Scientific cultivation of Banana (*Musa accumunata*)

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Cultivars:

Three types of Banana cultivars.

Dwarf:

Jahaji (Dwarf Cavendish)

Grand Naine

Medium Tall:

Cheni champa

Malbhog

Borjahaji

Tall:

Purakol

Jatikol

Bhimkol

Propagation

It is propagated by suckers. Select healthy sword suckers and uproot with corm. Trim all the roots without damaging the buds. Give a slanting cut to the pseudostem 30 cm above the base of the sucker. Weight of such sucker should be around d 1.5 to 2 kg

Size of pit

Pits of 60cm x 60cm x 60 cm size are dug, filled with a mixture of sand, soil and Farmyard manure in a 1:1:1 ratio.

Spacing:

Dwarf cultivars: 1.8m x 1.8 m

Medium Tall cultivars: 2.1m x 2.1m

Tall cultivars: 2.4m x 2.4 m

Manure & Fertilizers

12-15 kg FYM/ plant

220g urea/plant

200g SSP/plant

500g MOP/plant

FYM should be applied at the time of planting. The whole of SSP, half of Urea and half of MOP should be applied in the third month of planting. The remaining urea and MOP should be applied in 5^{th} month of planting.

Irrigation:

3 times irrigation per month is required during dry periods.

Intercultural Operations:

Desuckering : Remove all the suckers till shooting and allow only one sucker at shooting. Surplus and unwanted suckers should be kept under control for better growth and yield of the mother plant. Desuckering once in 45 days is a common practice in a banana plantation. In a young plantation of upto 2-3 months, emerging small suckers are simply headed back with a sharp knife. Cutting back the sucker and pouring kerosene (4ml) into the small gouged cavity made in the centre or injection of kerosene from the side of the sucker just above the meristem.

Weeding:

Remove weeds as and when required. Diuron @ 3 kg /ha or Gramoxome @ 1.5 kg/ ha should be applied to check weed growth.

Bunch Covering:

White polythene bunch covering is suitable measure to overcome low temperature effect.

Harvesting :

The fruit is harvested when the ridges on the surface of the skin change from angular to round. The dwarf bananas become ready for harvest within 11to 14 months after planting while tall varieties require about 14 to 16 months harvesting.

Insect Pests:

1. **<u>Rhizome Weevil</u> (*Cosmopolites sordidus*)**

Symptoms:

Eggs are laid in collar region or on under-ground rhizomes. Grubs bore into the pseudostem and rhizome

and make tunnels

by feeding.

Control measures:

- Planting of healthy suckers
- Clean cultivation
- Removal of pseudostems below ground level
- Trimming the rhizome
- Dipping in methyl oxydemeton 2 ml/l solution prevents infestation.
- Applying castor cake 250g or carbaryl 50g dust or phorate 10g per pit before planting also prevents infestation.
- In case of severe attack, dimethoate, oxydemeton or phosphamidon may be sprayed around the collar region.
- Trapping of adults using yellow traps is also helpful.

2. <u>Leaf And Fruit Scaring Beetle</u> (*Colaspis hypochlora*)

Symptoms:

- The beetle, *Colaspis hypochlora* feeds on young leaves and skin of young fruits.
- This insect sometimes lives in the heart of the pseudostem within the roll of the central leaf. Occurrence of this pest is usually the maximum during the rainy season. Severe scarring of fruit skin leads to underdeveloped fruit, which fetches less price in the market.

Control measures:

- Clean cultivation, particularly, the removal of grass weeds from plantations where the population of this pest is high, can often reduce the population levels enough to avoid the use of insecticides.
- Unless the beetles are causing serious economic losses the use of insecticides should be avoided.

- Dusting with Malathion is also effective.

3. <u>Nematode</u>

Symptoms:

- Larvae and females are found inside roots. Feeding continuously producing characteristic reddish-brown lesions throughout the cortex.
- Affected plants get "toppled".

Control measures:

i. Crop rotation:

- Rotations involving turmeric, sugarcane, cotton and green gram. Paddy after banana suppressed the population of all nematodes.
- Paddy after banana, green gram after banana, two crops of paddy after banana were effective in reduction of R.similis. Fallowing and flooding for 3 months after banana efficiently suppressed R.similis.
- The nematode population was brought down especially R.similis, in coriander and banana intercropping.

ii. Mulching

- Applying black polythene mulch at 60 per cent moisture depletion recorded the lowest population.

iii. Chemical control

a) Sucker disinfestation

- Treatment of suckers with Carbofuran 3G (45 g/sucker) is suggested as a control.

b) Field treatment

- Drenching Carbofuran 45% G at planting registered lowest root nematode population coupled with maximum bunch yield per plant.

Diseases

1. **<u>Sigatoka Leaf Spot</u> (*Cercospora musicola*)**

Symptoms:

- Spots are concentrated towards the leaf edges.
- Streaks enlarge and form small spindle or eye shaped spots with greyish centre and dark brown or black borders and chlorotic halo around them.
- Disease first appears as pale yellow or greenish yellow streaks running parallel to leaf veins on both the leaf surfaces.
- Early diseased plant produces poor fruits.

Control measures:

- Removal of infected leaves and burning.
- Proper drainage, spacing, weed management.
- Spraying of Thiophanate methyl 1 g/l, or 1per cent Bordeaux mixture + 2% linseed oil, or Captan 2 g/l of water are some practices that can manage the disease.

2. **<u>Panama Wilt</u> (*Fusarium oxysporum* var. *cubense*)**

Symptoms:

- Initial symptoms appear in older leaves as characteristic yellowing which ultimately wither, break at petiole and hang down along the pseudostem.
- Splitting of pseudostem, discoloured vascular region in rhizome are also seen.

- Longitudinal splitting of pseudostem, emittance of rotten fish smell when cut stunting of plants, wilting and death of suckers are other symptoms of the disease.



Control measures:

- Resistant cultivars include Cavendish group, Champa.
- Susceptible cultivars Malbhog, Alpan.
- Selection of healthy suckers, avoiding injury to roots
- The diseased plants should be uprooted and burnt.
- Highly infected soil should not be replanted with banana at least for 3-4 years.
- Use of disease-free planting material and resistant cultivar are recommended.
- Other measures include use of quicklime near the base of the plant and soaking with water.

3. <u>Bacterial Wilt Or Moko</u> Wilt.

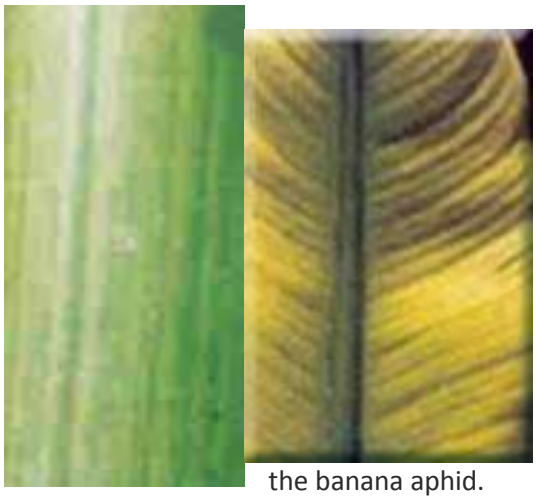
Symptoms:

- Affected plants show more or less rapid- wilting and collapse of leaves with a characteristic discolouration of vascular bundles, wilting and blackening of suckers.
- If pseudostem and rhizomes are cut, a characteristic bacterial oozing as shiny drops can be noticed for besides vascular discolouration.
- Production of yellow fingers, discoloured vascular bundles of fruit stalks and internal dry rot of fruits can also be noticed.

- Bacterium is soil born. Spreads through use of diseased suckers for planting.
- In field disease spreads through irrigation water, implements and insects. Infection is favoured by root injury.

Control measures:

- Disease can be minimized by exposing soil to sunlight.
- Selection of healthy planting material, eradication of infected plants. Disinfecting cutting knives and providing better drainage.
- Flower visiting insects are main agents for transmitting the disease and this is a good reason for following the practice of removing the bud from the male axis before the bunch matures.



4. <u>Bunchy Top</u>

Banana plant suffering from the bunchy top virus spread in infected planting material and by the banana aphid.

Symptoms:

- Symptoms appear at stage of growth associated with occurrence of prominent dark green streaks on petioles and along leaf veins.
- In badly diseased plants leaves bunch together, margins of lamina become wavy and slightly roll upwards.
- Severe stunting, non-elongation of leaf stalks, more erect leaves, non production of bunches are other external symptoms

Control measures:

- Planting materials should not be collected from places affected by this disease.
- The aphid should be controlled to check spread of the disease by spraying with an effective insecticide (Metasystox 0.1 to 0.5%, Dimecron or Parathion).
- Injection of Monocrotphos solution diluted with water at 1:4 ratio at 30-day interval twice or thrice at 2-3 months after planting has been found effective.
- Regular inspection, roguing of diseased plants, and planting virus-free corms have reduced bunchy top disease in Australia.

* Source of photo Farms science magazine(CAU Impal)