Participant Handbook

Banana Farmer

Qualifications Pack: Banana Farmer
- SECTOR: AGRICULTURE
- SUB-SECTOR: Horticulture
- OCCUPATION: Horticulture Crops Cultivation
- REFERENCE ID: AGR / Q.0201
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Participant’s Feedback Form
# Module 2: Planting Material Preparation in Banana Cultivation

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<td>5</td>
<td>Treatment of Planting Material</td>
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**Agro-climatic Conditions**

After completing this session the participants will be able to:
- state the climatic and soil conditions required for banana cultivation.

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**Climatic conditions**

The climatic conditions for banana cultivation are:
- Most Suitable temperature for banana is 24-28°C.
- Optimum growth at 27°C.
- Humidity : 75 – 80%.
- Average rainfall of Jalgaon: 805mm
- Grown in Maharashtra: Ahmednagar, Dhule, Nanded, Parbhani regions of the state.
- Banana hubs in Jalgaon district: Raver, Bhusaval, Jalgaon, Chalisgaon and Chopda.

The Soil conditions for banana cultivation are:
- Soil : Loamy soils with a pH range of 6.50 to 7.50 are most suited.
- Soils which are not too acidic or alkaline are desirable for banana cultivation.
- Water stagnation in the field damages the banana crop.
- Loamy soils having good drainage, adequate fertility and moisture are good for banana growing.
- Saline sodic (high concentration of sodium) and calcareous (high concentration of calcium carbonate) soils are not good.
### Characteristics of Cultivars

After completing this session the participants will be able to:
- select the variety based on the characteristics of cultivars;
- list the varieties that are suitable to the zone of cultivation.

### Session Plan

| 1 | Characteristics of Cultivators |

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### Cultural Practices to Control Diseases and Pest Incidence

**The Characteristics of Cultivators is discussed in the given table:**

<table>
<thead>
<tr>
<th>Variety</th>
<th>Characteristics</th>
<th>Duration (months)</th>
<th>Yield (t/ha)</th>
<th>Soil Suitability</th>
<th>Resistance and/ or Susceptibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Nain</td>
<td>Imported Commercial variety from Israel. Medium height. Good quality bunches having well spaced hands with straight orientation of fingers, bigger in size. Fruit develops attractive uniform yellow colour with better self life and quality than other cultivars. 8-10 hand and 200-220 fruits per bunch. The length of the fruit is 15-21 cm and girth is 12-13 cm.</td>
<td>11</td>
<td>70-75</td>
<td>Loamy soils having good drainage, adequate fertility and moisture</td>
<td>Susceptible to Sigatoka leaf spot disease when grown in humid tropics</td>
</tr>
<tr>
<td>Basrai</td>
<td>Very popular variety. Dwarf stature. Used for table and processing purpose. Bunch size, fruit length and size is good. Keeping quality is poor. The average bunch has 6-7 hands and with about 13 fruits per hand. The thick rind of the fruits retains to some extent the greenish colour even when the fruits are ripe.</td>
<td>14</td>
<td>45-50</td>
<td>Performs well drained fertile soils</td>
<td>No resistance to diseases and pests</td>
</tr>
<tr>
<td>Variety</td>
<td>Characteristics</td>
<td>Duration (months)</td>
<td>Yield (t/ha)</td>
<td>Soil Suitability</td>
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<tr>
<td>Sreemanthy and Mahalaxmi</td>
<td>These two varieties are also preferred by the local farmers. Almost having the similar characteristics like Robusta. Better self life and market potential</td>
<td>17 months</td>
<td>65-70</td>
<td>Loamy soils having good drainage, adequate fertility and moisture</td>
<td>No resistance to diseases and pests</td>
</tr>
<tr>
<td>Nendran</td>
<td>There is considerable diversity in plant stature. Bunch has 5-6 hands weighing about 6-12 kg. Fruits have a distinct neck with thick green skin turning buff yellow on ripening. Fruits remain starchy even on ripening.</td>
<td>16</td>
<td>55-60</td>
<td>No resistance to diseases and pests</td>
<td></td>
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**Identification of Appropriate Planting Material**

After completing this session the participants will be able to:
- state the types of planting materials;
- identify the appropriate planting material for various banana varieties.

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**Types of Planting Material**

There are three types of planting material:

i. **Suckers**: Shoots growing from the rhizome of banana plants which then grow into new plants.
   - Ideally suckers should come from a healthy, pest and disease free plantation.

ii. **Corm pieces**: Portions of the banana plant cut from the rhizome (corm) of the plant and with a bud attached.
More planting material from fewer suckers.
Easy to transport.
Easy to treat for pests and diseases.
Corm pieces should come from a healthy, pest and disease free plantation relatively clean planting material.

iii. **Tissue culture plants:** Banana planting material grown in a clean environment in the laboratory. These planting material are small plant pieces from mother plant.

### Varieties and their appropriate plant material

<table>
<thead>
<tr>
<th>Variety</th>
<th>Appropriate Planting Material</th>
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<tbody>
<tr>
<td>Grand Naine (G-9)</td>
<td>Tissue culture raised properly hardened secondary seedlings.</td>
</tr>
<tr>
<td>Dwarf Cavendish, Robusta, Basarai</td>
<td>Suckers as well as tissue culture</td>
</tr>
<tr>
<td>Nedran</td>
<td>Suckers as well as tissue culture</td>
</tr>
<tr>
<td>Mahalaxmi and Shri Manthey</td>
<td>Suckers and tissue culture</td>
</tr>
</tbody>
</table>
Procurement of Planting Material

After completing this session the participants will be able to:

◆ identify various suppliers for quality planting material;
◆ plan and procure planting material;
◆ identify appropriate storage space to store planting material;
◆ identify the appropriate time for procuring planting material.

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Selection of Supplier

The sucker/corm supplier should meet the following requirements.

◆ Succers/corms from true to type mother plant.
◆ Mother plant should come from diseases and nematode free clean fields.
◆ Trust worthy, cost effective with quality planting material

Tissue culture plants can be obtained from the following suppliers:

◆ Regional Research Station, Mahatma Phule Krishi Vidyapeeth, Neemkheda Road, Jalgaon, Maharashtra,
◆ Tissue Culture & Agricultural Services, Jain Irrigation Systems Ltc., Jain Plastic Park, N.H.No.6, Bansbari, P.O. Box-72, Jalgaon-425001, Maharashtra,
◆ Mahabanana, Krishi Utpanna Bazar Samittee, Jalgaon-425003, Maharashtra.

Obtaining Planting Material from Mother Plant

a. Succers

◆ Sword succers (1.8–2.1 m high and ~4.5 cm in girth) are preferred, partly because
◆ they are less infested with nematodes and banana weevils than larger planting material.
◆ Sucker preparation should be done far from the new field.
◆ Remove all leaves, roots and all parts of the rhizome that appear diseased (tunnels indicating banana weevils, reddish lesions at base indicating nematodes.
◆ The oldest leaf sheaths should also be removed as they may house banana weevil eggs or adults.
◆ A slanting cut is made to remove the top part (slanting prevents water from collecting on top,
causing rotting).

b. Corm:

- Separate the corm from the stem of the plant. Cut off the outer layers of the corm, about 3 cm deep, to reduce nematode populations.
- Remove damaged parts and wash the corm with clean water.
- Cut up the corm into 4–7 pieces depending on corm size and number of buds.
- Every piece should contain a visible, healthy bud.
- Treat corm pieces with recommended insecticides before planting

c. Tissue culture plants:

No major preparation is needed of tissue culture plants if they have been kept in a clean environment prior to planting. However, if the plants are seen to have pest infested leaves or leaves in a bad condition, these should be cut off prior to planting.

- Primary nursery plantlets

Tissue culture banana plantlets available in net pots to an approximate height of 12 cm. with three to four leaves. The plantlets are packed in open cartons or closed boxes and transported in pick-up-vans or trucks. These plantlets grown in Secondary Nursery for 8-12 weeks prior to planting in the main field.

- Secondary nursery plantlets

The Tissue culture Banana plantlets also available in poly bags to an height of 30 to 40 cm with 6 - 8 leaves from the Commercial Laboratories’ secondary nursery. These plants are ready for field planting.

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**Time of Procurement and Storage**

- The planting of banana is done twice in the year i.e. Kharif (June- July) and Rabi (October- November) seasons.
- Keep the field ready for planting while procuring planting material.
- Procure planting material depending on the field conditions, so that planting is done with a minimum gap between procurement and planting.
- Store the planting material in clean condition ensuring no chances of infection of pathogens and pests if there is a time lag between procurement and planting.
- Treat the planting material with fungicides/pesticides before transplanting in the field.

**Labour requirement**

- The actual labour cost will vary from location to location depending on minimum wage levels or prevailing wage levels for skilled and unskilled labour.
- The use of ergonomically suitable tools and equipments is desirable for efficient planting.
Treatment of Planting Material

After completing this session the participants will be able to:
◆ treat planting material as per dosage recommended.

Session Plan

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<th>Recommended treatment for Diseases and Pests of Planting Material</th>
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Recommended treatment for Diseases and Pests of Planting Material

Diseases of Planting Material
Rotting of suckers, Weevil and nematodes are the major problems of planting material.

Treatment Recommended
◆ Treat suckers with Monocrotophos (0.50%) and Bavistin (0.1%) before planting to control the weevil.
◆ Application of 2-3gm carbofuran per plant in secondary hardening stage can protect nematode infestation.
◆ Neem cake would also ensure vigour and health of the plants.
◆ Dip suckers in a solution of aurofugine (10g/100 litres water) or Captafol (200 g/100 litres water) or Carbendazin (100 g/100 litres water) for 1.5 hours prior to planting, to prevent fungal diseases.
## Session Plan

<table>
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<tr>
<th>Program Name</th>
<th>Banana Farmer</th>
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<tbody>
<tr>
<td>Name of Client</td>
<td>NSDC</td>
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<tr>
<td>Version No.</td>
<td>1.0</td>
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<tr>
<td>Pre-requisites to Training</td>
<td>One year experience in banana cultivation</td>
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<td>No Entry level barrier; 5th standard appear or pass preferable</td>
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<td>Training Outcomes</td>
<td>After completing this program, participants will be able to cultivate banana crop on a given piece of land which involves procurement of seed material from the market to the sale of farm produce in the market.</td>
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IL&FS Skills Development Corporation Limited
(A Joint Initiative with National Skill Development Corporation)

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