

INTENSIVE CULTIVATION PACKAGE FOR ROBUSTA

An area of 6,220 ha has been planted to robusta in Hassan region with majority of area coming in Hanbal zone. Generally old robusta and S.274 are predominantly cultivated. But in recent years, CxR is gaining popularity in the region. The productivity of robusta coffee in the region is much below the national average and hence intensive cultivation in suitable areas would be helpful in bridging the yield gap.

Planting material

- Use polyclonal planting material (rooted cuttings) of S.274 or C x R.
- Interplanting with dwarf arabica varieties like Cauvery could be taken up to realise early returns. However, Cauvery should be phased out once robusta is established.

Consolidation of holdings

- Filling of vacancies should be done with clones of the same planting material.
- Unproductive / off type plants should be rejuvenated by top working.
- Replanting of old, unproductive blocks in a phased manner.

Soil cultivation

- Cover digging during the first year of planting (Oct-Nov) and scuffling during the next 2 to 3 years (Oct-Nov) would help in suppression of weeds.
- No soil cultivation should be practiced in established fields except where root matting is noticed.
- Take out the cradle pits / trenches in a staggered manner in established field to conserve soil and soil moisture.

- Growing of cover crops like *Crotalaria*, *Tephrosia*, cow pea, horse gram etc. and mulching with dry leaves in young plantations shall be advantageous.
- Drainage channels should be provided in flat areas, to prevent water logging conditions.

Bush Management

- If the plants are closely spaced, thin them out to regular spacing to prevent self shading.
- In estates with old robusta which have lost frame work, hard pruning is recommended followed by one or two rounds of handling to re-establish the frame work.
- Regular light pruning followed by handling, desuckering and removal of shot-hole borer affected twigs should be practiced every year. Pruning of the plants should be taken after the harvest.
- Gourmandisers should not be allowed. If at all allowed, they should be removed after taking single crop.

Shade Management

- Maintain optimum shade preferably a mixed canopy of conventional trees and Silver oaks not exceeding 75-100 trees/ ha.
- Light shade regulation to be done before blossom irrigation every year.

Weed Management

- In large estates, an integrated weed control involving pre-monsoon weedicide spray, mid-monsoon slash weeding and post-monsoon weedicide spray is suggested.
- While using weedicides, use contact weedicide (Gramoxone @ 500 ml/barrel) or systemic weedicide (Round Up/ Glycel @ 600 ml/barrel) in a rotation in combination with urea (2kg/barrel).

Nutrition

- Apply FYM or compost 10 tonnes per ha once in two to three years.
- Fertilizer and lime application should be strictly based on soil test values.
- Apply fertilizers in two to three splits in unirrigated blocks (Pre-monsoon, mid-monsoon and post-monsoon) and in four splits in irrigated blocks.
- Water-soluble phosphorus should be applied during pre-blossom/ post-blossom period, while rock phosphates during other rounds.
- Application of calcium sulphate @ 50 kg/acre during the post-monsoon period improves soil and nutritional status of the field as well as provides much needed sulphur nutrition.

Foliar nutrition

- In blocks with high yield, foliar spray with 1 kg urea, 2 kg DAP, 0.5 kg $MgSO_4$ and 50 ml of Hormonal or Planofix per barrel is recommended (2-3 barrels per acre) during post-blossom period.

Watershed management

Watershed management includes conservation and harnessing the rainwater in plantations to build up water resources.

- Take up cradle pits / trenches in a staggered manner across the slope for conserving the rain water.
- Construction of check dams or farm ponds in low lying areas for storing of rain water, which can be used for irrigation and processing purposes.
- Opening of drainage channels in flat areas and connecting all these channels to a catchment pit and diverting the water to check dam/ farm ponds.

Irrigation

- Blossom irrigation at a rate of 1.5 to 2 inches per acre for blossom during Feb- March.
- Backing irrigation with 1 to 1.5 inches per acre after 20 days of blossom irrigation. Repeat the irrigation for every 20 days if natural showers are not received.
- In areas where water sources start depleting by Jan-Feb. winter irrigation of 1.5 inches per acre can be given 20-25 days after the last monsoon shower to utilise the inflowing water and such blocks can be left for natural blossom showers.
- One additional dose of fertilizers at a level of 10:5:10 kgs per acre could be given to the winter irrigated blocks.

Drought ameliorative measures

- In areas with delayed blossom/ backing showers and in the blocks where irrigation is not feasible, spraying of nutrient mixture comprising of 1 kg urea, 1 kg super phosphate, 750 gm MOP and 1 kg $ZnSO_4$ per barrel is useful in mitigating the drought effect. The first spray should be given 45 days after the last major rainfall and the second spray 30-45 days after the first spray. If blossom showers are delayed one more spray may be given 30-45 days after the second spray.

Pest management

Mealy bugs

- Build up adequate shade in open patches, which are endemic for infestation.
- Control ants by dusting Ekalux 1.5% or Folidol 2% or Malathion 5% dust around the base of coffee bushes and shade trees. Destroy ant nests.
- Control weeds.
- Spot application of Ekalux 25 EC (300 ml/barrel) or Folithion 50 EC (300 ml/barrel) or Lebaycid 1000 EC (150 ml/barrel)

or Kerosene emulsion 2% (4 L/barrel) along with wetting agent @ 200 ml/barrel. While applying Kerosene emulsion, the spray solution should be stirred constantly for proper emulsification.

- The parasitoid *Leptomastix dactylopii* could be used for bio-control.
- For controlling root mealy bugs, drench the soil near root zone with Rogor 30 EC @ 3.3 ml/L.

Coffee Berry Borer

Coffee berry borer incidence has been noticed in certain areas in Sakleshpur zone. The following measures should be taken up to control the same.

- Timely and clean harvest.
- Collection of gleanings and leftover/ off-season berries. Use harvest mats to minimise gleanings.
- Spot application of endosulfan 35 EC (340ml in 200 lit.of water) or chlorpyrifos 20EC (600 ml in 200 litres of water) during when most of the beetles are waiting at the navel region.
- Proper bush management to make the control measures (sprays) more effective.

In other areas, which are free from the incidence of berry borer, the following measures shall be taken to prevent spread of this pest.

- Do not procure seeds from berry borer affected areas.
- Do not transport berry borer affected coffee into these zones.
- Use only new gunny bags for packing the harvested crop.

Shot hole borer

- Maintain optimum shade and provide proper drainage to prevent build up of humidity.

- Regular tracing and burning of affected branches during pre-monsoon and post-monsoon should be done.
- Remove all the suckers
- In young non bearing plants, spraying with Lindane (650 ml / barrel) is suggested apart from tracing in case of severe infestation.

Disease management

Black Rot

- Clean the bushes by removing fallen leaves followed by handling and centering before the onset of monsoon.
- If disease is noticed, remove the affected the leaves and branches and burn them and spray Bavistin 50 WP @ 120 g/ barrel during break in monsoon.

Root Diseases

- Isolate the affected patch by taking trenches around.
- Uproot the affected bush and apply two kg of agricultural lime to the pit and fallow it for six months.
- Drench the base of surrounding healthy plants with 0.4% Bavistin solution (8 gms / litre).
- Apply 10 kg of FYM or compost along with *Trichoderma* to the surrounding healthy bushes.

Stalk rot

- In endemic blocks, spray 0.5% Bordeaux mixture during pre-monsoon period as a protection against stalk rot.

Inter cropping / mixed cropping

- Only pepper should be encouraged as an intercrop in the robusta blocks.
- Planting of areca nut and cardamom in valleys and coconut in borders could be adopted.

On-farm Processing

- Harvest the crop when more than 70% ripening is noticed.
- Use mats during harvesting to minimise gleanings.
- Sort out greens from ripe fruits and dry them separately.
- Do not heap harvested fruits for long periods, as it encourages mould growth and quality deterioration.
- Dry the fruits on concrete/tiled yards.
- Cover the cherry during night hours to avoid rewetting.
- Wherever possible, adopt wet method of processing to improve the quality and value addition.
- Commercial pectinolytic enzymes like 'Speedox' (800g /tonne of clean coffee) and 'Coffeeyzyme' (2.6 l/tonne of clean coffee) could be used for enhancing mucilage degradation during fermentation without affecting the quality of coffee. However, use of enzymes for fermentation is not permitted in the processing of specialty and organic coffees.
- Soak the washed coffee under fresh water for at least 12 hours, to improve the quality further.
- Sort out unpulped fruits, stinkers and other extraneous matter from parchment before drying.
- Dry the fresh parchment on raised wire mesh trays (75 cm above the ground level) for initial 1-2 days. Subsequently, dry it on pucca yards to a desired moisture level.
- While drying, cover the parchment with polythene sheets during night hours for preventing re-wetting.
- Pollutions treatment measures should be adopted as per the Pollutions Control Board norms.

