

**Livelihood Adaptation to Climate Change in Drought
Prone Areas of Bangladesh**

(LACC) Project

Technical guideline

**Establishment of field demonstrations
for
Kharif-II season/June - October 2007**



Implemented by
**Department of Agricultural Extension
Food and Agriculture Organization of the United Nations**



IMPLEMENTATION OF THE DEMONSTRATIONS

Necessary Directives

1. This guideline is prepared based on the need received from the pilot upazilas of the DRMA project and also the technical information gathered from the respective Upazila Agriculture Officers (UAO) and Field Officers (Monitoring) of the project.
2. Required technical inputs were also collected from the scientists of **BARI and BRRI**. A number of technical books and papers were consulted to make the guideline as appropriate as possible.
3. The entire technical part and tentative budget of the guideline was **reviewed with the concerned upazila and/or field officers** during the field visit of PD, NLC and TO in the concerned upazilas and necessary adjustment has been made.
4. Implement the demonstration as per the time/duration provided in the guideline. Any adjustment required due to the local condition and environment may be done with prior consultation with the PMU/concerned person.
5. **Farmer selection must be according to the need of the demonstration which is essentially based on the local farmers need** and it should be such that the objective of the demonstration can be achieved.
6. **Follow the budget break-up, procure the required materials and services, keep necessary documents and vouchers and proof evidence by attaching photograph during the re-imbursement/adjustment of the project advance.**
7. The number of demonstration i.e. the replication in each demonstration and the required budget for it is specified in the guideline. Therefore any change in this case can be done only after prior consultation with the PMU/concerned person.
8. Every single demonstration has its own monitoring requirement and accordingly a monitoring format has been attached. Timely and regular monitoring is vital for capturing the effect/impact of project intervention. Therefore it is **mandatory to keep timely, authentic and verifiable data and information and prepare the report and send to the PMU/concerned person in time**. A establishment/progress report has to be prepared and submitted immediately after the establishment of the demonstration.
9. For any technical matter consultation with the scientists of local BARI, and/or BRRI stations and DAE is essential and open.
10. Use common sense and rational judgment while taking decision in every situation and such that farmers must not be the loser.
11. PMU/concerned person may be contacted for any thing related to the demonstrations.

**PMU
DRMA and LACC Projects**

Title of demonstration: Homestead vegetable gardening

A. Context and justification:

Homestead gardening is an age-old production practice in our rural areas. It creates opportunity for employment of idle labour of the family and also scope for earning extra money for the family. Producing vegetables in the homestead can ensure utilization of the fallow and unexploited land of the homestead. It also utilizes the homestead wastes, sweepings and debris as organic matter and irrigation water from the homestead source. Selecting vegetables that require comparatively less irrigation water may be a step towards the adaptation of suitable technologies in the drought prone areas. Thus establishing homestead vegetable gardens may be the one of the livelihood adaptation options for the farmers of the drought prone areas of Bangladesh. Homestead is a women domain and they can manage the activities with minimum support from the male counterpart.

B. Objective:

The objective of homestead gardening is to provide vegetables throughout the year, primarily for household consumption and thereby contribute to the family nutrition. Surplus vegetables may also be sold in the market for additional income of the family.

C. Farmer selection criteria:

1. Interested female/male farmer who works by hand not by hired labour.
2. Farmer must have at least one decimal of land for homestead vegetable garden.
3. Irrigation facilities should be available in the homestead.
4. Availability of sufficient organic matter.
5. Sufficient sunlight in the homestead
6. High land, free from normal/seasonal flood.
7. The place of homestead vegetable garden should be accessible to the visitors by vehicle.

D. Implementation time:

Kharif-II/Jun - July 2007.

E. Implementation sites/upazilas:

Bagmara, Charghat, Kaligong and Patgram upazilas.

F. Technical details:

f.1. Lay out (Figure-1) of the plot/bed:-

- Area of homestead garden is 1 decimal or 36 m².
- No. of bed are 5 (in the north-south directions to ensure equal distribution of sunlight).
- The length of each bed is 550 cm and width of each bed is 90 cm.
- Width and depth of boundary drain are 25 cm and 10 cm. respectively.
- The height of the seedbeds will be 15 cm.

f.2. Other technical aspects:-

- Five recommended vegetables may be grown in five beds so that diversified vegetables are available for family consumption.
- A strong boundary fence is required to establish (with bamboo or other low-cost materials) to protect crops from cattle, goats, poultry etc.
- In the boundary canal aroid and on the fence bitter gourd, country bean, yard long bean, sponge gourd and drumstick plant at the corner as support of the fence can be grown.

f.3. The recommended vegetables for homestead garden may be:-

- Bed-1: Kangkon
- Bed-2: Brinjal
- Bed-3: Red amaranth
- Bed-4: Radish
- Bed-5: Indian spinach.

Similar and suitable crops/vegetables can be grown round the year as per the seasonal requirement and with farmers' own inputs and technical guidance from the project/DAE.

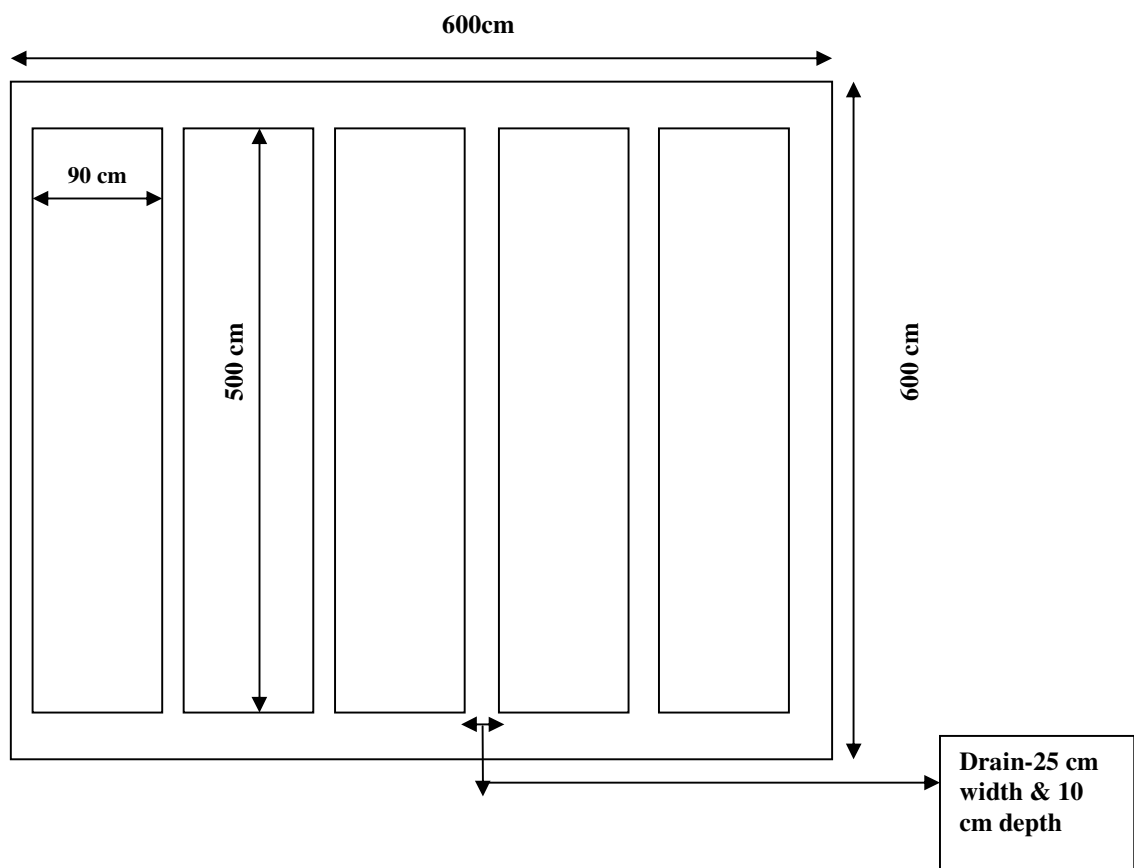


Fig 1: Lay out of homestead vegetable garden

G. General instruction:

- A sign board has to be posted at the demonstration site, a sample sign board is provided below.
- All demonstration records must be kept in register/monitoring format at 15 days interval and send the compiled report to the PMU after completion of the demo.
- Quality seed sowing and/or seedling transplantation should be ensured and if necessary technical inputs from local BARI scientists and BADC may be taken.

H. Budget for homestead vegetable garden for Kharif-II season.

Sl #	Item of expenditure	Amount of input (Kg/No.)	Unit cost (Tk)	Total cost (Tk)
1	Seed purchase			200.00
3	Fertilizer.			
	• Urea	5 kg	7.00	35.00
	• TSP	3 kg	20.00	60.00
	• MP	2 kg	16.00	32.00
4	Fencing preparation		500.00	500.00
5	Sign board	1	400.00	400.00
6	Register	1	25.00	25.00
7	Miscellaneous	-	100.00	100.00
Total (One thousand three hundred and fifty two taka only)				1352.00

Title of demonstration: Early or Late T. Aman Production

A. Context and Justification:

T. *Aman* rice is the single largest major crop throughout Bangladesh in Kharif-II season. But in some years and some places flood appears as a main hindrance for T. Aman transplantation and timely production. For early flood T. Aman transplantation is delayed and sometimes for late flood T. Aman is inundated and causes huge damage to the standing crop. Considering the circumstance and the following on flood forecast and nature of flood in a given area farmers can take decision whether to go for early varieties or late varieties of T. Aman transplantation. In case of early transplantation of T. Aman farmers could take an advantage of growing chickpea or linseed just after the harvesting, in drought prone areas where Boro rice production is not possible due to lack of irrigation facilities. Therefore the demonstration is proposed in one hand to produce T. Aman in a flood prone area following the flood schedule and take advantage of the early production by growing other additional crops.

B. Objective:

To provide farmers with the alternative choices and make them aware on the production technologies of early and late varieties of T. Aman rice in the flood prone areas of the country.

C. Farmer selection criteria:

1. Interested farmers who are ready to establish early or late varieties of T. Aman demonstration.
2. Farmer must have high land medium high land suitable for T. Aman demonstration.
3. Accessibility to idle/surplus labour.
4. The place should be accessible to the visitors by vehicle.

D. Implementation time:

Kharif-II/Jun-August 2007.

E. Implementation site/upazila:

Charghat, Kaligonj and Patgram upazilas.

F. Technical details/production guideline of T. Aman:

Variety: The early varieties of T. Aman are BR-11 (Mukta), BRRI Dhan-30, BRRI Dhan-31, BRRI Dhan-32, BRRI Dhan-33 etc. The late varieties are BRRI Dhan-34, BR-22, BR-23, Binasail, Naizersail etc.

Seedling raising: T. Aman seeds should be sown in medium high land near the main field. If the early heavy rainfall will occur in that area during the rainy season, the drainage facilities must be ensured. Before seed sowing the organic matter and other nutrient should be ensured.

Time of seed sowing: The appropriate time to sowing seed is 01-10 July.

Transplanted in another Field: When the rain occur during the rainy season, the lands become flooding. The main land may be under water, at that time the 30 days old seedlings should be transferred to another field. This type of land will be higher than the main field and flood free.

Main Land preparation: The land should be well prepared by plowing and harrowing three to four times. Fertilizer should be applied in appropriate dose at the time of land preparation. For sandy loam to silty loam soil, 2-3 ploughing to and cross plowing with subsequent 3-4 laddering are required so that the soil has a good tilth. For a clay type of soil, soil preparation requires more tillage operation at appropriate soil moisture status.

Seed rate: Seed rate will be 4-5 kg/ bigha.

Spacing: In case of line sowing, line to line spacing should be 15 cm.x 20 cm.

Fertilizer dose: Fertilizer doses for early or late varieties of T.Aman production are shown in table 1. below.

Table 1. Fertilizer dose for one bigha T.Aman production demonstration

Name of Fertilizer	Quantity per bigha
Urea	24kg.
TSP	14kg.
MP	10kg.
Gypsum	8kg.
Zinc sulphate	1kg.
Cow dung	800kg.

H. Budget break up for early and late T. Aman demonstration:

Sl #	Item of expenditure	Quantity	Unit cost (Tk)	Total cost (Tk)
1	Seed	5 kg.	25.00	125.00
2	Fertilizer for seed bed (2 dec.): Urea TSP MP	2kg. 2kg. 1kg	7.00 20.00 16.00	14.00 40.00 16.00
4	Fertilizer for demo. plot • Urea • TSP • MP • Gypsum • Zinc Sulphate	24 kg 14 kg 10 kg 8kg 1 kg	7.00 20.00 16.00 8.00 60.00	168.00 280.00 160.00 64.00 60.00
5	Pesticide	-	-	150.00
6	Sign board	1	400.00	400.00
7	Register	1	25.00	25.00
8	Miscellaneous		100.00	100.00
Total (One thousand six hundred and two taka only)				1602.00

Title of demonstration: Double Transplanting of T. Aman

A. Context and Justification:

Rice being the staple food, the crop is cultivated everywhere in Bangladesh. T. Aman is widely cultivated in the Kharif-II. While the cultivation depends on rainwater sometimes it is late if the rain comes lately. Again due to early heavy rainfall in the rainy season the field is flooded and it is not easy to transplant the seedlings. After continuous raining for 10-15 days, the seedlings go down to water and transfer from the seedling bed becomes urgent. Sometimes it happens that the seedlings are ready to transplant to the main field. But the main land is not ready for transplantation because of heavy water. So, after few days the transplantation in field has to be done. Therefore, at that time it is essential to transfer the seedlings in another place/seedling bed before finally transplant to the main field when situation allows.

B. Objective:

The farmers are prepared to use the alternative technology of the seedling transplantation and exploit the best adjustment of T. Aman during flood or heavy rainfall. Specifically, to avoid the flood, double transplanting is to be done which helps to reduce the loss of the seedling damage.

C. Farmer selection criteria:

1. Interested farmers who are ready to establish double transplanting T.Aman demonstration..
2. Farmer must have high land for middle transplanting period.
3. Drainage facilities should be available in the land.
4. Accessibility of idle/surplus labour.
5. The place should be accessible to the visitors by vehicle.

D. Implementation time:

Kharif-II/Jun-August 2007.

E. Implementation site/upazila:

Kaliganj and Patgram upazilas

F. Technical details/production guideline of T. Aman:

Variety: The varieties of BR-11, BR-41 or Aromatic rice or other variety suitable to the area.

Seedling raising: T. Aman seeds should be sown in medium high land near the main field. While there is early heavy rainfall will in the particular area during the rainy season, the drainage facilities must be ensured in the seedling beds. Before sowing seed the organic matter and other nutrient should be ensured.

Time of seed sowing: The appropriate time to sowing seed is 01-10 July.

Transplanted in another Field: When the rain occur during the rainy season, the lands become flooding. The main land may be under water, at that time the 30 days old seedlings should be transferred to another field. This type of land will be higher than the main field and flood free.

Main Land preparation: The land should be well prepared by plowing and harrowing three to four times. Fertilizer should be applied in appropriate dose at the time of land preparation. For sandy loam to silty loam soil, 2-3 ploughing to and cross plowing with subsequent 3-4 laddering are required so that the soil has a good tilth. For a clay type of soil, soil preparation requires more tillage operation at appropriate soil moisture status.

Seed rate: Seed rate will be 4-5 kg/ bigha.

Spacing: In case of line sowing, line to line spacing should be 15 cm.x 20 cm.

Fertilizer dose: Fertilizer doses for double transplanting of T.Aman production are shown in table 1 below.

Table 1. Fertilizer dose for one bigha T.Aman production demonstration

Name of Fertilizer	Quantity per bigha
Urea	24kg.
TSP	14kg.
MP	10kg.
Gypsum	8kg.
Zinc sulphate	1kg.
Cowdung	800kg.

G. General instruction:

- A signboard has to be posted at the demonstration site, a sample sign board is provided below.
- All demonstration records must be kept in register/monitoring format.
- Quality seed sowing should be ensured.

H. Budget break up for Double Transplanting of T.Aman demonstration:

Sl #	Item of expenditure	Quantity	Unit cost (Tk)	Total cost (Tk)
1	Seed	5 kg.	25.00	125.00
	Fertilizer for 1 st Seedbed (2 dec.):			
	Urea	2kg.	7.00	14.00
	TSP	2kg.	20.00	40.00
	MP	1kg	16.00	16.00
2	Fertilizer for 1 st Seedbed (2 dec):			
	TSP	2kg.	20.00	40.00
3	Fertilizer.			
	• Urea	24 kg	7.00	168.00
	• TSP	14 kg	20.00	280.00
	• MP	10 kg	16.00	160.00
	• Gypsum	8kg	8.00	64.00
	• Zinc Sulphate	1 kg	60.00	60.00
4	Pesticide	-	-	150.00
5	Sign board	1	400.00	400.00
6	Register	1	25.00	25.00
7	Miscellaneous		100.00	100.00
Total (One thousand six hundred and forty two taka only)				1642.00

Title of demonstration: Latiraj Kanchu (Aroid) Production

A. Context and Justification:

Flood and seasonal flood leaves some part of the country especially the northern districts inundated for few months. Farmers mostly have little choices for crop in the flood period in-terms of growing crops. They also lack of access to adequate food and nutrition for few months of the season. There are few crops like the aroids provide an excellent opportunity to produce in the season. Most of the aroids like the *Latiraj Kanchu* can be grown in the seasonally flooded land and can withstand for sometime in the floodwater/rainwater. Latiraj is also a good source of carbohydrate and other nutrients which can supplement the deficient diet in that particular period.

B. Objective:

Objective of the demonstration is to encourage farmers to produce latiraj for economic benefit exploiting the flood condition as well as for nutritional contribution to their family.

C. Farmer selection criteria:

1. Interested farmer for Latiraj Production.
2. Farmer must have at least one bigha of suitable land for Latiraj cultivation
3. Access to irrigation facilities.
4. The place of demonstration should be accessible to the visitors by vehicle.

D. Implementation time:

Kharif-II/June –July 2007.

E. Implementation site/upazila:

Bagmara , Kaligonj and Patgram upazilas.

F. Technical details/production guideline of Latiraj kachu production:

Variety: Latiraj

Soil : Silty loam and clay loam soils are suitable for latiraj cultivation.

Land preparation: Land has to be tilled 3-4 times to make the soil particles small.

Time of sowing: For early crop optimum time of sowing is October.

Method of sowing: Line sowing.

Seed rate: 37-38 thousand /ha.

Distance between lines: 36cm.

Distance between plants: 5cm.

Fertilizer dose: Fertilizer dose for Latiraj production is provided in Table.1

Table 1. Fertilizer doses for one bigha of land for Latiraj Production

Name of Fertilizer	Quantity per bigha
Urea	20 kg.
TSP	18kg.
MP	25kg.
Cowdung	2500kg.

Source: BARI

Method of Fertilizer application: All cowdung, TSP and MP should be applied at the time of planting stolon. Urea should be applied in 2-3 splits. Ist splits should be applied within 20-25 days of planting.

Intercultural operations: Maintain standing water up to 8-10 cm in the field.

G. General instruction:

- A sign board has to be posted at the demonstration site, a sample sign board is provided below.
- All demonstration records must be kept in register/monitoring format.
- Quality seed sowing should be ensured .

H. Budget break up for latiraj:

Sl #	Item of expenditure	Quantity	Unit cost (Tk)	Total cost (Tk)
1	Sucker	5000	1000.00	1000.00
2	Fertilizer. • Urea • TSP • MP	20kg 18 kg 25 kg	7.00 20.00 16.00	140.00 360.00 400.00
3	Sign board	1	400.00	400.00
4	Register	1	25.00	25.00
5.	Miscellaneous		100.00	100.00
Total (Two thousand four hundred and twenty five taka only)				2425.00

Title of Demonstration: Jujube Gardening

A. Context and Justification:

Jujube is a tropical fruit able to withstand wide temperature range. One of the outstanding qualities of the jujube is its tolerance to drought condition. The crop can be cultivated successfully in Barind tracts and other drought prone areas with little irrigation. The jujube field can be inter-cropped with T. Aman during Kharif-II season. So, jujube may be the one of the best adaptation options for the drought prone areas. On the other hand intercropping of vegetables can be done in the Jujube garden. Now a days, Jujube is best income earning options in Barind/northern drought area. In the Barind/northern drought area there are huge shortages of trees. So, high temperature and scarcity of rainfall is a major problem of that area. If jujube gardening with vegetables intercrop practice is popularized in these areas, standard of living the farmers of that area will be enhanced as well as climatic conditions of that area will also be improved.

B. Objective:

To encourage farmers to produce jujube as an adaptation option for drought prone areas for more economic benefit as well as for nutritional contribution.

C. Farmer selection criteria:

1. Interested farmers to establish jujube garden.
2. Farmer must have at least one bigha of land for cultivation of jujube.
3. Access to irrigation facilities.
4. Medium and high land free from normal/seasonal flood.
5. The jujube garden should be accessible to the visitors by vehicle.

D. Implementation time:

Kharif-II/ June -July 2007.

E. Implementation site/upazila:

Bagmara ,Charghat, ,Kaligonj and Patgram upazila.

F. Technical details/ Production technology:

Soil: Satisfactory production is possible from any type of land. Jujube plant can tolerate both salinity and stagnancy of water. But heavy and slightly alkaline sandy loam soil is good for jujube production.

Variety: Apple kul, BAU kul, khacchr.

Land preparation : High and medium high land is good for making jujube garden .

Time of planting : February – March and August – September are the suitable months for plantation .

Method of transplanting : For jujube garden square planting method is good. Planting distance should be 6- 7 metres . Spacing may be increased or reduced depending on the variety and place. 1metre x 1meter x 1metre pit should be prepared one month prior to planting.

Fertilizer Application and dose: Apply fertilizer 10 to 12 days before plantation as indicated in Table 1.

Table 1.Fertilizer doses per pit for Jujube Production

Name of Fertilizer	Quantity per pit (gram)
Urea	200-250
TSP	200-250
MP	245-255
Zinc Sulphate	40-60
Cow dung	20- 25 kg.

Source:BARC

Intercultural Operation : For good production irrigation should be done once in a month during flowering and fruiting time in dry season. In case of saplings branches up to 75 cm from the bottom should be allowed to grow to make the plant more strong.

Pruning or Removal of undesired parts: During pruning cut the branch leaving some portion at the joint. In addition cut of weak, disease affected, insect attacked thickly grown branches. Afterwards when new branches will come, then keep the strong branches and remove weak ones.

Pest and disease Management : Powdery mildew of a jujube is a dangerous disease. After flowering spray Thiovit to control powdery mildew disease at the rate of 2 gm. in 1 litre of water or Tilt 250 EC at the rate of 0.5 ml in litre of water. Afterwards, spray 2 times at an interval of 15 days .

Harvesting : Fruits generally collected in January to March depending on the variety. Start harvesting when the fruits start becoming light green or yellow.

H. Budget for jujube production demonstration (1 bigha):

Sl #	Item of expenditure	Quantity	Unit cost (Tk)	Total cost (Tk)
1	Sapling	25	50	1250.00
2	Fertilizer. • Urea (25x250gm) • TSP (25x250gm) • MP (25x250gm)	6.25 kg 6.25 kg 6.25 kg	7.00 20.00 16.00	44.00 125.00 100.00
3	Sign board	1	400.00	400.00
6	Register	1	25.00	25.00
7	Miscellaneous	-	-	100.00
Total (Two thousand and forty four only)				2044.00

Title of demonstration: Litchi Gardening

A. Context and Justification:

Litchi is one of the most important subtropical evergreen fruit trees, which grows well in Bangladesh. In the draught prone areas vast areas of land remain barren due to lack of irrigation water. Tree plantation is very much essential for ecological balance and climatic condition of those areas. Tree plantation by establishing Litchi fruit gardening is an important alternative option for the farmers of that drought prone areas. Litchi is a drought tolerant promising cash crops northwest part of Bangladesh. In the litchi garden farmers can easily practice inter crops, which may create scopes of earning additional earning for the farmers. Farmers can easily change their cropping pattern by cultivating litchi as garden and ultimately change their livelihood.

B. Objective:

Objective of the demonstration is to encourage farmers to establish litchi garden for more economic returns of the farmers as well as for nutritional contribution to the family.

C. Farmer selection criteria:

1. Interested farmer to establish litchi garden.
2. Farmer must have at least one bigha of land to establish litchi garden.
3. High land free from normal/seasonal flood.
4. The place of litchi garden demonstration should be accessible to the visitors by vehicle.

D. Implementation time:

Kharif-II/ June -July 2007.

E. Implementation site/upazila:

Bagmara, Charghat, Kaliganj, Patgram upazilas.

F. Technical details/production guideline of papaya:

Variety: Bedana, Bombai, Chaina-1 and Chaina-3 etc.

Soil: Deep, well drained, fertile sandy or loamy soil is suitable.

Land preparation: Select high and medium high land. Make the land plain, weed free by plowing and laddering.

Sapling selection: Select one year old healthy and strong grafted saplings.

Transplanting time: Mid May to Mid July and Mid August to Mid October.

Planting distance: 10 metres.

Pit size: 1 metre x 1 metre x 1 metre

Fertilizer dose: Apply fertilizer as per quantity shown in table 1. below

Table 1. Fertilizer dose per pit for Litchi gardening

Name of Fertilizer	Quantity per pit (gram)
TSP	600-700
MP	350-450
Gypsum	200-300
Zinc sulphate	40-60
Cow dung	20-25kg.

Source: BARC

Method of Fertilizer application: Apply fertilizers in 3 installments. Ist installment at the time of flowering, 2nd installment at the time when fruits become like pea grain and third installment two weeks before fruits ripe.

Sapling transplantation: After 10-15 days of filling the pit, the sapling with ball is placed at the center of the pit. After plantation irrigate water, fix a pole and fence. After 6 month of plantation apply 300-350 gm. urea.

Irrigation: Irrigate frequently to enhance growth of the saplings. If there is no rainfall, irrigate at the time of flowering and at the time of getting the fruit size like pea.

Weeding: Always keep the pit weed free.

Pruning: Cut off undesirable branches to allow sufficient light and air .

Attack by birds: Trees should be covered by net in ripening period.

Harvesting: *Start* collecting litchi with the branches as soon as litchis show reddish tinge.

G. General instruction:

- A signboard has to be posted at the demonstration site, a sample signboard is provided below.
- All demonstration records must be kept in register/monitoring format.
- Quality saplings selection should be ensured.

H. Budget break up for litchi gardening:

Sl #	Item of expenditure	Quantity	Unit cost (Tk)	Total cost (Tk)
1	Saplings	16	100.00	1600.00
2	Fertilizer. • Urea(16x350gm) • TSP(16x700gm) • MP(16x450gm) • Gypsum(16x200gm) • Zinc Sulphate(16x60gm)	6 kg 11 kg 7 kg 3kg 1 kg	7.00 18.00 16.00 8.00 60.00	42.00 198.00 112.00 24.00 60.00
3	Sign board	1	400.00	400.00
4	Register	1	25.00	25.00
6	Miscellaneous	-	-	100.00
Total (Four thousands one hundred and sixty one taka only)				2561.00

Title of demonstration: Maize production

A. Context and Justification:

Maize is one of the most important tropical grain crops able to withstand wide temperature range. On the other hand compared to rice and wheat it requires less water and it is more resistant to drought than rice and wheat. Hence, drought prone areas where scarcity of ground and underground water is a major problem the production of maize is more economic and profitable. At present maize is most valuable cash crop for multiple use especially its use in poultry industry. Hence, cultivation of maize might be a best livelihood adaptation option.

B. Objective:

Objective of the demonstration is to encourage farmers to grow maize for economic benefit in a given area of land.

C. Farmer selection criteria:

1. Interested farmers to establish maize demonstration.
2. Farmer must have at least one bigha of suitable land for maize cultivation.
3. Access to irrigation facilities.
4. High land and medium high land free from normal/seasonal flood.
5. The place of demonstration should be accessible to the visitors by vehicle.

D. Implementation time:

Kharif-II/July –August 2007.

E. Implementation site/upazila:

Bagmara and Charghat

F. Technical details/production guideline of maize:

Variety: Hybrid variety.

Soil : Flood free and sandy loam or loamy soil.

Land preparation: Land has to be tilled 4-5 times depending on the soil type. To soil should be levelled by laddering to make the soil particles thin.

Time of sowing: July to August .

Seed rate: 20 kg/ha.

Method of sowing: Line sowing should be done.

Distance between lines: 75cm.

Distance between plants: 25cm.

Depth of sowing: 25-30cm.

Number of seeds in each hole: 1 seed.

Fertilizer dose: Fertilizer doses for maize production are shown in table 1. below.

Table 1. Fertilizer dose for one bigha Maize production demonstration

Name of Fertilizer	Quantity per bigha
Urea	70kg.
TSP	35kg.
MP	35kg.
Gypsum	25kg.
Zinc sulphate	2.5 kg.
Boron	1kg.
Cow dung	800kg.

Method of Fertilizer application: Cow dung will be mixed well in the soil. One third of urea and all other fertilizers will be mixed with soil during the last tillage. The remaining urea in two equal halves will be applied. In Kharif-II season the 1st half will be applied during 20-25 days after sowing. The other half will be top dressed 40-45days after sowing.

Irrigation: Depending on soil types and low level of water in the land 2-3 irrigation may be needed. Efforts must be made to ensure that there is no shortage of soil moisture during seedling, flowering and grain formation stages.

Weeding: 2-3 times weeding is needed.

G. General instruction:

- A signboard has to be posted at the demonstration site, a sample sign board is provided below.
- All demonstration records must be kept in register/monitoring format in
- Quality seed sowing should be ensured.

H. Budget break up for maize production demonstration:

Sl #	Item of expenditure	Quantity	Unit cost (Tk)	Total cost (Tk)
1	Seed (Hybrid)	3kg.	180.00	540.00
2	Fertilizer. • Urea • TSP • MP • Gypsum • Zinc Sulphate • Boron	70 kg 35 kg 35 kg 25kg 2.5 kg 1kg	7.00 20.00 16.00 8.00 60.00 80.00	490.00 700.00 560.00 200.00 150.00 80.00
3	Irrigation	3 timesx10hours	80.00	2400.00
4	Insecticide (Dersban)	4 bottle	70.00	280.00
5	Sign board	1	400.00	400.00
6	Register	1	25.00	25.00
7	Miscellaneous		100.00	100.00
Total (Five thousand nine hundred and twenty five taka only)				5925.00

MONITORING FORMAT

Disaster Risk Management in Agriculture (DRMA) Project (BGD/01/004/01/31)
Department of Agricultural Extension, Khamarbari, Dhaka.

Title of the Demonstration:

Name of farmer/s:

Village:

Upazila:

Name of crop/s grown:

Area of land:

Date of sowing/transplanting:

Date of flowering (Range):

Date of fruiting (Range):

Date of first harvest:

Date of last harvest:

Others:

Data collection date	Harvest date	Amount harvested (Kg/g)	Amount consumed (Kg/g)	Amount sold (Kg/g)	Sale Value (Tk)	Amount of water use/day (Litre)	Farmers comments
Total							

INITIAL/ESTABLISHMENT REPORT

Disaster Risk Management in Agriculture (DRMA) Project (BGD/01/004/01/31)

Department of Agricultural Extension, Khamarbari, Dhaka.

District:

Upazila:

Year:

Season:

Sl #	Name of the Demonstration	Name of Farmer/s	Father/husband Name	Name of Village	Name of Block	Name of SAAO	Date of Establishment	Remarks

Copy to: Deputy Director of the concerned district

Filled up by.....Approved by.....Date.....

(Field Officer-Monitoring)

(Upazila Agriculture Officer)

Note: The filled-up format has to be sent to the PMU, DRMA/LACC as soon as the demonstration is established at the field.

SAMPLE SIGNBOARD

- 1| emZ evwoi Avw^{1/2}bvq me&wR evMvb cÖ`k©bx
- 2| AvMvg ev bvex Rv‡Zi ‡ivcv Avgb avb Drcv`b cÖ`k©bx
- 3| `yBevi ‡ivcb c×wZ‡Z Avgb avb Drcv`b cÖ`k©bx
- 4| jwZivR KPz Drcv`b cÖ`k©bx
- 5| Av‡cj Kzj evMvb m„Rb cÖ`k©bx
- 5| fyÆv Drcv`b cÖ`k©bx

(wb‡Pi bgybv mvBb‡ev‡W© Dc‡iv³/cÖ‡hvR` cÖ`k©bxi
bvg wj‡L wb‡Z n‡e)

mvBb‡ev‡W©i AvKvit 90‡mwig X 65‡mwig

wWRv÷vi wi` < g`v‡bR‡g>U Bb GwMÖKvjPvi
(wW Avi Gq G) c‡‡R±

emZ evwoi Avw^{1/2}bvq me&wR evMv bx‡ji g‡a`

K...l‡Ki bvg:
MÖvg:
BDwbqb:
Dc‡Rjv:
‡Rjv:

dm‡ji bvg:
dm‡ji RvZ:
Rwgi cwigvb:
‡ivc‡bi ZvwiL:
ni‡`i g‡a`



—evq‡b : K...wl m‡cÖmviY Awa`Bi
vMZvq : RvwZms‡Ni Lv` I K...wl ms`'v

