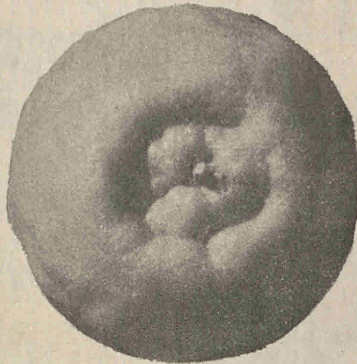


growing
santra
for profit

FARM INFORMATION UNIT, DIRECTORATE OF EXTENSION
MINISTRY OF FOOD AND AGRICULTURE, NEW DELHI

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The santra fruit is universally popular. It is delicious, refreshing and health-giving. It is rich in vitamin C and a good source of vitamins A and B. The fruit is easy to peel and can be taken out of hand.

A santra orchard needs initial care. Once established, it will give handsome returns year after year.

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SELECT THE SITE

* Keep the following things in mind, while selecting the site for your santra orchard.

* Santra can be grown in the plains under irrigated conditions. In the hills it can be grown in the hot valleys and submontane tracts with a rainfall of 750 to 2,500 millimetres, at an elevation of 600 to 900 metres.

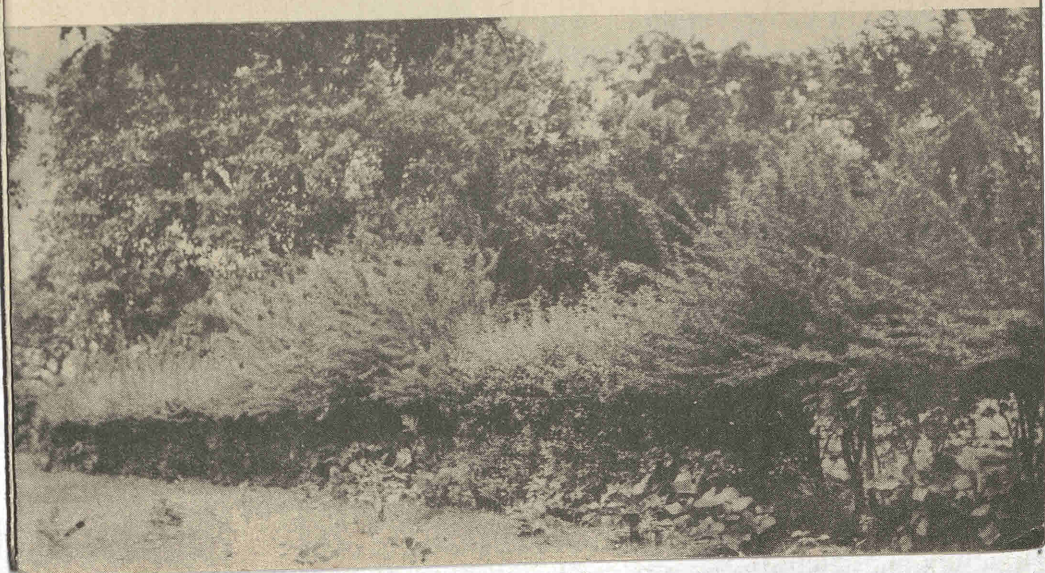
* Santra can tolerate acidic soils. However, neutral soils are more suited for its cultivation. It grows best on deep, well-drained soils.

* It does not tolerate water-logging.

PREPARE THE SITE

* Clear the land of weeds and shrubs by giving deep cultivation.

* Plant a suitable wind-break to protect the orchard against cold and hot high winds.



- * On hill-slopes, terrace the land into benches 3 to 4.5 metres wide.
- * In the plains, level the land for irrigation.

PREPARE PLANTING PITS

- * A month or two before the commencement of the monsoon, dig pits 60 to 90 centimetres cube, at a distance of 6 to 7 metres both ways. Leave the pits exposed for weathering.
- * Fill each pit with top-soil mixed with 25 kilograms of farmyard manure, one kilogram of bone-meal and 2.5 kilograms of wood-ash.
- * In the hills, you may fill the pits with jungle soil or soil mixed with farmyard manure.
- * Irrigate the pits profusely to allow the soil in the pits to settle down.

SELECT VARIETY

Take the advice of the Horticultural Officer of your area in selecting a suitable santra variety for your locality.

Nagpur santra, Coorg orange, Khasi orange and Desi santra are the popular varieties in their regions. Kinnow orange is a new promising variety recommended for planting.



PROCURE PLANTING MATERIAL

Get good planting material, even if it means extra cost. Select uniform, strong plants, with a clean and straight stem.

Buy some extra plants of the same stock to replace any casualties.

PLANT

Plant in July-August. in heavy-rainfall areas, you may plant in September.

* Keep the bud union 15 to 20 centimetres above the ground level. This will prevent infection from gummosis.

* Make basins about two metres in diameter around the trees. Connect them with an irrigation channel. Under rainfed conditions, channels are not needed.

PROTECT YOUNG TREES

- * To avoid subnurn injury, wrap the tree trunks with gunny cloth or rice straw, or paint them with bordeaux paste.
- * In the plains, protect the trees for the first few years from intense dry heat and frost. Provide thatched coverings to the trees. Give frequent irrigations.
- * On hill-slopes, provide shade to the young trees.

INTERCULTIVATE

- * Keep the basins free from weeds. Give light hoeings from time to time.
- * In the hills, adopt anti-erosion measures. Conserve organic matter. Grow cover crops. Provide silt-catch pits in beds. Remove silt periodically and spread it in the beds.
- * Intercrop the orchard for the first few years, with vegetables or other short-duration crops.
- * In the drought period, preserve moisture by providing mulch in the basins.

TRAIN THE TREES

- * Train the trees initially, to build a strong framework which can sustain a large crop of fruits.
- * Remove water-sprouts. Allow two or three leading branches to grow on the main stem.
- * Cut off interfering or crossing branches, once or twice a year. Remove growths arising below the bud union.

Consult your Horticultural Officer or Gram Sevak in drawing out a manurial schedule for your orchard.

Young Trees :

* In the first year, give the following manure mixture per tree :

Farmyard manure	10 kilograms
Castor cake	0.7 kilogram

* Afterwards, every year till the sixth year, add the following quantity to the previous year's dose :

Farmyard manure	5 kilograms
Castor cake	225 grams

Adult Bearing Trees :

* Apply 0.9 to 1.4 kilograms of nitrogen per tree per year, half as organic manure and the other half as a fertilizer like ammonium sulphate.

Apply it in two doses. Give two-thirds of the quantity of organic manure and fertilizer before flowering, and the remaining one-third after fruit-set.

In the north, apply the whole of the farmyard manure plus half the ammonium sulphate in December-January. Give the other half of ammonium sulphate in April-May after fruit-set.

* In heavy-rainfall areas such as Coorg (Mysore), give NPK 1.5 : 1:1 (680 grams Nitrogen + 450 grams phosphate + 450 grams potash, per tree). Apply in two instalments, with the two major flush periods in April-May and June-July. In addition, give 30 kilograms of cattle manure per tree in June-July.

* In acidic soils, apply 500 to 1,000 kilograms of lime per acre every three to six years. This will correct the acidity.

* Irrigate the trees copiously after each application of manures and fertilizers.

* Apply micro-nutrients like zinc, boron, copper and iron, in the form of spray, to improve the condition of the trees.

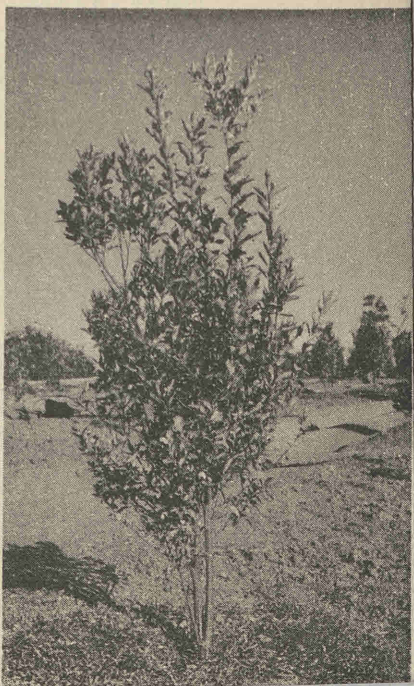
IRRIGATE

* Irrigate the trees at an interval of 7 to 15 days, depending on the soil and weather conditions. Make the interval longer in the case of a clayey soil and shorter in a sandy soil.

* In the plains, adopt the flood system of irrigation, after the trees attain a spread of three metres.

* Avoid excess watering. Do not let water stand for a long period around the tree trunks.

* Mulch the basins of trees with dry leaves during the drought period, to preserve moisture in the soil.



REGULATE CROPPING

In central and western India, santra trees produce new leafy growth and flower three times in a year: in June, October and February. To get regular crops at definite intervals, you have to 'rest' the trees before any of the flowering periods.

'Resting' consists of exposing the fibrous roots near the tree trunk and withholding water. As a result, the leaves will shrivel and turn yellow and fall. At this stage, cover the roots with the original soil, mix manures, form basins, and water the orchard. Give the second irrigation on the third day and subsequent ones at weekly intervals. Within 20 days of the first watering, the trees will flower profusely and set a heavy crop.

Keep the following points in mind :

- * In sandy, gravelly, light or shallow soils, a mere stoppage of water and a shallow ploughing up of the orchard will cause the wilting of leaves. Never plough deeper than 23 centimetres.
- * In very deep, heavy, clay soils, which are highly retentive of water, expose the roots, in addition to ploughing and withholding water, for a month or two till the leaves wilt and fall.
- * Expose the roots by removing the upper 8 to 10 centimetres of the soil within a radius of 45 to 60 centimetres around the tree trunk. Remove the minute fibrous roots with a pruning shear. Take care not to cut or bruise the thick roots.

Never disturb the roots beyond a radius of 60 centimetres from the tree trunk.

* For giving the treatment, choose a period which will help you get the maximum price for the crop in the market. You have also to take into account the period of rainfall and availability of water for irrigation.

Avoid a period for the crop when the attack of some pest is likely.

* Santra trees treated for flowering in a particular period get habituated to flower in the same period in the subsequent years. Choose the period of resting after careful consideration, and then treat the trees every year in the same period.



KEEP TREES IN HEALTH

* Remove the Loranthus parasite, as and when discovered on the branches.

* Prune dead wood, and remove unwanted branches after harvest.

* Spray the trees annually, two months after the start of new growth, with a solution of 4 to 5 kilograms of zinc sulphate and 2.3 kilograms of hydrated lime in 450 litres of water. This will remedy the mottle-leaf disease caused by zinc deficiency.

* Make basins in such a way that water does not come into contact with the tree trunks. This will check gummosis or foot rot. In case of infection, cut the diseased bark and paint the exposed wood with 25 per cent creosote oil.

* Take timely action to control any attack of disease.

Dusting fine sulphur will control powdery mildew.

Spraying the trees with Bordeaux mixture 5:5:50 in the beginning of June and again in July-August when there is a break in the monsoon, will control leaf-fall and fruit-rot.

In the case of the pink disease, prune the dead branches and burn them. Scrape diseased parts on the branches and paint them with Bordeaux paste. Also spray the trees with Bordeaux mixture 3:3:50.

** Consult your Horticultural Officer or Plant Protection Officer for a schedule of Plant Protection Operations for your orchard.

FOR ANY HELP IN GROWING SANTRAS, CONTACT
YOUR GRAM SEVAK OR THE HORTICULTURAL
OFFICER OF YOUR AREA.