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Progress and Prospect of Training on the Health and Quality of Seeds in Bangladesh

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Abstract

Training on seed health was first initiated at the Seed Pathology Laboratory in the Department of Plant Pathology, BAU in 1880s. Farmers Block Supervisors and Subject Matter Specialists of DAE, Scientific Officers from SCA and Seed Wing Officers of BADC received the training. A total of 51 training programmes were conducted during the year 1988-2012 where 1003 trainees have been trained. The durations of the training courses ranged from one day to three months depending on the category of trainees. From 2006 to 2010 SPC organized training of six batches for the Post Graduate Certificate courses based on Seed Technology integrated with Seed Pathology. Through training programmes the knowledge and skills of the trainees were evaluated and found eventually changing their attitudes as regards to the health and quality of crop seeds.

Key words: Training, Seed health, Seed quality

Introduction

In the modern technological age training is an indispensable process for proper development of skills, efficiency and quality at all levels of a given profession (Bazlur Rashid, 2006). Besides, there is no alternative of training for the applied field of modern agricultural practices which play a significant role in the national economy of agro-based Bangladesh. Seeds are by far the single most essential cultivable source and prerequisite vital input in all crop-based worlds' food production for humans and their domesticated animals. But being the most efficient and effective carrier even a pure viable high yielding variety of seed is of little or no use to the grower if the seed carries inoculum of a dangerous seed borne pathogen which under favorable storage and field conditions may incur great threat to production. With the sustained rate of ever increasing population growth and the crying need perspective to the national objectives the balance and sustainable growth of crop production in agro-based Bangladesh is lacking. The use of low quality unhealthy seeds and the impact of seed borne diseases are one of the major constraints towards maintaining the consistency of growth of the production sustainability (Bazlur Rashid and Fakir, 2000). Coincidentally, most of the major diseases affecting the major crops in the country are highly seed borne and seed Considering the enormous crop losses due to seed borne diseases, research and training on the subject have been initiated at first at the department of Plant Pathology, BAU during 1980s. Subsequently, with the co-operation of DANIDA the works have been shape through establishing an independent laboratory namely- Seed Pathology Laboratory (SPL) which was upgraded to Seed Pathology Centre (SPC).

transmitted result the annual yield losses worth two hundred fifty million US dollars ($250) (Bazlur Rashid *et al.* (1995). In this context it has become imperative to give proper emphasis on the health and quality issue of the seeds in the crop production technology.

Out of the total requirements only 5-6% seeds are produced by the different seed organizations with care but almost regardless of the health status. The rest of seeds are retained by the farmers and remain as uncertified and unknown quality outside the supervision of SCA. For the farmers seeds are not produced and collected in appropriate scientific technology rather these are the portions of grain cash crop harvested for their consumptions. However, the seed organizations in the country are still not so aware of the impact of unhealthy seeds which affect directly or indirectly the crop productivity and sustainable food security in the country. Apart from teaching and research various training programmes have also been organized time to time for the personnel of different tyres such as experts, officers and managers, BSs of DAE; SCA, BADC etc. including the farmers who are the real concerned stackholders.

Objectives

The main objectives of the trainings were to create awareness among the Govt. and Semi-Govt. personnel including farmers/ growers dealing with the seed production and procurement, plant protection and seed certification etc. on the seed diseases and seed-borne plant diseases affecting planting value as well as market value of the seeds.

TRAININGS

Depending upon the level of stack holders various category of need based 1 day to 3 months trainings were organized. Generally the local farmers of Mymensingh districts and in service personnel from different agencies, public and private organization agencies related to seed production, process, and procurement etc. of the country received the trainings (Table-1).

Trainings on seed health, management of seed borne diseases and production of healthy seeds for the Specialists, Extension Officers, Block supervisors, Technicians, NGO personnel and Farmers have been organized. It may be mentioned that the training on seed health issue were initiated since the inception of SPC at the department of Plant Pathology, BAU and the trainings were the first of its kind in Bangladesh.

FARMERS TRAINING DURING 1995-2011

During 16 years (1995 to 2011) Seed Pathology Centre arranged total 17 trainings for the total of 288 farmer trainees, out of which male farmers were 180 and female farmers were 108 (Table-1). The ratio of male and female farmers was 3:2. Among 17 trainings 3 trainings were conducted for female and 6 trainings were conducted for male farmer only. The durations of the trainings ranged from one day to three days depending as the funds for trainings.

Table 1. Farmers training conducted 1995-2011

Sl no.	Date of Training	Number of days	Number of trainees		Total trainees
			Male	Female	
1.	13-15 June, 1995	3	18	0	18
2.	30 October – 1 November, 1995	3	0	20	20
3.	29-30 June, 1996	2	0	30	30
4.	23-25 July, 1996	3	0	20	20
5.	10-12 December, 1996	3	9	11	20
6.	14-15 December, 1997	2	19	0	19
7.	29-31 March, 1998	3	15	1	16
8.	19 July, 1998	1	15	0	15
9.	11 December, 1999	1	12	0	12
10.	2 January, 2000	1	15	0	15
11.	19 June, 2000	1	9	0	9
12.	9 December, 2000	1	10	0	10
13.	19 February, 2004	1	9	3	12
14.	29 September, 2005	1	8	4	12
15.	7 June, 2010	1	16	4	20
16.	30 December, 2010	1	13	7	20
17.	15 September, 2011	1	12	8	20
Total			**180**	**108**	**288**

Training under SPL

SPL developed and offered seed pathology courses based on those 12 years of experience and field demand expressed by the concern recipient agencies (Table 2). Besides these training courses were designed for farmers (contract seed growers especially).

Table 2. Training courses offered by SPL

Category	Trainees	Coordinating Agency	Duration	Curriculum/topics/subject
A.	Farmers, Female farmers	BAUEC BAU	2-3 days	Importance of Seed Health, Orientation to Seed-borne diseases, Production of disease free seeds, Safe storage of seeds/rice/wheat Jute/vegetables
B.	Block supervisors, Field assistants and School teachers (Agri)	BAUEC BAU	5 days	Same
C.	Overseers of Hort. Centre, Farm Superintendent, Manager SM Farms (BADC), and Seed Treaders	GTI BAU	5-7 days	Economic importance of seed health, Production processing and storage of disease free seeds of rice, wheat, jute and vegetables
D.	Seed Analyst, Quarantine Inspector and Lab. Technician	GTI BAU	7 days	Orientation to seed health, seed-health testing techniques.
E.	In-service personnel of DAE, (SMS, Horticulturist, SMO, Asstt. Horticulturist) BADC and SCA	GTI BAU	7 days	Importance of seed-health, seed-crop production techniques, Monitoring and management of crop losses in the field and storage.

Number of Trainees: Max. 20 for each training programme

TRAININGS CONDUCTED DURING 2000 TO 2012 UNDER SPC

A total of 17 training programmes were conducted at SPC during 2000-2012 (Table 3). Among these 9 trainings were organized for the farmers, 2 for the specialists and 6 for the University teachers, BADC officers, BARI officers and officers from NGOs.

Table 3. Summary of the trainings conducted at SPC during 2000 to 2012

Sl. No.	Title of the training	Opening date	Closing Date	No. of training	Source of fund
01.	Identification of seed borne diseases of boro rice and their management	02-01-2000	02-01-2000	15	DANIDA
02.	Management of seed borne diseases of rice, Pilot Project Research, Amam 2000.	19-06-2000	19-06-2000	9	DANIDA
03.	Management of seed borne diseases of wheat (Pilot Project Research, 2000-2001).	09-12-2000	09-12-2000	10	DANIDA
04.	Applied Seed Pathology	07-04-2001	16-04-2001	15	PROSHIKA
05.	Seed Health Technology	09-12-2001	11-12-2001	12	DAE
06.	Seed health, identification of seed borne diseases and their mangement.	19-02-2004	19-02-2004	12	SPC, BAU
07.	Seed health, identification of seed borne diseases and their mangement.	29-09-2005	29-05-2005	12	SPC, BAU
08.	Post Graduate Certificate Course on Seed Technology	25-03-2006	25-06-2006	20	SPC, BAU
09.	Post Graduate Certificate Course on Seed Technology	15-07-2006	15-09-2006	20	SID/DANIDA
10.	Post Graduate Certificate Course on Seed Technology	15-04-2007	15-07-2007	20	SID/DANIDA
11.	Post Graduate Certificate Course on Seed Technology	06-01-2008	06-04-2008	20	SID/DANIDA
12.	Post Graduate Certificate Course on Seed Technology	10-01-2009	10-04-2009	20	SID/DANIDA
13.	Post Graduate Certificate Course on Seed Technology	05-01-2010	04-04-2010	20	SID/DANIDA
14.	Seed quality and seed health test	07-06-2010	07-06-2010	20	SPC, BAU
15.	Seed health and quality test of winter vegetable seeds	30-12-2010	30-12-2010	20	SPC, BAU
16.	Seed health and quality test of winter vegetable seeds	15-09-2011	15-09-2011	20	SPC, BAU
17.	Productin and storage of healthy seed	23-05-2012	23-05-2012	25	SPC, BAU

Training for specialists

A short course training 1-4 weeks long on seed health and seed technology for the specialists, technicians and contact growers of different seed organization were conducted at SPL with the cooperation of different organizations such as GTI, (BAU), BADC, SRTI, PRC etc. The totals of 40 courses were offered in each training. The trainees were included experts, officers and managers of DAE (Plant Protection and Quarantine officers), SCA, BADC, SMO, SMSs, Block supervisors, contact growers etc from different organizations (Table. 4). Altogether 1044 trainees were trained through a total of 37 courses during 1977-88.

Table 4. A short course training on seed health integrated with seed technology for the specialists, technicians and contact growers of different seed organization

Seed health integrated courses with Seed Technology	Year	No. the course	Duration	Share of SPC (%)	No. the trainees	Participants
Seed Technology	1977-78	2	2 weeks	30	38	Seed analyst field officer of SCA
Plant Protection	1980	2	2 weeks	5	37	Plant protection officers of Plant Production.
Seed Technology	1980-82	6	1-4 weeks	10	263	Farm manager supervisor and contact growers of BADC
Sugarcane Seed production. Inspection and Certification	1981-85	3	2 weeks	40	111	Seed agronomists of Sugar Corporation
Potato seed Production, Post-harvest technology	1981-85)	14	1-3 weeks	20-30	375	Managers, Contact growers, officers and specialists of BADC, SCA and DAE(Ag. Ext)
Crop Production Technology	1983-84	3	2-4 weeks	3-5	100	SMOs, SMSs and School teachers of DAE and Communities schools
Quality control of seeds	1985	2	1-2 weeks	10-15	10	Seed Analysts and contact Growers Officers of BADC
Vegetable Seed Prod.	1986	2	2 weeks	8	45	Contact Growers Officers of BADC
Seed health technology	1988	3	1 week	100	65	SMSs, BSs and PP Officers of BADC
	Total	37			1044	

- Out of total number of trainees 803, 251 and 30 were specialists, technicians and farmers respectively.

Farmers training

The need oriented short training programmes (1-3 days) for the farmers on the seed health issue were conducted at SPC during 1995-2011 (Table-1). Altogether 288 male and female farmers received the training which were conducted as per need of the farmers regarding the production, storage and procurement based on both lab and field orientation. Out of which the maximum (180) were male trainees and the rests were the females (Fig.1).

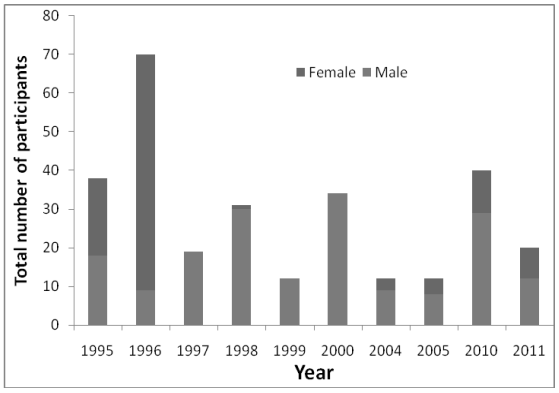

Fig 1. Farmers training on seed health conducted at SPC during 1995-2011

All the trainings were actually followed in accordance with the training usually held at the Danish Govt. Institute of Seed Pathology (DGISP), Presently, The Danish Seed Health Centre for Developing Countries-DSHC), founded in 1967 by Dr. Paul Neergaard. This is the first research organization in the world to work exclusively with the seed-borne diseases and so far 560 scientists and technologists from 72 developing countries have received Seed Pathology training (http://www.dshc.life.ku.dk/About/History.aspx).

SUMMARY OF TRAININGS OFFERED DURING 1988-2012

A total of 51 training courses were conducted for the officers and experts, block supervisors, Technicians and Farmers. A total of 1003 trainees received training in Seed Pathology Centre (Table-5).

Table 5. Summary of Trainings conducted during 1988-2012

Trainees	No. of Trainings	Number of Trainees
Experts & officers	13	214
Block supervisors	13	237
Farmers	25	552
Total	**51**	**1003**

TRAINING ON SEED HEALTH INTEGRATED WITH SEED TECHNOLOGY

Seed Pathology is very much integrated part of seed technology. Therefore three months duration Post-graduate Certificate course on Seed Technology and Seed Pathology was conducted by SPC from 2006 to 2012 though 1-6 batches. Among six batches 1st and 2nd batches was conducted in 2006. Total 120 participants were trained (Table-6) where 19 were female participants.

Table 6. Post Graduate Certificate Course on Seed Technology conducted by SPC (2006-2010)

Number of Batch	No. of Trainings / Year	Trainings		Participants	
		Period	Duration	Male	Female
1st	2/2006	25 March - 25 June, 2006	3 months	17	3
2nd		15 July - 15 September, 2006	3 months	17	3
3rd	1/2007	5 April - 15 July, 2007	3 months	16	4
4th	1/2008	6 January - 6 April, 2008	3 months	17	3
5th	1/2009	10 January - 10 April, 2009	3 months	17	3
6th	1/2010	5 January - 4 April, 2010	3 months	17	3
Total				**101**	**19**

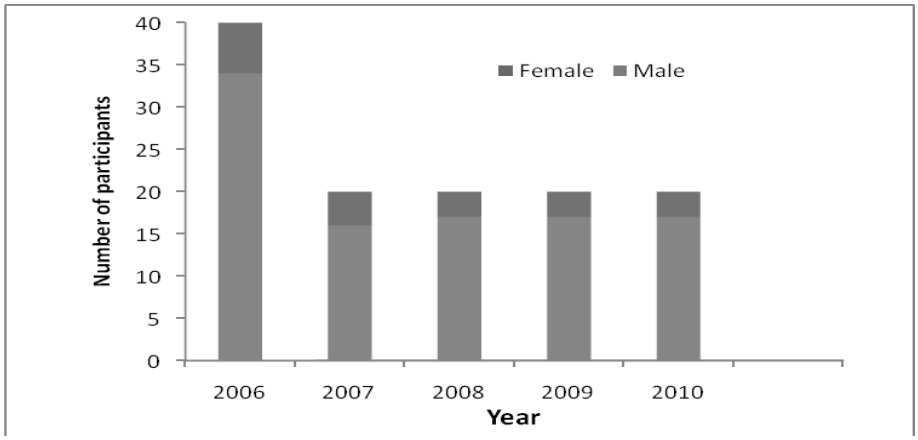

Fig 2. Three months training on seed health integrated with Seed Production and Technology for Post Graduate Certificate Course held at SPC during 2006-2010.

POST GRADUATE TRAINING

Among all the trainings held at SPC some important ones were enlightened here as one of the progress of seed pathological activities in the country. Three months training on seed health integrated with Seed Production and Technology for the Post Graduate Certificate Course was held at SPC during 2006-2010 (Fig.2).

It is revealed that the maximum average participants (40 trainees) received the training in 2006 followed by 20 participants in each of the subsequent years. The highest number of male participants followed by the lower number participated every year though comparatively low in number. **NATIONAL DEMAND FOR LONG COURSE TRAINING**

However, it is understandable that except BAU, all the mentioned organizations have serious dark of personnel trained in Seed Pathology, (Table-7). The plant quarantine authority, the seed certification agency and the plant protection divisions are under DAE. These organizations under DAE need strong contingents of seed pathologists. Same is true for BADC seed wing and the Plant Pathology divisions of the national Agricultural Research Organizations to meet their present and near future demand.

This is understandable that, given highest preference, it will not be possible for DGISP to provide training to one tenth of the estimated number of persons in this estimated period (Table - 6).

In front of this backdrop the SPL should manage to arrange long duration training programmes to respond to this national demand. The duration of the course may be six months two batches a year (as previously been offered by the DGISP) or nine months (as is being offered now in DGISP)- one batch a year. At the beginning 5-6 trainees may be accommodated per batch. Having said this, this must be also stated that, to enable SPL to undertake such venture wide range of multiple logistic supports must be provided to this infant organization. And to prepare SPL to take up major share of the long course training demand further local and foreign investment will be necessary.

Table 7. Demand for Systematic (Long Course) Training in Seed Pathology in Bangladesh.

Areas	Organizations	Persons trained at (DGISP)	Personnel to be trained			
			Technicians/ Frontline Workers by 2000 AD	Additional by 2005 AD	Specialists 2000 AD	Additional by 2005 AD
Crop production & protection	DAE Crop production wing	1	20	60	15	50
	:Quarantine service	2	12	25	6	18
	:Seed Certification agency	2	8	15	4	10
	Seed multification (Hort.)	-	30	100	10	50
Research	BARI	3	10	30	10	30
	BRRI	2	2	10	2	10
	BJRI	1	2	10	2	10
Seed multiplication and trade	BADC	1	10	30	10	20
	BRAC (NGO)		10	30	10	15
	PROSHIKA (NGO)		10	30	10	15
	SEED COMPANIES					
Teaching Agri-Colleges	Agricultural Colleges	2	4	8	2	8
BAU	BAU/SPL Other	7	4	8	2	8
		3				
Total		24	122	356	83	244

FUTURE DEMAND FOR SHORT COURSE TRAINING

The training courses, as being offered by SPC at present, have been proved beneficial to the organizations to which the trainees belong. Moreover the programmes have created high degree awareness and keen interest in the farmer's community. As a result, especially the organizations who deal with crop and seed production, distribution and trade are seriously demanding routine short course training programmes for their mangers, field staff, technicians and contact growers (farmers). As per information available to us at this moment, a number of 1479 technicians/front line workers and 439 specialists will need compact short-course training by the year 2014 (Table-8).These figures eventually may raise. It is evident that the SPC is quite well equipped with its technical facilities but organizational setup will be too little to carry out this task. For that matter re-structuring of its organizational setup and continuous flow of fund assistance will be needed to be ensured.

Table 8. Personnel to be trained through compact short courses in seed health for an improved national programme, by the year 2014.

Areas	Organizations	Personnel to be trained	
		Technicians/ Frontling Workers	**Specialists 2000 AD**
Agriculture (Crops)	a) Crop prodn. b) Seed prodn. c) Seed Process and storage d)Seed trade e) Agril. Service and Extension f) Pl. breeding	Field Asstts. 300 Contact Growers and Farmers 600* Asstt. Managers/Store Keepers 60 Block Supers./Inspectors 300 Technicians/ Field Asstts. 60	Farms Suptdts.60 Managers and Production Specialist 60 Supervisors/Managers 60 Dealers/Managers 20 Ext.Officers/Advisors/SMSs 20 Plant Breeders 20
Teaching and Training	a) Agriculture and forestry Training Institutions b)Agril.Colledges/Universities	Lab. Technicians 21 Lab. Technicians 18	Instructors of Pl. Protection 21 Teachrts of Pl. Path., Bot., Seed Path., Pl.Breeding, Hort., Agron. And Seed Technology 18
Research	a) Universities b) Research Institutes and c) Indust. Dev. Res.	Technicians and Field Attendants 60	Research Scientists 30
Control (Testing)	a) Seed Testing b) Seed Multipl. c) Pl. Quarantine d) Pl. Pesticide Testing	Analysts, field Asstts. Techns.60* and Inspectors	Scientists 30
Total		**1479**	**439**

- Female participants will be preferred.

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