence of pathogen

Out of 531 seed traders interviewed, 55% reported that they had tested the seed for the presence of pathogens, while 45% did not take any measures to test the seeds for pathogens (Fig. 6.).

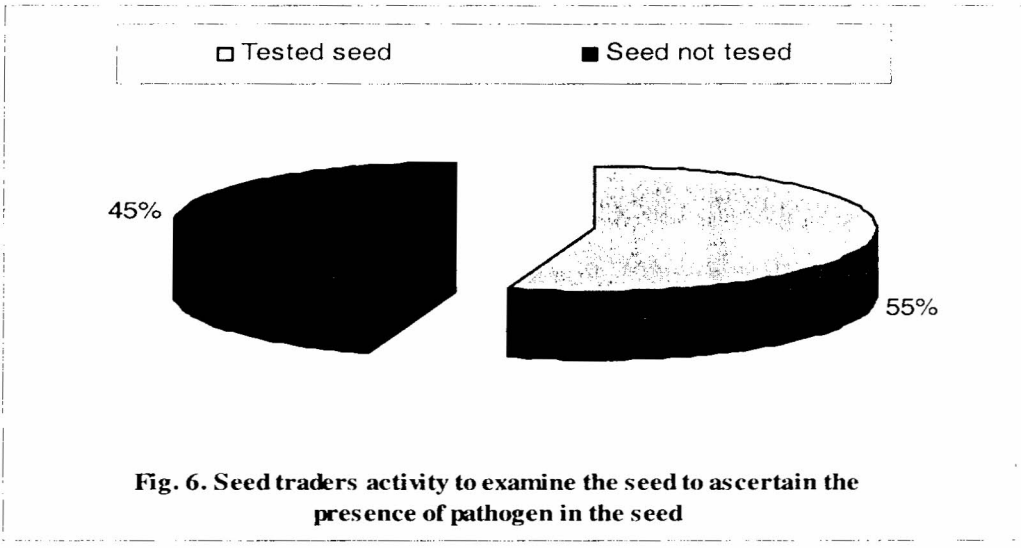

Fig. 6. Seed traders activity to examine the seed to ascertain the presence of pathogen in the seed

Comment on fruit species seed business

Among the seed trading shop investigated, 49% owner commented fruit seed trading as profitable and 47% respondent commented the business as mediocre, while only 4% reported the business as not profitable (Fig. 7).

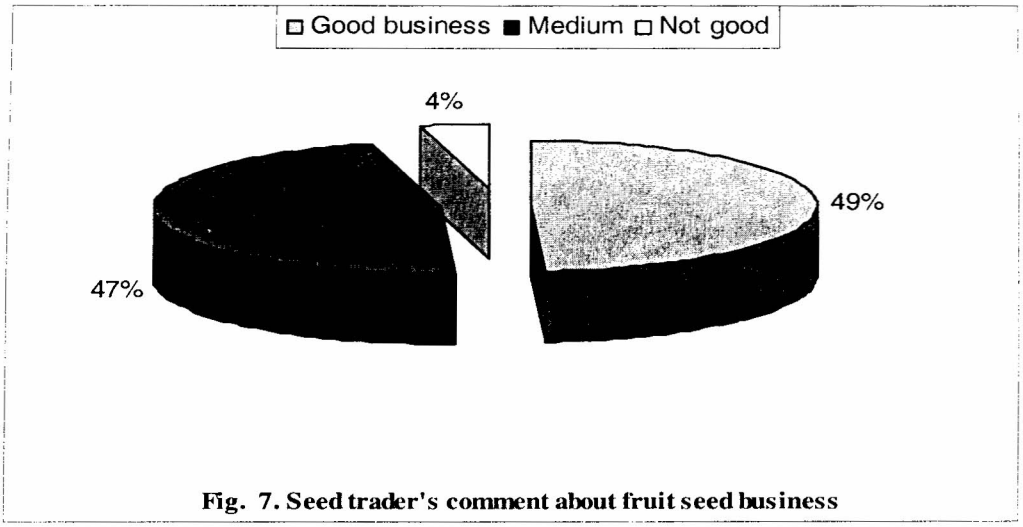

Fig. 7. Seed trader's comment about fruit seed business

However, the issue of seeds of fruit species is totally disregarded by all the concerned authorities of Bangladesh that are dealing with the seed sector. According to the Ministry of Agriculture (MoA), the total amount of seed of potatoes, rice, spices, wheat, pulses, jute, vegetables and maize required for the year 2005-2006 were approximately 1 (one) million tons. Again, the issue of fruit seed is not mentioned in the detailed report on the demand and supply of seeds in Bangladesh (Farook, 2006). As the present investigation showed that considerable amount of seeds of fruit species are being traded every year, the issue of fruit species seeds demands attention of the concerned authorities to take necessary action.

CONCLUSION

Attention should be given to the health status of fruit seeds. Since there is an increasing awareness on improvement of nursery productivity and profitability, seed quality and seed health demand special attention as important factor of QPM. However, working with seed and seed health of fruit species is an ongoing process which needs to involve the four major stakeholder viz. seed industry, DAE, NARS (National Agriculture Research System) and regulatory institutions in a committed collaboration with NSB (National Seed Board) as the coordinating body.

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