

SUSTAINABLE PRODUCTION TECHNOLOGY FOR ARABICA

Majority of small coffee growers are faced with economic constraints and lack of entrepreneurial ability to follow intensive cultivation. Hence, an alternative method viz., low-cost technology aimed at yield optimisation and cost minimisation is the most suitable proposition. By this method, it is also sought to promote ecologically sustainable coffee farming with progressively less reliance on chemical inputs. In low cost technology, the grower has to settle down for an average crop.

Planting material

- ❖ In case of new planting or replanting, varieties like Sln.5B, Sln.6 and Sln.9, which are fairly tolerant to leaf rust disease and respond well to low input management could be preferred.

Consolidation of holdings

- ❖ In already existing plantations, vacancy filling (with same varieties in a block) should be taken up to build up the plant population to the desired level. By maintaining optimum plant density the recurring problems of weed growth and soil erosion are minimised and the land use efficiency is improved.
- ❖ Rejuvenation of off-type plants by top working.
- ❖ Replanting of old, uneconomical blocks in a phased manner.

Soil management

- ❖ Cultivation of green manure crops like *Crotalaria*, *Tephrosia*, cow pea, horse gram in the initial years of establishment by sowing during May-June and incorporating them in soil before flowering to build up soil organic matter.
- ❖ Planting of soil binding grasses like vetiver grass, paspalum etc., in steep areas will help in conservation of soil.
- ❖ Cover digging during the first year of planting (Oct.-Nov.) and scuffling during the next 2-3 years helps in suppression of weed growth. In sloping terrain avoid digging and scuffling and follow only manual weeding.
- ❖ Avoid soil cultivation in established fields.
- ❖ Opening up cradle pits/trenches in staggered manner across the slope in established fields to conserve soil and moisture.
- ❖ Mulch young plants with dry leaves to conserve moisture during dry months.

Bush management

- ❖ As the yield levels are usually low, only handling, centering and desuckering in 2 to 3 rounds per year would be adequate. Only once in 2 to 3 years light pruning may become essential.

Shade management

- ❖ To maintain a two-tier shade canopy consisting of temporary dadaps and permanent shade trees like *Ficus*, *Albizzia*, Jackfruit etc. with a tree density of 120-140 per ha.
- ❖ Trees like Neeli and Nerale should be discouraged as shade trees in endemic areas of caterpillar incidence.

- ❖ At higher altitudes temporary shade trees may be phased out once the coffee is well established.
- ❖ Regulate shade every year instead of once in 3-4 years to minimise damage to coffee bushes.
- ❖ Indiscriminate timber extraction should be avoided.

Weed control

- ❖ Cultural methods like cover digging, scuffing, cover cropping with cowpea, horse gram etc. in the early years suppress the weed growth.
- ❖ In established fields, slash weeding should be done before flowering of weeds. The weed slashings can be either used as mulch to suppress the grasses or for composting.

Nutrition

- ❖ Recycling of on-farm wastes like fruit skin, cherry husk and farm yard manure after composting to reduce dependence on chemical fertilizers.
- ❖ Soil testing at least once in 2-3 years for liming and fertilizer application.
- ❖ Broadcasting of fertilizers may be followed to save labour. Mulch should be heaped near to the coffee plants before broadcasting and spread back later.
- ❖ Recommended doses of fertilizers to be applied in two splits during pre/post blossom and post-monsoon periods.
- ❖ Application of phosphorus solubilising biofertilizer 'Biophos' @ 10 kg/ha would be useful in increasing the yield besides enabling one-third saving in phosphorus dosage.

Pest management

White Stem Borer

- ❖ Maintain optimum shade and build up shade in open patches.
- ❖ Regular tracing especially prior to flight periods i.e., in March and Sept., uprooting and immediate disposal of the affected plants is essential to reduce the pest build up.
- ❖ If infestation is not spread to lower portion of stem, allow a new framework by collar pruning.
- ❖ Spray Lindane (1300 ml/barrel) during April and October on the main stem and thick primary branches using Bakpak sprayer fitted with jet nozzle.
- ❖ Scrubbing the main stem and thick primaries during post-monsoon period using coir gloves would be helpful in reducing the pest incidence.

Nematodes

- ❖ In nursery, dry the jungle soil thoroughly while preparing nursery mixture.
- ❖ In the main field, uproot the affected plants and expose the pit for at least one season and plant arabica grafted on robusta or excelsa rootstocks. The affected area should be kept free from weeds.

Coffee berry borer

As Chikmagalur region is free from coffee berry borer, the following precautions may be taken to prevent its possible entry.

- ❖ 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.

Disease management

Leaf Rust

- ❖ Maintain optimum shade
- ❖ Give two sprays of 0.5% Bordeaux mixture as pre-monsoon and post-monsoon applications.

Black Rot

- ❖ In Black rot endemic areas, mono shade of Silver Oak should be avoided as it aggravates the disease incidence. It is therefore desirable to maintain mixed shade of conventional trees at wider spacing.
- ❖ Thinning of shade, opening of cradle pits, cleaning of bushes by removing fallen shade tree leaves etc. should receive attention, prior to monsoon.
- ❖ Two rounds of handling and centering of bushes (pre-monsoon and mid-monsoon)
- ❖ Pre-monsoon spraying with 1% Bordeaux mixture in place of 0.5% Bordeaux usually done against leaf rust.
- ❖ When disease is noticed, clean the bushes by removing affected leaves, branches etc. and spray with 0.03% Bavistin (120 g/ barrel) during the break in monsoon.

Root Diseases

- ❖ Isolation of affected bushes including one row of surrounding bushes by trenching.
- ❖ Uprooting of affected bushes and application of agricultural lime @ 2 kg per pit and mix thoroughly with soil. Fallow the affected spots for 6 months.
- ❖ Drenching the base of surrounding bushes with 0.4% Bavistin solution (8 g/l) @ 3L/plant, during pre-monsoon period.
- ❖ Application of FYM @ 10 kg along with *Trichoderma* to the surrounding bushes.

Inter cropping/ mixed cropping

- ❖ Cultivation of intercrops like vegetables, ginger, yams, banana etc. in the initial 2-3 years could be adopted.
- ❖ Planting of pepper as an intercrop in coffee blocks, areca nut and cardamom in the valleys and coconut, vanilla in the borders could also be taken up.

Estate level processing

- ❖ Use mats while harvesting to minimise gleanings.
- ❖ Do not heap harvested fruits for long periods, as it encourages mould growth and quality deterioration.
- ❖ In case of cherry preparation, sort out greens from ripe fruits and dry them separately.
- ❖ Adopt wet method of processing wherever pulping is possible.
- ❖ Use of polythene sheets for drying in the absence of pucca drying yards to preserve the quality.
- ❖ Do not dry coffee on mud or cow dung plastered surfaces.
- ❖ Cover coffee on the drying yard during night hours to avoid rewetting.

