

VEGETABLES

Under this chapter, package of practices for amaranth, okra, coleus, cucurbitaceous vegetables, solanaceous vegetables, cool season vegetables and minor vegetables are furnished. A separate table showing the waiting period for insecticides on vegetables has been included. Control of pests of vegetables with the help of non-chemical insecticides and tips for vegetable seed production are also given under separate titles. Certain recommendations given under the nonchemical control of pests have not been included under the respective crops to avoid repetition.

AMARANTH (*Amaranthus* spp.)

Amaranth is the most popular leafy vegetable of Kerala. It can be grown throughout the year. Avoid sowing or planting of red leaved varieties during periods of heavy rain.

Varieties

Red: Kannara Local, Arun

Green: Co-1, Co-2, Co-3 and Mohini

Note: Kannara Local is a season bound variety, which comes to flowering in November-December.

Seed rate: 1.5 to 2.0 kg/ha

Preparation of land

Prepare the land by ploughing or digging followed by levelling. Then shallow trenches of width 30-35 cm are made 30 cm apart. Well

rotten FYM is mixed with soil in the trenches. Transplant 20-30 day old seedlings in the shallow trenches at a distance of 20 cm in two rows. During rainy season planting shall be done on raised beds.

Manuring

Apply 50 tonnes of FYM per ha as basal dose before planting. After preparing trenches, apply N:P₂O₅:K₂O @ 50:50:50 kg/ha. Another 50 kg of N can be applied at regular intervals as topdressing. Spraying 1 % urea immediately after each harvest will increase the yield.

Plant protection

As far as possible, avoid use of insecticides or fungicides. In severe cases of leaf webber attack, spray malathion 0.1 % or dust malathion 10% DP.

OKRA (*Abelmoschus esculentus*)

The three main planting seasons for Okra are February-March, June-July and October-November.

Varieties

Green / light green fruited: Pusa Sawani, Pusa Makhmali, IARI Selection 2, Kiran, Salkeerthi

Redfruited: Co-1, Aruna

Yellow vein mosaic resistant/tolerant: Arka Anamika, Arka Abhay, Susthira (*all green fruited*)

Seed rate

The seed rate is 8.5 kg/ha for the summer crop sown in February-March and 7 kg/ha for kharif crop.

Storage of seeds

Packing of okra seeds in polythene cover (700 gauge) increases the storage life up to 7 months.

Planting

For kharif crop, sow the seeds at a spacing of 60 cm between rows and 45 cm between plants. For the summer crop, soak the seeds in water for 24 hours before sowing and give a spacing of 60 x 30 cm.

Manuring

Apply FYM or compost as basal dose @ 12 t/ha. At the time of sowing, apply N, P₂O₅, and K₂O @ 25, 8 and 25 kg/ha. Another 25 kg _ per ha may be applied one month after sowing.

Note: For reclaimed soils of Kuttanad, a fertilizer dose of N:P₂O₅:K₂O 75:5:15 kg/ha is recommended.

Aftercultivation

Give pre-sowing irrigation, if soil is not moist enough. During summer, irrigate at intervals of 2 to 3 days. Conduct weeding regularly and earth up rows during rainy season.

Plant protection

The important pests are jassids, fruit and

shoot borer and root knot nematode.

Against jassids, use quinalphos, fenthion or fenitrothion as foliar sprays each at 0.05%. For controlling fruit and shoot borers, remove all drooping shoots and damaged fruits. Spray carbaryl 0.15% at intervals of 15 to 20 days. For controlling aphids, apply dimethoate 0.05%.

For the control of nematodes, apply sawdust or paddy husk at 500 g/plant or neem leaves or *Eupatorium* leaves at 250 g/plant in basins one week prior to planting and water daily. The effect of this treatment persists up to 75 days after sowing in summer season

Application of *Bacillus macerans* or *B. circulans* (1.2×10^6 cells per pit) before sowing is recommended for the control of root knot nematode (ad hoc recommendation).

For the control of pests, application of carbofuran granules at the rate of 0.5 kg ai / ha or phorate at the rate of 1 kg ai / ha at seeding followed by need-based application of foliar insecticides has been recommended. The application of granules is recommended only at the time of seeding.

In general, insecticides of plant origin may be used, as far as possible. '

Yellow vein mosaic

This is a common disease in okra, which shows vein clearing and vein chlorosis of leaves. The yellow network of veins is very conspicuous and veins and veinlets are thickened. Fruits become small and yellowish green in colour. White fly (*Bemisia tabaci*) and leaf hopper (*Amrasca biguttula biguttula*) are vectors of this virus. Hence, their control is very important. Use of resistant varieties like Arka Anamika, Arka Abhay and Susthira, and destruction of host weeds (*Croton sparsiflora* and *Ageratum* sp.) are also effective.

COLEUS (*Solenostemon rotundifolius*)

Coleus thrives well in tropical and subtropical regions. A well-drained medium fertile soil is suitable for its cultivation.

Season

Plant the cuttings in the main field between July and October.

Variety: Nidhi

Nursery

Raise the nursery approximately one month , before planting. An area of 500 to 600 m² is

sufficient to produce cuttings required for one ha of main field. Apply 125 to 150 kg

FYM in the nursery area. Plant the seed tubers at a spacing of 15 cm on the ridges taken 30 cm apart. About 170 to 200 kg of tubers is required to raise the nursery. Take the vine cutting to a length of 10-15 cm from the top portion after three weeks from planting.

Preparation of main field

Plough or dig the land to a depth of 15-20 cm and form ridges at 30 cm apart or raised beds of 60-90 cm width. Planting

Plant the vine cutting collected from the nursery on ridges at a spacing of 30 cm or on raised beds at 30 x 15 cm spacing.

Manuring

Broadcast 10 tonnes of FYM and N:PzOs: KzO @ 30:60:50 kg per hectare and incorporate into the soil at the time of land preparation. Topdress with Nand KzO at the rate of 30 and 50 kg/ha respectively at 45 days after planting.

Aftercultivation

Give weeding and earthing up, at 45 days after planting along with topdressing. Cover a portion of the vine with soil to promote tuber formation.

Plant protection

To control the root-knot nematode, plough the field deeply in summer, adopt crop rotation and destroy root residues and other plant parts by burning.

Harvesting

Harvest the crop 5 months after planting.