

PLANTS AND PLANTING IN MEDITERRANEAN LANDSCAPES

(VOLUME 1)

Editors

Juan José Galán Vivas
Vicente Caballer Mellado



EVERGREEN TREES

DECIDUOUS TREES

SHRUBS

CONIFERS

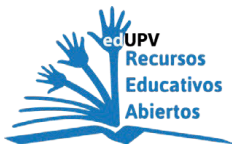
PALM TREES

MEDICINAL AND AROMATIC

GROUNDCOVERS

HEDGES

CLIMBERS



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CITRUS PLANTS

Chapter 10

CITRUS PLANTS

- Subchapter 10.1** Introduction
- Subchapter 10.2** Species
- Subchapter 10.3** Commercialization, use and planting
- Subchapter 10.4** Maintenance

Subchapter 10.1

Introduction

Citrus is usually understood as the species of the *Citrus* genus, which are the most popular, but this term also includes plants of the *Fortunella*, *Poncirus*, *Eremocitrus*, and *Microcitrus* genus, as well as hybrids between these genera and their species.

The *Citrus* genus originates from the S.E. Himalayas, Assam, and Northern Burma. Its wild plants were used long before they were cultivated, attributed with medicinal and even miraculous virtues since time immemorial. Following the routes of the merchants, they came to be cultivated in Mesopotamia more than 2,600 years ago. Thus, during their captivity in Babylon, the Jews substituted the “cone” of the cedar for the fruit of the current “citron” as an offering in the ceremony of tabernacles. Possibly bitter orange, lemon, sweet lime and *zamboa* also referred to as the *azamboa* or *azimboa* has a yellowish gold color fruit similar to an apple or pear were also used, with various applications. During the Roman Empire, these citrus fruits were not of interest for food and their cultivation was restricted to growing only a few trees in small orchards and gardens.

The citron (*Citrus medica*) is the first citrus known in Europe, where it arrived through the Middle East through Iran from its native India. It did not spread to the Iberian Peninsula, perhaps because of its great sensitivity to cold. Currently, it does not have many uses in the commercial sector. Something similar must have happened with the *azamboa* and sweet lime, although traces of these species remained in some areas of Murcia.

Bitter orange (*Citrus aurantium*) also seems to be native to Southeast Asia and quite possibly to India, from where it spread to China. It seems that Arab traders based in India brought bitter orange with them to Oman (Arabia) in the 10th century, from where it spread to Iraq, Syria, Palestine, and Egypt and later through North Africa to Spain, where it was introduced in the eleventh century.

The origin of the lemon tree (*Citrus limon*) is ambiguous. It is thought that it could have originated from Southeast Asia or northern Burma. Everything suggests that this fruit is a mutation or a hybridization from other citrus fruits, among which the citron would be found. The Arabs already knew about it in the 10th century, and it was they who spread it. From India it would probably follow the same paths as the bitter orange tree and it is supposed to have arrived in Spain around the year 1150.

The arrival of the sweet orange tree (*Citrus sinensis*) to the Mediterranean is still a mystery for which there are many answers but, although none of them is completely satisfactory, the one that claims to have been brought by the Portuguese from the Far East is plausible (oranges from China, sweet, as opposed to the “normal” orange tree then, bitter). References to the sweet orange tree in the 15th century are scarce, but in those years, it spread in Spain. However, it is from the sixteenth century onwards that numerous citations and data begin to be documented that do not name it as a new plant, which suggests that it had been known for a long time.

The citron, bitter orange, and lemon plants were known and cultivated for their ornamental value, medicinal and aromatic properties, and thus we have descriptions, treatises and Islamic poems that speak of the beauty of their fruits, trees, and flowers, of their different uses, and of its cultivation.

Taking into consideration all of the above, it can be deduced that the presence of orange trees in Spain is mainly due to the Arabs and especially to the caliphs of Córdoba. These trees were primarily used for their ornamental value, being planted in streets, gardens, and courtyards of mosques, specially and more extensively in the Levantine regions of Spain and in Andalusia.

The mandarin (*Citrus reticulata*) arrived in Spain at the beginning of the 19th century and the grapefruit (*Citrus paradisi*) came to Europe at the beginning of the 20th century.

The interesting features that citrus fruits can offer through their genera, species and varieties means that this group has a specific place within garden ornamentation. The diversity of sizes makes it easy to choose a species for each case and so we find from small shrubs such as *Triphasia trifolia* to the impressive specimens of sweet lime (*Citrus limettioides*) and lemon trees, passing through intermediate sizes such as kumquats. (*Fortunella margarita*, *Fortunella japonica*), calamondins (*Citrus madurensis*), mandarins, etc.

The intense color of their leaves is striking in these trees but with some exceptions, such as *Poncirus trifoliata*, a deciduous species. The contrast offered by the deep, glossy green of the foliage with the bright orange or yellow of its fruits is one of the many reasons why these specimens can occupy prominent places in gardens. Another circumstance that makes citrus very usable in ornamentation is the flowering and its aroma. Many varieties produce profuse white blooms that stand out against the green background of the foliage. Some varieties such as citrons and lemon trees can flower several times a year as long as the weather conditions are adequate.

The fruits of the citrus species offer a great diversity in sizes, flavors, and colorations. Regarding size, we can choose from the small fruits of the *Severina buxifolia* to the large pummelos (*Citrus grandis*). Concerning shape some are spherical like oranges, ovoid like kumquats, and strange looking like *Citrus medica* var. *sarcodactylis*. As for flavor, some are acidic like Mexican limes (*Citrus aurantifolia*), sweet like clementines (*Citrus clementium*). Some species are inedible like *Poncirus trifoliata* although other species, like the kumquats can be eaten even with their skin. Their colors vary from reddish orange to yellow, always in warm tones that contrast with the bright green of the foliage.

In addition to the purely ornamental use, the leaves and flowers were used for many years for medicinal purposes, and even today, orange blossom water and essences for perfumery are still obtained from bergamot orange tree (*Citrus bergamia*), and the wood of the lemon tree for inlays in joinery. When it comes to the ornamental use of citrus as garden plants, we should consider that these trees and shrubs can be used for many purposes in landscape design, as long as the climate is not excessively cold. In the case of somewhat low temperatures, some of the most resistant citrus trees are *Citrang Troyer*, *Poncirus trifoliata* or the bitter orange (*Citrus aurantium*).

Subchapter 10.2 Species

This subchapter describes **15 ornamental citrus species** used in garden and landscape design. They have been chosen based on their ornamental use, botanical interest, and other characteristics which make them of special interest in this chapter.

A table of parameters and values has been developed to explain each characteristic or factor presented in each botanic datasheet.

Each datasheet describes each species containing with regards to its botanical and ecological characteristics, cultivation, and uses, along with other interesting features such as their commercialization. This information is accompanied by photographs in which the general appearance and morphological details of each species can be appreciated.

TAXONOMY	
TAXONOMIC RANKS	DIVISION, SUBDIVISION, TYPE, ORDER, FAMILY
VARIETIES	OTHER VARIETIES OF INTEREST
STRUCTURE	
SHAPE	GLOBE-SHAPED, ROUNDED, OVAL, COLUMNAR, CONE, EXTENDED, IRREGULAR, PARASOL, FAN-SHAPED, HORIZONTAL, PALMIFORM, PENDULAR, WEEPING
HEIGHT	AS APPROPRIATE- IN METERS OR CENTIMETERS
DIAMETER	AS APPROPRIATE -IN METERS OR CENTIMETERS
TEXTURE	TEXTURE: LEAVES>10CM= COARSE. LEAVES OR LEAFLETS BETWEEN 2-10CM= MEDIUM. LEAVES OR LEAFLETS <2CM= FINE
SHADE	LIGHT, FULL, DENSE
ROOT	TAPROOT, FASCICULATE, OBLIQUE, HORIZONTAL, AERIAL, ADVENTITIOUS
MORPHOLOGY	
TRUNK	
BARK	SMOOTH, VERTICAL FISSURES, LONGITUDINAL FISSURES, DIAGONAL FISSURES; ROUGH, SCALY, CORKY WITH PLATES
COLOR OF BARK	GREYS; GREEN/GREY OR BLUE/GREY. SILVER; LIGHT GREEN, YELLOW, LIGHT BROWN, DARK, GREEN, RED; RED. PURPLE; YELLOW; BLACK; MARBLED; TWO-TONED; THREE-TONED; LIGHT GREY, DARK GREY
LEAF	
TYPE	EVERGREEN, SEMI-EVERGREEN DECIDUOUS, SEMI-DECIDUOUS
SIZE OF LEAF	LENGTH OF LEAF (cm)
SIZE OF LEAFLET	LENGTH OF LEAFLET (cm)
COLOR OF UPPER SIDE (US)	PALE GREEN, LIGHT GREEN, DARK GREEN, BLUE/GREEN, GREY, PURPLE; PALE; YELLOW; VARIEGATED
COLOR OF LOWER SIDE (LS)	GREEN, LIGHT GREEN, DARK GREEN, BLUE/GREEN, GREY PURPLE; PALE; YELLOW; VARIEGATED; RUST COLORED; SILVER
TEXTURE OF UPPER SIDE (US)	SHINY, ROUGH, GLABROUS, TOMENTOSE, HAIRY, ROUGH, SCALY, VISCOSE
TEXTURE OF LOWER SIDE (LS)	SHINY, ROUGH, GLABROUS, TOMENTOSE, HAIRY, ROUGH, SCALY, VISCOSE
COMPOUND LEAVES	NO COMPOUND LEAVES YES. COMPOUNDS: IMPARIPINNATE, PARIPINNATE, TRIFOLIATE, PALMATE, PALMIFORM, PALM, PINNATE, BIPINNATE
HARDNESS	CORIACEOUS, SOFT, SUCCULENT, HARD
ARRANGEMENT	OPPOSITE, ALTERNATE, WHORLED, VERTICAL
VENATION	PINNATE, PALMATE, PARALLEL, RETICULATE, ARCUATE, A3 MAIN VEINS
SHAPE	ROUNDED, LINEAR, LANCEOLATE, FALCATE, OVAL, OBLONG, ELLIPTIC, DELTOID, RHOMBOID, SPATULATE, ACICULAR GROUPS 2, ACICULAR GROUPS 3, ACICULAR GROUPS 5, ACICULAR GROUPS, ACICULAR IN 1 PLANE, ACICULAR IN SPIRAL, SCALY, PALM 7 LOBES, PALM 5 LOBES- PALM 3 LOBES, POLYMORPHIC; PANDURIFORM; PINNATIFID, SAGITATE, RENIFORM, CORDATE, ORBICULAR, OBOVATE, OBLANCEOLATE, LIRATE, HASTATE, RUNCINATE
LEAF MARGIN	WHOLE, CILIATE, DENTATE, CRENATE, SERRATED, DOUBLE SERRATED, LOBED, DOUBLE LOBED
APEX	ACUTE, CUSPIDATE, OBTUSE, RETUSE, MUCRONATE
LEAF BASE	ATTENUATE, CORDATE, ROUNDED, ASYMMETRIC, CUNEATE, OBLIQUE, SAGITATE, HASTATE

PETIOLE	LONG, SHORT, SESSILE, WIDE
FLOWER	
SIZE	HERMAPHRODITE (MALE/FEMALE FLOWERS): (CM OR MM)
TYPE	UNISEX, HERMAPHRODITE
REPRODUCTION	MONOECIOUS, DIOECIOUS, HERMAPHRODITE, POLYGAMY, SYNOICIOUS, STERILE
FLOWERING	ISOLATED, INFLORESCENCE IN CORYMB, CYMOSE, RACEME, SPIKE, UMBEL, CATKIN, SPADIX, FLORET OR CAPITULUM, PANICLE (+ INFLORESCENCE SIZE (IN CM OR MM))
FRAGRANCE	YES, NO, UNPLEASANT
FRUIT	
SIZE	IN CM OR MM
TYPE	FOLLICLE, PLURIFOLLICLE, LEGUME, LOMENT, SAMARA, DOUBLE SAMARA, PLURISAMARA, CAPSULE, POLYATHENE, TETRACHENE, NUT, ACHENE; SYCONIUM, HESPERIDIUM, PLURISAMARA, ACORN, COMPOUND FRUIT, PLURIFOLLICLE, BERRY, RACEME, POME, BALAUSTA, DRUPE, CONIFER CONE, PSEUDO CONIFER, CONE, PINE
EDIBLE FRUIT	YES, NO
COLOR OF FRUIT	RED, GREEN, YELLOW, BROWN, BLACK, PALE, WHITE, PURPLE
FRUITING SEASON	INTERVAL OF MONTHS: JAN, FEB, MAR, APR, MAY, JUN, JUL, AGO, SEP, OCT, NOV, DEC
DEVELOPMENT	
GROWTH	SLOW, VERY SLOW, MODERATE, FAST, VERY FAST
LONGEVITY	<25 YEARS, 25 YEARS, 50 YEAR, 75 YEARS, 100 YEARS, 150 YEARS, 200 YEARS, 250 YEARS, 300 YEARS, >300 YEARS
ECOLOGY	
CLIMATE	
ALTITUDE	NATURAL HEIGHT OF THE PLANT: interval of sea level altimetry
IRRIGATION	++HIGH, MODERATE, LOW, ++LOW (very low/low < 350 mm; Very high/high > 750 mm)
MINIMUM TEMPERATURE AND INTERNATIONAL CLASSIFICATION	<p>MINIMUM TEMPERATURES: DEGREES CELSIUS</p> <p>CLASSIFICATION ACCORDING TO EUROPEAN REGULATION: (SEE MAP)</p> <p>G2___ HOT GREENHOUSES IN SOUTHERN EUROPE</p> <p>G1___ COLD GREENHOUSES IN SOUTHERN EUROPE</p> <p>H5___ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM 0°C TO -5°C</p> <p>H4___ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -5°C TO -10°C</p> <p>H3___ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -10°C TO -15°C</p> <p>H2___ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -15°C TO -20°C</p> <p>H1___ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -20.</p> <p>CLASSIFICATION INTERNATIONAL REGULATIONS. ACCORDING TO MINIMUM TEMPERATURE RANGES</p> <p>Z1___ SUPPORT MINIMUM TEMPERATURES OF -50°C</p> <p>Z2___ SUPPORT MINIMUM TEMPERATURES OF -50°C TO -40°C</p> <p>Z3___ SUPPORT MINIMUM TEMPERATURES OF -40°C TO -30°C</p> <p>Z4___ SUPPORT MINIMUM TEMPERATURES OF -30°C TO -20°C</p> <p>Z5___ SUPPORT MINIMUM TEMPERATURES OF -20°C TO -10°C</p> <p>Z6___ SUPPORT MINIMUM TEMPERATURES OF -10°C TO -0°C</p> <p>Z7___ SUPPORT MINIMUM TEMPERATURES OF -0°C TO 10°C</p> <p>Z8___ SUPPORT MINIMUM TEMPERATURES OF 10°C TO 20°C</p> <p>Z9___ SUPPORT MINIMUM TEMPERATURES OF 20°C TO 30°C</p> <p>Z10___ SUPPORT MINIMUM TEMPERATURES OF 30°C TO 40°C</p> <p>Z11___ SUPPORT MINIMUM TEMPERATURES OF MORE THAN 40°C</p>

EXPOSURE TO SUNLIGHT	FULL SUN, FULL SHADE, SHADE, PART SHADE
DROUGHT RESISTANCE	YES, NO, MODERATE
FROST RESISTANCE	YES, NO, MODERATE
SOIL	
PH OPTIMUM	PH: ALL TYPES- NEUTRAL, ACID, BASIC (OR INTERVAL OF PH)
LEVEL OF FERTILITY	FERTILE, AVERAGE, POOR
TEXTURE OF SOIL	SANDY, SLIT OR LOAMY, CLAY, SANDY LOAM, CLAY LOAM - ALL TYPES
DRAINAGE	HIGH, MODERATE, LOW
RESISTANCE TO SEA	YES, NO, MODERATE
RESISTANCE TO LIME	YES, NO, MODERATE
USES	
RESISTANCES	
COASTAL	1 ST LINE, 2 ND LINE, NO
RESISTANCE TO POLLUTION	HIGH, MODERATE, LOW
RESISTANCE TO WIND	HIGH, MODERATE, LOW
APPLICATIONS	
IN SLOPES IN LINES ON RIVERBANKS AS WINDBREAKERS IN HEDGES IN FIELD BORDERS IN GROUPS ISOLATED	YES, NO
SPACING	
SPACING	MINIMUM RECOMMENDED DISTANCE BETWEEN PLANT: M, CM
PLANTING AND PLANT HEALTH	
PLANTING AND PLANT HEALTH	
CALENDARS	
CHROMATIC CALENDAR	FOLIAGE, FLOWERING, FRUITING SEASON: the color white represented with grey or black cell
CULTIVATION CALENDAR	SOWING, PLANTING, PRUNING
TREATMENTS CALENDAR	FUNGICIDES, PESTICIDES, FERTILIZERS, HERBICIDES
COMMERCIALIZATION	
PRESENTATION	BR (BARE ROOT), CT (CONTAINER or POT (LITERS)), CE (ROOT BALL), CEY (ROOT BALL IN GYPSUM), ROOT BALL IN MESH
TRUNK GIRTH(TREE)	GIRTH (perimeter): CM or years, or SAMPLE, or shrubs (in tree species)
HEIGHT	CM, M

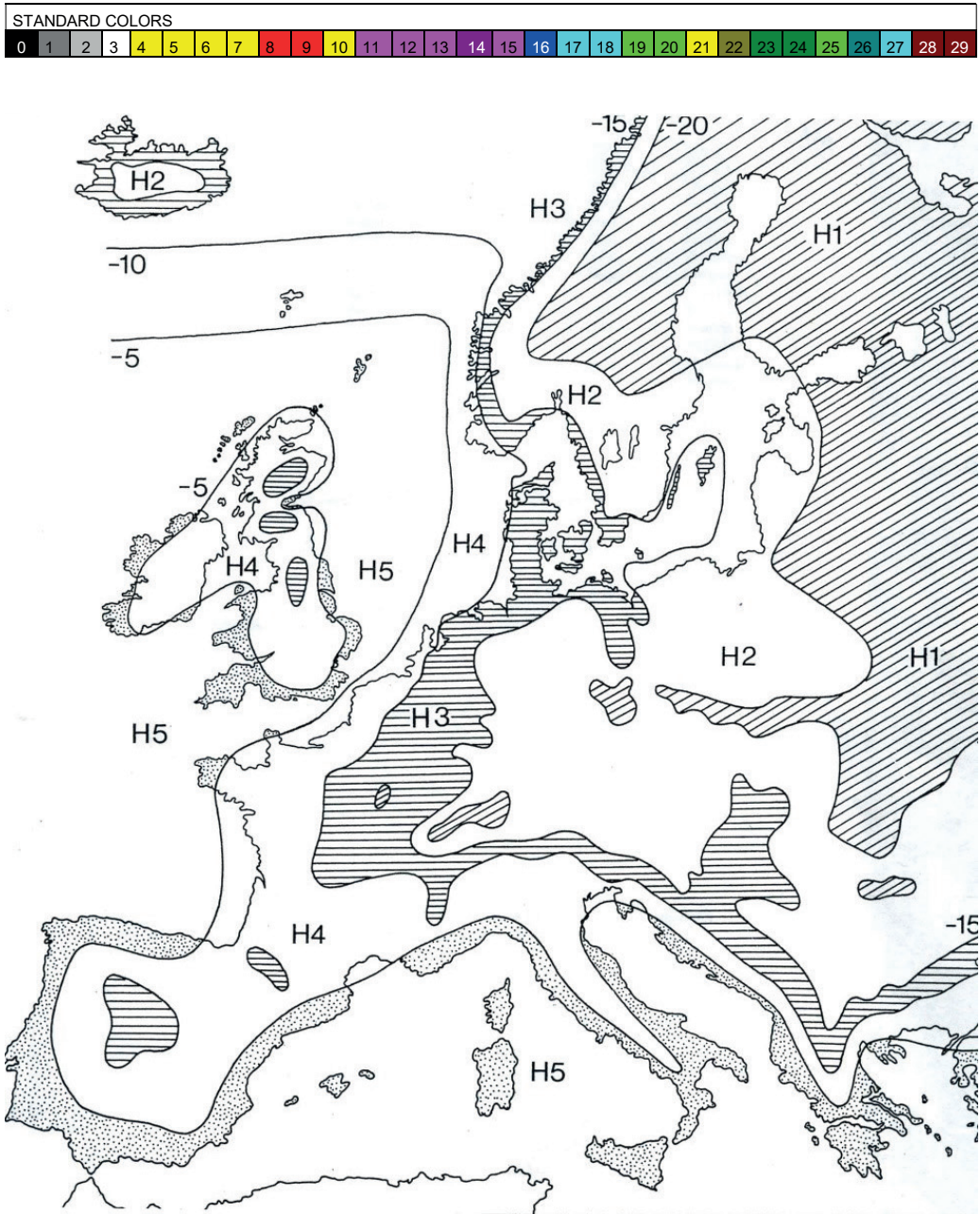


Figure 10.2.1: Thermal classification map according to European regulations

LIST OF ORNAMENTAL CITRUS SPECIES DESCRIBED

1. *Citrus aurantifolia*
2. *Citrus aurantium*
3. *Citrus deliciosa*
4. *Citrus limos*
5. *Citrus madurensis*
6. *Citrus medica*
7. *Citrus reshni*
8. *Citrus sinensis*
9. *Eremocitrus glauca*
10. *Fortunella japonica*
11. *Fortunella margarita*
12. *Fortunella* sp (*Citrus sinensis* x *Poncirus trifoliata*)
13. *Murraya paniculata*
14. *Poncirus trifoliata*
15. *Triphasia trifolia*

CITRUS

Citrus aurantifolia

ORNAMENTAL CITRUS

LIMA MEXICANA
SPANISH

VALENCIAN

KEY LIME
ENGLISH

LIMETTIER MEXICAN
FRENCH

STRUCTURE		
Shape ROUND	Height 6 M	Diameter 6 M
Texture COARSE	Shade DENSE	Root TAPROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf	COMPOUND: NO HARDNESS: CORIACEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: ELLIPTIC MARGIN: SMOOTH APEX: OBTUSE LEAF BASE: ATTENUATE PETIOLE: SHORT AND WINGED	
EVERGREEN SIZE: 4-6 CM COLOR: US: GREEN LS: LIGHT GREEN TEXTURE: US: SMOOTH LS: SMOOTH		
Flower	TYPE HERMAPHRODITE	REPRODUCTION HERMAPHRODITE
SIZE AND TYPE: 2 CM RACEME	Flowering	Fragrant YES
Fruit	Type HESPERIDIUM	Color YELLOW
SIZE: 3-4 CM	Edible YES	Fruiting season SEPT-FEB
Growth	Rate MEDIUM	Longevity <10 YEARS



ECOLOGY		
Climate	Temperature -2°C,H5,Z6	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant MODERATE
Soil	Texture LOAMY	Salt resistant LOW
pH: 6.5-7.5 FERTILITY: MODERATE	Drainage MODERATE	Lime resistant MODERATE

USES		
Resistances	Applications	
COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	SLOPES: NO RIVERBANKS: NO GROUPS: NO	HEDGEROWS: NO BORDERS: NO ISOLATED: YES

POINTS OF INTEREST

Valued for its evergreen foliage, this species of citrus is edible in addition to having an ornamental value. It is also known for its exquisite fragrance. It produces more juice than the lemon. It is much more fragrant and has softer pulp. The fruit is medium in size, similar to that of a tangerine. The lime is native to Southeast Asia. Its cultivation is widespread throughout Asia, India, the Caribbean, Mexico, Brazil and South Africa. In addition to being a source of vitamin C, popular medicine attributes curative properties to the lime. It is believed to be a natural antibiotic and to regulate cholesterol levels.

SPACING: 4-6 M

PLANTING AND PLANT HEALTH

They need deep, mulched soil in warm, well-watered locations. It propagates by polyembryonic seeds or grafts that cause the trees to bear early fruit. Unlike the lemon (subtropical) the lime requires a tropical climate. It is more sensitive to cold than other varieties and has low resistance to frost. Trees must be kept well drained as waterlogged soil can kill them. Some heat is required if quality fruits are to be produced 5-6 months after flowering.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
■	■	■	■	■	■	■	■	■	■	■	■
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
■	■	■	■	■	■	■	■	■	■	■	■
Sowing		Planting		Pruning		X					
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
■	■	■	■	■	■	■	■	■	■	■	■
Fungicides		Pesticides		Fertilizers							

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

CITRUS

Citrus aurantium

ORNAMENTAL CITRUS

NARANJO AMARGO SPANISH TARONGER BORD VALENCIAN BITTER ORANGE ENGLISH BIGARADIER FRENCH

STRUCTURE		
Shape ROUND	Height 6-10 M	Diameter 6-10 M
Texture COARSE	Shade DENSE	Root TAPROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf	COMPOUND: NO HARDNESS: CORIACEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: OVAL MARGIN: CRENATE APEX: ACUTE LEAF BASE: ATTENUATE PETIOLE: SHORT AND WINGED	
COLOR: US: GREEN LS: GREEN TEXTURE: US: SMOOTH LS: SMOOTH	SIZE: 7-10 CM COLOR: US: GREEN LS: GREEN TEXTURE: US: SMOOTH LS: SMOOTH	
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE



SIZE AND TYPE:	2 CM	Flowering	Fragrant
	SINGLE OR IN RACEMES		YES
Fruit	Type HESPERIDIUM	Color ORANGE	
SIZE: 7-8 CM	Edible YES	Fruiting Season NOV-JUNE	
Growth	Rate MEDIUM	Longevity <100 YEARS	



ECOLOGY		
Climate	Temperature -3°C,H5.28	Drought resistant LOW
ALTITUDE: 0-300	Sun exposure SUN	Frost resistant MODERATE
IRRIGATION: MODERATE	Texture LOAMY	Salt resistant LOW
Soil	pH: 6.5-7.5	Drainage MODERATE
FERTILITY: MODERATE		Lime resistant MODERATE

USES		
Resistances	Applications	
COASTAL: 2ND LINE	SLOPES: NO	HEDGE ROWS: NO
POLLUTION: MODERATE	RIVERBANKS: NO	BORDERS: NO
WIND: MODERATE	GROUPS: NO	ISOLATED: YES

POINTS OF INTEREST

Native to Southeast Asia. The bitter orange tree can reach heights of 8m, with a fairly straight trunk and a regular round crown. Bitter oranges, highly variable in size and less in shape, are rich in vitamin C, as well as mineral salts and sugar. They are used for the preparation of jams, pharmacopoeia, perfumery and the liquor industry. It has long, curved spines (not sharp). It is used to align narrow streets. It is found in historical gardens typical of Arab or Mozarabic cultures. The water of the same name is extracted from the orange blossom flowers, with antispasmodic and slightly sedative properties. Lemon rootstocks.

SPACING: 4-6 M

PLANTING AND PLANT HEALTH

It requires medium compact, deep and fresh soils, regardless of its nature, although it prefers ones that are humus-rich without salt. It has a deep and moderately branched root system, which makes it drought tolerate (irrigation between light humidity and light drought). This is an ideal species for topiary shapes. Pruning allows light to penetrate the interior and should be done after harvesting. Seed propagation in spring.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting across months]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning across months]											
Sowing	Planting	Pruning									
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers across months]											
Fungicides	Pesticides										

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

CITRUS

Citrus deliciosa

ORNAMENTAL CITRUS

MANDARINA
SPANISH

MANDARI
VALENCIAN

MANDARINER
ENGLISH

MANDARINER
FRENCH

STRUCTURE		
Shape SPHERICAL	Height 4-6 M	Diameter 4-6 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES
CLAUSELLINA SATSUMA, ...

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf	COMPOUND: NO HARDNESS: CORIACEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: LANCEOLATE MARGIN: SMOOTH APEX: ACUTE LEAF BASE: ATTENUATE PETIOLE: SHORT	
COLOR: US: GREEN LS: LIGHT GREEN TEXTURE: US: SMOOTH LS: SMOOTH		
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
SIZE AND TYPE: 1.5-2 CM SINGLE	Flowering	Fragrant YES
Fruit	Type HESPERIDIUM	Color ORANGE
SIZE: 5-7.5	Edible YES	Fruiting season SEPT-FEB
Growth	Rate MEDIUM	Longevity <100 YEARS



ECOLOGY		
Climate	Temperature -2°C.H5.Z6	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant MODERATE
Soil	Texture LOAMY	Salt resistant LOW
pH: 6.5-7.5 FERTILITY: MODERATE	Drainage MODERATE	Lime resistant MODERATE

USES		
Resistances	Applications	
COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	SLOPES: NO RIVERBANKS: NO GROUPS: NO	HEDGE ROWS: NO BORDERS: NO ISOLATED: YES

POINTS OF INTEREST

Native to China and Vietnam, from where it was brought to Europe at the beginning of the 19th century. The specific name *deliciosa* alludes to the exquisiteness of its fruit, with an acidic but pleasant flavor and is edible. The so-called mandarin essential oil is obtained from the rind of the fruit, which, in addition to being used in perfumery, is used to flavor liqueurs, sweets and medicines. Potted mandarin is also cultivated as an ornamental plant. This plant is quite common in orchards or gardens throughout the Mediterranean area. The Valencian Community produces 90% of the Spanish mandarin.

SPACING: 4-6 M

PLANTING AND PLANT HEALTH

It is more resistant to cold than the orange tree but its fruits are sensitive. It prefers temperate climates. The optimum temperature for root growth is 26°C. It is more drought resistant than the orange tree but the soil requirements are similar. It is not suitable for soils that are too clayey or calcareous, while it grows perfectly on those of medium consistency (sandy or sandy/loamy), permeable, deep and cool. It prefers fertile and well-drained soils. A certain amount of humidity must be maintained in the soil and waterlogging must be avoided. It admits pruning, which allows light to penetrate the interior and to improve harvesting potential.

CHROMATIC CALENDAR

Foliage , Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning]											
Sowing [] Planting [] Pruning [X]											
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers]											
Fungicides [] Pesticides [] Fertilizers []											

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in Gypsum/CT	8-10	250-300
RB in Gypsum/CT	10-12	250-300
RB in Gypsum/CT	12-14	250-300
RB in Gypsum/CT	14-16	250-300
RB in Gypsum/CT	16-18	250-300
RB in Gypsum/CT	18-20	250-300
RB in Gypsum/CT	20-25	250-300
RB in Gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

CITRUS

Citrus limon

ORNAMENTAL CITRUS

LIMON SPANISH L'LLIMER VALENCIAN LEMON TREE ENGLISH CITRONNIER FRENCH

STRUCTURE		
Shape	Height	Diameter
ROUND	3-7 M	3-7 M
Texture	Shade	Root
COARSE	DENSE	TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES
FINO
VERNA

MORPHOLOGY		
Trunk	Bark	Color
	SMOOTH	GRAY/BROWN
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: CORIACEOUS	
SIZE: 5-10 CM	ARRANGEMENT: ALTERNATE	
	VENATION: PINNATE	
COLOR: US: PALE YELLOW	SHAPE: OBLONG/LANCEOLATE	
LS: PALE YELLOW	MARGIN: CRENATE	
TEXTURE: US: SMOOTH	APEX: ACUTE	
LS: SMOOTH	LEAF BASE: ATTENUATE	
	PETIOLE: SHORT	
Flower	Type	Reproduction
	HERMAPHRODITE	HERMAPHRODITE
SIZE AND TYPE:	3.5 CM Flowering	Fragrant
	RACEMES	YES
Fruit	Type	Color
	HESPERIDIUM	YELLOW
SIZE: 5-7 CM	Edible	Fruiting season
	YES	SEPT-MAR
Growth	Rate	Longevity
	MEDIUM	75 YEARS



ECOLOGY		
Climate	Temperature	Drought resistant
	-2°C H5,26	LOW
ALTITUDE: 0-300	Sun exposure	Frost resistant
IRRIGATION: MODERATE	SUN	MODERATE
Soil	Texture	Salt resistant
	LOAMY	LOW
pH: 6.5-7.5	Drainage	Lime resistant
FERTILITY: MODERATE	MODERATE	MODERATE



USES		
Resistances	Applications	
COASTAL: 2ND LINE	SLOPES: NO	HEDGE ROWS: NO
POLLUTION: MODERATE	RIVERBANKS: NO	BORDERS: NO
WIND: MODERATE	GROUPS: NO	ISOLATED: YES

POINTS OF INTEREST

Native to Asia Minor and brought to Spain by the Arabs. Its cultivation extends mainly through the Levante and Southern provinces, with an annual lemon production of about 500,000 tons. The flowers are dark pink before opening and white when in full bloom, giving off a very pleasant fragrance. Most lemon trees bloom several times a year so that flowers and the green and ripe fruits coincide at the same time on the same tree. It is used to prepare drinks and as a dressing for various foods, as well as in pharmacopoeia, cosmetics and perfumery. They have low resistance to many pests, viruses and diseases (especially fungal).

SPACING: 4-6 M

PLANTING AND PLANT HEALTH

The lemon tree needs warm climates temperatures which should not drop below 0° C. It also needs a certain amount of humidity, so it is important to protect it from the wind. It is not very demanding on soils, but the highest productions are achieved in fertile, medium-consistency and deep soils. They are formed with two or three main branches. During the first years it is advisable to reduce pruning to the maximum, by just removing suckers or any overlapping branches. Once they have produced fruit, some branches are lightly pruned to allow light to penetrate to the interior. They are grafted on bitter orange or on ungrafted lemon trees. It is advisable to transplant the seedlings with a root ball.

CHROMATIC CALENDAR

Foliage, Floration and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Sowing		Planting		Pruning	X						
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Fungicides			Pesticides			Fertilizers					

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum /CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

CITRUS

Citrus madurensis

ORNAMENTAL CITRUS

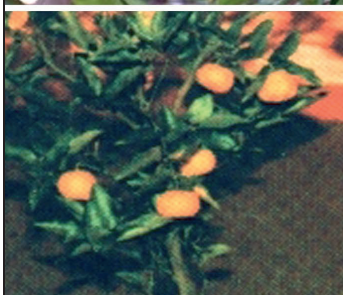
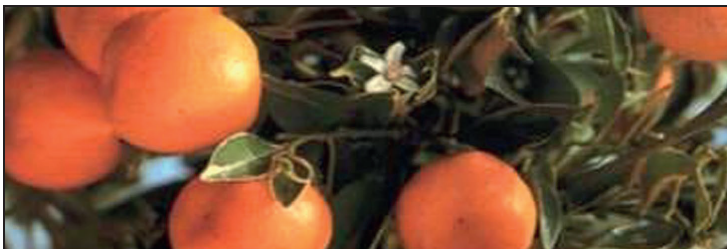
CALAMONDIN SPANISH VALENCIAN CALAMONDIN TREE ENGLISH CALAMONDIN FRENCH

STRUCTURE		
Shape ROUND	Height 4 M	Diameter 4 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf	COMPOUND: NO HARDNESS: CORIACEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: OVAL/LANCEOLATE MARGIN: DOUBLY SERRATE APEX: EMARGINATE LEAF BASE: ATTENUATE PETIOLE: SHORT	
COLOR: US: DK. GREEN LS: GREEN TEXTURE: US: SMOOTH LS: SMOOTH		
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
SIZE AND TYPE: 1.5-2 CM	Flowering	Fragrant YES
RACEME		
Fruit	Type HESPERIDIUM	Color ORANGE
SIZE: 1-1.5 CM	Edible NO	Fruiting season NOV-JUNE
Growth	Rate MEDIUM	Longevity 0-50 YEARS



ECOLOGY		
Climate	Temperature -2°C	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant HIGH
Soil	Texture LOAMY	Salt resistant LOW
pH: 6.5-7.5 FERTILITY: MODERATE	Drainage MODERATE	Lime resistant MODERATE

USES	
Resistances	Applications
COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	SLOPES: NO HEDGE ROWS: NO RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: YES

POINTS OF INTEREST

Native to China and brought to Indonesia and the Philippines in ancient times. This species of citrus is appreciated more for its ornamental value than for its fruits. Commonly known as calamondin, China orange, Panama orange, etc. It became the most important source of citrus juice in the Philippine Islands and has been extensively planted in India and throughout South Asia and Malaysia. It is a common doorway ornamental in Hawaii, the Bahamas, some of the islands in the West Indies, and parts of Central America.

SPACING: 3-4 M

PLANTING AND PLANT HEALTH

The calamondin is very resistant to frost and drought (like the Satsuma). It seems capable of tolerating a wide range of soils, from clayey to sandy. Plants grow from cuttings during the rooting period. Transplanted into large containers and if well cared for, they will grow at a rate of 30 cm per year and produce abundant fruit at the age of 2 years. Potted plants can be stored in the dark for 2 weeks. A commercial fertilizer with a 1:1 nitrogen to potassium ratio has been found to encourage the best growth.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded grid for foliage, flowering, and fruiting]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded grid for cultivation activities]											
Sowing [Color] Planting [Color] Pruning [Color] X [Color]											
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded grid for treatments]											
Fungicides [Color] Pesticides [Color] Fertilizers [Color]											

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in Gypsum/CT	8-10	250-300
RB in Gypsum/CT	10-12	250-300
RB in Gypsum/CT	12-14	250-300
RB in Gypsum/CT	14-16	250-300
RB in Gypsum/CT	16-18	250-300
RB in Gypsum/CT	18-20	250-300
RB in Gypsum/CT	20-25	250-300
RB in Gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

CITRUS

Citrus medica

ORNAMENTAL CITRUS

CIDRO
SPANISH

PONCILER
VALENCIAN

CITRON
ENGLISH

CEDRATIER
FRENCH

STRUCTURE		
Shape ROUND	Height 3-5 M	Diameter 3-5 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES
<i>Sacrodactylis</i> - SWINGLE

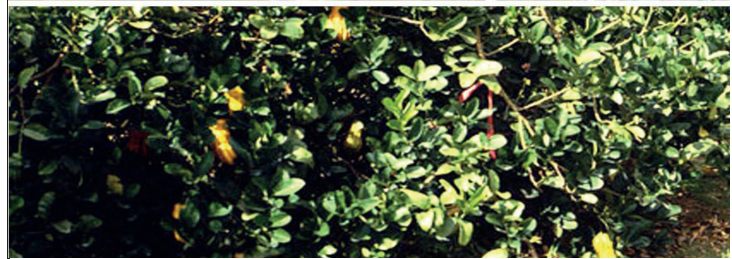
MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf EVERGREEN SIZE: 8-20 CM COLOR: US: GREEN LS: GREEN TEXTURE: US: SMOOTH LS: PUBESCENT	COMPOUND: NO HARDNESS: CORIACEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: OVAL/OBLONG MARGIN: CRENATE APEX: EMARGINATE LEAF BASE: ATTENUATE PETIOLE: SHORT	



Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
SIZE AND TYPE: 1.5-2.5 CM	Flowering RACEME	Fragrant YES
Fruit SIZE: 8-15 CM	Type HESPERIDIUM	Color WHITE
Growth	Edible YES	Fruiting season NOV-JUNE
	Rate MEDIUM	Longevity 75 YEARS



ECOLOGY		
Climate	Temperature -2°C.H5.Z6	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant LIGHT
Soil pH: 6.5-7.5 FERTILITY: MODERATE	Texture LOAMY	Salt resistant LOW
	Drainage MODERATE	Lime resistant MODERATE



USES	
Resistances	Applications
COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	SLOPES: NO HEDGE ROWS: NO RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: YES

POINTS OF INTEREST

Native to Southeast Asia. The fruit rind of this species is used to make soft drinks, sweets, preserves and liqueurs. It does well as a potted plant. The *sacrodactylis* Swingle (also known as "Buddha's fingers") is a singular variety due to the shape of its fruits and was appreciated many years ago by the Chinese for its ornamental and medicinal value.

SPACING: 4-6 M

PLANTING AND PLANT HEALTH

This species has a very low resistant to cold and to excessively high temperatures. It requires normal garden soil, preferably rich, well-drained and porous. Depending on the rootstock, it tolerates lime. A normal irrigation programme is needed. Drought and excess water-logging must be avoided. Pruning is required to allow light to penetrate the interior. It is propagated by cutting or grafted on "Cleopatra" mandarin.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning]											
Sowing [X] Planting [X] Pruning [X]											
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers]											
Fungicides [X] Pesticides [X] Fertilizers [X]											

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

CITRUS

Citrus reshni

ORNAMENTAL CITRUS

MANDARINO CLEOPATRA SPANISH VALENCIAN CLEOPATRA MANDARIN ENGLISH MANDARINIER CLEOPATRE FRENCH

STRUCTURE		
Shape	Height	Diameter
ROUND	3-4 M	3-4 M
Texture	Shade	Root
COARSE	DENSE	TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES	

MORPHOLOGY		
Trunk	Bark	Color
	SMOOTH	GRAY/BROWN
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: CORIACEOUS	
SIZE: 4-7 CM	ARRANGEMENT: ALTERNATE	
	VENATION: PINNATE	
	SHAPE: OVAL/LANCEOLATE	
COLOR: US: DK. GREEN	MARGIN: DOUBLY SERRATE	
LS: GREEN	APEX: ACUTE	
TEXTURE: US: SMOOTH	LEAF BASE: ATTENUATE	
LS: SMOOTH	PETIOLE: SHORT	
Flower	Type	Reproduction
	HERMAPHRODITE	HERMAPHRODITE
SIZE AND TYPE:	Flowering	Fragrant
	1.5-2.5 CM	YES
	RACEME	
Fruit	Type	Color
	HESPERIDIUM	ORANGE
SIZE: 3-5 CM	Edible	Fruiting season
	YES	NOV-FEB
Growth	Rate	Longevity
	MEDIUM	0-50 YEARS



ECOLOGY		
Climate	Temperature	Drought resistant
	-3°C.H5.Z6	LOW
ALTITUDE: 0-300	Sun exposure	Frost resistant
IRRIGATION: MODERATE	SUN	LIGHT
Soil	Texture	Salt resistant
	LOAMY	LOW
pH: 6.5-7.5	Drainage	Lime resistant
FERTILITY: MODERATE	MODERATE	MODERATE

USES	
Resistances	Applications
COASTAL: 2ND LINE	SLOPES: NO HEDGE ROWS: NO
POLLUTION: MODERATE	RIVERBANKS: NO BORDERS: NO
WIND: MODERATE	GROUPS: NO ISOLATED: YES

POINTS OF INTEREST

Native to India, The Cleopatra mandarin (due to the long persistence of its pleasant-tasting fruit) is used as an ornamental plant in both orchards and gardens. They have reached their maximum development in subtropical areas (30-40° N and S latitude). In these areas, production is seasonal and the quality of the fruit for fresh consumption is excellent. The production of mandarins has a greater yield than that of oranges.

SPACING: 3-4 M

PLANTING AND PLANT HEALTH

This species had good resistance to cold and more tolerant to drought than the orange tree, which is why it is used as rootstock in citrus production, but the fruits are more sensitive to low temperatures. The limiting factor is the minimum temperature, since it does not tolerate temperatures below 3° (temperature determines the vegetative development, flowering, fruit set and quality of the fruits). Constant high temperatures maintain high levels of chlorophylls and its color is persistently green. They do well in porous, fresh and well-drained soils, without excessive lime. They are demanding in fertilizer. Long periods of drought are not recommended but waterlogging must be avoided. Light pruning is required to allow light to penetrate the interior.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars representing seasonal activity]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars representing cultivation activities]											
Sowing		Planting		Pruning		x					
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars representing treatments]											
Fungicides				Pesticides				Fertilizers			

COMMERCIALIZATION

Presentation	Height (cm)	Topiary shapes
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

CITRUS

Citrus sinensis

ORNAMENTAL CITRUS

NARANJO
SPANISH

TARONGER
VALENCIAN

SWEET ORANGE TREE
ENGLISH

ORANGER
FRENCH

STRUCTURE		
Shape ROUND	Height 4-6 M	Diameter 4-6 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES	
NAVEL LANE LATE , NAVELATE, NAVELINA	
NEWHALL	
SALUSTIANA	
SANGUINELLI	

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf EVERGREEN SIZE: 6-15 CM COLOR: US: DK. GREEN LS: GREEN TEXTURE: US: SMOOTH LS: SMOOTH	COMPOUND: NO HARDNESS: CORIACEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: LANCEOLATE MARGIN: SMOOTH APEX: ACUTE LEAF BASE: ATTENUATE PETIOLE: SHORT	
Flower	TYPE HERMAPHRODITE	REPRODUCTION HERMAPHRODITE
SIZE AND TYPE: 1.5-2 CM	Flowering SINGLE	Fragrant YES
Fruit	Type HESPERIDIUM	Color ORANGE
SIZE: 6.5-9 CM	Edible YES	Fruiting season OCT-MAY (depending on var.)
Growth	Rate MEDIUM	Longevity 0-100 YEARS



ECOLOGY		
Climate	Temperature -2°C.H5.Z6	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun Exposure SUN	Frost resistant LIGHT
Soil	Texture LOAMY	Salt resistant LOW
pH: 6.5-7.5 FERTILITY: MODERATE	Drainage MODERATE	Lime resistant MODERATE

USES	
Resistances COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	Applications SLOPES: NO HEDGE ROWS: NO RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: YES

POINTS OF INTEREST

With its many cultivated varieties, the orange is one of the most popular and recognizable fruits. They are considered important sources of vitamin C (ascorbic acid) and other fruit acids. The origins of citrus are difficult to trace because of the immense variety of natural hybrids and cultivated varieties, including spontaneous mutants. They originated from the region comprising Southeast Asia and India. They arrived from India to the Italian peninsula and during the fall of the Roman Empire they had already spread. The navel variety is the most important.

SPACING: 4-6 M

PLANTING AND PLANT HEALTH

This particular species prefer porous, fresh and well-drained soils, without excessive lime. They are demanding in fertilizer. They have good resistance to salt. Long periods of drought are not recommended but waterlogging must be avoided. Pruning (done in spring after the harvest - avoid the coldest months) allows light to penetrate the interior and to encourage the production of fruits. It propagates by grafting on rootstocks tolerant to the *Citrus tristeza* virus (CV).

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning]											
Sowing		Planting				Pruning					
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers]											
Fungicides		Pesticides				Fertilizers					

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

EREMOCITRUS

Eremocitrus glauca

ORNAMENTAL CITRUS

LIMA DEL DESIERTO
SPANISH

VALENCIAN

AUSTRALIAN DESERT LIME
ENGLISH

EREMOCITRUS
FRENCH

STRUCTURE		
Shape ROUND	Height 2-3 M	Diameter 2-3 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf EVERGREEN SIZE: 2-3.5 CM COLOR: LS: GREEN US: GREEN TEXTURE: LS: SMOOTH US: SMOOTH	COMPOUND: NO	HARDNESS: CORIACEOUS
	ARRANGEMENT: ALTERNATE	VENATION: PINNATE
	SHAPE: OVAL	MARGIN: SMOOTH
	APEX: OBTUSE	LEAF BASE: ROUNDED
	PETIOLE: SHORT	
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
	Flowering	Fragrant
SIZE AND TYPE: 1.5 CM SINGLE OR IN RACEMES		YES
Fruit SIZE: 1-1.5 CM	Type ROUND/BERRY-LIKE	Color ORANGE/RED
	Edible YES	Fruiting season DEPENDS ON VAR.
Growth	Rate MEDIUM	Longevity 50 years



ECOLOGY		
Climate ALTITUDE: 0-300 IRRIGATION: MODERATE	Temperature -2°C,H5,Z6	Drought resistant LOW
	Sun exposure SUN	Frost resistant LIGHT
Soil pH: 5.5-6.5 FERTILITY: MODERATE	Texture LOAMY	Salt resistant LOW
	Drainage MODERATE	Lime resistant LOW



USES	
Resistances COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	Applications SLOPES: NO HEDGE ROWS: YES RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: YES

POINTS OF INTEREST

Native to Australia, its common name is desert lime and its scientific name comes from *eremos* (desert) and *citron* (citrus), since it grows in desert areas. *Glauca*, from Latin, means bluish-green, due to the color of its leaves. The pulp of its fruits (similar to small tangerines) is edible. This species is used for indoor areas. Due to its habitat, this species is grafted to increase resistance to frost and drought. It has a tendency to produce suckers that may need to be controlled in cultivation.

SPACING: 2-3 M

PLANTING AND PLANT HEALTH

It propagates by seed or by cuttings (the latter being very slow). This plant is drought resistant and undemanding in soils, although it prefers clayey ones. It is not widely cultivated because it is not adapted to humid climates. However, it can survive in arid, near-desert conditions. Produces hybrids with some ease when planted near other citrus.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
			o o o o o o								

Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
x	x	x	x	x	x	x	x	x	x	x	x
Sowing Planting Pruning											

Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
		Fungicides		Pesticides				Fertilizers			

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

FORTUNELLA

Fortunella japonica

ORNAMENTAL CITRUS

KUMQUAT DE FRUTO GLOBOSO
SPANISH

VALENCIAN

ROUND KUMQUAT
ENGLISH

KUMQUAT
FRENCH

STRUCTURE		
Shape ROUND	Height 3-4 M	Diameter 3-4 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES
MEIWA
MERUMI

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf EVERGREEN SIZE: Leaf: 4-7 CM COLOR: US: DK. GREEN LS: GREEN TEXTURE: US: SMOOTH LS: SMOOTH	COMPOUND: NO HARDNESS: CORIAEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: OVAL/LANCEOLATE MARGIN: SMOOTH APEX: ACUTE LEAF BASE: ATTENUATE PETIOLE: SHORT	
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
SIZE AND TYPE:	1.5-2.5 CM Flowering SINGLE OR IN AXILLARY RACEMES	Fragrant YES
Fruit	Type HESPERIDIUM	Color ORANGE
SIZE: 2-3 CM	Edible YES	Fruiting season DEC-MAR
Growth	Rate MEDIUM	Longevity 0-50 YEARS



ECOLOGY		
Climate	Temperature -2°C.H5.28	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant LIGHT
Soil	Texture LOAMY	Salt resistant LOW
pH: 6-7 FERTILITY: MODERATE	Drainage MODERATE	Lime resistant LOW

USES	
Resistances	Applications
COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	SLOPES: NO HEDGE ROWS: NO RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: NO

POINTS OF INTEREST

Native to East Asia. Its scientific name *Fortunella* is dedicated to Robert Fortune (1812-1880), a Scottish horticulturist who collected plants in China. Small tree with an abundance of dark orange fruits, which can be eaten directly from the tree as both the thick rind and the fleshy interior are very sweet. Delicious both fresh and in jams and preserves. As a potted species, it can give an ornamental value to interior spaces.

SPACING : 3-4 M

PLANTING AND PLANT HEALTH

The transplant season is from April to June in summer (when the leaves have fallen) with a substrate consisting of a mixture of 60% akadama and 40% sand. Ripe pinching from June to August by removing shoots that are too long when the leaves are ripe. Prune from February to June. Severe pruning is not recommended as it will turn the leaves yellow. It is vulnerable to the white fly, red spider, Chlorosis. It undergoes a loss of foliage from June to August.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting across months]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning across months]											
Sowing [X] Planting [X] Pruning [X]											

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in Gypsum/CT	8-10	250-300
RB in Gypsum/CT	10-12	250-300
RB in Gypsum/CT	12-14	250-300
RB in Gypsum/CT	14-16	250-300
RB in Gypsum/CT	16-18	250-300
RB in Gypsum/CT	18-20	250-300
RB in Gypsum/CT	20-25	250-300
RB in Gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

Treatment Calendar

JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers across months]											
Fungicides [X] Pesticides [X] Fertilizers [X]											

FORTUNELLA

Fortunella margarita

ORNAMENTAL CITRUS

KUMQUAT DE FRUTO ALARGADO
SPANISH

VALENCIAN

OVAL KUMQUAT
ENGLISH

KUMQUAT A FRUITS OVALES
FRENCH

STRUCTURE		
Shape ROUND	Height 3-4 M	Diameter 3-4 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES
NAGAMI

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf	COMPOUND: NO HARDNESS: CORIACEOUS ARRANGEMENT: ALTERNATE VENATION: PINNATE SHAPE: OVAL/LANCEOLATE MARGIN: SMOOTH APEX: ACUTE LEAF BASE: ATTENUATE PETIOLE: SHORT	
EVERGREEN SIZE: 4-8 CM COLOR: US: DK. GREEN LS: GREEN TEXTURE: US: SMOOTH LS: SMOOTH		
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
SIZE AND TYPE: 1.5-2.5 CM	Flowering	Fragrant
SINGLE OR IN AXILLARY RACEMES	Yes	Yes
Fruit	Type HESPERIDIUM	Color ORANGE
SIZE: 2.5-3.5	Edible YES	Fruiting season DEC-MAR
Growth	Rate MEDIUM	Longevity 0-50 YEARS



ECOLOGY		
Climate	Temperature -2°C.H5.Z6	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant LIGHT
Soil	Texture LOAMY	Lime resistant LOW
pH: 6-7 FERTILITY: MODERATE	Rate MODERATE	Salt resistant LOW

USES	
Resistances	Applications
COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	SLOPES: NO HEDGE ROWS: NO RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: YES

POINTS OF INTEREST

Native to East Asia. Its scientific name *Fortunella* species is dedicated to Robert Fortune (1812-1880), a Scottish horticulturist who collected plants in China. Margarita comes from the Latin *margaritus*, which means pearl, alluding to its small, shiny fruits. Commonly known as the Kumquat. It can be used as a fruit or ornamental tree in orchards or gardens.

SPACING: 3-4 M

PLANTING AND PLANT HEALTH

More resistant to cold than other citrus commercial species. Cold temperatures cause a severe winter dormancy. It requires medium-compact, deep, fresh soils, regardless of its nature, although it prefers soils that are free of salt, excessive in lime and humus-rich. A certain humidity must be maintained in the soil and waterlogging must be avoided. A light/moderate pruning is recommended to allow light to penetrate the interior and encourage harvesting. Propagation is by seed or grafting.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning]											
Sowing [Red] Planting [Yellow] Pruning [X]											
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers]											
Fungicides [Green] Pesticides [Blue] Fertilizers [Light Blue]											

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

MURRAYA

Murraya paniculata

ORNAMENTAL CITRUS

MURRAYA
SPANISH

VALENCIAN

ORANGE JASMINE
ENGLISH

BUIS DE CHINE
FRENCH

STRUCTURE		
Shape ROUND	Height Up to 6 M	Diameter Up to 6 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf EVERGREEN SIZE: Leaf: 2.5-5CM Leaflets: 2-8 COLOR: US: DK. GREEN LS: GREEN TEXTURE: US: SMOOTH LS: SMOOTH	COMPOUND: HARDNESS: ARRANGEMENT: VENATION: SHAPE: MARGIN: APEX: LEAF BASE: PETIOLE:	PARIPINNATE CORIACEOUS ALTERNATE PINNATE OVATE SMOOTH OR CRENATE ACUTE ATTENUATE SHORT
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
SIZE AND TYPE: 1-2.5CM SINGLE OR IN AXILLARY RACEMES	Flowering	Fragrant YES
Fruit	Type HESPERIDIUM/OBLONG	Color ORANGE OR RED
SIZE: 1 CM	Edible NO	Fruiting season NOV-JUNE
Growth	Rate MEDIUM	Longevity 0-50 YEARS



ECOLOGY		
Climate	Temperature -2°C.H5.Z8	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant LOW
Soil	Texture LOAMY	Salt resistant LOW
pH: 6.5-7.5 FERTILITY: MODERATE	Drainage MODERATE	Lime resistant MODERATE

USES	
Resistances COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	Applications SLOPES: NO HEDGE ROWS: NO RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: YES

POINTS OF INTEREST

Native to Southeast Asia, from China to Japan and Malaysia. Commonly known as orange jasmine. The species is dedicated to the scientist Johann Andreas Murray (1740-1791), a Swedish professor of medicine and botany and a disciple of Linnaeus. *Paniculata* comes from the Latin *paniculatus* (with flowers arranged in panicles). It is a tropical species that can be used indoors. It is commonly used in bonsai.

SPACING: 3-4 M

PLANTING AND PLANT HEALTH

Irrigation must take place when the soil begins to dry out. It is fertilized with a solid, slow-release organic fertilizer once a month. It can be fertilized throughout the year. If severe pruning is to be carried out, it should be done in winter. In spring the finer twigs are removed. It sprouts without problems from the old wood. It can be obtained very easily by cuttings. High resistant to pests however it is prone to red spider, aphid and scale insect.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting across months]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning across months]											
Sowing [Red] Planting [Yellow] Pruning [X]											
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers across months]											
Fungicides [Green] Pesticides [Blue] Fertilizers [Light Blue]											

COMMERCIALIZATION

Presentation	Girth (cm)	Height (Cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

TRIPHASIA

Triphasia trifolia

ORNAMENTAL CITRUS

LIMONCILLO
SPANISH

VALENCIAN

LIME BERRY
ENGLISH

ORANGINE
FRENCH

STRUCTURE		
Shape ROUND	Height 2-3 M	Diameter 2-3 M
Texture COARSE	Shade DENSE	Root TAP ROOT

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	SAPINDALES
FAMILY:	RUTACEAE

VARIETIES

MORPHOLOGY		
Trunk	Bark SMOOTH	Color GRAY/BROWN
Leaf EVERGREEN SIZE: Leaf:2-3.5CM Leaflets: 3 COLOR: US: GREEN LS: GREEN TEXTURE: US: SMOOTH LS:SMOOTH	COMPOUND: HARDNESS: ARRANGEMENT: VENATION: SHAPE: MARGIN: APEX: LEAF BASE: PETIOLE:	TRIFOLIATE CORIACEOUS ALTERNATE PINNATE OVAL SMOOTH OBTUSE ROUND SHORT
Flower	Type HERMAPHRODITE	Reproduction HERMAPHRODITE
SIZE AND TYPE:	1.5 CM SINGLE OR IN AXILLARY RACEMES	Flowering Fragrant YES
Fruit	Type ROUND/BERRY-LIKE	Color ORANGE/RED
SIZE: 1-1.5 CM	Edible YES	Fruiting season
Growth	Rate MEDIUM	Longevity 50 YEARS



ECOLOGY		
Climate	Temperature -2°C,H5,Z6	Drought resistant LOW
ALTITUDE: 0-300 IRRIGATION: MODERATE	Sun exposure SUN	Frost resistant LIGHT
Soil pH: 5.5-6.5 FERTILITY: MODERATE	Texture LOAMY	Salt resistant LOW
	Drainage MODERATE	Lime resistant LOW

USES		
Resistances COASTAL: 2ND LINE POLLUTION: MODERATE WIND: MODERATE	Applications SLOPES: NO HEDGE ROWS: YES RIVERBANKS: NO BORDERS: NO GROUPS: NO ISOLATED: YES	

POINTS OF INTEREST

Its fruit is edible and can be used to prepare drinks. When cooked, to prepare jams, cosmetics or aromatic baths. They are shaped like red berries whose flesh has an acidic taste similar to that of lime. It is native to Java, in Indonesia. One of its most common uses in landscaping is as a hedge. They can also be used as bonsai.

SPACING: 2-3 M

PLANTING AND PLANT HEALTH

It is a small tree or shrub that is quite resistant. Although they can survive temperatures below zero, low temperatures in general are not recommended. It propagates by seeds that must be planted in early spring. It should be kept in a greenhouse during its first two winters in cold climates. This species tolerates moist soils with a pH between 5 and 6.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for foliage, flowering, and fruiting]											
Cultivation Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for sowing, planting, and pruning]											
Sowing [] Planting [] Pruning [X]											
Treatment Calendar											
JAN	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
[Color-coded bars for fungicides, pesticides, and fertilizers]											
Fungicides [] Pesticides [] Fertilizers []											

COMMERCIALIZATION

Presentation	Girth (cm)	Height (cm)
RB in gypsum/CT	8-10	250-300
RB in gypsum/CT	10-12	250-300
RB in gypsum/CT	12-14	250-300
RB in gypsum/CT	14-16	250-300
RB in gypsum/CT	16-18	250-300
RB in gypsum/CT	18-20	250-300
RB in gypsum/CT	20-25	250-300
RB in gypsum/CT	25-30	300-400
CT(1500L)	Specimen	400-500

Subchapter 10.3**Commercialization, Use and Planting****COMMERCIALIZATION**

Throughout the complete cultivation process or in the last phases, the citrus plant should be grown in a mesh container, since large citrus plants cannot tolerate bare root transplants.

The most common presentation for Citrus species is a straight stem or trunk with a diameter of at least 2-3 cm, devoid of leaves and branches up to a height of 1.80-2 meters. The crown is given a rounded shape, although without much retouching.

The Technological Standards for Gardening and Landscaping state:

1. The trees are measured according to the girth of the trunk, 1 m above the level of the root neck.
2. For trees with multiple trunks, the total girth is the sum of the individual perimeters.
3. In all plants there must be a proportion between the total height and the diameter of the trunk, which depends on the species or variety, and which may vary according to the growing conditions in different climatic zones.
4. The height, width of the crown, the length of the branches, the branching out, and foliage must correspond to the age of the individual according to the species or variety in well-balanced proportions. Where appropriate, this should also be applied to the ratio between rootstocks and grafts in terms of trunk and crown.
5. The crown must be proportionate to the thickness of the trunk and present a minimum of three structural branches, balanced among them.
6. Citrus plants can be supplied with a root ball or in a container, as long as good root development is possible.
7. The root system must be well developed and correspond, both in shape and size, to the characteristics of the species or variety, to the age of the tree, as well as to the characteristics of the soil or substrate where it has been cultivated. The root system will be balanced and its size proportional to the size of the root ball or container. In the case of root systems with taproot, it must have sufficient functional secondary roots and must maintain a length of at least 20 cm.
8. The trees must be correctly formed and structured, having adequate branching. They must be supplied with a proportionate volume of healthy foliage.
9. In grafted trees, the grafts should be satisfactorily attached to the rootstocks.
10. Trees, especially those intended for alignments must not present codominant branches (with forks) in their main axis, nor anomalous ramifications.
11. Trees for roadsides require a minimal crown height, normally high or medium crown, and care must be taken that the main branches do not branch out excessively.

Classification of citrus trees according to trunk girth	
6-8 cm	20-25 cm
8-10 cm	25-30 cm
10-12 cm	30-35 cm
12-14 cm	35-40 cm
14-16 cm	40-45 cm
16-18 cm	45-50 cm
18-20 cm	50-55 cm

Table 10.3.1. Classification of citrus trees according to trunk girth

Crown height	
Crown height	Free trunk of lateral branches (cm)
Tall	>250
Medium	225-250
Low	<225

Table 10.3.2. Crown height of Citrus trees

The volume of the root ball must be proportional to the size of the aerial part of the plant, its vigor, and the soil conditions of the garden where it has grown. The following table outlines the guidelines.

- Diameter of root ball (cm) = Girth of trunk x 2
- Height of root ball (cm) = Diameter of root ball x 1/2

Minimum recommended volume for root ball	
Trunk girth	Root ball volume (liters)
6-10	10
8-10	10
10-12	15
12-14	15
14-16	25
16-18	35
18-20	50
20-25	80

Table 10.3.3. Minimum volume of root ball in citrus

PLANTING

Citrus plants are identified with a color code. Plants produced in the field are commonly individually packed or in groups of five, at the buyer's discretion, with the root ball covered with a 60 x 70 cm black plastic sheet, or with sackcloth.

The root ball of a plant used in agriculture should have dimensions of 20 cm in diameter and 25 cm in height, with a weight of 5-6 kg.

The plants produced in a mesh or in a greenhouse are cultivated in black plastic foil bags or in a plastic container of variable dimensions depending on the size of the plant.

When the plants arrive in the garden (its time in the nursery after the uprooting should be as short as possible), they must be planted in their final placed sheltered from the sun and maintaining a high relative humidity by lightly spraying with water. The conditions for planting evergreen broadleaf trees presented in Chapter 1 of this book should also be observed. To begin the with the planting process, the plant should be removed from the bag or container and the substrate should be shaken slightly, the last two centimeters of the main root must be eliminated (including those that have spiraled) and pruning should be carried out.

USES

The use of citrus as garden and street trees is based on different criteria than those that are followed for agricultural citrus trees. Thus, citrus trees for gardening should preferably come from seed and without grafting since this allows obtaining specimens with greater vigor and in which it is easier to form a trunk without branches in the lower part. On the contrary, if grafted trees are used in gardens, streets and avenues, multiple branches are obtained in the lower part, which must be eliminated, causing scars that give rise to multiple bulges or wounds on the trunks. At the same time, the crowns do not reach the volume or area capable of generating shade of sufficient width or to offer a desired shape in a citrus tree.

The use of citrus trees in ornamentation has niched the bitter orange tree as a street tree and therefore numerous other applications in gardening have been ignored, except for its use in Moorish gardens.

New applications for the use of citrus trees in gardens are the result of the existence of recent mutations with variegated leaves or leaves that are different from the typical ones. For example, the variety of bitter orange *Bouquet de fleurs* are trees of great ornamental value and with ruffled leaves. In addition, *Poncirus trifoliata* and *Citrange Troyer* offer new possibilities for the use of citrus trees in gardens since they can be planted in regions where the climate is not as mild as in the typical citrus-growing regions). Similarly, *Citrus reshni* can be placed in any type of soil, provided it has good drainage and there is no danger of waterlogging.

The aromatic effect of citrus has historically been of great interest. To this end, it is necessary to plant these trees in groups, so that the fragrance of their blossom becomes more intense.

Another interesting application for these species is hedges in gardening. However, we should bear in mind that although these plants tolerate pruning well, most of them grow better if the trimming is done according to their needs. Consequently, these species can be used as informal hedges and although they are shrubby or arboreal species with very dense foliage and therefore suitable for forming a hedge, it will not be possible to obtain an effect like the one achieved in common topiary art. However, citrus hedges, in addition to providing originality, offer profuse spring flowering and decorative fruits adding to the primary delimiting function of the hedge.

If species such as *Citrus aurantium* var. *myrtifolia*, *Severinia buxifolia*, *Microcitrus australasica* and *Triphasia trifolia* are used for hedges they can reach heights of between 1 and 2 meters.

To obtain acceptable hedges with *Citrus* species, the plants should begin to branch from a fairly low point and, since these plants derive from cultivars generated by mutation or hybridization, they must be grafted plants in which the graft must be made in the rootstock a few centimeters from the ground. Another option would be to choose a species suitable for hedges but without grafting.

If tall hedges are desired, these same species can be used, allowing them to reach a development and size appropriate to the needs. More vigorous species such as calamondin, kumquat and other vigorous citrus can also be used, the choice of which will be made based on their foliage density, tolerance to pruning, existence of short internodes and abundant branching out.

Trellises can also be covered by citrus. As early as the 15th century, the Valencian *lligadors d'orts* (professional lattice workers) distinguished themselves for their ability to intertwine citrus branches to form tunnels and trellises. In this case, the most vigorous species must be chosen, capable of quickly reaching the desired height so that later, by directing their branches and buds, they can populate the space that needs to be covered. In this case, moderate pruning is recommended in order to preserve the good vigor of the plant and ensure that the trellis is progressively covered. Suitable species for this purpose are lemon trees, the *Salustiana* variety of orange tree or the *Chandler pummelo*.

LEGISLATION

Citrus trees are, rather than ornamental plants, a crop of enormous social and economic importance, not only in Spain but also in other countries of the European Union. Therefore, every state takes steps to protect this resource. Among these measures is the prevention of pests and diseases that may compromise the profitability or even the survival of this crop. For this reason, citrus plants intended for ornamental use must be produced in such a way that they do not spread of diseases and pests to commercial plantations. The European Union establishes some rules in this regard. These rules are transferred to Spanish law by the following provisions:

- Royal Decree 2071/1993 of November 26, regarding protection measures against the introduction and dissemination in the national territory and the European Union of organisms harmful to plants or plant products, as well as for export and transit to countries third parties.
- Decree 200/2000 approving the Technical Regulation for the Control of Production and Marketing of reproductive materials for ornamental plants and ornamental plants themselves.

Subchapter 10.4

Maintenance

FERTILIZING

Base-dressing with mineral and organic fertilizers

Base dressing consists of the incorporation of fertilizers or manure into the soil before the planting takes place.

The equipment usually used includes: Truck or van with a trailer to carry bags of organic and mineral fertilizer, hoes, rakes, shovels, brushes and brooms.

A typical example of organic fertilizer in gardening would include well fermented solid waste from the city free of glass, metal, plastic, etc. It should contain 60% refined city compost, 20% pomace and 20% cow dung. In the case of meadows and lawns, sand is added to the mixture in a proportion of 1/3, and it is fermented much more. The dose used is 5 kg/m².

The mineral fertilizer is used with the complex fertilizer 15-15-15 at a dose of 30 gr/ m².

Maintenance fertilizing

Programme:

November.....	Organic Matter: 150 Kg/area
March.....	Ammonium nitrate: 3 Kg/area Superphosphate of lime: 2.5 Kg/area Potassium sulfate: 1.5 Kg/area
May.....	Ammonium nitrate: 1.5 Kg/area
July.....	Superphosphate of lime: 2.5 Kg/area Potassium sulfate: 1.5 Kg/area
August.....	Ammonium nitrate: 1.5 Kg/area

A suitable nutrient solution (mg/l final solution) could be:

- N 100-150
- P2O5 50-80
- K2O 75-125
- MO 20-30
- CaO 50-150

Depending on the characteristics of the area to be fertilized, the operation is carried out in different ways. In the case of planting beds and tree pits, the expert will provide the appropriate amount of fertilizer according to the species planted. When possible, a rake is used to spread the fertilizer. Finally, abundant water is added and the paths or walkways are cleaned.

FERTILIZING OUTPUTS	
MAINTENANCE OPERATION	Output
Supply and manual spread of mineral fertilizer on lawns, with a dose of 800 Kg/ha	600 m ² /hour
Supply and mechanical spread of mineral fertilizer on lawns, with a dose of 800 kg/ha.	6800 m ² /hour
Supply and spread of organic fertilizer on groups of trees and shrubs, contributing a dose of 6 Kg/ m ²	90 m ² /hour
Organic fertilizer by manual digging	19 m ² /hour
Supply and spread of mineral fertilizer on groups of trees and shrubs, contributing a dose of 70 g/ m ²	350 m ² /hour
Application of foliar fertilizer by means of a wheelbarrow-type sprayer (100 l capacity)	800 m ² /hour

Table 10.4.1.: Outputs in the supply of fertilizers

IRRIGATION

The soil must be at field capacity in order to ensure that the plant is in good condition and an adequate level of cohesion of the walkways and paths in the gardens. Irrigation will take place through sprinklers, diffusers and dripping nozzles and programmed by means of an electronic timing device. Quick irrigation heads or hydrants will be installed so that they can be used in the event the automated network breaks down.

Below is a guideline to the monthly irrigation operations, which may vary depending on the type of soil.

Irrigation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bush/shrub		1	1	1	2	3	3	2	1			
Trees		1	1	1	1	1	2	1	1			

Table 10.4.2.: Number of monthly per plant (in Valencia)

When planting new specimens or restocking, they must be watered immediately.

Dose:

Shrubs: Average: 5 L per foot of watering/irrigation
Maximum: 10 L per foot of watering/irrigation

Trees: Average: 30 L per foot of watering/irrigation
Maximum: 50 L per foot of watering/irrigation

REPLACING

When replacing a specimen, the tree and its stump must be removed. To do this, the tree is sawn at a height between 0.5 m and 1 m, depending on the diameter of the tree (the larger the diameter, the higher the cutting height). Its purpose is to facilitate subsequent stump removal, which is carried out in two different ways depending on the size or state of the stump:

- Stump with a diameter < 30 cm: the stump is removed with the root cutter (an ax and a hoe in the same tool) and axes (either one-handed or two-handed). Both pieces are used to cut roots and for this a ditch is made around the tree, approximately one meter deep. If necessary, a crane is used to pull up the stump and as it comes out the roots are cut. The crane then transports it to a platform or trailer for delivery to the landfill.
- Stump with a diameter > 30 cm: The stump is removed with the help of a crane and the tools mentioned above.

After removing the tree (an operation that is usually carried out the day before) the specimens to be planted are collected from the nursery and brought to the site. During the transportation phase, care must be taken so that the plant does not undergo any stress or receive air at the roots.

In the case of replacement trees, the hole resulting from the stump removal is deepened. The opening of new planting pit can be done by hand (hoes, picks) or with a mechanical auger. A pit up to one meter deep and approximately one meter in diameter is made (less in small trees).

Once the pit is made, the extracted soil is fertilized. In some cases, mulch with sand can be added instead of manure. With the earth prepared, part of it is put back into the pit, and then the tree is prepared: if it is container tree, the container is given a few taps on the side or at the base to loosen it (this makes it easy to remove the tree and root ball). If it is wrapped in burlap, cut it with scissors. In the case of plastic or plaster, the wrapping can be broken with a pair of scissors (plastic) or with some light taps (plaster).

Once the root system of the tree is placed inside the pit (if the specimen is being used in a line of trees, care must be taken that it is well positioned with respect to the others), the pit is then filled with the soil that has been previously prepared. Approximately halfway through the filling, both a tube which will allow the water to get to roots and the stake are placed. The rest of soil will be added and the surface padded down to make it more compact.

To carry out the staking operation, refer to the steps outlined in other chapters. Tie the tree with a cable and elastic protection so that it does not damage the tree by preventing its swaying in the wind. The stake should be higher than the cross crown so that it does not cause chafing to the bark. If this is not possible, it can be placed lower, but its end would finish in a flute beak cut with its highest part being on the side opposite the tree, avoiding damage to the bark.

PRUNING AND FORMATIVE PRUNING

Trees do not need severe pruning, but rather light touch-ups, unless dead or broken branches are present, elimination of suckers, adjustment of structural branches that are poorly arranged, and certain thinning that allow the passage of air and light to the center of the plant. The maximum percentage of living tissue that it is advisable to prune in a tree is 25% and in the case of citrus fruits it is considered 20% for normal pruning and 10% for light pruning. The goal is to keep the treetop balanced, and a light branch cleaning should be done every year. Pruning work will always be carried out by qualified personnel and care will be taken to ensure that the cuts are clean and that there are no tears, to ensure the health of the tree and avoid risks to passersby.

If the specimen has dead or diseased branches, pruning can be done at any time. However, if branches are in good health, pruning should be carried out only during the dormant stage. In recent years, various studies have appeared that show that pruning done in the dormant stage reduces the incidence of cankers

on branches, since a good part of wood-degenerating fungi produce their fruit bodies in the winter period.

Action will be taken every year on the specimens that need it, according to a program that will be presented by the maintenance company. Pruning should not be carried out in frosty weather, on rainy days or days with very high temperatures.

Pruning tools must be kept in good condition, sharp and disinfected. If the branch is relatively large and heavy, the rule of three cuts is used, which consists of making two relief cuts before making the final cut: the first cut is made at 30-45 cm. from the neck of the branch, the second cut is made further outwards (at this point the branch breaks and falls). The third cut removes what remains of the stump. In the case of pruning large branches, the branch can be eliminated by cutting it successively into smaller sections.

There is no pre-established pruning angle since it depends on each particular case. When making the cut, the neck of the branch and the bark ridge will be respected so that healing happens quickly, and internal rotting does not set in.

Material used: chainsaws, handsaw with its sheath, one-handed scissors with its sheath, two-handed scissors, telescopic scissors with saw, dynamic climbing rope, aluminum ladder with 3 extensible sections, aluminum stepladder with steel saw, rakes, brushes and brooms, wheelbarrow and carts, healing products such as Lac-Balsam or similar.

Formative pruning

Among formative pruning types the following are highlighted:

- Formative pruning of the stem: Consists of maintaining the dominant stem, while the secondary branches are eliminated or reduced, so that they do not compete with the central leader. A few well-formed and shortened side branches can be left to protect the trunk from sun and traumatic injury.
- Formative pruning of the structure: It is done when the tree is young. This will provide the tree with a strong structure so that it becomes resistant and has fewer pruning needs in the future. When pruning, an adequate distance is maintained between consecutive branches. The natural forms towards which the growth of the tree is oriented are: ovoid, extended, columnar, tapered, conical and rounded.
- Thinning out/lifting the crown: This consists in the progressive elimination of the lower branches of the trees (with central leader and lateral branches). Only small diameter branches should be removed, also considering that the part removed does not exceed one third of the total crown height. The free height of the trunk will ultimately depend on its location: on public roads or streets it will be 4.5 m and in pedestrian areas 2.5-3 m.
- Formative pruning for the safety of aerial service networks: If there are aerial low voltage electricity or telephone networks with untwisted cables, a formative pruning of the structure is carried out, in order to keep a clear area between the top of the tree and the aerial network.

Pruning to clean and plant health

The tree is cleaned by selectively eliminating dead branches, cracked or broken branches, diseased branches, weak branches, badly oriented branches, branches that cross or rub against each other, branches loosely attached to the trunk, excess suckers, shoots of root. The tools used for this type of pruning must

be disinfected before moving onto a new tree. This will reduce the transmission of diseases from one tree to another.

Pruning for pedestrian security

This type of pruning is carried out in order to prevent the following risks: detachment and fall of branches; friction of branches with buildings, facilities, services...; low branches that might interfere with the crossing of pedestrians and circulation in general; branches that might affect urban furniture; tree falls or breaks.

Elimination of branches attached to the main trunk

The cuts must be made in the section of the resulting plane between the branch bark ridge and the upper end of its neck, which positively promotes healing.

If the branches to be removed are excessively heavy and there is a danger of causing damage due to tears when making the cuts, the rule of three cuts is applied.

If the branches are horizontal and not inclined as in the previous case, the cuts will be made parallel to the trunk, respecting the neck of the branch.

Pruning to reduce the crown

Through this type of pruning, branches and parts of branches are selectively removed from a tree to reduce its height and width. The aim is to create sufficient space to not to interfere with aerial service networks and buildings, to ensure the stability of some branches, and to allow sunlight to reach homes.

There are several methods to reduce the crown: the English method consists of eliminating the terminal branches, leaving a lateral branch in each cut so that it becomes the central leader, thus ensuring the shape and structural integrity of the tree. Another method is crown rebalancing pruning, which aims to ensure the tree's stability and improve its aesthetics (according to the English method this would be considered topping).

The removal of an unfavorable branch must be carried out at the level of another lateral branch, leaving the latter acting as a sap strip and never leaving stumps. The cuts will be made in a plane parallel to the ridge of the bark.

Unless otherwise stated (due to the specific type of pruning used), the suppression of any branch will try to give to the tree its most natural appearance, and must respect the following rules:

- Keep proportion between the diameters of the respective orders of branching.
- The side branches should generally grow outwards.
- Avoid twisted shapes

If there are no lateral branches, the cuts will be made at the height of a lateral bud, making the cut in a bevel shape, parallel to the plane of the future bark ridge.

The branches that were dead at the time of pruning will be removed by making the cuts at the height of the new healing callus that would have formed, taking great care not to damage this callus

Eliminating hooked branches

The cuts must be made so that only unfavorable branches are eliminated. The cut must be made in bevel allowing the sap to flow to the healing area. It is important that no part of the plant is left without sap circulation and the section of the wound must be as small as possible.

Thinning

This operation will be carried out when it is necessary or convenient to maintain the volume of the tree. It consists in eliminating part of the branches in order to facilitate greater aeration, penetration of light and revitalization of the tree. The removal of the branches must be carried out evenly, distributing the loads and making the branches lighter at their terminal ends. This will prevent breakage due to excess weight. In this type of pruning, 25-30% of the branches will be suppressed, never more than 50%. Thinning should start first at the highest part of the crown and then continue in the lower parts. This type of pruning should be done when the tree has foliage.

Pruning to Restore and re-shaping.

This type of pruning is only carried out in special cases and by qualified professionals. Restoration pruning aims to improve the structure, shape and appearance of a tree that has been neglected and is only applied to large specimens of high heritage value. Re-shaping pruning aims to re-shape a tree that has been subjected to vandalism, to inclement weather, or that it is simply poorly shaped.

Rejuvenation pruning

This pruning process aims to revitalize the trees when all other methods have not given results or circumstances advise it. Most of the branches are eliminated, thus causing the sprouting of the emergency adventitious buds. This pruning will only be applied in exceptional cases.

Treatment of wounds

Any wound produced in a tree can be a future source of infection, thus endangering its health. The cuts should be made correctly, always following the guidelines indicated in the previous sections. This will ensure the tree can activate its natural defense against this type of damages and wounds.

When pruning the tree, we will try to make as few cuts as possible, favoring small ones. All cuts whose wounds are greater than 5 cm in diameter will be treated with protective products.

The cuts must be clean and without burrs and therefore the tools used must be perfectly sharp. If the cut cannot be done properly in the first attempt, successive cutting operations will be carried out until a perfectly clean wound edge is achieved, which will favor the development of a healing callus.

Wounds caused accidentally will also be treated. To carry out this treatment, all dead tissues must be cleaned, while facilitating the non-accumulation of water in the wound. Subsequently and after carrying out these operations, a waterproofing product will be applied.

Special treatment of cavities

It includes the elimination of dead tissues, making sure the edges are smooth and uniform, creation of drains to avoid the accumulation of water, waterproofing treatments. The construction of a structure may be necessary to avoid possible loss of resistance in the tree.

MAINTENANCE OF TREE PITS

The aim here is to provide the tree with the necessary elements for its correct development in a tree pit (normally in a paved area). For this, various tasks are carried out such as: digging, fertilizing, and weeding, as well as cleaning and watering.

Digging: It is carried out throughout the year, especially in spring and summer, with the same frequency that the rest of the plantations are dug, resulting in 3-4 per year. It is convenient to check the state of the pit after heavy rains in case it is necessary to dig.

Fertilizer: Generally, 1-2 times a year.

Weeding: In spring-summer every 20-30 days, in autumn-winter approximately every 45-60 days

PHYTOSANITARY TREATMENTS

Treatments are carried out at the times indicated below, always by mutual agreement with the owners or managers of the garden or green area, in terms of species, products and methods. (c.p. = commercial product).

March: Treatment against insects, mites and cryptogamic diseases.

- Abamectin: 0.35 cc/l c.p.
- Fosetil Al: 2.5 g/l p.c.

May: Treatment against wax scales, other insects and cryptogamic diseases.

- Metilpirimifos: 1.75 g/l c.p.
- Fosetil Al. 2.5 g/l c.p.

July: Treatment against sucking insects, chewing insects and mites.

- Fenvalerate: 0.75 cc/l c.p
- Dienochlor: 0.9 g/l c.p

September: Treatment against sucking insects, chewing insects and mites.

- Abamectina: 0.35 cc/l c.p
- Fosetil Al: 2.5 g/l c.p

December: Treatment against cryptogamic diseases.

- Fosetil Al: 2.5 g/l c.p

February: Treatment against cryptogamic diseases.

- Fosetil Al: 2.5 g/l c.p

Signs of specific pests and diseases in some plants should be monitored throughout the year:

- **Aphids/mites:** Treat with Abamectin at 0.75 cc/l p.c. or with Ethiofencarb at 1 cc/l c.p.
- **Powdery mildew:** White spots on the leaves. Treat with Benomyl at 0.6 g/l as soon as it appears
- **Snails and slugs:** Treat late in the day and water with Metaldehyde at a rate of 10-15 granules/m².
- **Chlorosis (iron deficiency):** Sequestrene 138 F at 3 g/m².

The following equipment and materials will be normally used:

- Low toxicity phytosanitary products
- Wetting
- Small tank
- Vehicle for displacement
- Masks, aprons, forearm gloves, boots.

The treatment requires only one specialist or technician , who prepares the mixture in the tank or backpack and sprays the indicated species.

Phytosanitary treatments are preferably carried out during hours of minimal inconvenience, prior to notifying the owners or managers of the garden or green area.

REMOVAL OF WASTE TO LANDFILL

Throughout the year and whenever waste is produced by gardening and cleaning work, it should be removed within 24 hours. The following materials are usually needed: van, rakes, brooms, carts, shovel, and wheelbarrow.

The waste should have been previously accumulated in piles, bags or containers, depending on their origin. The driver of the van where the remains are stored will be helped by a laborer in collecting and loading them into the van. Once the collection is finished, the area is cleaned with a rake or broom, (depending on whether it is a garden or a walkway). The waste will be transported to the landfill for their appropriate disposal.

Calendar of operations

MONTH	Trees and bushes
MARCH	Transplanting of bareroot plants Formative training/pruning
APRIL	Transplanting of evergreen trees Fertilizing
MAY	Maintenance pruning
OCTOBER NOVEMBER	Deep substrate, maintenance pruning Transplanting of evergreen species
DECEMBER JANUARY	Transplants and pruning weather permitting
FEBRUARY	Formative pruning and transplanting of deciduous species.

Table 10.4.3.: Calendar of operations for evergreen and deciduous specimens

Frequency in maintenance operations

OPERATION	FREQUENCY		
		1 Mar / 31 Oct	1 Nov / 28 Feb
Irrigation	Bushes with or without trees	3 times a week	once a week
	Trees	2 time a week	once a week
	Pots	3 time a week	once a week
	Street trees	2 time a week	once every 2 months
	Subsoiling and Deep digging	Trees or bushes	3 times a year /as indicated by D.T.
Base dressing	Prior to any planting		
Renewal of substrates or amelioration	As indicated by D. T.		
Weeding or light digging	Once a month		
Surface Fertilizing (top dressing)	Spring and Autumn	Winter	
	5-8 mineral fertilizer	1 organic fertilizer	
Replacements	Trees with root ball	All year	
Phytosanitary treatments	From April to Nov OR as indicated by D.T.		
Maintenance of tree base or tree pit	Once a month		
Pruning and tree sanitation	Formative pruning	Winter	
	Maintenance pruning	As indicated by D.T.	
	Green pruning	Every month	
Applications of herbicides	Monthly		

Table 10.4.4.: Calendar and frequency in maintenance operations (D.T.: Technical Director)