



Government of the People's Republic of Bangladesh
Ministry of Agriculture
Department of Agricultural Extension (DAE)
Exportable Mango Production Project
Khamarbari, Farmgate, Dhaka-1215

Final Report

“Preparation of Good Agricultural Practices (GAP) Guidelines for Mango Crops”



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FINAL REPORT FOR

Preparation of Good Agricultural Practices (GAP) Guidelines for Mango Crops

Submitted to:

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Abbreviation

BARI	:	Bangladesh Agricultural Research Institute
BBS	:	Bangladesh Bureau of Statistics
DAE	:	Department of Agricultural Extension
EU	:	European Union
FAO	:	Food and Agriculture Organization
GAP	:	Good Agricultural Practices
MOA	:	Ministry of Agriculture
NGO	:	Non-Government Organization
SAAO	:	Sub Assistant Agriculture Officer
UAO	:	Upazila Agriculture Officer
AFACI	:	Asian Food and Agriculture Cooperation Initiative
TSS	:	Total Soluble Solids
CHT	:	Chittagong Hill Tracts
IPM	:	Integrated Pest Management
GI	:	Geographic Index
EMAP	:	Emergency Management Accreditation Program
C & F	:	Cleaning and forwarding
MRL	:	Maximum Residue Level
GSP	:	Generalized System of Preference
REX	:	Registered Exporter system
UK	:	United Kingdom
FoB	:	Foreign on Board
ISO	:	International Organization for Standardization
BACB	:	Bangladesh Association of Certification Bodies

GAP GUIDELINES FOR MANGO

1.1 Introduction

Global GAP rooted in 1997 as EUREPGAP. The intension of global GAP is to be changed producers' attitude towards the safe food production process. The global GAP is a pre farm gate standard and applies to whole agricultural production process of certified product. The farmers perception on Global GAP was mostly positive that will benefit them in knowledge and skill development (Khan 2020).

Good Agricultural Practices (GAP) address environmental, economic and social sustainability for on-farm processes and result in safe and quality food and non- food agricultural products. It is a set of principles, regulations and technical recommendations applicable to production, processing, transportation addressing human health care, environmental protection and improvement of working conditions (AFACI & BARC 2015).

According to FAO 2016, GAP “Collection of principles to apply for on-farm production and post-production processes, resulting in safe and healthy food and non-food agricultural products, while taking into account economic, social and environmental sustainability.”

Reasons for conducting GAP:

- ✓ Many importing countires as well as domestic buyers, especially organized retailers, are requiring producers to implement GAP to ensure the quality and safety of their products.
- ✓ Implementation of GAP encourages promotion of the optimum use of resources such as pesticides, fertilizers and water and eco-friendly agriculture, and
- ✓ Protect the agricultural workers' health from improper use of chemicals and pesticides.

In the context of above importance of GAP, Mango as an important fruit crop of Bangladesh, GAP protocol has been developed to produce safe and quality mango for both domestic and export markets. GAP will be addressed for new and established orchard.

1.2 GAP Guidelines for New orchard/Old orchard

1.2.1 Site Selection

- Mango may be planted in any parts of Bangladesh but North Western and South Western regions are mostly suitable for commercial mango cultivation.
- During selecting site cropping area, infrastructure such as road, electricity and water source, suitable soil, land topography, climate, market network and labor availability should be considered.

1.2.2 Land and Soil

- High and medium land should be suitable for planting.

- Most desirable soil is fertile with medium texture, deep and well drained having PH of 7.8-8.4 and water table below 180 cm in the year.
- Soil analysis should be conducted for organic matter content, macro and micro nutrient composition, salinity level, soil structure and texture.
- In hilly area, the hill slopes should be below 45 degrees.

1.2.3 Saplings selection

- Select the saplings of varieties of the well adopted to the area.
- Saplings should be grafts of genuine variety, healthy and free from pests. The sources of grafts should be from reliable nursery or public farms.
- Purchases and transplantation invoices of saplings should be kept in the farm.

1.2.4 Varieties/Hybrids

Growers are suggested to plant early, medium, late and year-round varieties/hybrids for commercial cultivation to supply mangoes at local and export markets.

1.2.4.1 Early Varieties

a) *Gopalvog*

- Oval Shaped, Weight 210 g, TSS 25% (Sweet), Yield 8-10 ton/ha
- Available from late May to Mid-June.

b) *Gobindavog*

- Round, Weight 330 g, TSS 16%, Yield 12-15 ton/ha
- Available from Mid-May to June.

1.2.4.2 Medium (Mid-Season)

a) *Khirshapat/Himsagar*

- Nearly Oval, Weight 264 g, TSS 26%, Yield 15-20 ton/ha
- Available from late May to 3rd June
- GI recognized.

b) *Langra*

- Oval, Weight 315 g, TSS 24%, Yield 15-17 ton/ha
- Available from 1st week to end of June
- GI recognized.

c) *BARI Aam 2*

- Colored oval, Weight 250 g, TSS 17.5%, Yield 22 ton/ha
- Available from 2nd week June to 1st week July.

d) Harivanga

- Originated from Rangpur, Fruit Oval, Weight 350 g, TSS 20%, Yield 15-20 ton/ha
- Available from Mid-June to Mid-July.

e) BARI Aam 3 (Aamrupali)

- Fruit Long oval, Weight 210 g, TSS 23.4%, Yield 20 ton/ha
- Available from Mid-June to Mid- July.

1.2.4.3 Late Varieties

a) BARI Aam 4 (Hybrid)

- Fruit Round, Large Size, Weight 600 g, TSS 24.5%, Yield 18-20 ton/ha
- Available from June 3rd week (CHT), other districts from July to August.

b) Fazli

- Fruit long oval, weight 655 g, TSS 20%, Yield 20-22 ton/ha
- Available from 3rd week of June to July
- GI (Geographic Index) recognized.

1.2.4.4 Year-round variety

a) BARI Aam 11

- Fruit long and wide, Weight 320 g, TSS 18.5%, Yield 12-15 ton/ha
- Light yellow-colored mangoes are harvested 3 times – January, May & September.

1.2.5 Planting process

- May-July most appropriate time of planting maintaining distance 12 x 12 m for large size plants, 10 x 10 m for medium size plants and 8 x 8 m for small size plants like dwarf variety (BARI – Aam 3).
- Pit size for planting 1 x 1 x 1 m 8-10m for pit to pit.
- Each pit will contain 20kg cow-dung, 500g TSP, 50g zinc sulphate and 50g boric acid, and these will be thoroughly mixed and kept 10-15 days ahead of planting sapling.
- Appropriate planting design square and rectangular design is also practiced.
- Saplings should be planted at center of pit with the stick support and followed by proper watering.

1.2.6 Management of new plantation

- Raise soil around the new planted sapling to avoid water logging.
- Remove unnecessary branches.
- Remove blossom from young plants and blossom should not be kept until two years old.

- In new garden, intercrops like pulses, quick growing vegetables, ginger, turmeric, etc. may be practiced to diversify the income of the farmers.

1.2.7 Fertilizer application

- Both cow-dung/compost and fertilizer to be applied as per age of the plants. (Table- I).

Table-1: Fertilizer dosages for different ages of mango trees. (Sarker B.C et.al,2021)

Manure & Fertilizers	Age of plant (years)					
	2-4	5-7	8-10	11-15	16-20	20 (above)
Cow dung or compost (kg)	10-15	16-20	21-25	26-30	31-40	41-50
Urea (g)	250	500	750	1000	1500	2000
TSP (g)	250	250	500	500	750	1000
MP (g)	100	200	250	350	450	500
Gypsum (g)	100	200	250	350	400	500
Zinc sulphate (g)	10	10	15	15	20	25
Boric acid (g)	20	20	30	30	40	50

- Fertilizer to be applied in two instalments June-July and September – October.
- Fertilizer is applied in ring method around the base of the plant up to two years old at a distance of 1-1.5 m, 2-3 m for 10-12 years old plants and 4 m or more 30 years old plants.

1.2.8 Crop management of the orchard:

- Pruning the dead, diseased, infested and damaged branches.
- Avoid excessive pruning on bearing trees.
- Pruning is to be done preferably after harvest of mango.
- After fruit bearing, clean the unproductive panicles, overlapped leaves, and malformed fruits.

1.2.9 Rejuvenation and top working

- Old plants do not produce quality fruits of desired quantity. These plants are to be rejuvenated by cutting the top branches starting from northern side of the plant and gradually other side in subsequent 2-3 years. The emerged branches produce good quality fruits.

If the owner of the orchard desires to change the existing variety, veneer grafting on the new branches may be practiced.

- Farmers sometimes want to change the inferior variety by replacing with good variety through top working.
- Cut the 20-25 cm long branches from where 5-6 cm girth branches are emerged.
- Scion of improved variety is veneer/cleft grafted on the new branches.

- Top working should be done on selected branches gradually without cutting all branches of the plant at a time.

1.2.10 Weeds and parasitic plants control.

- Plough down the weeds at the beginning of and end of rainy season.
- Hand weeding for small orchard.
- Remove parasitic plant like Loranthus sp. from mango plants.
- Selective herbicides like paraquate (3 kg/ha) may be used in addition to other methods of weed control if necessary.

1.2.11 Irrigation and drainage

- Water free from contaminants like arsenic, cadmium etc. should be used in irrigation, post-harvest washing etc.
- Irrigate the orchard at full bloom and another at pea stage of fruit.
- Irrigation should not be given at least 2-3 months before flowering to avoid vegetative growth.
- Orchard should be irrigated through modified basin system raising dykes around each plant.
- Drip irrigation may be practiced for efficient water and nutrient delivery systems for growing plants.
- Excess water should be drained out after heavy rainfall to avoid water logging.

1.2.12 Crop Protection

- Mango crop is infested by some insects and diseases like mango hopper, fruit borer, fruit fly, leaf eating caterpillar. Major diseases are anthracnose, powdery mildew, die back, stem end rot.
- Integrated Pest Management (IPM) is necessary to control different pests. Some methods are-

1.2.12.1 Cultural Management:

- Clean cultivation.
- Pruning of diseased, insect infested undesired branches.
- Removal of rotten and infested fruits.

1.2.12.2 Pesticides application:

In order to achieve the effective control of pest, four basic principles should be followed which include-

- a) Pesticide selection
- b) Proper doses
- c) Appropriate time of application
- d) Proper methods

a) Pesticide selection

Farmers should contact Local Agriculture officers (UAO, SAAO) for proper selection of pesticides. Same pesticide should not be repeatedly used as the targeted pests to develop resistance.

b) Pesticides proper doses

The proper dose of the pesticide should be as per recommended doses mentioned on the packet or bottle and advice of Agriculture officers.

c) Proper time of pesticide application:

- Spraying pesticides before opening of blossom.
- After blossom opening, spraying will hamper the mango flower pollination by different flies.
- Ahead of 15-20 days of fruit harvesting, spraying pesticides must be stopped.

d) Proper methods of pesticide application:

Thoroughly spray pesticide on the targeted pest attacked leaves, branches, trunks and fruits. The number of sprayings depends on the intensity of the infestation.

1.2.12.3 Use of pheromone (Methyl uignal)

- Farmers may use the pheromone trap and impregnated pheromone sticky trap to control fruit fly.
- Use of brown paper one month before harvesting fruits, also protect fruits from fruit fly.

1.2.12.4 Use of paper bagging

(After use bags to be destroyed by burying)

1.2.12.5 Pesticide Management

a) Pesticide Handling

Handling of pesticide should follow all rules recommended by law and only legally registered pesticide should be used by trained adults. Following practices should be adopted:

- a) Before mixing.
 - Check sprayers for any defects.
 - Clean the nozzles with water.

- Read the product label before mixing.
- b) During mixing
 - Use the measuring cup for the concentrated formulated pesticide.
 - Use clean water for mixing the pesticide.
 - Use appropriate hand gloves to avoid dermal exposure.
- c) During application
 - The operator should wear gloves, mask, protection glasses, water-proof coat, hat & boots according to the manual of pesticide use.
 - Maintain a record of spray application indicating the information on date, volume used and area sprayed.
- d) After Spraying
 - Clean the spray equipment.
 - Residue of the pesticides should be disposed outside the water bodies.
 - Change working clothes immediately after spray.

b) Storage & disposal of empty containers in safe areas

- Damaged pesticides container should not be carried.
- Keep pesticides locked in storeroom and out of children reach.
- Storage area should be dry and well ventilated.
- Pesticide must not be stored near food, feed, which may become contaminated by spilled material, volatile pesticide and odour.
- Alternatively, pesticide containers should be buried in the pits of the remote areas of the farm.

1.2.13 Training

Growers and traders need training for their capacity improvement:

- Good production practices of mango.
- Post harvest technology to minimize post-harvest loss.
- Processing mango for leather, juice/jelly/jam, pickles, dry mango etc.
- Marketing management of mango for both local and export market.

1.2.14 Harvesting and post-harvest management

- The fruits should be harvested at proper maturity after 15-20 days of spraying pesticides.
- Mature fruits will sink in 1% salt solution (100g table salt/10L water)
- Leave about 2.0 cm pedicle on the fruit to minimize latex flow which may burn the fruit.
- Harvested fruit should be immediately brought to the shade/packing house for sorting and grading.
- Mangoes are sorted according to size and quality.
- Fruits are washed with mixture of potable water and mild soap.

- Newly harvested fruits are sub-merged in hot water (46°-47° C for 2 Hours).
- Alternatively Vapor hot water treatment to be provided to mangoes at 55° C for 5 minutes.
- Fruits are allowed to cool by air drying.
- Mango fruits are packed in suitable packaging containers.
- Packed mangoes are stored in cool room (temperature 12° -14° C and relative humidity 85-90%)

Transportation

- Mango is a climacteric fruit and easily perishable after harvesting. It should properly be transported to different markets to minimize post-harvest loss through careful handling and proper transportation.
- Harvested mangoes are to be transported in local markets by local transports using only plastic crates instead of bamboo basket and gunny bags.
- Mangoes are to be packaged in single layer in fruit crates and carton due to the sensitivity to pressure before transportation.
- Mango fruits are to be transported in plastic crates wrapping with news/tissue paper.
- Cool chain vehicles are to be used for carrying to long distance local market and airport for export.
- Farmers/Traders of Rajshahi region are advised to use train introduce for mango transportation from Rajshahi to Dhaka to minimize post-harvest loss and cost of transportation.

1.2.15 Workers Health and Hygiene

The working environment and health of the workers are very important for the profitable output of orchard.

Following actions are suggested:

- Child labors below 16 years old should not be employed in the farm.
- All workers and staff of the orchard should be trained about the importance of proper working environment and risks of chemical, physical and biological contamination.
- The workers should wear environment friendly globes, impermeable apron, mask, sunglass (if necessary).
- Maintain a program for constant cleaning and supply of sanitary materials in hygienic toilets.
- Arrange safe drinking water and hand washing taps inside the farm.
- Train workers for proper handling of chemicals personal hygienic practices.
- Provide the workers safe and healthy foods creating environment of proper cooking, drinking water and sitting arrangement.
- Provide medical facility to workers and staff for better health.
- Always First Aid Box should be kept in the farm for emergency primary treatment.

1.2.16 GAP Display Board

- Farmers adopting GAP protocol in mango garden should be demonstrated in the display board as per guideline of the EMAP.
- The contents of the display board will include the followings:
 - ✓ Name of the farmer:
 - ✓ Father/Husband name:
 - ✓ Mobile No.:
 - ✓ Village, block, union, upazila and district name:
 - ✓ Year of garden establishment:
 - ✓ Area of the orchard:
 - ✓ Name of the variety/varieties:
 - ✓ Name, address and mobile number of SAAO:

1.2.17 Export processing of mango

Mango exported to EU, Middle East, Singapore, Malaysia among other countries. Hortex foundation (Saha M K, 2023) outlined 19 steps to start an export business of different agro-commodities including mango.

Steps:

- i. NID, Vat Tax Registration, Trade license, Membership of Association / Trade body.
- ii. Export Registration Certificate (ERC) from Export-Import Directorate.
- iii. Registration with plant protection wing of DAE.
- iv. Agreement with the exporters of the concerned country.
- v. C & F (Cleaning and Forwarding) agent appointment.
- vi. Airspace booking for export item with different airlines.
- vii. Agreement signing with the contract farmers of exportable target crop and submission of contract farmers list to Plant Protection wing of DAE.
- viii. Training of contract farmers and supply them seeds/ saplings and other inputs (fertilizer, pesticides).
- ix. Crop production as per GAP and use of register for ensuring traceability.
- x. Periodical supervision and evaluation by Upazila Agriculture Offices/ Plant Protection Wing officials, DAE.
- xi. Sample of Exportable mango from selected orchard should be sent to accreditation lab (BARI) for Maximum Residue Level (MRL).
- xii. Careful harvesting and post harvesting operations (Sorting, grading, washing, hot water treatment/ VPN etc.) and after cooling, mango should be packed in corrugated cartoon box.
- xiii. Collection of GSP/ REX certificates from Export Promotion Bureau.
- xiv. Country of origin certificate for mango from Chamber of Commerce.
- xv. Phytosanitary certificate from Plant Protection Wing of DAE.

- xvi. Mango for export to middle east and other non-Europeans countries, exporters will send from own pack house to Airport. Exporters like to export mango to UK and other European countries, should send mango to central packhouse for grading, cleaning and hot water treatment, Phytosanitary certificate for shipment to Shahjalal International Airport to exporting country like UK.
- xvii. Mango will be loaded in Biman/ other Airline only after getting custom clearance. However, custom clearance is also mandatory for any commodity export by Sea and Land port.
- xviii. Foreign currency like dollar, pound should be paid by importers to exporters.
- xix. Application should be address to Bangladesh Bank to collect incentive 20% as per FoB (Foreign on Board).

All the above documents are to be properly preserved by the exporter for inspection.

1.2.18 GAP Certificate

Bangladesh GAP has been formulated keeping in harmony with the basic principles of Global GAP which will encourage the optimum use of agricultural inputs such as pesticides, chemical fertilizers, water etc., and environment friendly management to produce safe, healthy and quality food. Safe food production is an urgent issue to protect the human, environment, bio-diversity and promote economic improvement. Besides, cleanliness of farm and processing equipment, pack houses, storage etc., are to be ensured. The health and hygiene of the farmers and workers should be protected with proper sanitation and primary medical facilities.

It is important that the certification authority follow the uniform and accurate procedures in all levels of sustainable production of safe and nutritious crops, processing and marketing of agro-commodities and thereby earned the creditability and the confidence of the consumers.

Application of Bangladesh GAP practices certification will be at per guidelines of the Bangladesh GAP Policy 2020 of the Ministry of Agriculture, Government of Bangladesh.

Application for Bangladesh Good Agricultural Practices certification:

1. Individual producer or producers' group (two or more) may be the applicant;
2. The same requirements will be in effect for the individual producer and producer group;
3. The producer must evaluate GAP procedures according to ISO 17065:2012 through self-assessment for at least three months before submitting the application;
4. Application must be made in the prescribed form so that there is a clear understanding of the producer or the producer group.
5. Application form and necessary information have to be uploaded on the website of certification body;
6. Certification body may consider to verify the information provided by the previous certification body;

7. Any minutes or GAP certificates revoked or approved in any policy or law by any other certification body has to be mentioned.
8. Bangladesh Association of Certification Bodies (BACB) will conduct all activities to issue GAP certificates to the crop producers or producer group following the processes prescribed in the GAP standard.

1.2.19 Farm Records

Different records related to commercial production of mango in orchard/ farm are to be properly maintained at least for two years for auditing and traceability:

1. Orchard/ farm registration number and date of registry.
2. General information of the orchard farm-
 - Name of the owner with the address.
 - Ownership pattern-own and or lease.
 - Location of the farm-Mouza, Union, Upazila, and District.
 - Area (ha) of the farm, own and lease land.
 - Fencing around the orchard with a gate for entrance and exit.
3. Soil type and analysis report
4. Plantation records:
 - Source of sapling (new orchards)
 - Varieties
 - Plant to plant spacing.
 - Planting Design.
5. Manure and fertilizer management:
 - Doses of manure and fertilizer per decimal on the basis of soil analysis.
 - Time and frequency of application.
 - Source of advice of fertilizer application.
6. Irrigation and drainage:
 - Source and quality of water.
 - Frequency of irrigation during mango production.
 - Drainage of access water.
7. Pests management:
 - Name of major pests in orchard.
 - Application of pesticides with their name, doses, and dealers.
 - Frequency of pesticides application with dates by the trained person.
 - IPM practices.

- Sources of advice for pest management.
 - 8. Training related information:
 - Date, subject, duration, and training provider particulars.
 - 9. Harvesting and post-harvest management:
 - Dates of harvesting mango with variety.
 - Harvested amount (Kg) per harvesting.
 - Post harvest treatment.
 - Mango sale mentioning quantity (Kg) and price (Tk).
 - Facilities of cold storage and transportation.
 - 10. Inventory of crop production inputs and machinery/ equipment of the farm.
 - 11. Cash book register.
 - 12. Health and hygiene management records by providing hand gloves, safe drinking water, first aid kit, sanitary measures and welfare of the farm labors and other workers.
 - 13. Inspection register (Quarantine officials, Upazila Agriculture Officer etc.).
 - 14. Farm record keeping form
- Based on review of documents (Hortex-2023, Wagmod et al 2020) and our personal experience, recording information of the farm/orchard has been suggested as per following form:

Year of Recording (.....)

1) Orchard owner/Farmer Particulars:

- a) Name:....., b) Father's/Husband Name:
- c) Village:....., d) Union:.....
- e) Upazila:....., f) District:.....
- g) Membership of Farmers' Group (if any):.....
- h) Year of Membership:....., i) Number of farmer in the group:.....
- j) E-mail:....., k) Web Site (if any):.....
- l) Sub-Assistant Agriculture Officer (Name):.....Cell (for contact):.....

2) Orchard area and ownership pattern:

- a) Year of establishment:....., b) Ownership Pattern (tick): Own/Joint family/Share cropping
- c) Land area (decimal): own....., lease.....share cropping.....
- d) Soil type (tick): Sandy/Sandy Loam/Loamy/Clay.

3) Different Structures of the Farm (Yes/No):

- a) Working shade:.....
- b) Farm implements shade:.....
- c) Storage and Packaging arrangement:.....
- d) Pond:.....
- e) Waste and litter disposal area:.....

- f) Toilets:.....
 g) Drinking water arrangement:.....
 h) Fencing and gate:.....

4) Workers/Labour Particulars:

- a) Name:.....
 b) Father's Name:.....
 c) Age:....., d) Gender:.....
 f) Home address:.....

g) Personal Hygiene Information (Yes/No) tick:

	Yes	No
(i) Hand washing with soap after toilet		
(ii) Regular nail cutting		
(iii) Regular bathing		
(iv) Use of Apron, musk, gloves during spraying pesticides		
(v) Medical facilities for primary treatment with First Aid Box		
(vi) Arrangement of safe drinking water and dining		

5) Planting Saplings:

- a) Varieties:
 (i) Names:..... (ii) Number of plants:..... (iii) Year of Planting:.....
 (iv) Planting distance (meter):..... (v) Design:.....
 b) Sources of grafts (tick):
 (i) Govt. Nurseries (ii) Private Nurseries (iii) NGO Nurseries

6) Cultural Management (Yes/No):

- a) 1st Pruning branches b) 2nd Pruning c) Removal of Infested/damaged branch
 d) Mulching

7) Manure and Fertilizer Management:

- a) Soil Analysis: (i) Nutrients (%) N.....P.....K....., (ii) Organic matter (%)
 (iii) Soil pH (tick): (1) Acidic..... (2) Alkaline..... (3) Neutral.....
 b) Application of organic manure (tick): (i) Cow dung (ii) Vermicompost (iii) Wood ash
 c) Application of fertilizer (tick): (i) Urea....., (ii) TSP....., (iii) Muriate of potash.....
 (iv) Gypsum..... (v) Boron.....
 d) Advice of Manure and fertilizer sources (tick): (i) DAE..... (ii) BARI.....
 (iii) NGO..... (vi) Dealer.....

8) Irrigation and Drainage:

- a) Irrigation (tick): (i) Yes..... (ii) No..... (iii) Partial.....
 b) Sources of water (tick): (i) River..... (ii) Canal..... (iii) Deep/Shallow Tube-well.....
 c) Analysis of irrigation water (Yes/No):

d) Irrigation methods (tick): (i) Manual..... (ii) Drip..... (iii) Fertigation.....

e) Drainage (tick): (i) Yes..... (ii) No..... (iii) Partial.....

9) Intercropping Yes/No:

a) If yes, name of intercrops.....

10) Weed Control (tick):

a) Manual..... b) Mechanical..... c) Herbicide.....

11) Pest Management (Insects & disease):

Date of Pesticide application	Name of pesticide	Regions of uses	Dose (gram per litter)	Pheromone traps (Yes/No)	Light/sticky traps (Yes/No)	Paper bag (Yes/No)

12) Weather Data Recording:

Date	Mean Temperature	Relative Humidity (%)	Rainfall (Inches)	Strom/ Cyclone	Fogs	Drought

13) Training Related Information (Yes/No):

Dates of receiving training	Training subject	Duration (days)	Training Providing Agencies

14) Harvesting and Post Harvest Management and Transportation:

Dates of harvest		Harvesting fruits 15 to 20 days after pesticide application		Washing		Sorting and grading		Hot water/vapor treatment		Packaging (corrugated box)		Transportation in cool vehicle with plastic crates		Storages in cool room (12-14°C RH 85-95%)	
1 st harvest	last harvest	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

15) Marketing of Mango (tick):

Exporters		Processor		Contracting Agency		Local Bepari	
Yes	No	Yes	No	Yes	No	Yes	No

16) Expected Production and Profitability

Production		Profitability	
Yes	No	Yes	No
Total Production (Kg)		Total sale proceeds (Tk.)	

17) Farm Inspection Record (Quarantine Officials/ Upazila Agriculture Officer and others.

Inspection Date	Inspector's Name & Mobile	Observations	Comments	Recommendations	Signature

18) Cash Register (tick): Yes..... No.....

If yes, Name of Cashier:.....

Name and Signature of the
Farm/Orchard Owner:

Name and Signature of the
Record Keeper

1.3 References

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