

CITRUS FRUITS



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Citrus Fruits: An Introduction

Citrus Fruits are known for their nutrient density. Major nutrient rich citrus fruits are oranges, limes, lemons and grapefruits.

Sweet Oranges: Scientific name of sweet oranges is *Citrus sinensis* and it belongs to the family Rutaceae. Citrus fruits are believed to be originated in South-East Asia. Sweet Orange is a hybrid between pomelo (*Citrus maxima*) and mandarin (*Citrus reticulata*).



Lemon: Lemon is *Citrus limon*. It is an evergreen, perennial, flowering shrub which sometimes grows into a small tree. They are grown for their highly acidic, highly useful, yellow coloured fruits. Under good cultural conditions, a lemon tree reaches up to a height of 3-4 meters. Lemon plants are believed to be originated in South-East Asia.

Limes: Limes are evergreen, sun-loving plants of subtropical regions. They can be grown year-round. They are grown for their highly acidic, aromatic fruits which are used for flavouring foods and making soft drinks. Limes are a rich source of citric acid, pectin and lime oil. Lime is a highly acidic, hybrid citrus fruit. It is round or circular shaped and green in colour. There are different types of limes grown all around the world. Green limes or key limes, *Citrus aurantifolia*; like all other citrus fruits belongs to the family Rutaceae and is a native of South-East Asian region.

Plant Description

Citrus plants are a small evergreen, perennial, flowering tree with a shallow root system. Leaves are oval-shaped and dark green with alternate arrangement. Petioles are winged. Flowers are axillary and borne solitary or in small groups. Fruit is a hesperidium, a modified berry with slightly acidic, juicy pulp. Fruit is subglobose shaped and contains small seeds. Citrus fruits are non-climacteric fruits.

Growing Citrus Fruits

Climate: Citrus Fruits are essentially a plant of subtropical climate. Wet tropical climate and high altitudes are not suitable for the growth of Citrus sinensis plants. However, they can be grown indoors in cool climates. Citrus Fruits thrive well between 15.5 and 29 °C. They are sun-loving plants and require considerable amounts (10-12 hours daily) of sunshine. They need plenty of water also for their growth; however high humidity should be avoided as it may invite plant diseases. For fruit development, there should be a temperature variation between summer and winter and, between day and night. Citrus Fruits are sensitive to frost and hence frost-protection is mandatory.

Soil: Citrus Fruit can be successfully grown in well-drained, fertile, light or medium loam soils. Citrus Fruit thrive well in well-drained alluvial, medium black and loamy soils also. Soil pH should be between 5 and 8 (moderately acidic to slightly alkaline soils)

Propagation: Seed propagation may be done for a small crop. For a commercial crop, grafting and budding may be used. In grafting, a rootstock is grown from seed and then bud from a scion variety is grafted into the one-year old seedling rootstocks. While choosing a rootstock, make sure that it is compatible with the variety/scion inserted into them. Otherwise the graft will not survive for a long period. Grafted trees mature uniformly and bear fruits earlier than seedling trees. Grafted trees begin to bear after 3-4 years of growth while a seedling tree begins to fruit after 5-6 years only.

Field Preparation: Field is tilled, and organic matter/humus is added to the top soil ; alternatively green manuring may be done to increase soil fertility. Citrus Fruit trees are susceptible to heavy winds and hence wind protection should be provided in the fields. Pits of size 50x50x50cm are prepared well in advance and left for weathering.

Planting: One year old grafted plants are planted in well-manured pits at the onset of rains. Plant to plant distance may be kept at 4-5 meters while distance between two rows may be kept at 9-10 meters. A light watering is done soon after planting.

Recommended Fertiliser Doses

Age of the Plant	Year-wise fertilizer applied (g./plant)		
	N	P	K
1	150	50	25
2	300	100	50
3	450	150	75
4 & Above	600	200	100

Note: Foliar application of micronutrients is also recommended

Irrigation: Irrigation @10-15 days interval during winter. Weekly irrigation is recommended during summers. Water requirement of young (1-4 years old) plant is about 5 to 15 litres/day. Water requirement of a mature plant (9 years and more) may be 60 to 170 litres/day. Irrigation should be planned according to the plant requirement and prevailing climatic conditions.

Aftercare: Pruning is not required for mature plants but slight pruning may be done for young plants to keep them in shape. Mulching may be practiced to suppress weed growth and to conserve soil moisture. Growth regulators may be sprayed to avoid pre-harvest fruit drop.

Disease Management in Citrus Fruits

- Gummosis caused by the fungus *Phytophthora* spp. ; it affects tree bark which develops cracks and dried cankers; bark of the affected trees can be pasted with Bordeaux Mixture in order to control this disease
- Citrus greening disease, caused by the bacterium *Liberobacter asiaticum*; major symptoms are streaks on the leaves, and deformed fruits; this disease can be controlled by the use of disease-free planting materials
- Greasy spot, a fungal disease caused by the *Mycosphaerella citri*; major symptoms are premature defoliation; Bordeaux Mixture may be used as a control measure

Insect-Pest Management in Citrus Fruits

1. Bark borer-*Inderbela tetraonis*; these caterpillars make holes in the branches; they can be effectively controlled by injecting kerosene in the holes and plugging the holes thereafter
2. Citrus Psylla-*Diaphorina citri*; these insects can be controlled by the use of its natural enemies, ladybird beetles
3. Citrus leaf miners-*Phyllocnistis citrella*; larvae feeds on tender plants; these insects can be controlled by destroying the affected plant parts and also by the application of organic, pyrethrum based insecticides
4. Citrus whiteflies, citrus butterflies, and citrus aphids: All these insects attack on young leaves and tender shoots by feeding on them; they can be effectively controlled by the application of organic, pyrethrum based insecticides
5. Citrus fruit flies: These insects attack young and ripening fruits and can be controlled by the destruction of affected fruits as well as by the use of fly traps
6. Other major insects are scale insects ,thrips and mealy bugs; they can be effectively controlled by the application of organic, pyrethrum based insecticides

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