

Package of practices for cultivation of *Jasminum sambac*



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matter can be seen attached to the silken web. Management is same as given for jasmine bud worm

Leaf webworm (*Nausinoe geometralis*): Leaves mostly in the lower bushy and shaded portions are affected. The leaves are webbed in an open and loose manner. The silk threads are seen as a cobweb on the surface of the leaves. Larvae feed on the leaves and skeletonise it. Spray dimethoate 30 EC 500 ml in 500 – 750 L of water/ha for the control of the pest.



Jasmine eriophyid mite (*Aceria jasmini*) Feeding causes felt-like hairy out growth (erineum) on the surface of the leaves, tender stem and flower buds. Makes web which look like felt and appear to be a white hairy growth on the leaf surface, tender stems and flower buds. Spray dicofol 18.5 EC 3ml/l or wettable sulphur 50WP 5g/lit.



Red Spider Mite (*Steneotarsonemus pallidus*): Incidence of this pest is high during warm and dry weather, especially during summer. Pests feed on the under surface of the leaves which become yellow and drop off. Spray Wettable Sulphur 50 WP @ 2 g/lit or Dicofol 2.5 ml/lit to control the mite infestation.

Minor Pests

Jasmine leaf roller (*Glyphodes unionalis*): The green caterpillar roll the leaves and feed on them. Adult is a white moth with brown lines along the costal margin of forewings.



Blossom midge: Spray Monocrotophos 2 ml/lit or Quinalphos 2 ml/lit to control it.



Jasmine bug (*Antestia cruciata*): Both nymphs and adults suck the sap from tender shoots and buds and prevent flower formation.

Leaf eating caterpillar: It can be controlled by spraying Quinalphos 2 ml/lit.

White ants: Both nymphs and adults suck the sap from tender shoots and buds and prevent flower formation. To control, dust Lindane @ 5 g/pit to the pits before planting

Green plant hopper (*Flata ocellata*) The adult bug is green with minute spot on fore wings. Both nymphs and adults feed on terminal shoots.

Diseases

Leaf Blight: It is caused by a fungi viz., *Cercospora jasminicola*. Circular to irregular reddish brown spots (2-8 mm diameter) appear on the upper surface of leaves. Later the spots become irregular covering larger areas of the leaves. Spray of Bavistin (0.1%), Mancozeb 0.25% and Bordeaux mixture (1%) are equally effective.



Alternaria leaf spot and blight: It is caused by *Alternaria jasmini* or *A. alternata*. Dark brown spots appear on the leaves. Later the spots enlarge covering larger area causing blighting of leaves. The disease also affects stem, petiole and flowers. Collect and remove fallen leaves. Spray with Copper oxychloride 0.25% or Mancozeb at 2 g/lit. from the onset of monsoon at monthly interval to control the disease occurrence.



Wilt: Wilt is caused by *Fusarium solani*. Symptoms are yellowing of lower leaves which gradually spread upwards and finally results in death of the plant. Drenching of soil around the plants with Bordeaux mixture (1%) is the control measure.

Collar rot and Root rot: It is caused by *Sclerotium rolfsii*. Plants at all stages are infected. First the older leaves become yellow followed by younger leaves and finally death of the plant. In the root black discoloration can be seen. On the infected tissues and stem surface white strands of mycelia and mustard like sclerotia are seen. Soil drenching with Copper oxychloride 0.25% is the control measure.

Yellowing of leaves: It is caused by 3 factors viz., iron deficiency, nematode infection and root rot disease.

Iron deficiency: It can be rectified by spraying ferrous sulphate 5 g/lit at monthly intervals until the chlorotic symptoms disappear.

Nematode: Initially test the soil for nematode infection. Apply 10 g of Temik granules near root zone and then irrigate the field.

Root rot: Drench the soil around the plant with Copper oxychloride at 2.5 g/lit.

Season of flowering and harvesting: Flowering commences after 6 months of planting. Jasmine gives economic yield only from the third year and up to 12-15 years and then the yield starts declining. Flowering commences in March-April. The stage of harvest depends on the purpose of flowers to be harvested. For fresh flowers, fully developed unopened flower buds should be picked in the early morning hours, while for extraction of concrete only fully opened fresh picked flowers are required. The yield and quality of the concrete will be considerably reduced in flowers picked after 11 a.m. Avoid damage to flowers during harvest and transit as it will affect the shelf life of fresh flowers and concrete recovery.



Yield: Yield depends upon the cultural practices followed by the farmer. Yields are obtained after six months of planting. During the first year, 750 kg of flowers could be obtained, and it increases to 2000 kg in second year, 2500 kg in third year and 3500 kg per acre from fourth year onwards. The economic life of the plant can be taken as 12-15 years.

Grading: There are no standard grades available for jasmine. The flowers are graded according to the length of corolla tube, size and shape of the flower bud and freshness.

Packing: Flowers can be packed in bamboo baskets. They are packed so as to maintain some moisture and air circulation in the baskets. Water is sprinkled on the newspapers covering the inside of the basket. The top is covered with paper again and closed with a bamboo basket cover or gunny sack which is stitched at the edges.

Marketing, Distribution and Transportation: Transporting of jasmine flowers can be done through trucks, ships (Refrigerated) etc. Before long distance transportation it is better to keep flowers in bamboo basket which should be covered under moist muslin cloth. Proper care should be taken so that flowers are not handled badly or damaged during transportation. Damage to flowers during harvest and transit will affect shelf life of fresh flowers and concrete recovery.

Photo Courtesy (Varieties, Pest and diseases): TNAU, Coimbatore

Introduction: Jasmines constitute a group of flowering plants which are commercially grown for their fragrant flowers and essential oil production. It is an ideal crop for small and marginal farmers. Jasmine contributes substantially to the national economy and annually more than 20 crores worth of jasmine flowers are produced and sold in India and also exported to neighbouring countries. They belong to Kingdom Plantae, Sub kingdom Tracheobionta, Division Magnoliophyta, Class Magnoliopsida, Subclass Asteridae, Order Lamiales, Family Oleaceae and Genus *Jasminum*. The flowers of jasmines are used for various purposes viz., for making special type of flower strings called veni, garlands, for hair adornment of women, religious offerings, floral decorations, extraction of essential oil etc., which is used in preparing high grade perfumes, colognes and flavoring the beverages etc. apart from their medicinal uses which has growing demand in India as well as in many developed countries.

Important species There are trailing, climbing, and erect growing species and cultivars. Commercially grown important *Jasminum* species are *Jasminum sambac* (Gundumalli / Mogra), *Jasminum auriculatum* (Mullai / Jui), *Jasminum multiflorum* (Kunda) and *Jasminum grandiflorum* (Pitchi / Jahi). The first three species are mainly cultivated for selling as fresh flowers whereas the last one is cultivated for concrete extraction.

Botanical description: Jasmines are either erect, spreading, or climbing shrubs and vines, shrub reaching up to 0.5 to 3 m (1.6 to 9.8 ft) tall. Cultivated *Jasminum sambac* generally do not bear seeds and the plant is reproduced solely by cuttings, layering and other methods of asexual propagation. The leaves are ovate, 4 to 12.5 cm long and 2 to 7.5 cm wide. Leaves of jasmine are opposite or alternate. They can be simple, trifoliate, or pinnate. The flowers are usually very fragrant and are produced in clusters with a minimum of three flowers, sometimes solitary on the ends of branchlets. Each flower has about four to nine petals, two locules, and one to four ovules. They have two stamens with very short filaments. The bracts are linear or ovate. The calyx is bell-shaped.

Package of practices

Climate: *Jasminum sambac* prefers warm summer and mild winter for their successful cultivation. They can be grown in the open field for commercial flower production. They are sensitive to frost.

Soil: Jasmine can be planted on a wide range of soils. Well-drained sandy loams and red loams under tropical conditions are suitable for its cultivation. In clayey soils, there is increased vegetative growth and reduced flowering.

Varieties: Gundumalli, Single Mogra, Double Mogra, Motia, Virupakshi, Madanabanam, Ramabanam, Iruvatchi, Ramanathapuram local, Khoya, Iruvatchi, Kasthurimalli, Oosimalli, Sujimalli etc.



Preparation of field: Land selected for planting should be a sunny location and should have proper drainage and irrigation facilities. After ploughing the land, pits of 30 x 30 x 30 cm size are dug at least one month before planting and exposed to sunlight. A few days before planting, pits are filled with topsoil and 10 kg well-rotten farm yard manure per pit.



Propagation: Jasmine can be propagated by cuttings, layering, sucker, grafting, budding and tissue culture. *J. sambac* is usually propagated by terminal and semi hardwood cuttings. Better rooting of cuttings can be obtained by planting in coarse sand and also by using any of the rooting hormones like IBA (5000 ppm), IAA (1000 ppm) and NAA (5000 ppm).



Plant Spacing, density and season: Rooted cuttings are used as the planting material. Planting should be done at a spacing of 1.25 m x 1.25 m. About 6400 plants can be accommodated in one hectare. June to November is ideal season for planting



Time of Planting: The best time for planting in most parts of India is during the monsoon. The planting of jasmines can be done almost throughout the year but June to November is ideal. Once planted, the jasmine remains in the field for 10-15 years.

Planting: Well rooted, healthy and strong plants are planted one in each pit.

Irrigation: Irrigation should be given immediately after planting followed by weekly irrigation at an interval of 7-10 days depending upon weather conditions and soil type. During summer, irrigate twice a week. Constant and adequate water supply during peak flowering season is essential for high yield of flowers. After flowering is over, the water supply can be cut off.

Nutritional requirement

Jasmine responds well to manuring. Too much of manuring encourages vegetative growth and hampers quality and

quantity of blooms. Each plant should be applied with 10 kg FYM, 60 g Nitrogen and 120 g each of Phosphorus and Potassium and they should be applied in two split doses. i.e. once after annual pruning (November) and again during June-July.

Pruning: Pruning influences growth, flower bud initiation, differentiation and ultimately flower production. Flowering is terminal and axillary in jasmine. So increasing the number of branches or shoots would increase flower yield, for which pruning is essential. Normally, irrigation should be withheld prior to pruning and plants are pruned by removing all past season shoots including dead and diseased branches. It is better to prune the plants at a height of 45-50 cm from the ground level during last week of November to get increased yield and quality flowers.

Inter Cultural Operations: Weeding and strengthening of irrigation channel and bunds are the intercultural operations followed for jasmine cultivation.

Weed control: Manual weeding is effective but expensive. The first weeding should be done 20-25 days after planting and subsequent weedings are done once in 2-3 months. Chemical weed control is effective and economical. Use of weedicides like paraquat is practised. Mulching also reduces weed population.

Plant protection

Major Pests:

Bud worm (*Hendecasis duplifasciialis*): It is a green larva with a black head. It bores into closed immature flower buds and feeds on inner floral structures. In case of severe infestation, the larva makes a web like pattern among the adjacent buds and feed on petals. Infested flowers turn pale red in colour and fall off from the plant. Collect and destroy infested flowers along with larvae at least once in a week. Set up light trap to attract and kill the adult moths. Monocrotophos 2ml/l should be applied for the control of the pest.



Gallery worm (*Elasmopalpus jasminophagus*):

Caterpillar web together the terminal leaves, shoots and flower heads and feed on them. Faecal

