Draft

IMPACT OF THE OXBOW LAKES PROJECT II ON PARTICIPANT HOUSEHOLDS

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BRAC
Research and Evaluation Division
BRAC Centre, 356 Mohakhali, Dhaka 1212
Fax: 880-2-883-542, 886448
Tel: 880-2-884180-7

CONTENTS

Executive Summary

Importance of the agricultural input 'seed', which is the very basic input has not been clearly recognised until recently by farmers, bureaucrats, business men, traders, policy makers or politicians. Good quality seed not only increases production because of its own capability, but also helps in better utilization of other costly inputs like fertilizer, pesticide, water etc., essentially required for increasing production.

Presently, about 3000 m.tons of vegetable seeds are used in Bangladesh annually, out of which only about 3% seeds are produced through organised seed producers. With the implementation of National Seed Policy and removing restriction on importation of commercial vegetable seeds, it is expected that demand of good quality vegetable seeds among the farmers will rapidly increase. On the other hand vegetable extension programme of BRAC will need about 30 tonnes of vegetable seeds annually. Part of this requirement is now being met from importation and part through local production and purchase from the local seed companies.

The project is, therefore, proposes to produce and sell about 100 tonnes of vegetable seeds annually. To do that, it has been proposed to 1) Establish a 30 acre Foundation Seed Farm at a cost of Tk. 106 lakh , 2) Establish three seed production zones to produce commercial seeds and 3) Establish a seed processing, storage, packaging and seed testing centre near Dhaka at a cost of Tk. 204 lakh. The operational cost of the above stated three sections is arround Tk. 190.895 lakh annually when the project will run in full capacity.

41 regular and 20 casual jobs will be created under BRAC, in addition to a number of self employed jobs both for male and female, in the rural areas in the contract growers zones.

When the project will produce and sell about 100 tonnes of vegetable seeds annully, an amount of Tk. 206 lakh will be realised as sale proceds of seeds, incurring an expenditure of Tk. 190.895 lakh.

It is expected that the project will start increasing profit at the end of fourth year of operation, when the project will produce and sell 80 tonnes of vegetable seeds ie., when the project will start producing and marketing 80 % of targetted quantity. Annual net profit would be arround Tk. 15 lakh per year.

This is not a very highly profit oriented project, but apart from creating jobs a great service will be given to the nation by supplying much needed high quality seeds at a reasonable price to the farmers. Thousands of farmers will get additional monetary benefit from the same area of land by using better quality seed.

1. INTRODUCTION AND BACKGROUND

Quality of seed deteriorate with time because of genetic variation, mechanical mixture and incidence of diseases, details of which are given in Appendix-I. Hence, to obtain a good production. the farmers are required to replace their own stock with good quality seed at a regular interval.

Currently 3,000 m.tons of only vegetable seeds are used in Bangladesh, value of which is around Tk.300 million. With the improvement of quality of life and because of inflation, both the volume and value of seed will increase proportionately.

Out of the total seed used, about 50% seeds are of farmers own seed, quality of which is doubtful, about 17% is imported, 28% is purchased from local market, pedigree of which is unknown. Only less than 3% (± 70 m.tons) seeds are produced through organised seed producers and out of this 70 tons, 20 tons are produced through public sector and 50 tons are produced through private sector. With the Govt. policy of restricting production of commercial seed through public sector and with the removal of restriction on import of vegetable seeds of new crops and varieties, the scope for seed production and sale through private sector has further increased.

Of the total cost of inputs & activities for production of a crop, seed cost is the least cost and very minimal. The use of good quality seed with high potential will not only increase production because of its own capability but will also result a good return on investment on other inputs. Hence there seems apparently a big opportunity to produce and market good quality seed in the country.

Production of good quality seed and subsequently processing, storing and marketing is highly technical, particularly in the hot and humid region like Bangladesh. BRAC has just started to produce vegetable seed. With the present scope of activities, BRAC has the demand to absorb about 30 M.Tons of vegetable seeds annually, for their Vegetable Extension Project. To meet the need of BRAC Veg. Extension programme and to run the project commercially it has been proposed to produce and market atleast 100 Tonnes of Veg. Seeds from the end of fifth year

annually. After meeting the requirement for Veg. Extension Programme, the remaining seeds would be sold to the farmers on first come first serve basis, through appointed dealers and/or from the Regional and Area Offices of BRAC throughout the country.

2. OBJECTIVE

The immediate objectives are:

1. To produce and supply much needed good quality vegetable seeds and sell at a reasonable price to the farmers.
2. Introduce new crops and varieties with promising potentiality.
3. Train farmers on production, processing and preservation technique of vegetable seeds.
4. Develop a set of farmers as professional seed producers.
5. Increase nutrition level of rural and urban people.

The subsequent objectives are:

1. Production and supply of other crop seeds such as pulses, oils, potatoes, quick growing fruits etc.
2. Introduce Genetic Engineering, tissue culture and production of Hybrid Seed.
3. Produce Foundation (F1 & F2) seeds for other seed companies/traders of Bangladesh.
4. Custom production of commercial seeds for local, foreign and multinational companies.
5. Develop a set of Seed Technologists in the country.

3. PROPOSAL

With a view to produce & sell atleast 100 tonnes of vegetable seeds every year it has been proposed to establish :

1. One 30-50 acres Foundation Seed Production Farm mainly to produce foundation seeds.
2. Three Contract Growers Zones to produce commercial seeds.

3. One Seed Processing Centre, where all seeds either produced in Seed Farm or through Contract Growers, will be processed, packed and stored. Seeds will be supplied to different outlets from this centre.
4. A Seed Testing Laboratory where quality of all seeds will be tested.

At a later stage, traders seeds will also be processed and tested at the Seed Processing Centre on a commercial approach.

4. OPERATIONAL STRATEGY

Foundation seeds of vegetable crops will be sold to the selected Contract Growers in three Contract G. Zones for production of commercial seeds.

Foundation seeds will be procured from BADC and other research institute till BRAC Seed Multiplication Farm is in a position to produce and supply foundation seed.

Contract Growers will multiply foundation seeds to produce commercial seeds, as per instruction of technical/supervisory personnel of BRAC. The multiplied seeds, if meets the minimum standard, will be purchased back at a premium price.

The above seeds will be carried to the Seed Processing Centre for processing, testing & storing.

Immediately before planting season the commercial seeds will be tested and despatched to different distribution outlets after packaging and issuing the the certificate "Truthfully labelled". Quality of seed will also be indicated on each and every packet.

Unsold seeds (if any) will be brought back to the Seed Processing Centre for proper storing with a view to use in the next planting season.

As a general rule processed and packed seeds will be sold at double the procurement price of seed from the contract growers. However, prevailing market price will influence both procurement and sale price.

At least 100 tonnes of veg. seeds shall have to be produced and sold annually for viable operation of the project.

At a later stage Foundation and Commercial Seeds of other crops will be produced and sold.

5. IMPLEMENTATION OF THE PROJECT

The following four stages are involved in quality seed production & marketing:

Stage -I Breeding - Production of Breeders Seed
Stage -II Foundation Seed Production - F_1 & F_2
Stage -III Commercial Seed Production - Quality/Certified Seed.
Stage -IV Marketing - End user/Farmer.

A flow-chart of seed is shown in Appendix-II. BRAC is now in stage III and is purchasing Foundation seed produced in govt. farm and multiplying it through Contract Growers to produce commercial seeds.

All the activities under this seed project have been divided in the following four sections:

A. Seed Multiplication Farm - Mainly production of Foundation Seed.
B. Contract Growers - Production of commercial seed.
C. Procurement, processing & storing - Conversion of procured Raw seed of Farm & Contract Growers to finished product.
D. Marketing - Sale of procured and processed seeds.

An organogram has been shown in Appendix-III.

Operations of these four sections are proposed as follows:-

A. Seed Multiplication Farm:

A 30 acre farm will be established at the northern part of the country preferably around Thakurgaon. Capital cost for establishment of the farm is estimated at Tk. 1,06,00,000 (Detail in Appendix-IV). The annual operating cost is Tk. 26.03 lakh (Detail Note-1). About 20 acres will be put under seed production, leaving the 10 acres for construction, internal road and different trials, observation etc.

8,000 kg (20 acres 2 seasons x 200 kg / acre) of foundation and commercial seeds will be produced annually apart from other activities. The major activities in the proposed Seed Multiplication Farm has been shown in Appendix-V. It is clear that the quantities of foundation seed being produced are to be in line with the expected demand for commercial seed of different crops and varieties. On an average about 8000 kg seed will be produced annually and the direct production cost would be Tk 8,00,000 (8,000 kg @ Tk.100/kg). The same seed will be sold at Tk. 16,00,000 (8,000 kg @ Tk. 200/kg). Hence there would be a gross benefit of Tk. 8,00,000 annually from the fifth year, when the farm is expected to operate at 100% efficiency/capacity.

The farm will be headed by a Manager, who would be assisted by one Plant Breeder and other technical personnel. The plant breeder would be recruited at a later stage. Staff recruitment schedule is at Appendix-VI.

B. Contract Growers:

The target of commercial seed production is 100 MT per year from the fifth year. These seeds will be produced in three different zones at 1) Meherpur-Gagni, 2) Rongpur-Bogra, and 3) Dinajpur-Thakurgaon region. Each zone will be managed by one Zonal Seed Agronomist who will be assisted by 4 Contract Grower Supervisors. Each supervisor will be

responsible for 50 acres of seed plot for production of about 10 tones of quality seeds. The annual expenditure would be Tk. 14.97 lakh (Note-2). The man power recruitment schedule is shown in Appendix-VI.

Foundation seeds produced in the seed farm or procured from other sources will be sold to the contract growers for further multiplication. The seeds will be produced as per instruction and supervision of contract grower supervisors and Zonal Seed Agronomist. About 1200 Contract Growers will be involved in seed production. The seed produced, which meets the minimum procurement standard will be procured at a premium price and will be transported to the seed processing centre at Dhaka.

BRAC will also go for customs production of seed for seed traders and companies under a mutually agreed up terms and conditions. This custom production could be done for overseas companies also through the contract growers.

C. <u>Seed Processing Centre and Seed Testing Laboratory:</u>

The seed processing centre and seed testing laboratory will be established around Dhaka city at a cost of Tk. 2,04,00,000 (detail in Appendix-IV) The annual operating expenditure would be Tk 145.77 lakh. The manpower recruitment schedule is shown at Appendix-VI. The centre would be headed by a Manager, who would be assisted by one Seed Texting Officer & other technical personnel.

All seeds either produced in seed farm or procured from contract growers will be tested for purity and germination. The accepted seeds will be cleaned, graded, dried, packed and stored for next season. Seed quality will be maintained through drying, testing , spraying insecticide etc.

Similarly all seeds going out from seed processing centre will be tested for quality and for stating the standard of the seed.

The cleaning, grading and other facilities will be extended to other seed producers and traders, after meeting BRAC's requirement at a small margin of profit.

D. Marketing:

The produced and procured seeds will be sold through the following ways:

1. Direct sell to Vegetable Extension Programme
2. Through appointed dealers
3. Through seed traders and companies
4. Through regional & area offices

Agreed upon commissions will be given to the seed dealers and traders. No additional man power is visualized at this stage in the field. But a Marketing Manager at the Head Office will look after the marketing aspects of the seed.

6. CROPS & VARIETIES

Initially the following vegetable crop seeds will be produced:

1. Amaranthus
2. Sweet gourd
3. Bottle gourd
4. Bitter gourd
5. Radish
6. Cauliflower
7. Tomato
8. Brinjal
9. Spinach
10. Beans
11. Kankon
12. Indian spinach
13. Okra

Year wise production target is -

1st year	-	30 tonnes
2nd year	-	40 tonnes
3rd year	-	70 tonnes
4th year	-	80 tonnes
5th year	-	100 tonnes.

Market demand and sale promotion effort will guide the variety, crop and their quantity.

If initial success is achieved, then the project will go for production of other crops & hybrid seeds apart from above stated vegetable seeds.

7. MARKETING

Market & Marketing

3,000 m.tons of vegetable seeds are used annually in Bangladesh. About only 3-4% seeds are produced and marketed by the private seed companies. The remaining seeds are of farmers retained seed, purchased from spot market and imported. Hence, there exists a big market for quality seeds.

With the present scope of activities, BRAC is in need of about 30 tons of Vegetables seeds, for her Vegetable Extension Project. It has been proposed to produce and market atleast 100 tons of veg. seeds from the fifth year and onward.

After meeting the requirement of seeds for Vegetable Extension Programme, the remaining seeds would be sold -

(1) to the farmers on first come first serve basis,

(2) through appointed dealers and/or

(3) from the regional and area offices throughout the country.

(4) to recognised seed traders/merchants.

Bulk sale will also continue from the seed processing centre to the seed companies and seed traders.

As a general rule sale rate will be double than the procurement price.

8. ECONOMIC FEASIBILITY

In the first phase (first 5 years) of the project, it has been estimated to produce and market 100 m. tons of Vegetable Seed annually from the fifth year (starting with 30 m.tons of seed production in the first year, the project proposes to produce and market 100 m. tons in the fifth year). Total investment is around Tk.31.00 million for establishing 1) Seed Multiplication Farm 2) One Seed Processing Centre and Seed Testing Laboratory, and 3) Three Contract Grower Zones. The annual operating cost of the above three sections has been estimated to be Tk.19.08 million including over head cost, interest, depreciation etc.

Annual revenue will be Tk.6.50 million in the first year and will increase to Tk.20.60 million in the fifth year. The gross profit would be Tk.2.47 million in the first year and will increase to Tk.7.70 million in the fifth year.

In the first three years, the project will incurr loss. But in the fourth year, the project will come to a break-even point incurring a profit of Tk.0.286 million. And, in the fifth year, when the project will produce and market the targetted quantity of 100 m.tons of vegetable seeds, the project will incurr a net profit of Tk.1.51 million and the cumulative profit will stand at Tk.0.261 million. The detail financial aspects has been shown in Appendix-VII.

9. ASSUMPTIONS

Following assumptions are made:

1. Farmers will fast realise the benefit of using good quality seeds.
2. Govt. will withdraw subsidy on production of foundation seed by public sectors.
3. Marketing of "Truthfully Labelled" seeds in the country would be enforced.
4. BRAC seeds gets quick popularity because of its high standard. The minimum standard should be set slightly higher than the National Standard.

10. FEMALE PARTICIPATION

Production of field crops are mainly done by the male members of the farm family. Post harvest operations like, threshing, seed extraction, drying, cleaning, storing would be done by the female members of the family & part by hired female labourers. As a result a good number of jobs will be created in the rural areas for self employed female family members and hired workers.

Apart from the above activities some of these seed workers could also be appointed as seed dealers.

11. CONCLUSION

The proposed project is expected to run commercially with small amount of net profit - arround one & half million taka annually.

The requirement of good quality seed in the country is quite high. If BRAC can earn confidence of the consumers about the quality of her seed than the project activities can be expanded manyfold. Thousands of farmers will be benefitted.

Apart from small financial benefit, the project will render a great service to the nation by way of creating new jobs and self employment particularly of women community in the rural areas. The farmers vis-a-vis the nation will get more production from the same unit of land by using high quality seed.

If the project can produce Hybrid seed than, this will not only save the foreign exchange, required to import Hybrid seed, but opportunity of earning foreign exchange will be created, by way of custom production of seed for foreign or multinational companies. Even the seeds of self pollinated crops can be produced, through contract growers for overseas companies. But all will depend on the initial achievement/performance of the BRAC seed project.

APPENDIX

Appendix-I

POSSIBLE REASONS OF DETERIORATON OF SEED STOCK

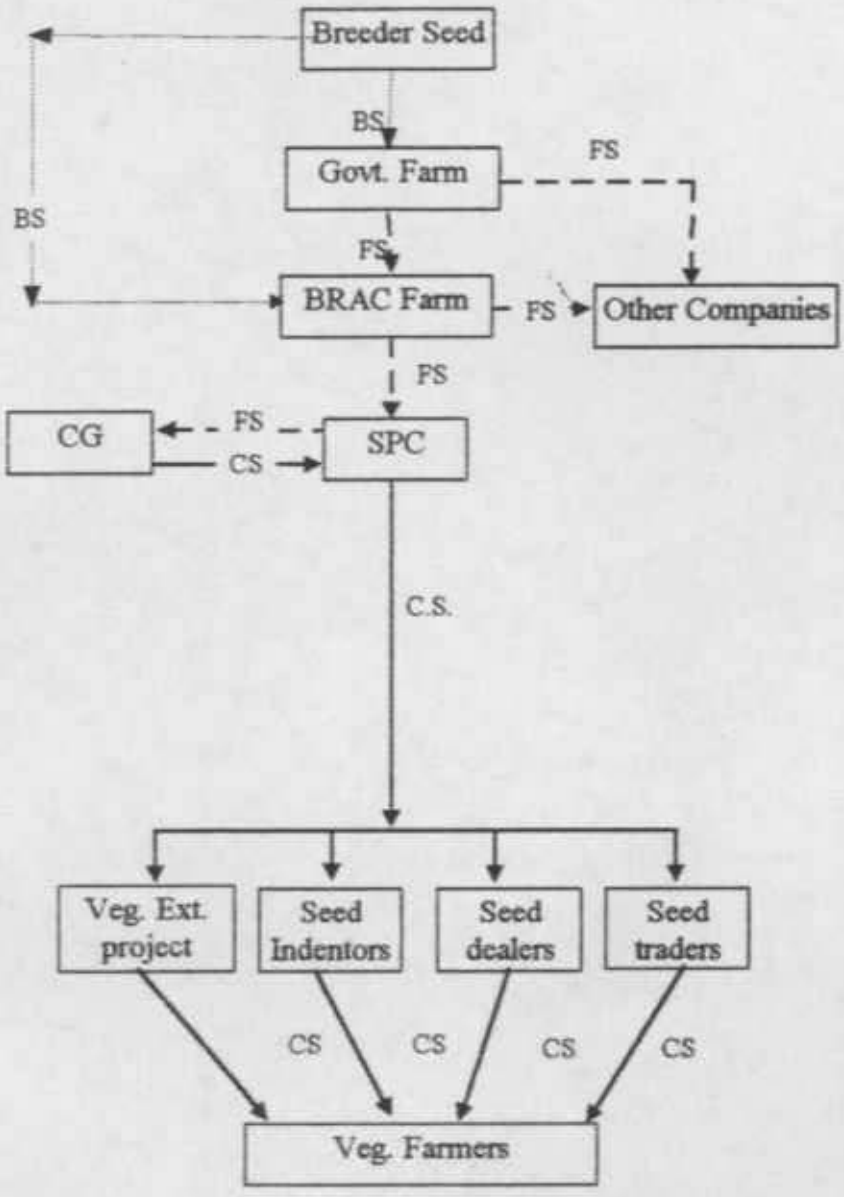
PURE CULTIVAR

GENETIC	MECHANICAL	DISEASE
Outcrossing	Bad weather	Attack of Seed borne disease
Genetic shift	Poor husbandry	Loss of resistance to certain disease
Hybrid Vigour	Admixture with other kind	
Mutation		

IMPURE CULTIVAR

Appendix-II

SEED FLOW CHART



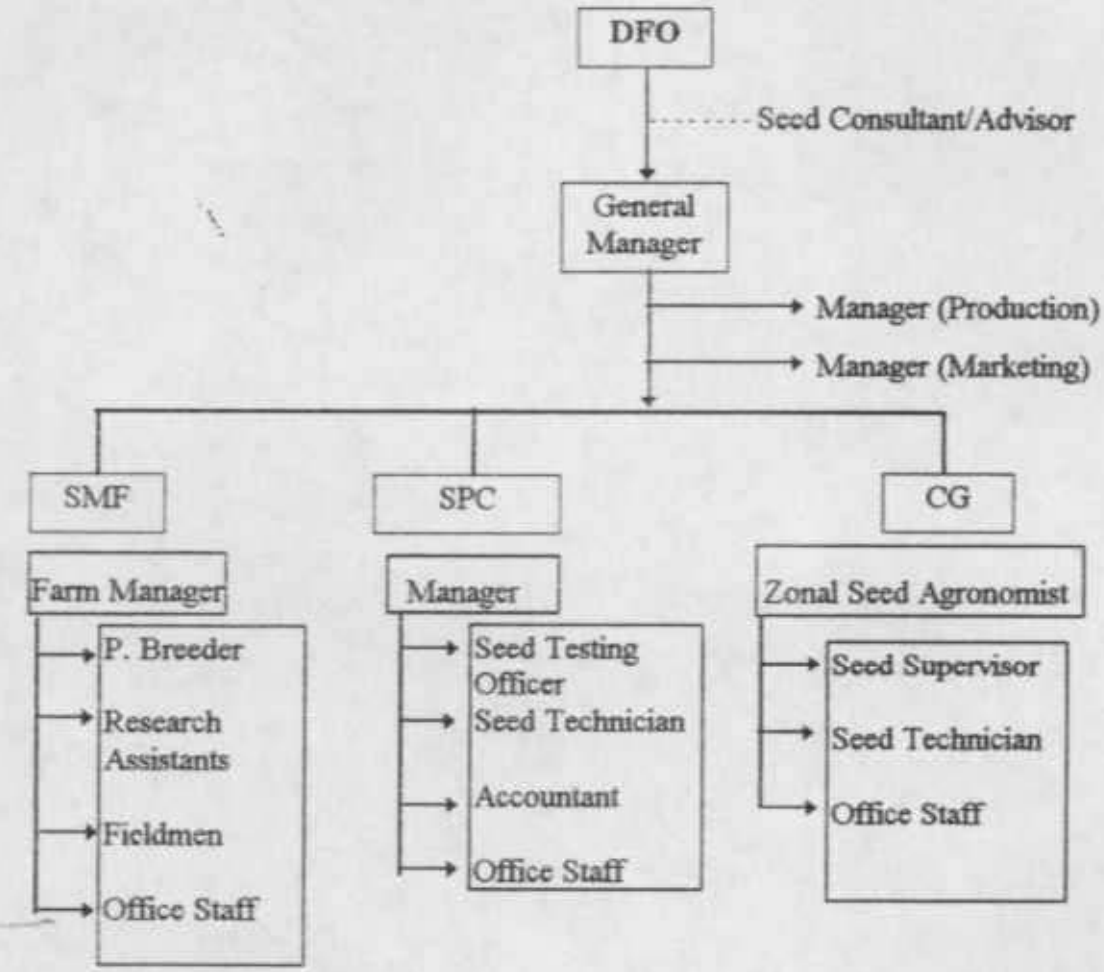
Legend:

BS	=	Breeder Seed
FS	=	Foundation Seed
CS	=	Commercial Seed
CG	=	Contract Growers
SPC	=	Seed Processing Centre

→ Breeder Seed
- - - → Foundation Seed
→ Commercial Seed

Appendix-III

ORGANOGRAM OF BRAC SEED ENTERPRISE



Legend:

DFO	=	Director Field Operations
SMF	=	Seed Multiplication Farm
SPC	=	Seed Processing Centre
CG	=	Contract Growers
P. Breeder	=	Plant Breeder

Appendix-IV

CAPITAL INVESTMENT:

A. Seed Multiplication Farm -SMF:
(Details in Note-4)

	Cost Items	1st Y	2nd Y	3rd Y	4th Y	5th Y
1	Land & L. Development 30 acres @ Tk.150000/acre	3000000	2000000	0	0	0
2	Construction	0	2500000	1000000	0	0
3	Farm Machineries	0	2000000	0	0	0
4	Misc.	0	60000	40000	0	0
	Year Total=	3000000	6560000	1040000	0	0
	Cumulative (Tk)=	3000000	9560000	10600000	10600000	10600000

B. Seed Processing Centre- SPC:
(Details in Note-5)

	Cost Items	1st Y	2nd Y	3rd Y	4th Y	5th Y
1	Land & L. Development 1 acres @ Tk.15000000/acre	10000000	5000000	0	0	0
2	Construction	0	2500000	1100000	0	0
3	Machineries Install.	0	1000000	700000	0	0
4	Misc	0	60000	40000	0	0
	Year Total=	10000000	8560000	1840000	0	0
	Cumulative(Tk.)=	10000000	18560000	20400000	20400000	20400000
Yearly Total Capital Investment=		13000000	15120000	2880000	0	0
Cumulative Total Capital Investment=		13000000	28120000	31000000	31000000	31000000

CAPITAL INVESTMENT SCHEDULE (Fig. in Lakh Taka)

ACTIVITY	Year-1				Year-2				Year-3				Year-4				Year-5			
	Quarter				Quarter				Quarter				Quarter				Quarter			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A. S.M. Farm (30 acres)			1																	
1. Land & Land dev.			30		20															
2. Construction					25				10											
3. Farm machinery					20															
4. Misc.					0.60				0.4											
Total Taka	30.00				65.60				10.40				106.00							
B. SPC & Laboratory																				
1. Land & Land Dev. (1.0 acre)			100		50															
2. Construction					25.00				14											
3. Machinaries					10				7											
4. Misc.					0.60				0.40											
Taka Tk	100.00				85.60				18.40				204.00							
Grand Total Taka	130.00				151.20				28.80				310.00							

Appendix-V

DETAIL FUNCTIONS OF DIFFERENT SECTIONS

A. FOUNDATION SEED FARM

Modern seed business enterprise need to have its own production unit. As such establishing a 30-50 acres seed production farm is proposed. The following activities would be carried out in the seed farm:

1. Production of foundation seed
2. Grow-out test.
3. Collection of local germ-plasm and screening/purification.
4. Breeding and production of Breeders Seed.
5. Trial and observation on the performance of new crops and verieties both local and imported.
6. Research, Development and training on -

    a) Planting time & method.
    b) Intercultural operation
    c) Harvesting
    d) Method of seed extraction etc.

7. Production of Hybrid Seed.

A brief justification is given below for conducting the above stated activities in the farm.

Production of Foundation Seed: Good quality (both phenotype and genotype) foundation seed is the pre-quisite for production of good quality commercial seeds. According to National Seed Policy, BADC & other govt. agencies are supposed to supply the foundation seed to the seed producers. It has been observed that required variety and quantity of foundation seeds are not always available, sometime, the quality also become doubtful resulting embarracing situation both for the seed production agency and the seed farmers. With a view to overcome the situation, it is

proposed to produce foundation seed in BRAC's own farm. Breeders seeds will be collected from the Breeding station to produce F1 foundation seeds and/or F_1 foundation seed will be collected from BADC to produce foundation F2 seed.

Promising cultivers of screened local germ plasm will also be produced as foundation seed.

3. Grow out test:

Grow out test is required to confirm whether the variety is of true to type. By physical appearance of the seed it is almost impossible to ascertain what would be the performance of the variety. One has to go either by the description on the container or has to grow himself to see the performance. So, as a seed producing enterprise BRAC would regularly conduct grow out test of the seeds produced by them or procured from other sources. An unknown or new variety either of local or from other countries required to be tested in the farm both before distribution for commercial cultivation and before starting multiplication of seed production of the said variety.

Grow out test will also be required to see the performance of Hybrid seed, either developed by BRAC or procured from other sources.

4. Collection of local germ plasm and purification.

Many varieties of unrecognised, unnamed or with local names are cultivated here & there throughout Bangladesh. Some of these and cultivers are very promising & have high potential. These so called varieties will be collected and purified in the seed farm with a view to market the seed commercially. Both, farm and the farmers will be benefitted. Since BRAC has an organised field level workers and there is constant interaction with the farmers, it will be easier for BRAC to collect local germ plasm and popularise it in other parts of the country.

5. Breeding & Production of Breeder Seeds.

Breeders Seed is the purest form of seed both phonotypically and genotypically. Production of breeders seed requires special care and special eyes. Hence, there is the necessity of a plant breeder in a seed production chain.

Introduction, selection, purification, and development of a variety are the function of breeding. These activities have to the conducted in own land/farm under utmost care.

The breeder seed is required for production of foundation seed. The foundation seed will further be multiplied through contract growers to produce commercial seed.

As the source of foundation/breeders seed is limited and alongwith increase of seed production by the private seed companies, it may be presumed that if BRAC can produce good quality foundation seed there will be no dirt of buyer. Price of foundation seed is always higher than the commercial seed.

When BRAC will expand her activity to other crops (other than vegetable) such as pulses, spices, tubers etc. requirement of own farm will be an absolute one. In the unused land, if there is any, BRAC will produce commercial seed also in the said farm.

6. Trial and observation on the performance of new crops and varieties - both local and imported.

Any new crop and variety which seems to be promising and attractive to the farmers, shall have to be tried in own farm. This will also help in fine tuning on planting time, fertilizer application, harvesting etc. The potential seed producer/traders will also get an opportunity, to see for themselves the performance of the variety. This will act in gaining confidence on BRAC, which will help in selling BRAC seed to the seed traders in bulk or on commission basis.

7. Research

The 'best' is always turning to 'better' incourse of time with research and with new ideas. With the introduction of new crop variety, technology, and change of weather and social outlook, constant research is required to make the 'best' better. The main objective would be to increase the productivity or to reduce the production cost without compromising with quality of seed. Hence, research is required primarily on the following issues:

1. Planting time.
2. Harvesting time.
3. Cultural method.
4. Method of seed extraction etc.

It is to be always remembered that planing time, seed rate and cultural practices are not necessarily the same for grain and seed production.

8. Production of Hybrid Seed.

Agriculturally developed countries have gone to production of crops by using Hybrid Seeds. Unfortunately, no hybrid seed is produced in Bangladesh although farmers are using imported hybrid seed. Seed traders and businessmen are importing these seeds & selling it to the farmers at an exorbitant price. These seeds are not always showing the promised performances and sometimes turning to complete failure. The poor farmers had to take it as their luck.

BRAC should and will take an attempt to produce hybrid seeds in their own seed farm. Hybrid seed can be sold at a very high price.

B. Production of Seed Through Contract Growers:

Objectives:

1) Multiplication of foundation seed to produce commercial seed.
2) Multiplication of Breeder/Foundation (F1) seed to produce Foundation seed (F1) & (F2) at a later stage.

Commercial or high quality vegetable seed will be produced through Contract Growers. Foundation Seed produced in the Farm or collected from other sources will be supplied to the Contract Growers and the seed produced will be purchased from them at a premium price, if the seed quality meet the procurement standard.

Crops can be produced throughout the country but under natural condition it is preferred to produce seed in the Northern and Western region of the country because of comparatively drier weather and duration of cool period is slightly longer.

Initially 30.00 tons of vegetable seeds will be produced and at the end of 5th year it should reach at least 100.00 tons per year. To start with, the seed would be produced in two areas in Meherpur, Thakurgaon and Dinajpur districts.

Observing the performance in the first two to three years and depending on market demand, production and marketing of other crop seeds (such a spices, pulses, quick growing fruits, tuber crop & creals) will be started.

C. Seed Processing Centre & Seed Testing Laboratory.

Immediately after procurement of seeds, either from seed farm or from contract growers, the seed has to be processed & stored before these are sold or used again. The following functions would be carried out at the seed processing centre:

1. Cleaning
2. Grading
3. Drying
4. Packaging
5. Storing
6. Treating (if/when required)

1. Seed cleaning:

Seeds procured from the farm and contract growers would require further cleaning to bring it to the level of good quality seed i.e. to increase the seed purity. This will be carried out mostly by mechanical process.

2. Seed Grading:

Grading of seed is essential for uniformity which will result a good look and also to get rid of smaller seeds. This also has to be done mechanically.

3. Seed Drying:

a) Drying of seed is required for maintaining the seed viability.
b) Sometime seed crops are to be harvested during rainy day or day with high humidity, as a result the seed will contain high amount of moisture. This will result fast deterioration of seed quality and problem in payment of seed price of the procured seed from the contract growers and maintenance of seed stock.

4. Seed Packaging:

Seed has to packed in small packets for

a) Good presentation &

b) Maintain quality of seed

5. Storing:

Procured seeds and after processing shall have to be stored in a cool, dry place till next planting time. The unsold seeds (if any) shall be bought back to this centre for storing about an year i.e. till the next planting season.

6. Seed Treatment

Seeds are normally not treated presently. But since seed treatment result in prevention of seed borne diseases and increases yield, seed treatment shall be carried out at a subsequent stage.

Seed Testing Laboratory

Seed will be tested in the Laboratory in the following two occasions:

a) During Procurement:

Seed samples will be collected from seed produced in the Seed Multiplication Farm and immediately before collection of seed from the Contract Growers. This is required to confirm whether the seeds are acceptable or not. If seeds are acceptable than payment will be made on the basis of the certificate issued by the STL, and if required, weight adjustment will be done depending on the moisture % of the seed.

b) During Supply:

Each seed lot or bag offered for sale has to be tested for quality and for issuing 'truthfully labelled' certificate. This certificate or declaration in the seed packet has to be done as per rule/law of the country.

Appendix-VI

STAFF RECRUITMENT SCHEDULE

A. S.M. Farm:

Year and Quarter / Personnel (No)	Year-1				Year-2				Year-3				Year-4				Year-5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Farm Manager (1)			1																	
2. Plant Breeder (1)									1											
3. Research Asst. (2)			1						1											
4. Field Man (4)			2						2											
5. Accountant (1)			1																	
6. Store Asstt. (1)			1																	
7. Permanent Lab.(10)			6						4											
Total			12						8											

B. Contract Grower Zones (3 zones):

Year and Quarter / Personnel(No.)	Year-1				Year-2				Year-3				Year-4				Year-5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Zonal Seed Agronomist (3)	3																			
2. Seed Technician(3)		3																		
3. Acct. Assist.(3)	3																			
4. Seed Supervisor(12)	6				3				3											
5. Permanent Labourer.(6)	3				3															
Total=	18				6				3											

C) Seed Processing Centre & Laboratory:

Year and Quarter / Personnel (No)	Year-1				Year-2				Year-3				Year-4				Year-5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Manager (1)																				
2. Operator (2)																				
3. Store Asst. (1)																				
4. Accountant (1)																				
5. Accounts Asstt.(1)																				
6. Seed testing officer (1)																				
7. Seed technician (2)																				
8.Security Guard (1)																				
9. Permanent labour (3)																				
Total				9						4										

Appendix-VII

FINANCIAL ASPECTS OF PROPOSED SEED ENTERPRISE

		1st Year	2nd Year	3rd Year	4th Year	5th Year
	% of Achievement →	30%	40 %	70 %	80 %	100 %
1.	Prodn. of commercial Seeds (Tonnes)	30	40	70	80	100
2.	Prodn. of Foundation Seeds (Tonnes)	4	8	8	8	8
Revenue						
1.	Seed Sale (CG seeds) @ Tk. 200/kg	5700000	7600000	13300000	15200000	19000000
2.	Seed Sale (SMF seeds) @ Tk. 200/kg	800000	1600000	1600000	1600000	1600000
	Total revenue(Tk.) =	6500000	9200000	14900000	16800000	20600000
Less						
Cost of Goods Sold (Tk.)						
1.	Seed Cost in SMF	400000	800000	800000	800000	800000
2.	Seed Cost in CG	3000000	4000000	7000000	8000000	10000000
3.	Seed Processing	600000	800000	1400000	1600000	2000000
4.	Seed Carrying	30000	40000	70000	80000	100000
Total Cost of Goods Sold		4030000	5640000	9270000	10480000	12900000
Gross Profit		**2470000**	**3560000**	**5630000**	**6320000**	**7700000**
Cumulative G.P =		**2470000**	**6030000**	**11660000**	**17980000**	**25680000**
Less						
1.	Operating & Administrative Expenses					
	Operating Cost of :					
	a) S.M Farm (Details in Note-1)	950000	2201800	2603000	2603000	2603000
	b) Contract Growers (Details in Note-2)	872000	1372000	1497000	1497000	1497000
	c) Seed Processing Centre (Details in Note-3)	4591150	6680200	10777500	12077500	14577500
Total Operating Cost=		6413150	10254000	14877500	16177500	18677500
2	HO Administrative Expenses @ 2 % of Sales	130000	184000	298000	336000	412000
3	Misc.					
Total Operating & Admin. Exp.=		**6543150**	**10438000**	**15175500**	**16513500**	**19089500**
Net Profit=		-43150	-1238000	-275500	286500	1510500
Cumulative Net Profit =		-43150	-1281150	-1556650	-1270150	240350

NOTES

Note 1 : OPERATING COST OF SEED MULTIPLICATION FARM

		1st Y	2nd Y	3rd Y	4th Y	5th Y
1.	Staff cost(Note-6)	277200	554400	943200	943200	943200
2.	Production cost (200kg/acrex(20-40-40--40-40) @ Tk. 100/kg)	400000	800000	800000	800000	800000
3.	Office Expenses @5000 pm	60000	60000	60000	60000	60000
4.	Maintenance					
	a) Building(1% on (0-25-35- -)Lakh	0	25000	35000	35000	35000
	b) Machinery(2% on (0-20- - -)lakh	0	40000	40000	40000	40000
5.	Depreciation					
	a) Building(2% on "(0-25-35,-,-)lakh"	0	50000	70000	70000	70000
	b) Machinery(10% on (0-20- - -)lakh	0	200000	200000	200000	200000
6.	Interest on Capital					
	a) Interest on warking Capital(15% on 4-8--lakh)	30000	60000	60000	60000	60000
	b) Interest on Capital Investment(15% on 20% of Asset cost)	90000	286800	318000	318000	318000
7.	"Misc.(Land tax, etc)"	92800	125600	76800	76800	76800
	Total(Tk.) =	**950000**	**2201800**	**2603000**	**2603000**	**2603000**

Y = Year

Note 2: OPERATING COST OF CONTRACT GROWERS SYSTEM (3 ZONES):

		1st Y	2nd Y	3rd Y	4th Y	5th Y
1.	Staff Cost(Note-7)	507600	1015200	1144800	1144800	1144800
2.	Office Rent @ 5000 pm x 3 zones	180000	180000	180000	180000	180000
3.	Office expences @ 4000 pm x 3 zones	144000	144000	144000	144000	144000
4.	Miscellanious	40400	32800	28200	28200	28200
	Total(Tk.)=	**872000**	**1372000**	**1497000**	**1497000**	**1497000**

Y = year

NOTE 3: OPERATING COST OF SEED PROCESSING CENTRE:

		1st Y	2nd Y	3rd Y	4th Y	5th Y
1.	Staff Cost(Note-8)	254550	598800	688500	688500	688500
2.	Cost of seeds (30-40-70-80-100)tones @ Tk.100/kg	3000000	4000000	7000000	8000000	10000000
3.	"Processing, storing &" Packaging Cost (@ Tk.20/kg)	600000	800000	1400000	1600000	2000000
4.	Transportation of seeds @ Tk. 1/kg	30000	40000	70000	80000	100000
5.	Office Expenses @8000 pm	96000	96000	96000	96000	96000
6.	Maintenance					
	a) Building(1% on "(0-25-36-,-,-)lakh"	0	25000	36000	36000	36000
	b) Machinery(2% on (0-10-17 - -)lakh	0	20000	34000	34000	34000
7.	Depreciation					
	a) Building(2% on (0-25-11--)lakh	0	50000	72000	72000	72000
	b) Machinery(10% on (0-10-17 - -)lakh	0	100000	170000	170000	170000
8.	Interest on Capital					
	a) Interest on warking Capital @ 15% for 6 m. (on 30-40-70-80-100)lakh	225000	300000	525000	600000	750000
	b) Interest on Capital Investment(15% on 20% of Asset cost)	300000	556800	612000	612000	612000
9.	"Misc.(Land tax, etc)"	85600	93600	74000	89000	19000
	Total(Tk.)=	**4591150**	**6680200**	**10777500**	**12077500**	**14577500**

Note 4 : CAPITAL COST OF SEED MULTIPLICATION FARM

(Taka)

1.	Land & land Development (30 acres)		50,00,000
2.	Construction		35,00,000
a)	Office building 1500 sft @600/	9,00,000	
b)	Residential Do	9,00,000	
c)	Seed store 50'x25' @300/-	3,75,000	
d)	Farm store do	3,75,000	
e)	Threshing/Drying floor 80'x40' @150	4,80,000	
f)	Tractor, implement shed	1,70,000	
g)	Furniture & Fixtures	3,00,000	

3. Machineris & Equipments

	Item	Cost(Tk)	Duties & Taxes(Tk)	Total(Tk)
a)	Power tiller/small tractor	6,00,000	–	6,00,000
b)	Pump/Tubewells	1,00,000	–	1,00,000
c)	Thresher/seed cleaner	5,40,000	54,000	5,94,000
d)	Seed Dryer	4,20,000	42,000	4,62,000
e)	Germinator	80,000	8,000	88,000
f)	Weighing scale	60,000	–	60,000
g)	Moisture meter	42,000	–	42,000
h)	Tarpauline, farm Implement etc.	54,000	–	54,000
				20,00,000
4.	Misc.			1,00,000
	Total (1 + 2 + 3 + 4)			1,06,00,000

Note 5 : CAPITAL COST OF SEED PROCESSING CENTRE & SEED TESTING LABORATORY

(Taka)

1.	Land & Land Development (1 acre near Dhaka)		1,50,00,000
2.	Construction		
	a) Office		36,00,000
	b) Spare for raw seed		
	c) Space for seed clearing/grading		
	d) Space for seed drying		
	e) Space for seed packaging	6000 sft	
	f) Store for finished product	@Tk.600/sft	
	g) Open drying floor		
	h) Seed Testing Laboratory		

3. Machineries and Equipments:

Item		Cost(Tk)	D. & Taxes(Tk)	Total(Tk)
a)	Seed cleaner and grander	5,04,000	50,400	5,54,400
b)	Seed Dryer	4,20,000	42,000	4,62,000
c)	Packing equipments	10,000	–	10,000
d)	Weighing scales	68,000	–	68,000
e)	Dehuminiditifier	2,20,000	22,000	2,42,000
f)	Moisture meter (2)	84,000	8,400	92,400
g)	Seed Treater	10,000	–	10,000
h)	Seed Germinator	67,200	6,720	73,920
i)	Furniture & Fixtures	1,87,280	–	1,87,280
		15,70,480	1,29,520	17,00,000

4.	Misc.	1,00,000
	Total : (1 + 2 + 3 + 4)	**2,04,00,000**

Note 6: Staff Cost of the Seed Multiplication Farm:

		1st Year	2nd Year	3rd Year	4th Year	5th Year
1	Salary & Benifits:					
1.1	Farm Manager (1-1-1-1-1) x 1 "@ 15,000 pm"	90000	180000	180000	180000	180000
1.2	Plant Breeder (1-1-1-1-1) x 1 "@ 12,000 pm"	0	0	144000	144000	144000
1.3	Research Assistant (1-1-2-2-2) x 1 "@ 5,000 pm"	30000	60000	120000	120000	120000
1.4	Accounts Asst. (1-1-1-1-1) x 1 "@ 3,000 pm"	18000	36000	36000	36000	36000
1.5	Store Asst. (1-1-1-1-1) x 1 "@ 3,000 pm"	18000	36000	36000	36000	36000
1.6	Fieldman (2-2-4-4-4) x 1 "@ 3,000 pm"	36000	72000	144000	144000	144000
1.7	Permanent Labour (6-6-10-10-10) x 1 "@ 1,500 pm"	54000	108000	180000	180000	180000
Year Total of 1.0 =		246000	492000	840000	840000	840000
2	Staff Training 10% of salary (Sum of 1.1 - 1.5)	15600	31200	51600	51600	51600
3	Staff Travelling 10 % of Salary (Sum of 1.1 - 1.5)	15600	31200	51600	51600	51600
Total Staff Cost=		**277200**	**554400**	**943200**	**943200**	**943200**

Note 7 : Staff Cost of Contract Growers Section

		1st Year	2nd Year	3rd Year	4th Year	5th Year
1	Benifits & Salary:					
1.1	Zonal Seed Agronomist (1-1-1-1-1) x 3 Zones @ 6000 pm	108000	216000	216000	216000	216000
1.2	Seed Supervisor (2-3-4-4-4) x 3 Zones @ 3000 pm	108000	324000	432000	432000	432000
B	Seed Technician/Store (1-1-1-1-1) x 3 Zones @ 3000 pm	54000	108000	108000	108000	108000
1.4	Accounts Asst. (1-1-1-1-1) x 3 Zones @ 3000 pm	108000	108000	108000	108000	108000
1.5	Permanent labour (1-2-2-2-2) x 3 Zones @ 1500 pm	54000	108000	108000	108000	108000
Year Total of 1.0 =		432000	864000	972000	972000	972000
2	Staff Training 10% of salary (Sum of 1.1 - 1.4)	37800	75600	86400	86400	86400
3	Staff Travelling 10 % of Salary (Sum of 1.1 - 1.4)	37800	75600	86400	86400	86400
Total Staff Cost=		**507600**	**1015200**	**1144800**	**1144800**	**1144800**

Note 8 : Staff Cost of Seed Processing Centre:

		1st Year	2nd Year	3rd Year	4th Year	5th Year
1	Salary & Benifits:					
1.1	Manager (1-1-1-1-1) x 1 "@ 12,000 pm"	72000	144000	144000	144000	144000
1.2	Seed Analyst (1-1-1-1-1) x 1 "@ 6,000 pm"	36000	72000	72000	72000	72000
1.3	Accountant (1-1-1-1-1) x 1 "@ 5,500 pm"	33000	66000	66000	66000	66000
1.4	Accounts Asst. (0-1-1-1-1) x 1 "@ 3,000 pm"	0	36000	36000	36000	36000
1.5	Operator (0-2-2-2-2) x 1 "@ 3,500 pm"	0	42000	84000	84000	84000
1.6	Store Asst. (1-1-1-1-1) x 1 "@ 3,000 pm"	18000	36000	36000	36000	36000
1.7	Seed Technician (1-1-2-2-2) x 1 "@ 3,000 pm"	18000	36000	72000	72000	72000
1.8	Security Gourd (1-1-1-1-1) x 1 "@ 2,500 pm"	15000	30000	30000	30000	30000
1.9	Permanent Labour (4-4-4-4-4) x 1 "@ 1,500 pm"	36000	72000	72000	72000	72000
Year Total of 1.0 =		228000	534000	612000	612000	612000
2	Staff Training 10% of salary (Sum of 1.1 - 1.7)	17700	43200	51000	51000	51000
3	Staff Travelling 5 % of Salary (Sum of 1.1 - 1.7)	8850	21600	25500	25500	25500
Total Staff Cost=		**254550**	**598800**	**688500**	**688500**	**688500**
Grand Total of Staff Cost= (Note 6 + 7 + 8)		**1039350**	**2168400**	**2776500**	**2776500**	**2776500**