

Calendar of Operations – Black pepper

January

Nursery

- Start preparation for production of rooted cuttings.
- Prepare the potting mixture using fertile soil, farm yard manure and sand/ decomposed coir compost in 2:1:1 ratio and keep for solarization in an open yard for 30 to 45 days.
- Mix bio control agents with the potting mixture (*Trichoderma harzianum* , and *Pochonia chlamydosporia* 1-2 g each per kg mixture).
- Fill the potting mixture (sand: soil: FYM in 1:1:1 ratio) in poly bags of 15 x 10 cm size. Make adequate holes on the poly bag.
- Detach the earlier marked and coiled runner shoots from the mother plant with sharp knife.
- Cut the detached runner shoots into 2 to 3 noded cuttings; remove the attached leaves leaving a small portion along with petiole on the stem.
- Rooted three node cuttings from existing nursery (3 nos) can be used for propagation using serpentine method.

Field

- Harvest matured berries when one or two berries in the spikes start to turn yellows or turn to yellowish red.
- Berries can be separated from spikes using machine or other methods.
- Take cleaned berries in a vessel having drain holes or cloth and steep in boiling water for one minute.
- Sundry cleaned berries in clean cement floor/bamboo mat/paper/polyethylene /silpaulin sheet for 3-5 days (moisture 8-10 %).
- Pack, dried and cleaned berries in polythene lined jute sack.
- Heap the bags over wooden floor after spreading polypropylene sheet and away from side wall.
- Weeding of the inter space with slashing
- Mulch the basin with dry leaves or similar materials to conserve moisture. Green leaves may be used for mulching @ 5-10 kg per vine.
- Remove hanging shoots in older plants.
- Young vine should be tied to the support tree with jute thread.
- Cover the young vines with dried coconut leaves so as to prevent drying.
- Remove and destroy plants showing symptoms of phyllody and viral diseases

February

Nursery

- Solarised potting mixture with biocontrol agents may be used for filling the bags
- Runner vines can be detached from the mother plant and can be used for propagation.

- Three noded cuttings (3 nos) may be used for planting in bags of 15 x 10 cm size.
- Serpentine method for producing rooted cuttings may be continued.
- Remove the already sprouted cuttings from the mist chamber and keep in shade.
- Water the plants at regular intervals to maintain low temperature and high humidity.
- In case of mealy bugs damage, spray and drench the rooted plants with chlorpyrifos 0.075%
- Spray Carbendazim + Mancob if Anthracnose disease is seen in nursery.

Field

- Collect standards like Murikku (*Erythrina indica*), Karayam or Kilingil (*Garugapinnata*) and may be kept in shade for new planting.
- Irrigate the young vines (4 litres) of water daily till the monsoon starts.
- Irrigate mature vines 50-60 litres of water once in a week depending on availability of water.
- Care should be taken to avoid injuries to the vines while performing intercultural operations as it may invite diseases.

March

Nursery

- Continue watering the plants at regular intervals to maintain low temperature and high humidity.
- Spray with 1% Bordeaux mixture and drench with 0.2% copper oxychloride as a prophylactic measure against Phytophthora disease.
- In case of leaf gall thrips or scale insects infestation spray dimethoate (0.05%).
- In case of mealy bug's damage, spray and drench the rooted plants with chlorpyrifos 0.075.

Field

- If scale insects infestation is observed, spray vines with dimethoate 0.05%

April

Nursery

- Continue watering the plants at regular intervals to maintain low temperature and high humidity.

Field

- Plant Cuttings of Murikku (*Erythrina indica*), Karayam or Kilingil or Glyricidia (2 meter length at a spacing 3 x 3 meter on plain lands on receipt of summer showers).
- Water the black pepper plants at regular intervals to maintain low temperature and high humidity depending on availability of water.
- Apply dolomite @500 g per vine if not applied in previous month after receiving rain.
- Destroy cuttings infected with diseases along with bags at regular intervals to prevent spread.
- Spray micronutrient mixtures getting vigorous growth.
- Pruning of branches of standards (support trees) for shade regulation

May

Nursery

- Daily irrigation may be given
- Spray Bordeaux mixture 1% and drench with copper oxychloride 0.2% as a prophylactic measure against diseases.
- If mealybugs damage is noticed drench the infested bags with chlorpyrifos 0.075%.
- If gall thrips or scale insects incidence is noticed spray with dimethoate (0.05%).
- Remove infested bags, select healthy, robust rooted cuttings for field planting/ replanting.

Field

- Prepare pits (50 x 50 x 50 cm) on the northern side of standards, 15-30 cm away from the base of the standard. Fill the pits with a mixture of topsoil and FYM or compost @ 5 kg/pit mixed with biocontrol agents viz., *T.harzianum* (50 g/pit) and *P.chlamydosporia* (50 g/pit).
- Tie and trail the growing shoots to the standards.
- Provide shade to the plants if the land is exposed. Shade can be removed from young plant after receiving 1 or 2 rain.
- Remove and destroy all infected or dead vines along with the root system.
- Prune the runner shoots or tie back to the standards before the onset of monsoon
- Water the plants at regular intervals to maintain low temperature and high humidity depending on water availability
- Pruning off the branches of live standards ,if pruning has not been done on April.

June-July

Field

- If soil acidity is <5, apply dolomite 500 g -1 kg/ plant.
- Plant 2-3 rooted cuttings in the pits at a distance of about 30 cm away from the standards after getting sufficient rain
- Press the soil around the cuttings to form a small mound slopping outward and away from the cuttings to prevent water stagnation around the plants.
- Do frequent inspection of recently planted vines for pest infestations and take necessary protection measures.
- Provide good drainage in areas prone to water stagnation.
- Tie the growing shoots of young vines to the standard.
- Undertake slash- weeding in the interspaces.
- Apply organic manures @ 10 kg/vine and neem cake @ 1 kg/ mature vine fortified with *Trichoderma* and *Pochonia* with the receipt of monsoon showers (vines with more than 3 years).
- Apply *Azospirillum* (50 g/vine).
- Apply half of (NPK50:50:150 g/vine/year as general recommendation i.e Urea 55 g: Rock Phosphate 140 g: MOP 125 g) per plant more than 3 years old and care should be taken to avoid injuries to the vines while applying fertilizers and other intercultural operations.

- Apply 1 kg neem cake, 200 g rock phosphate, 0.5 kg ash and 10 kg cow dung per vine if organic method is followed. Apply 150 g sulphate of potash if potassium deficiency persists in soil.
- Provide black pepper micronutrient mixture as foliar spray @ 5 gm per liter water
- Undertake foliar spray of Bordeaux mixture 1% followed by soil drenching over a radius of 45-50 cm around the vines with copper oxy chloride 0.2% (@ 2-5 litres per vine), immediately after first monsoon showers if *Phytophthora* infestation is noticed.

OR

- Drench the soil and spray foliage with potassium phosphonate 0.3% or metalaxyl Mancozeb 0.125% (@ 2-5 litres per vine).
- Undertake foliar spray with quinalphos (0.05%) to check pollu beetle or top shoot borer. Over shading of vines may invite incidence of pollu beetles. Leaf gall thrips can be controlled by spraying dimethoate (0.05%)
- Apply first round of biocontrol agents (*Trichoderma*, and *Pochonia chlamydosporia*) along with organics.
- Avoid drenching of chemical pesticides if biocontrol agents are applied.
- Seedlings of silver oak and Ailanthus may be planted as support for black pepper

August –September

Field

- Continue new-planting / replanting
- Undertake slash – weeding
- Provide adequate drainage in the field.
- Tie the growing shoots of young plants to the standards.
- Prune the branches of support trees to regulate shade.
- Apply balance half dose of the recommended fertilizers (Urea-55g: Rock phosphate-140g: MOP 125g) in the last week of August or in first week of September.
- Apply second round of biocontrol agents (*Trichoderma*, and *Pochonia chlamydosporia*) along with organics.
- Apply *Azospirillum* (50 g/vine) and *P. Solubilizer* (50 g/vine along with 2 kg of vermicompost or well decomposed cowdung in organic black pepper. Sulphate of potash (150 g) can be added if potassium deficiency persists in soil.
- Care should be taken to avoid injuries to the vines while performing intercultural operations.
- Spray the foliage with Bordeaux mixture 1% and drench the basin of the vines with copper oxychloride 0.2% @ of 2-5litres/vine if foot rot symptoms are observed.

OR

- Spray foliage and drench the soil with potassium phosphonate 0.3% or metalaxyl mancozeb 0.125% (@ 2-5litres per vine).
- Undertake foliar spray with quinalphos (0.05%) for pollu beetle and top shoot borer infestations.
- Spray black pepper Micronutrient mixture as foliar spray @ 5g per liter water.

October

- If monsoon is prolonged, drench the basins of the vines with Potassium phosphonate 3 ml/litre@ 2-5 litres per vine, depending on the size of the vine.

November-December

Nursery

- After evaluation, select and label mother vines of 5-12 years age from high yielding varieties tolerant to biotic and abiotic stresses.
- Runner shoots from selected mother vines are coiled and raised on a stake to prevent it from soil contamination and striking roots in the soil.

Field

- Tie the growing shoots of young vines to the standards.
- Young vines to be covered with dry arecanut or coconut leaves
- Mulching around basins with green leaves@ 10 kg per plant.
- Remove hanging shoots in older plants.
- Destroy plants showing symptoms of phyllody and stunt diseases (viral).
- In case of root mealy bugs infestation drench chlorpyrifos 0.075% on affected vines; repeat drenching after 21 days.
- In case of scale insects infestation, spray neem oil 0.3% or neem based insecticide 0.3% or dimethoate 0.1%; on affected vines; repeat spraying after 15days.