# PLANTS AND PLANTING IN MEDITERRANEAN LANDSCAPES
(VOLUME 1)

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http://tiny.cc/edUPV_rea

Original Title: *Material vegetal en paisajismo mediterráneo (Volumen 1)*


Collection Académica http://tiny.cc/edUPV_aca

To cite this publication please use the following reference:
Galán Vivas, Juan José and Caballer Mellado, Vicente. (2024). *Plants and Planting in Mediterranean Landscapes (Volume 1).* Valencia: edUPV. DOI: https://doi.org/10.4995/REA.2024.677001

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Translation funded by the NO BORDERS Program of the UPV



Edited by: edUPV, 2024
Ref.: 6770_01_01_01

ISBN: 978-84-1396-250-4 (printed version) ISBN: 978-84-1396-109-5 (electronic version)
DOI: https://doi.org/10.4995/REA.2024.677001

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# 9

# HEDGES AND TOPIARY

# Chapter 9 HEDGES AND TOPIARY

**Subchapter 9.1** Introduction and choosing hedges
**Subchapter 9.2** Species
**Subchapter 9.3** Commercialization, use, planting and maintenance

## Subchapter 9.1 Introduction and choosing hedges

### INTRODUCTION

Hedges are linear formations of plants with straight or curved shapes. They can be dense and compact or sparse, evergreen or deciduous, austere and/or flowery.

Hedges and topiary are a decorative element of the garden. Some hedges are used as functional elements to separate spaces and to reduce views and noise. Others are used exclusively for their ornamental role and to delimit small spaces in the garden.

Normally the plants used to form hedges are plants that admit intense trimming/pruning and produce dense and compact growth.

The most common practice is to use compact growth species, with a good number of latent buds and small leaf.

Plantings are usually very dense in order to form the hedge as soon as possible and, at the same time, make it as compact as the project requires. Due to the narrow planting frames (with the subsequent concentration of roots in a small space) and successive annual pruning, the plants that form the hedge must be fertilized frequently since the stress they suffer is very high.

Shrubs are more commonly used for topiary and pruning hedges, however other tree species, perennials, bamboos, or even palms can be considered.

Planting frames (spacing) for hedge plants range from 15 cm to 100 cm and can be planted in a row or staggered.

To achieve the best possible hedge, it is very important to do a proper maintenance during the first 2-3 years of its life, since during that period plants should not grow too fast or too slow, neither too high nor too low.

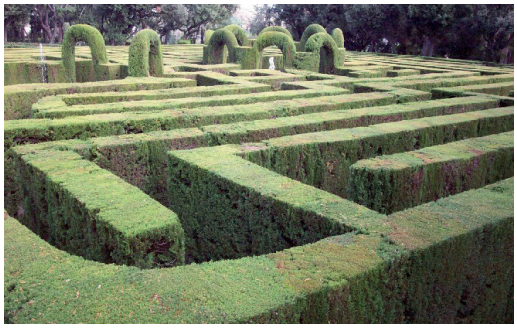


**Figure 9.1.1: Planting of strawberry tree (*Arbutus unedo*) for hedges. The use of a young plant favors the shaping of the hedge**
**Figure 9.1.2: Park of the Labyrinth of Horta, Barcelona- Hedge of *Cupressus sempervirens*. Hedge trimmed on a right angle**

**Considerations for the Topiary of hedges**

- If we prune too intensively the shrubs or trees as shrubs, flowering is unlikely. However, in some species the hedge can flower if we control the height and time of the pruning operation.

- Shrubs normally have many dormant buds at their base and along their branches.

- Pruning tends to wear down plants by removing their reservoirs of nutrients and by forcing them to consume a lot of energy in healing. Therefore, plants must be adequately cultivated to minimize the stress for them.

- The new buds that come out of the base or the lower parts of the shrubs will be the ones that replace the weak and dead branches.

- The fundamental characteristic of old or poorly maintained shrubs is that they have few buds at their base (the sun does not reach them). If we prune the upper part of the shrub and allow the sun to penetrate, new buds will grow and therefore shaping becomes possible.

- The specialist must be familiar with the species used to make the hedge or topiary, whether or not it is slow or fast growing and as a result, act accordingly.

- The apical bud of each plant must be recognized. Trees more than shrubs have apical dominance and therefore will tend to vertical growth. Dominance disappears or is greatly weakened in old plants. The apical bud controls the growth of the lateral twigs, being that it grows longitudinally to the detriment of the widening of the plant. In the case of monopodic species, the control of the apical bud is so intense that it prevents the growth of the lateral ones. The pruning of the apical bud usually causes the activation of the lower twigs and their growth.

- When pruning the apical bud, to prevent vertical growth, it is the twigs or upper buds that take over from the vertical growth, so if we do not want to repeat the same situation, the bush will have to be pruned again, in this way, eliminating the dominant apical buds, we keep the form compact and shrubs can be shaped or trimmed.

- The more severe the pruning (short pruning, in which we barely leave a few buds), the stronger the growth of the terminal buds that are left.

- The longer we do the pruning (removing a few buds), the less development of the remaining branch will be.

- Since variegations tend to disappear, all the green branches that emerge from the shrub should be pruned quickly as they are more vigorous and weaken the shrub.

**CHARACTERISTICS TO CONSIDER IN HEDGEROWS**

**Deciduous:** Adequate when we are interested in the leaf fall, the view of the stems, the structure, the autumnal color of the leaf. *Acer campestre, Carpinus betulus, Crataegus monogyna, Forsythia Spp*.

**Evergreen:** Adequate when the function of the hedge is to be homogeneous over time, throughout the year, and the appearance of the hedge must keep the same aesthetic characteristics. *Viburnum tinus, Laurus nobilis, Ilex aquifolium, Cupressus sempervirens, Arbutus unedo*.

**Foliation:** The leaf is the main focus. Whether deciduous or evergreen. The color, texture and fragrance are also of interest. *Prunus laurocerassus, Pittosporum tobira, Lavandula spp., Cotinus coggygria.*

**Flowering:** The flowers, their colors, their fragrances or even the time in which they bloom are of interest. *Myrtus communis, Viburnum tinus, Forsythia Spp, Crataegus monogyna, Chaenomeles speciosa, Fuchsia magellanica, Hydrangea macrophylla.*

**Figure 9.1.3: *Hibiscus syriacus*, shrub as a formal hedgerow with flowers**

**Decorative fruits:** Adequate when we look for a hedge that displays its fruits throughout the year or in autumn - winter, whether the hedge is with leaves or without. *Ilex aquifolium, Gleditsia triacanthos, Arbutus unedo.*

**Defensive:** Appropriate when we want to use plants that define a natural barrier that can deter entry to some areas. *Pyracantha Spp., Gleditsia triacanthos, Quercus ilex, Ilex aquifolium, Rosa rugosa*.

**Low:** Suitable when what is being cultivated behind the hedge must be clearly visible, and the hedge must frame another well-defined space (for instance, around parterres). The species used must be slow growing to require little maintenance. *Buxus sempervirens, Lavandula spp. Lonicera nitida, Rosmarinus officinalis*.

**High:** Adequate when what is cultivated behind the hedge must not visible or lacks any interest. If it must be year-round, an evergreen species is most suitable and if it is only during the spring and summer months, a deciduous species will be ideal. The species used are usually fast growing and can adapt well. *Prunus laurocerassus, Acer campestre, Laurus nobilis, Cupressus sempervirens*.

## TYPOLOGY

### Regular or formal hedges

Regular or formal hedges require more maintenance and dedication during the first few years of their development.

Regular hedges should have a trapezoidal shape, with the base of the bush being wider than the crown. In this way, the base of the bush receives more solar radiation and does not run out of leaves or twigs. This shape is very important in evergreen hedges, which require light throughout the year.

Regular hedges can be divided into three groups according to the type of species that we are going to use:

(a) Sprouting species
(b) Non-Sprouting species
(c) Evergreen and conifer species

*(a) Sprouting species*

These species are planted while the plants are in a dormant stage. Plants must be shortened to 15-20 cm from the ground in its first year of life in order to produce new vegetation and expand the bush by emitting new root shoots.

During the summer all the branches are cut off and shortened to reduce the size of the plant. For the next two years and with a few a more pruning operations the desired shape can be achieved.

From May to September and every month or two months after that, the regular hedge is reviewed with sharp and disinfected tools.

Species in this group: *Crataegus, Ligustrum, Tamarix, Laurus, Ilex.*

**Figura 9.1.4: Monforte Gardens. Topiary with different species. *Ligustrum ovalifolium, Ligustrum japonicum* and *Bougainvillea spectabilis***

*(b) Non-sprouting species*

These plants do not produce new branches from the roots, although they are capable of forming compact vegetation from the buds of stems and twigs.

During the first year and during the dormant periods, the terminal guide should be shortened by a third and the lateral branches should be shortened in proportion, this formative pruning lasts three years until the hedge has the desired shape.

In the third year the final shape of the hedge is formed. If the hedge belongs to a species that flowers on one-year-old wood, severe pruning is done after flowering and then light pruning in the month of August.

Species in this group: *Carpinus betulus, Forsythia Spp., Corylus Spp; Teucrium fruticans*.

*(c) Evergreen and conifer species*

During the first and second year of planting, the central leader is not touched and the lateral branches are pruned so that the bush takes on a compact form. It is when the desired height is reached that the central leader can be pruned.

The following years, the end of branches are cut off in summer.

Species in this group: *Cupressus Spp., Pyracantha Spp., Cotoneaster Spp., Taxus baccata, Ilex aquifolium, Quercus ilex, x Cupressocyparis leylandii, Buxus sempervirens, Myrtus comunis*.

**Figure 9.1.5: Formal hedge of the species *Pittosporum tobira*.**

**Informal hedges**

Flower shrubs are often used for this type of hedge. The plants are allowed to grow freely without pruning (other than flowering, maintenance, and rejuvenation). Planting frames are somewhat narrower than for regular shrub cultivation but not as narrow as for formal hedges.

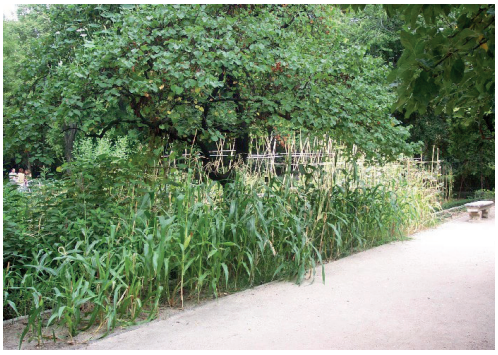


**Figure 9.1.6: *Lantana camara*, flowering shrubs displayed as informal flowering hedge.**
**Figure 9.1.7: informal hedge *Zhea mays*. Annual plant**

## TABLES FOR HEDGES

In the following tables we can find some classifications of hedges, according to different criteria.

In Table 9.1.1 we can see the classification of hedge species according to whether the leaf is deciduous or evergreen. In Table 9.1.2 according to their height, and in Table 9.1.3 according to their main characteristics for landscape design.

| Spieces | Leaf type |
|---|---|
| *Acer campestre* | Deciduous |
| *Acer monspessulanum* | Deciduous |
| *Arbutus unedo* | Evergreen |
| *Ardisia japonica* | Evergreen |
| *Bougainvillea spectabilis* | Evergreen |
| *Brunfelsia pauciflora* | Evergreen |
| *Carpinus betulus* | Deciduous |
| *Chamaerops excelsa* | Evergreen |
| *Coriaria myrtifolia* | Deciduous |
| *Crataegus monogyna* | Deciduous |
| *Elaeagnus macrophylla* | Deciduous |
| *Erica arborea* | Evergreen |
| *Escallonia macrantha* | Evergreen |
| *Euonymus japonicus* | Evergreen |
| *Fagus sylvatica* | Deciduous |

| Spieces | Leaf type |
|---|---|
| *Griselinia littoralis* | Evergreen |
| *Ilex aquifolium* | Evergreen |
| *Laurus nobilis* | Evergreen |
| *Melaleuca leucodendra* | Evergreen |
| *Myrtus communis* | Evergreen |
| *Nandina domestica* | Evergreen |
| *Nerium oleander* | Evergreen |
| *Opuntia Spp.* | Evergreen |
| *Photinia x fraseri* | Evergreen |
| *Quercus ilex `Rotundifolia´* | Evergreen |
| *Rosa rugosa* | Deciduous |
| *Rosmarinus officinalis* | Evergreen |
| *Sambucus nigra* | Deciduous |
| *Tamarix gallica* | Deciduous |
| *Tamarix ramosissima* | Deciduous |

**Table 9.1.1: Classification of species (evergreen or deciduous)**

| Type | Plant height | normal height of hedge | Planting frame |
|---|---|---|---|
| *BUXUS SEMPERVIRENS* | 1-3-5 m | 30-40 cm | According to hedge height 25-30 cm |
| *CARPINUS BETULUS* | 15-20 m | 60-80 cm | According to hedge height 60-80 cm |
| *COTONEASTER FRANCHETII* | 3 m | 50-60 cm | 60-80 cm |
| *ESCALLONIA RUBRA* | 3-4 m | 50-70 cm | 50-60 cm |
| *EUONYMUS JAPONICUS* | 5-7m | 60-70 cm | 40-50 cm |
| *ILEX AQUIFOLIUM* | 5-15 m | 60-80 cm | According to hedge height 60-80 cm and up to 3-4 m |
| *LAURUS NOBILIS* | 3-15 m | 60-80 cm | According to hedge height 60-80 cm and up to 2-3 m |
| *LAVANDULA SPICA* | 1-2 m | 50-70 cm | 40-50 cm |
| *LIGUSTRUM OVALIFOLIUM* | 3-4 m | 60-80 cm | According to hedge height 50-60 cm |
| *MAHONIA AQUIFOLIUM* | 1-2 m | 80-100 cm | 50-70 cm |
| *MYOPORUM LAETUM* | 7-10 m | 80-100 cm | According to hedge height 60-80 cm |
| *MYRTUS COMMUNIS* | 3-5 m | 60-80 cm | According to hedge height 60-80 cm |
| *PRUNUS LAUROCERASSUS* | 2-3 m | 80-100 cm | According to hedge height 60-80 cm |
| *TEUCRIUM FRUTICANS* | 1,5 -2,5 m | 50-70 cm | 50-70 cm |
| *VIBURNUM TINUS* | 2,5-3,5 m | 60-80 cm | According to hedge height 60-80 cm |

**Table 9.1.2: Hedge species according to height and planting frame (spacing)**

| Species | Observations |
|---|---|
| *Acer campestre* | Hardy-formal |
| *Acer monspessulanum* | Formal-delicate |
| *Arbutus unedo* | Fruit |
| *Ardisia japonica* | Warm climate |
| *Arundinaria-Phyllostachys Sp.* | Invasive |
| *Berberis julianae* | Thorny, Spiked |
| *Bougainvillea spectabilis* | Flowering-invasive |
| *Brunfelsia pauciflora* | Warm climate |
| *Ceanothus* | Flowering |
| *Cereus Spp.* | Warm climate |
| *Chamaerops excelsa* | Warm climate |
| *Choysia ternata* | Flowering -fragrant |
| *Coriaria myrtifolia* | Medicinal |
| *Crataegus monogyna* | Flowering-spiked (defensive) |
| *Elaeagnus macrophylla* | Colored leaves-spiked (defensive) |
| *Erica arborea* | Flowering-ground |
| *Escallonia macrantha* | Warm climate -Coastal conditions |
| *Fagus sylvatica* | Delicate-humid-shade |
| *Forsythia x intermedia* | Flowering-informal |
| *Frangula alnus* | Medicinal |
| *Genista hispanica* | Informal-flowering |
| *Gleditsia triacanthos* | Fruit-Thorny, spiked (defensive) |
| *Griselinia littoralis* | Flowering |
| *Ilex aquifolium* | Thorny, Spiked leaves |
| *Lantana camara* | Flowering –Thorny, spiked (defensive) |

| Species | Observations |
|---|---|
| *Lonicera nitida* | Formal |
| *Melaleuca Spp.* | Warm climate |
| *Nandina domestica* | Warm climate |
| *Nerium oleander* | Flowering- informal |
| *Opuntia Spp.* | Warm climate. Thorny/spiked (defensive) |
| *Philadelohus x Virginalis* | Flowering - informal |
| *Photinia x Fraseri* | Flowering – colored leaves |
| *Pittosporum tenuifolium* | Flowering-fragrant |
| *Pittosporum tobira* | Flowering-fragrant |
| *Portulacaria afra* | Succulent-hardy |
| *Prunus laurocerasus* | Toxic fruit |
| *Pyracantha angustifolia* | Flowering -fruit. Thorny, spiked (Defensive) |
| *Quercus ilex `Rotundifolia´* | Spiked (defensive) |
| *Rosa rugosa* | Spiked (defensive) |
| *Rosmarinus officinalis* | Medicinal-aromatic- flower |
| *Ruscus aculeatus* | Defensive-informal-leaves |
| *Sambucus nigra* | Medicinal-Informal |
| *Santolina chamaecyparissus* | Flowering- fragrant- formal-hardy |
| *Spartium junceum* | Flowering-hardy |
| *Spiraea x Vanhouttei* | Flowering - informal |
| *Tamarix gallica* | Flowering -sea |
| *Tamarix ramosissima* | Flowering - sea |
| *Ulex europaeus* | Flowering – Thorny, spiked-hardy |
| *Viburnum lucidum* | Flowering - informal |

**Table 9.1.3: Hedges classified according to their main characteristics for landscape design**

## Subchapter 9.2 Species

This subchapter describes **11 species of plants suitable for hedges or topiary** 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.

Firstly, a table of parameters and values has been developed to explain each characteristic or factor presented in each botanic datasheet

Then, each botanic datasheet describes each species 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 different photographs in which the general appearance and morphological details of each species can be appreciated.

| PARAMETERS AND VALUES USED IN THE BOTANIC DATASHEET | |
|---|---|
| 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, 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<br>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, SYNOICOUS, STERILE |
| FLOWERING | SINGLE; 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, MEDIUM, 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** | MINIMUM TEMPERATURES: DEGREES CELSIUS<br><br>**CLASSIFICATION ACCORDING TO EUROPEAN REGULATION**: (SEE MAP)<br>G2____ HOT GREENHOUSES IN SOUTHERN EUROPE<br>G1____ COLD GREENHOUSES IN SOTHERN EUROPE<br>H5____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM OºC TO -5ºC<br>H4____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -5ºC TO -10ºC<br>H3____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -10ºC TO -15ºC<br>H2____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -15ºC TO -20ºC<br>H1____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -20.<br><br>**CLASSIFICATION INTERNATIONAL REGULATIONS.** ACCORDING TO MINIMUM TEMPERATURE RANGES<br>Z1____SUPPORT MINIMUM TEMPERATURES OF -50ºC<br>Z2____ SUPPORT MINIMUM TEMPERATURES OF -50ºC TO -40ºC<br>Z3____ SUPPORT MINIMUM TEMPERATURES OF -40ºC TO -30ºC<br>Z4____ SUPPORT MINIMUM TEMPERATURES OF -30ºC TO -20ºC<br>Z5____ SUPPORT MINIMUM TEMPERATURES OF -20ºC TO -10ºC<br>Z6____ SUPPORT MINIMUM TEMPERATURES OF -10ºC TO -0ºC<br>Z7____ SUPPORT MINIMUM TEMPERATURES OF -0ºC TO 10ºC<br>Z8____ SUPPORT MINIMUM TEMPERATURES OF 10ºC TO 20ºC<br>Z9____ SUPPORT MINIMUM TEMPERATURES OF 20ºC TO 30ºC<br>Z10___ SUPPORT MINIMUM TEMPERATURES OF 30ºC TO 40ºC<br>Z11___ SUPPORT MINIMUM TEMPERATURES OF MORE THAN 40ºC |
| 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, CLAYEY, SANDY/LOAMY, CLAYEY/LOAMY - ALL TYPES |
| DRAINAGE | HIGH, MODERATE, LOW |
| RESISTANCE TO SEA | YES, NO, MODERATE |
| RESISTANCE TO LIME | YES, NO, MODERATE |
| USES | |
| RESISTANCES | |
| COASTAL | 1ST LINE, 2ND LINE, NO. |
| RESISTANCE TO POLLUTION | HIGH, MODERATE, LOW |
| RESISTANCE TO WIND | HIGH, MODERATE, LOW |
| APPLICATIONS | |
| **IN SLOPES**<br>**IN LINES**<br>**ON RIVERBANKS**<br>**AS WINDBREAKERS**<br>**IN HEDGES**<br>**IN FIELD BORDERS**<br>**IN GROUPS**<br>**ISOLATED** | YES, NO |
| **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 |
| STEM GIRTH(TREE) | GIRTH (perimeter): CM or years, or SAMPLE, or shrubs (in tree species) |
| **HEIGHT (SHRUBS, CONIFERS AND PALMS)** | HEIGHT: CM, M |

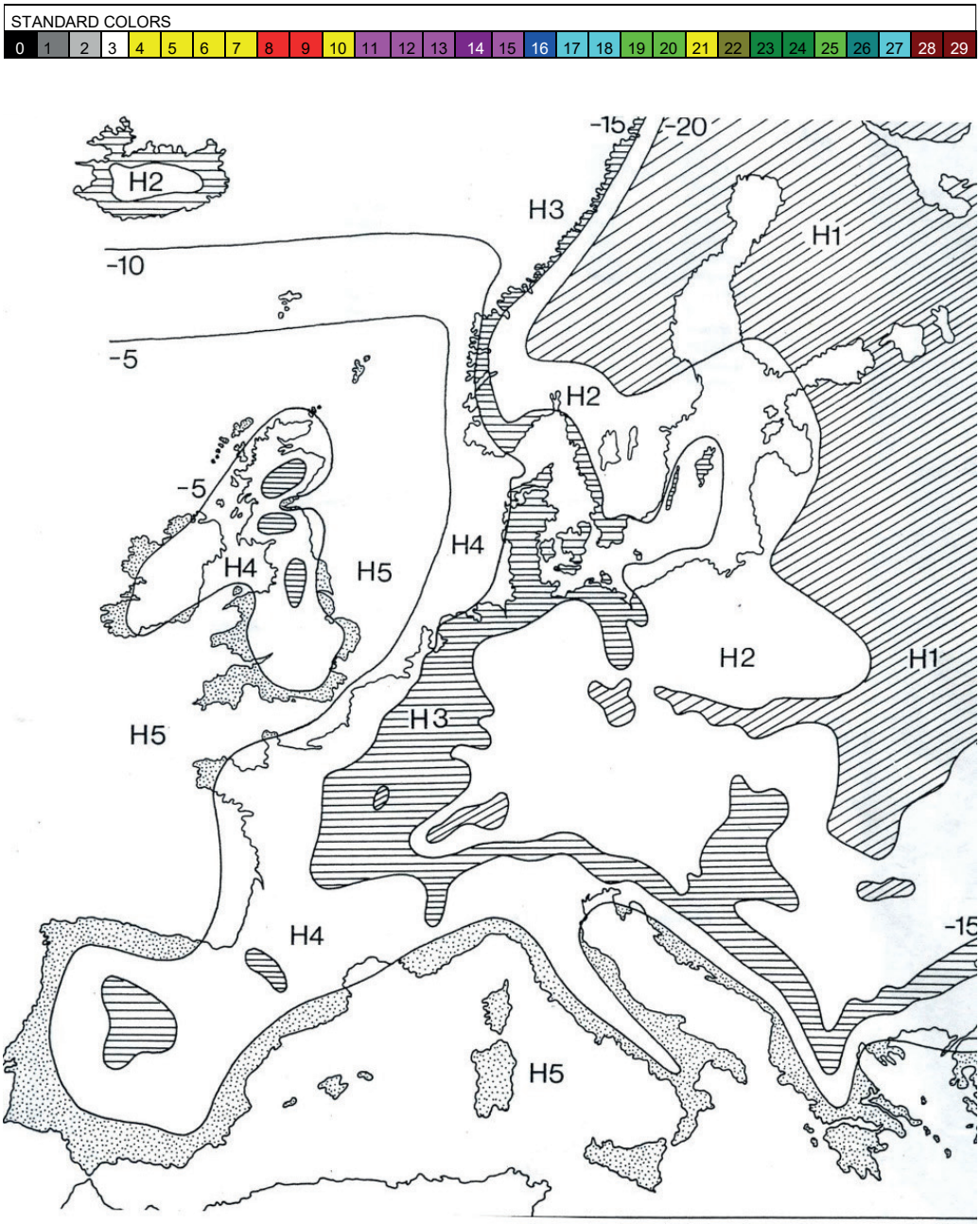



**Figure 9.2.1: Thermal classification map according to European regulations**

## LIST OF HEDGES AND TOPIARY SPECIES DESCRIBED

1. *Buxus sempervirens*
2. *Carpinus betulus*
3. *Cotoneaster franchetti*
4. *Escallonia rubra*
5. *Lingustrum ovalifolium*
6. *Mahonia aquifolium*
7. *Myoporum laetum*
8. *Myrtus comunis*
9. *Prunus laurocerasus*
10. *Teucrium fruticans*
11. *Viburnum tinus*

# BUXUS

## HEDGE AND TOPIARY

# *Buxus sempervirens*

BOJ SPANISH | BOIX VALENCIAN | BOXWOOD ENGLISH | BUIS FRENCH

| STRUCTURE | | |
|---|---|---|
| Shape: OVOID | Height: 3-5M | Diameter: 3-4M |
| Texture: FINE | Shade: LIGHT | Root: HORIZTONAL |

| | |
|---|---|
| DIVISION: | SPERMATOPHYTE |
| SUBDIVISION: | ANGIOSPERM |
| TYPE: | DICOTYLODON |
| ORDER: | EUPHORBIALES |
| FAMILY: | BUXACEAE |

**VARIETIES**

*ARGENTEOVARIEGATA*
*AUREOVARIEGATA , BLAUER HEINZ*
*ELEGANTISSIMA , LATIOLA MACULATA*
*LINERAIIFOLIA , RAKET , ROTUNDIFOLIA*

| MORPHOLOGY | | |
|---|---|---|
| **Trunk** | Bark: SMOOTH | Color: GREENISH/GRAY |
| **Leaf**: EVERGREEN; SIZE: 2-3CM; COLOR: US:DARK GREEN, LS: YELLOW/GR.; TEXTURE: US:GLOSSY, LS: ROUGH | COMPOUND: NO; HARDNESS: CORIACEOUS; ARRANGEMENT: OPPOSITE; VENATION: PINNATE; SHAPE: OVAL; MARGIN: ENTIRE; APEX: EMARGINATE; LEAF BASE: ROUNDED; PETIOLE: SHORT | |
| **Flower**; SIZE AND TYPE: ♂/M 1 MM, ♀/F 1 MM | Type: UNISEXUAL | Reproduction: MONOECIOUS |
| | Flowering: RACEME | Fragrant: YES |
| **Fruit**; SIZE: 0.8-10 MM | Type: CAPSULE | Color: DARK BROWN |
| | Edible: NO | Fruiting season: SEPT-NOV |
| **Growth** | Rate: SLOW | Longevity: > 200 YEARS |

| ECOLOGY | | |
|---|---|---|
| **Climate**; ALTITUDE: 400-2000; IRRIGATION: HIGH | Temperature: -23ºC; H1; Z4 | Drought resistant: MODERATE |
| | Sun exposure: SHADE/PARTIAL SHADE | Frost resistant: YES |
| **Soil**; pH: 5.5-7.5; FERTILITY: HIGH | Texture: LOAMY | Salt resistant: MODERATE-LOW |
| | Drainage: HIGH | Lime resistant: MODERATE |

| USES | | |
|---|---|---|
| Resistances: COASTAL: MODERATE; POLLUTION: MODERATE; WIND: MODERATE | Applications: SLOPES: NO; RIVERBANKS: NO; GROUPS: YES | CARPET: NO; WINDBREAKER: NO; ISOLATED: YES |

## POINTS OF INTEREST

This species can be found in the Mediterranean region, and northeast of the Peninsula: Catalonia, Pyrenees, Navarra, Maestrazgo, reaching the Valencian Community. It is located in calcareous mountainous zones with a cold climate. It tolerates shade and shallow soils well. It is a protected plant in many Autonomous Communities of Spain. Although this species can provoke allergies, it is used mainly for hedges and topiary. Since it does not flower, it reduces the problems it may cause to people.

TYPICAL SPACING FOR HEDGES: 0.3-1 M

## PLANTING AND PLANT HEALTH

It tolerates transplanting if it is carried out in its dormant stage and with a root ball. Drought is the worst abiotic disease for this plant. It is resistant to pests and diseases. The machinery and tools used in pruning must be disinfected and especially if the same tools are used on other species of plants (this reduces the risk of passing on plagues and diseases to other plants). Boxwood plants intended as low hedges are often sold bare root.

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | X | X | X | X | X | X | X | X | X | X |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

Fungicides Pesticides Fertilizers

## COMMERCIALIZATION

| Presentation | Height (cm) | Topiary shapes |
|---|---|---|
| BR | 10-15 | No |
| BR | 15-20 | No |
| BR | 20-25 | No |
| CT2 | 10-15 | No |
| CT3 | 15-20 | No |
| CT9 | 20-25 | No |
| CT15 | 25-30 | Yes |
| CT25 | 30-35 | Yes |
| CT30 | 35-40 | Yes |
| CT50 | 40-50 | Yes |
| CT60 | 50-60 | Yes |
| CT60 | 60-80 | Yes |

# CARPINUS

*Carpinus betulus*

## HEDGE AND TOPIARY

| CARPE | CARPÍ | HORNBEAM | CHARME COMMUN |
|---|---|---|---|
| SPANISH | VALENCIAN | ENGLISH | FRENCH |

| STRUCTURE | | |
|---|---|---|
| Shape: PYRAMID | Height: 20M | Diameter: 6-8M |
| Texture: MEDIUM | Shade: PARTIAL | Root: HORIZONTAL |

| | |
|---|---|
| **DIVISION:** | SPERMATOPHYTE |
| **SUBDIVISION:** | ANGIOSPERM |
| **TYPE:** | DICOTYLEDON |
| **ORDER:** | FAGALES |
| **FAMILY:** | BETULACEAE |

**VARIETIES**

*FASTIGIATA*
*FRANS FONTAINE*
*PURPUREA*

| MORPHOLOGY | | |
|---|---|---|
| **Trunk** | Bark: GROOVED | Color: GRAY |
| **Leaf** | COMPOUND: NO | |
| DECIDUOUS-MARCESCENCE | HARDNESS: CORIACEOUS | |
| SIZE: LEAF:6-12CM | ARRANGEMENT: ALTERNATE | |
| | VENATION: PINNATE | |
| | SHAPE: OVAL | |
| COLOR: US: DARK GREEN | MARGIN: DENTATE | |
| LS: DARK GREEN | APEX: ACUTE | |
| TEXTURE: US: ROUGH | LEAF BASE: ROUNDED | |
| LS: ROUGH | PETIOLE: LONG | |
| **Flower** | Type: UNISEXUAL | Reproduction: UNISEXUAL |
| SIZE AND TYPE: 3-5 CM | Type: CATKIN | Fragrant: NO |
| **Fruit** | Type: NUT | Color: BROWN |
| SIZE: 4 CM | Edible: NO | Fruiting season: SEPT-NOV |
| **Growth** | Rate: MODERATE | Longevity: 100-200 YEARS |

| ECOLOGY | | |
|---|---|---|
| **Climate** | Temperature: -29ºC; H1; Z4 | Drought resistant: MODERATE-LOW |
| ALTITUDE: 400-2000 | Sun exposure: SHADE/PARTIAL SHADE | Frost resistant: YES |
| IRRIGATION: HIGH | | |
| **Soil** | Texture: LOAMY/SANDY | Salt resistant: NO |
| pH: 5-7.5 | Drainage: MODERATE | Lime resistant: YES |
| FERTILITY: MODERATE | | |

| USES | | | |
|---|---|---|---|
| Resistances | | Applications | |
| COASTAL: 2ND LINE | SLOPES: NO | CARPET: NO | |
| POLLUTION: YES | RIVERBANKS: NO | WINDBREAKERS: Yes | |
| WIND: YES | GROUPS: YES | ISOLATED: Yes | |

### POINTS OF INTEREST

This species can be found in Europe and Near Asia, the Iberian Peninsula is the southwestern limit (Navarra), although in the past it reached as far as Andalusia. Lives in fresh deciduous forests in rich (not very acidic) soils. The fruits remain during the winter, giving it an interesting appearance. This species is used for hedges and since it is deciduous, it sprouts in both spring and autumn offering an interesting foliar coloration. The autumn leaves remain entangled in the mesh of branches and twigs of the shrubs that form it. The wood was widely used, it is a dye plant (yellow) and provides coal. It is known to provoke allergies however, if it is pruned and does not flower, there is minimal risk to people. The leaves are marcescent and remain on the twigs without falling.

### PLANTING AND PLANT HEALTH

Resistant to pests and diseases. Lack of humidity and salt burns (if placed near the sea) can affect this species.

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | X | X | X | | |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

### COMMERCIALIZATION

| Presentation | Height (cm) | Topiary shapes |
|---|---|---|
| CT3 | 20-30 | No |
| CT7 | 30-40 | No |
| CE | 60-80 | No |
| CE | 80-100 | Yes |
| CE | 100-125 | Yes |
| CE | 125-150 | Yes |
| CE | 150-175 | Yes |
| CE | 175-200 | Yes |
| CE | 200-250 | Yes |
| CE | 250-300 | Yes |
| CE | 400-450 | Yes |
| CE | 450-500 | Yes |

# COTONEASTER

## HEDGE AND TOPIARY

*Cotoneaster franchetii*

| GRIÑOLERA | CORNERA DE FRANCHET | COTONEASTER | COTONEASTER |
|---|---|---|---|
| SPANISH | VALENCIAN | ENGLISH | FRENCH |

### STRUCTURE

| Shape | Height | Diameter |
|---|---|---|
| OVAL | 1-4M | 1-3 M |
| **Texture** | **Shade** | **Root** |
| MEDIUM | LIGHT | HORIZONTAL |

| | |
|---|---|
| **DIVISION:** | SPERMATOPHYTE |
| **SUBDIVISION:** | ANGIOSPERM |
| **TYPE:** | DICOTYLEDON |
| **ORDER:** | ROSALES |
| **FAMILY:** | ROSACEAE |

### VARIETIES

### MORPHOLOGY

| | | |
|---|---|---|
| **Trunk** | Bark: SMOOTH | Color: BROWN |
| **Leaf** | COMPOUND: NO | |
| SEMI-EVERGREEN | HARDNESS: CORIACEOUS | |
| SIZE: 2-3CM | ARRANGEMENT: ALTERNATE | |
| | VENATION: PINNATE | |
| | SHAPE: OVAL | |
| COLOR: US: GREEN | MARGIN: ENTIRE | |
| LS: LIGHT GREEN | APEX: MUCRONATE | |
| TEXTURE: US:SMOOTH | LEAF BASE: ROUNDED | |
| LS:TOMENTOSE | PETIOLE: SHORT | |
| **Flower** | Type: HERMAPHRODITE | Reproduction: HERMAPHRODITE |
| SIZE AND TYPE: 0.8-1 CM | Flowering: CORYMB | Fragrant: YES |
| **Fruit** | Type: POME | Color: ORANGE |
| | Comestible: NO | Fruiting Season: SEPT-OCT |
| SIZE: 0.8-1 CM | | |
| **Growth** | Rate: MODERATE | Longevity: 10-25 YEARS |

### ECOLOGY

| | | |
|---|---|---|
| **Climate** | Temperature: -23ºC; H1; Z4 | Drought resistant: YES |
| ALTITUDE: 0-1200 | Sun exposure: SUN/PARTIAL SHADE | Frost resistant: YES |
| IRRIGATION: MODERATE | | |
| **Soil** | Texture: LOAMY | Salt resistant: MODERATE |
| pH: 5-8.5 | Drainage: LOW | Lime resistant: YES |
| FERTILITY: MODERTATE | | |

### USES

| Resistances | | Applications | | | |
|---|---|---|---|---|---|
| COASTAL: | 2ND LINE | SLOPES: | YES | CARPET: | YES |
| POLLUTION: | YES | RIVERBANKS: | NO | WINDBREAKER: | YES |
| WIND: | YES | GROUPS: | YES | ISOLATED: | YES |

### POINTS OF INTEREST

Native to Western China and Tibet. This species can be found in mountainous areas with limestone soils. Its fruit is slightly toxic. Widely used as bushes and hedges due to their impenetrability. Its planting has been mishandled due to its ease of cultivation and its hardiness, but nevertheless, it remains one of the most economical hedges. When carrying out a maintainence pruning, avoid trimming the lower branches so that the lower part of the bushes can be cleaned (this is where most dirt accumulates). If those branches are pruned in their adult state, it is very difficult to clean and therefore recovering its lower foliage is complicated. For many months the fruits remain on the bush offering an interesting and visible color.

TYPICAL SPACING FOR HEDGES: 0.5 -1 M

### PLANTING AND PLANT HEALTH

This species belongs to the rosacea family and therefore is widely cultivated throughout Spain (especially the genus *Cotoneaster* and *Pyracantha* ). As a result, there is a danger that fire blight (a common plague in this species) may be introduced and generalized, therefore, it is essential that the plant is purchased with a sanitary guarantee.Planting and caring for this species does not present any specific challenges.

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | X | X | X | X | X | X | | |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

### COMMERCIALIZATION

| Presentation | Height (cm) | Topiary shape |
|---|---|---|
| CT2 | 25-30 | No |
| CT3 | 30-35 | No |
| CT7 | 35-40 | No |
| CT9 | 40-50 | No |
| CT30 | 50-60 | No |
| CT50 | 60-80 | Yes |

# ESCALLONIA

## HEDGE AND TOPIARY

*Escallonia rubra*

ESCALLONIA SPANISH | ESCALLONIA VALENCIAN | ESCALLONIA ENGLISH | ESCALLONIA FRENCH

### STRUCTURE

| Shape | Height | Diameter |
|---|---|---|
| OVAL | 1-2 M | 2-5 M |
| **Texture** | **Shade** | **Root** |
| MEDIUM | PARTIAL | HORIZONTAL |

| | |
|---|---|
| **DIVISION:** | SPERMATOPHYTE |
| **SUBDIVISION:** | ANGIOSPERM |
| **TYPE:** | DICOTYLEDON |
| **ORDER:** | ROSALES |
| **FAMILY:** | ESCALLONIACEAE |

**VARIETIES**

*CRIMSON SPIRE*
*INGRAMII, VERYI*
*MACRANTHA*
*WILLIAM WATSON*

### MORPHOLOGY

| | | |
|---|---|---|
| **Trunk** | Bark: SMOOTH | Color: GREEN/RED |
| **Leaf** | COMPOUND: NO | |
| | HARDNESS: CORIACEOUS | |
| EVERGREEN | ARRANGEMENT: ALTERNATE | |
| SIZE: 2-5 CM | VENATION: PINNATE | |
| | SHAPE: OVAL | |
| COLOR: US: LIGHT GREEN | MARGIN: SERRATE | |
| LS: LIGHT GREEN | APEX: ACUTE | |
| TEXTURE: US: ROUGH | LEAF BASE: ATTENUATE | |
| LS: ROUGH | PETIOLE: SHORT | |
| **Flower** | Type: HERMAPHRODITE | Reproduction: HERMAPHRODITE |
| SIZE AND TYPE: 1-2 CM | Flowering: RACEME 5-10CM | Fragrant: NO |
| **Fruit** | Type: CAPSULE | Color: PURPLE |
| SIZE: 0.8-1.5 CM | Edible: NO | Fruiting season: SEPT-NOV |
| **Growth** | Rate: MODERATE | Longevity: 25-50 YEARS |

### ECOLOGY

| | | |
|---|---|---|
| **Climate** | Temperature: -12ºC; H3; Z5 | Drought resistant: MODERATE |
| ALTITUDE: 100-1200 | Sun exposure: SUN/PARTIAL SHADE | Frost resistant: YES |
| IRRIGATION: LOW | | |
| **Soil** | Texture: LOAMY/SANDY | Salt resistant: YES |
| pH: 5.5-8 | Drainage: MODERATE | Lime resistant: MODERATE |
| FERTILITY: MODERATE | | |

### USES

| Resistances | | Applications | | | |
|---|---|---|---|---|---|
| COASTAL: | 1ST LINE | SLOPES: | NO | CARPET: | MOD |
| POLLUTION: | YES | RIVERBANKS: | YES | WINDBREAKER: | YES |
| WIND: | YES | GROUPS: | YES | ISOLATED: | YES |

### POINTS OF INTEREST

Native to Chile and Southern Argentina, in cool and humid forests and scrub, near flows of water. It can become wild. It requires a fertile and well-drained soil. The *Macrantha* variety is more suited to coastal areas. It works well as a flowering hedge plant. Prune once flowering has finished to ensure abundancy in subsequent years. The substrate must be rich to guarantee good flowering.

TYPICAL SPACES FOR HEDGES: 0.7-1.5M

### PLANTING AND PLANT HEALTH

Planting can take place at the end of winter and spring. Avoid planting late in the season, even in a container. It has good resistance to pests and diseases.

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | X | X | X | X | X | X | X |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

### COMMERCIALIZATION

| Presentation | Height (cm) | Topiary Shape |
|---|---|---|
| CT2 | 20-25 | No |
| CT3 | 25-30 | No |
| CT7 | 30-35 | No |
| CT9 | 35-40 | No |
| CT15 | 35-40 | No |
| CT50 | 40-50 | Yes |

# LIGUSTRUM

## HEDGE AND TOPIARY

*Ligustrum ovalifolium*

| ALIGUSTRE DE HOJA OVAL | TROANELLA | CALIFORNIA PRIVET | TROÈNE DE CALIFORNIE |
|---|---|---|---|
| SPANISH | VALENCIAN | ENGLISH | FRENCH |

| STRUCTURE | | |
|---|---|---|
| Shape: OVAL | Height: 1-4 M | Diameter: 2-3 M |
| Texture: MEDIUM | Shape: PARTIAL | Root: HORIZONTAL |

| | |
|---|---|
| DIVISION: | SPERMATOPHYTE |
| SUBDIVISION: | ANGIOSPERM |
| TYPE: | DICOTYLEDON |
| ORDER: | GENTIANALES |
| FAMILY: | OLEAECEAE |

**VARIETIES**

*AUREUM*
*ALBOMARGINATUM*
*ARGENTEUM*
*COMPACTUM*, *NANUM*, *GLOBOSUM*

**MORPHOLOGY**

| | | |
|---|---|---|
| **Trunk** | Bark: SMOOTH | Color: GRAY |
| **Leaf**: EVERGREEN; SIZE: 5-7 CM; COLOR: US: DARK GREEN, LS: GR./YELLOW; TEXTURE: US: SMOOTH, LS: SMOOTH | COMPOUND: NO; HARDNESS: MEDIUM; ARRANGEMENT: OPPOSITE; VENATION: PINNATE; SHAPE: ELLIPTICAL; MARGIN: ENTIRE; APEX: ACUTE; LEAF BASE: ROUNDED; PETIOLE: MEDIUM | |
| **Flower**; SIZE AND TYPE: 0.8-1 CM | Type: HERMAPHRODITE; Flowering: PANCILE -10 CM | Reproduction: HERMAPHRPDITE; Fragrant: YES |
| **Fruit**; SIZE: 0.6-0.8 CM | Type: BERRY; Edible: NO | Color: BLACK; Fruiting season: SEP-OCT |
| **Growth** | Rate: HIGH | Longevity: 25-50 YEARS |

**ECOLOGY**

| | | |
|---|---|---|
| **Climate**; ALTITUDE: 200-1200; IRRIGATION: MODERATE | Temperature: - 29ºC; H1; Z4; Sun exposure: SUN/PARTIAL SHADE | Drought resistant: MODERATE; Frost resistant: MODERATE |
| **Soil**; pH: 5-8.5; FERTILITY: MODERATE | Texture: LOAMY/SANDY; Drainage: MODERATE | Salt resistant: NO; Lime resistant: YES |

**USES**

| Resistances | | Applications | | | |
|---|---|---|---|---|---|
| COASTAL: | 2ND LINE | SLOPES: | YES | CARPET: | NO |
| POLLUTION: | YES | RIVERBANKS: | YES | WINDBREAKER: | YES |
| WIND: | YES | GROUPS: | YES | ISOLATED: | YES |

**POINTS OF INTEREST**

Native to Japan, from the middle riverside areas. Widely used as a formal hedge through pruning or as an informal hedge. The flowers have an unpleasant fragrance and so if pruned as a formal hedge it will not flower. If used to form hedges, they require plenty of water, sun, and fertilizer.

TYPICAL SPACING FOR HEDGES: 0.7-0.3 M

**PLANTING AND PLANT HEALTH**

Planting should be done at the end of winter and beginning of spring, although it can withstand other periods of planting. Transplanting and rooting are easy. Due to its rapid growth rate, it requires up to three prunings per year (two in April and May and one in September).

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X | X | X | X | X | X | X | X | X |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

**COMMERCIALIZATION**

| Presentation | Height (cm) | Topiary shapes |
|---|---|---|
| BR | 60-80 | No |
| BR | 80-100 | No |
| BR | 100-125 | No |
| CT2 | 20-40 | No |
| CT3 | 40-60 | No |
| CT7 | 80-100 | No |
| CT9 | 125-150 | Yes |
| CT50 | 200-250 | Yes |
| CE | 60-80 | Yes |
| CE | 80-100 | Yes |
| CE | 100-125 | Yes |
| CE | 125-150 | Yes |

# MAHONIA

## *Mahonia aquifolium*

HEDGES AND TOPIARY

| MAHONIA SPANISH | MAHÒNIA VALENCIAN | OREGON GRAPE ENGLISH | MAHONIA FRENCH |
|---|---|---|---|

| STRUCTURE | | |
|---|---|---|
| Shape: OVAL | Height: 1-2 M | Diameter: 1-2 M |
| Texture: 1-2M | Shade: LIGHT | Root: HORIZONTAL |

| | |
|---|---|
| DIVISION: | SPERMATOPHYTA |
| SUBDIVISION: | ANGIOSPERMAE |
| TYPE: | DICOTYLEDONEAE |
| ORDER: | ROSALES |
| FAMILY: | BERBERIDACEAE |

**VARIETIES**

*APOLLO*, *ORANGE FLAME*, *ATROPURPUREA*, *GREEN RIPPLE*, *SMARAGAGE*, *FASCICULATA*

| MORPHOLOGY | | |
|---|---|---|
| **Trunk** | Bark: VERTICALLY FISSURED | Color: GREEN |
| **Leaf**: EVERGREEN; SIZE: LEAF:10-25CM, LEAFLET:4-6CM; COLOR: US:DARK GREEN, LS: GREEN; TEXTURE: US:GLOSSY, LS: GLOSSY | COMPOUND: IMPARIPINNATE; HARDNESS: CORIACEOUS; ARRANGEMENT: OPPOSITE; VENATION: PINNATE; SHAPE: OVATE; MARGIN: ONDULATE-SPINE; APEX: ACUTE; LEAF BASE: ATTENUATE; PETIOLE: SESSILE | |
| **Flower**: SIZE AND TYPE: 0.6-0.8 CM | Type: HERMAPHRODITE; Flowering: PANICLE 8-10CM | Reproduction: HERMAPHRODITE; Fragrant: YES |
| **Fruit**: SIZE: 0.8-1 CM | Type: BERRY; Edible: YES | Color: BLACK; Fruiting Season: JUNE-AUG |
| **Growth** | Rate: MODERATE | Longevity: 15-25 YEARS |

| ECOLOGY | | |
|---|---|---|
| **Climate**: ALTITUDE: 0-1200M; IRRIGATION: LOW | Temperature: -29ºC; H1; Z4; Sun exposure: SUN/PARTIAL SHADE | Drought resistant: MODERATE; Frost resistant: YES |
| **Soil**: pH: 5-8; FERTILITY: MODERATE | Texture: LOAMY; Drainage: LOW | Salt resistant: MODERATE; Lime resistant: MODERATE |

| USES | | | |
|---|---|---|---|
| Resistances | | Applications | |
| COASTAL: 2ND LINE | | SLOPES: YES | CARPET: YES |
| POLLUTION: YES | | RIVERBANKS: YES | WINDBREAKER: NO |
| WIND: YES | | GROUPS: YES | ISOLATED: YES |

### POINTS OF INTEREST

Native to North America (California and Oregon). It can be found on riverbanks, underbrush and prefers cool, shady places. It is very common in gardening. It is a stoloniferous plant, which means that over the years, stems will emerge from the roots and invade new spaces (delimited by a wall, sidewalk, geotextile surfaces). Over time, maintenance will not increase, but if it is necessary, plants that are in unwanted places must be removed. In case of open spaces, it should not be used as a formal hedge. This species is more suitable as an informal hedge, without formative pruning. As a species it offers the reddish coloration of autumn and spring, the yellow flowering and the black fruiting during the winter. The leaf has thorns and therefore can be considered a defensive species and, of course, its use, both as a hedge or as a bush should be kept away from children's play areas.

TYPICAL SPACING FOR HEDGES 0.7-1.5 M

### PLANTING AND PLANT HEALTH

Planting should take place in the winter months and early spring. Transplanting is easy. Pruning should be carried out on the stems that are directed away from the center of the plant or from the planting site. Rejuvenation pruning must be done to remove old and dry stems making way for a new root and only after flowering and on old branches.

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X | X | X | X | X | X | X | | |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

### COMMERCIALIZATION

| Presentation | Height (cm) | Topiary shapes |
|---|---|---|
| CT3 | 30-40 | No |
| CT7 | 40-50 | No |
| CT9 | 40-50 | No |
| CT30 | 50-60 | No |
| CT50 | 50-60 | No |

## MYOPORUM

# *Myoporum laetum*

HEDGES AND TOPIARY

MIOPORO, TRASPARENTE SPANISH | MIOPORO VALENCIAN | MYOPORUM ENGLISH | MYOPORUM FRENCH

### STRUCTURE

| Shape | Height | Diameter |
|---|---|---|
| ROUND | 4-8 M | 4-6 M |
| **Texture** | **Shade** | **Root** |
| COARSE | PARTIAL | HORIZONTAL |

| | |
|---|---|
| **DIVISION:** | SPERMATOPHYTES |
| **SUBDIVISION:** | ANGIOSPERMS |
| **TYPE:** | DICOTYLEDONS |
| **ORDER:** | SCROPHULARIALE |
| **FAMILY:** | MYOPORACEAE |

### VARIETIES

### MORPHOLOGY

| | | |
|---|---|---|
| **Trunk** | Bark: SCALY | Color: GRAY |
| **Leaf** | COMPOUND: NO | |
| EVERGREEN | HARDNESS: SOFT | |
| SIZE: Leaf: 4-14 CM | ARRANGEMENT: ALTERNATE | |
| | VENATION: PINNATE | |
| | SHAPE: OBOVATE | |
| COLOR: US: GR./YELLOW | MARGIN: SERRATE | |
| LS: GR./ YELLOW | APEX: ACUTE | |
| TEXTURE: US:VISCOSE | LEAF BASE: CUNEATE | |
| LS: VISCOSE | PETIOLE: SHORT | |
| **Flower** | Type: HERMAPHRODITE | Reproduction: HERMAPHRODITE |
| SIZE AND TYPE: 1-1.5 CM | Flowering: SOLITARY | Fragrant: NO |
| **Fruit** | Type: DRUPE | Color: BLACK |
| SIZE: 0.5-1 CM | Edible: NO | Fruiting season: SEPT-OCT |
| **Growth** | Rate: FAST | Longevity: 50-100 YEARS |








### ECOLOGY

| | | |
|---|---|---|
| **Climate** | Temperature: -7ºC;H4; Z6 | Drought resistant: MODERATE |
| ALTITUDE: 0-1000 | Sun exposure: SUN | Frost resistant: LOW |
| IRRIGATION: LOW | | |
| **Soil** | Texture: SANDY | Salt resistant: YES |
| pH: 5-8 | Drainage: MODERATE | Lime resistant: YES |
| FERTILITY: MODERATE | | |

### USES

| Resistances | | Applications | | | |
|---|---|---|---|---|---|
| COASTAL: | 1ST LINE | SLOPES: | YES | CARPET: | NO |
| POLLUTION: | YES | RIVERBANKS: | YES | WINDBREAKER: | YES |
| WIND: | YES | GROUPS: | YES | ISOLATED: | YES |

### POINTS OF INTEREST

Native to New Zealand. It can be cultivated in the coastal areas of the Mediterranean region and regions with a warm climate. It is also a naturalized species. It has good resistance to sea but has low resistant to frost especially when young. For hedges, *Myoporum insulare* is widely used. (*Myoporum tenuifolium* is a synonym of *M. laetum)* . Widely used for medium-height hedges. Flowers are white.

TYPICAL SPACING FOR HEDGES: 1.5-0.7 M

### PLANTING AND PLANT HEALTH

Planting should be carried out late spring and summer (when possible frosts have passed). Pruning at the end of winter, shortening 1/3 all the twigs.

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | X | X | X | X | | | | | | |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

### COMMERCIALIZATION

| Presentation | Height (cms) | Topiary shapes |
|---|---|---|
| CT2 | 30-40 | No |
| CT3 | 40-50 | No |
| CT7 | 50-60 | No |
| CT30 | 80-100 | Yes |
| CT50 | 125-150 | Yes |
| CT70 | 150-175 | Yes |
| CT85 | 175-200 | Yes |

# MYRTUS *Myrtus communis*

## HEDGES AND TOPIARY

| MIRTO, ARRAYÁN | MURTA | MYRTLE | MYRTE |
|---|---|---|---|
| SPANISH | VALENCIAN | ENGLISH | FRENCH |

### STRUCTURE

| Shape | Height | Diameter |
|---|---|---|
| OVAL | 2-5 M | 2-4 M |
| **Texture** | **Shade** | **Root** |
| MEDIUM | PARTIAL | HORIZONTAL |

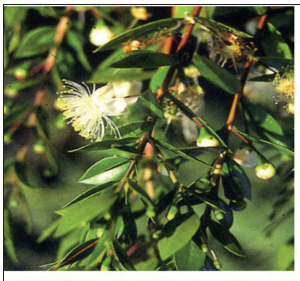
| | |
|---|---|
| **DIVISION:** | SPERMATOPHYTE |
| **SUBDIVISION:** | ANGIOSPERM |
| **TYPE:** | DICOTYLEDON |
| **ORDER:** | MYRTALES |
| **FAMILY:** | MYRTACEAE |

**VARIETIES**

*TARENTINA, ITALICA, ROMANA*
*TARENTINA MICROPHYLL A*
*TARENTINA VARIEGATA*
*VARIEGATA*

### MORPHOLOGY

| | | |
|---|---|---|
| **Trunk** | Bark: SCALY | Color: BROWN/RED |
| **Leaf** | COMPOUND: NO | |
| EVERGREEN | HARDNESS: SOFT | |
| SIZE: 2-4 CM | ARRANGEMENT: OPPOSITE | |
| | VENATION: PINNATE | |
| | SHAPE: LANCEOLATE | |
| COLOR: US: DARK GREEN | MARGIN: ENTIRE | |
| LS: GREEN | APEX: ACUTE | |
| TEXTURE: US: GLOSSY | LEAF BASE: CUNEATE | |
| LS: GLOSSY | PETIOLE: SHORT | |
| **Flower** | Type: HERMAPHRODITE | Reproduction: HERMAPHRODITE |
| SIZE AND TYPE: 2-3 CM | Flowering: SOLITARY | Fragrant: YES |
| **Fruit** | Type: BERRY | Color: BLACK |
| SIZE: 0.6-0.8 CM | Edible: YES | Fruiting season: OCT-NOV |
| **Growth** | Rate: MEDIUM | Longevity: 50-100 YEARS |





### ECOLOGY

| | | |
|---|---|---|
| **Climate** | Temperature: -12ºC; H3; Z5 | Drought resistant: MODERATE |
| ALTITUDE: 0-1000 M | Sun expiosure: SUN | Frost resistant: NOT EXTREME |
| IRRIGATION: MODERATE | | |
| **Soil** | Texture: LOAMY/SANDY | Salt resistant: MODERATE |
| pH: 5.5-8 | Drainage: MODERATE | Lime resistant: MODERATE |
| FERTILITY: MODERATE | | |

### USES

| Resistances | | Applications | | | |
|---|---|---|---|---|---|
| COASTAL: | MODERATE | SLOPES: | MOD | CARPET: | YES |
| POLLUTION: | YES | RIVERBANKS: | YES | WINDBREAKER: | YES |
| WIND: | YES | GROUPS: | YES | ISOLATED: | YES |

### POINTS OF INTEREST

Native to the Mediterranean region in the Balearic Islands and on the Iberian Peninsula in Extremadura, Andalusia, Levante and Catalonia. It has low resistance to strong frosts and does well in humid and well-drained substrate. The flower is yellowish white. Both its leaves and flowers are scented. It has important medicinal properties. The fruits have been used in confectionery, for the elaboration of wines and as condiment. The myrtle is protected in the Balearic Islands (Decree 24/1992, of March 12, B.O.C.A.I.B. of 2-4-1992). It has been cultivated as an ornamental plant since ancient times.

TYPICAL SPACING FOR HEDGES: 0.3-0.5

### PLANTING AND PLANT HEALTH

Plant and transplant in late winter. Lack of light will leave the branches with very little vitality. Pruning is done in spring. If the aim is develop a flowering hedge, pruning must be carried out in the summer, once flowering has finished.

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | X | X | X | X | X | X |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

### COMMERCIALIZATION

| Presentation | Height (cm) | Topiary shapes |
|---|---|---|
| CT2 | 15-20 | No |
| CT3 | 20-25 | No |
| CT7 | 25-30 | Yes |
| CT9 | 30-40 | Yes |
| CT30 | 60-80 | Yes |
| CT50 | 80-100 | Yes |

# PRUNUS *Prunus laurocerasus*

## HEDGE AND TOPIARY

LAUREL CEREZO, LAUROCERASO (SPANISH) | LLORER-CIRER (VALENCIAN) | CHERRY LAUREL (ENGLISH) | LAURIER-CERISE (FRENCH)

| STRUCTURE | | |
|---|---|---|
| Shape: OVAL | Height: 4-6 M | Diameter: 2-4 M |
| Texture: COARSE | Shade: PARTIAL | Root: FASICULATE |

| | |
|---|---|
| DIVISION: | SPERMATOPHYTES |
| SUBDIVISION: | ANGIOSPERMS |
| TYPE: | DICOTYLEDONS |
| ORDER: | ROSALES |
| FAMILY: | ROSACEAE |

**VARIETIES**

*CAUCASICA, ROTUNDIFOLI*
*HERBERGII, VARIEGATUM*
*ZEBELIANA, OTTO LUYKEN*

| MORPHOLOGY | | |
|---|---|---|
| **Trunk** | Bark: ROUGH | Color: DARK BROWN |
| **Leaf**: EVERGREEN; SIZE: 8-15 CM; COLOR: US: DARK GREEN, LS: GREEN; TEXTURE: US: SMOOTH, LS: SMOOTH | COMPOUND: NO; HARDNESS: CORIACEOUS; ARRANGEMENT: ALTERNATE; VENATION: PINNATE; SHAPE: ELIPTICAL; MARGIN: ENTIRE; APEX: OBTUSE; LEAF BASE: CUNEATE; PETIOLE: SHORT | |
| **Flower**; SIZE AND TYPE: 0.8-1 CM | Type: HERMAPHRODITE; Flowering: RACEME 8-10CM | Reproduction: HERMAPHRODITE; Fragrant: YES |
| **Fruit**; SIZE: 1-1.2 CM | Type: DRUPE; Edible: NO | Color: BLACK; Fruiting season: SEPT-OCT |
| **Growth** | Rate: MEDIUM | Longevity: 25-50 YEARS |

| ECOLOGY | | |
|---|---|---|
| **Climate**; ALTITUDE: 100-1000; IRRIGATION: HIGH | Temperature: -17ºC; Z5; H2; Sun exposure: SUN/PARTIAL | Drought resistant: MODERATE; Frost resistant: YES |
| **Soil**; pH: 5-8; FERTILITY: MODERATE | Texture: SANDY; Drainage: MODERATE | Salt resistant: NO; Lime resistant: YES |

| USES | | | | |
|---|---|---|---|---|
| Resistances | | Applications | | |
| COASTAL: | 2ND LINE | SLOPES: | NO | CARPET: NO |
| POLLUTION: | YES | RIVERBANKS: | MOD | WINDBREAKER: Yes |
| WIND: | YES | GROUPS: | YES | ISOLATED: Yes |



### POINTS OF INTEREST

Native to Eastern Europe, the Balkan Peninsula, Turkey and Iran. Found in slightly humid mid-mountain areas. The flower is a whitish cream color. The leaves and fruit have medicinal properties that must be handled with care. These plants should never be placed near children's areas, nurseries and schools. It is used for informal hedging and of a certain width and height.

TYPICAL SPACING FOR HEDGES: 1.5-0.7 M

### PLANTING AND PLANT HEALTH

Planting is easy and should be done at the end of winter - beginning of spring. It is frequently attacked by mealybug, therefore the bushes must be treated with the appropriate phytosanitary treatments. Pruning should be done before bud break (around April-end of March) and when not used as a formal hedge. Rejuvenation pruning can be carried out if the plant is losing vitality. If it is used as a formal hedge, during the months of August-September a second pruning must be done.

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X | X | X | X | X | X | X | X | X |

Sowing Planting Pruning X

**Treatment Calendar**

| JAN | FEB | MAR | ABR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|

Fungicides Pesticides Fertilizers

### COMMERCIALIZATION

| Presentation | Height (cm) | Topiary shapes |
|---|---|---|
| CT3 | 40-60 | Yes |
| CT3 | 60-80 | Yes |
| CT3 | 80-100 | Yes |
| CT7 | 100-125 | Yes |
| CT9 | 125-150 | Yes |
| CT50 | 170-200 | Yes |

# TEUCRIUM

## HEDGE AND TOPIARY

# *Teucrium fruticans*

| OLIVILLA BLANCA | TEUCRÍ FRUTICÓS | TREE GERMANDER | ARBRISSEAU |
|---|---|---|---|
| SPANISH | VALENCIAN | ENGLISH | FRENCH |

### STRUCTURE

| Shape | Height | Diameter |
|---|---|---|
| OVAL | 1-2 M | 0.5-1 M |
| **Texture** | **Shade** | **Root** |
| MEDIUM | LIGHT | SCATTERED |

| | |
|---|---|
| **DIVISION:** | SPERMATOPHYTES |
| **SUBDIVISION:** | ANGIOSPERMS |
| **TYPE:** | DICOTYLEDONS |
| **ORDER:** | LAMIALES |
| **FAMILY:** | LABIATAE |

**VARIETIES**

*AZUREUM*

*PYRAMIDALIS*

### MORPHOLOGY

| | | |
|---|---|---|
| **Trunk** | Bark: SCALY | Color: GRAY |
| **Leaf** | COMPOUND: NO | |
| | HARDNESS: SOFT | |
| EVERGREEN | ARRANGEMENT: OPPOSITE | |
| SIZE: 2-2.5 CM | VENATION: PINNATE | |
| | SHAPE: OVAL | |
| COLOR: US: GREEN | MARGIN: ENTIRE | |
| LS: TOMENTOSE | APEX: ACUTE | |
| TEXTURE: US: SMOOTH | LEAF BASE: DECURRENT | |
| LS: TOMENTOSE | PETIOLE: SHORT | |
| **Flower** | Type: HERMAPHRODITE | Reproduction: HERMAPHRODITE |
| SIZE AND TYPE: 1-2 CM | Flowering: RACEME 5-7CM | Fragrant: YES |
| **Fruit** | Type: NUT | Color: DULL BROWN |
| SIZE: 0.4-0.6 CM | Edible: NO | Fruiting season: SEPT-OCT |
| **Growth** | Rate: MEDIUM | Longevity: 15-25 YEARS |






### ECOLOGY

| | | |
|---|---|---|
| **Climate** | Temperature: -12ºC; H3; Z5 | Drought resistant: YES |
| ALTITUDE: 0-1300 | Sun exposure: SUN | Frost resistant: YES |
| IRRIGATION: MODERATE | | |
| **Soil** | Texture: LOAMY | Salt resistant: YES |
| pH: 5-8.5 | Drainage: MODERATE | Lime resistant: YES |
| FERTILITY: LOW | | |

### USES

| Resistances | | Applications | | | |
|---|---|---|---|---|---|
| COASTAL: | YES | SLOPES: | YES | CARPET: | YES |
| POLLUTION: | YES | RIVERBANKS: | MOD | WINDBREAKER: | YES |
| WIND: | YES | GROUPS: | YES | ISOLATED: | YES |

### POINTS OF INTEREST

Native to the Mediterranean region and reaching as far as the Balkans. In the Iberian peninsula it extends through Extremadura, Castilla la Mancha, Andalusia and Portugal. It is not found in the Balearic Islands. It is naturalized on the Mediterranean coast. It grows in low mountain areas, especially in places where species of evergreen holm oak, mastic, Mediterranean dwarf palm and wild olive trees can be found. It is resistant to most types of soil. Its flowers are bluish white and it is a honey plant.

TYPICAL SPACING FOR HEDGES: 0.3 m

### PLANTING AND PLANT HEALTH

Propagation is easy by seed, bush division and by herbaceous cutting under cover. Admits pruning very well both to shape the plant and to stimulate growth.

### 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 | Height (cm) | Topiary shapes |
|---|---|---|
| CT2 | 10-15 | No |
| CT3 | 15-20 | No |
| CT7 | 20-25 | Yes |
| CT9 | 25-30 | Yes |
| CT10 | 30-40 | Yes |

# VIBURNUM

*Viburnum tinus*

## HEDGE AND TOPIARY

| DURILLO | MARFULL | LAURUSTINUS | LAURIER - TIN |
|---|---|---|---|
| SPANISH | VALENCIAN | ENGLISH | FRENCH |

### STRUCTURE

| Shape | Height | Diameter |
|---|---|---|
| OVAL | 2-4 M | 2-4 M |
| **Texture** | **Shade** | **Root** |
| COARSE | PARTIAL | HORIZONTAL |

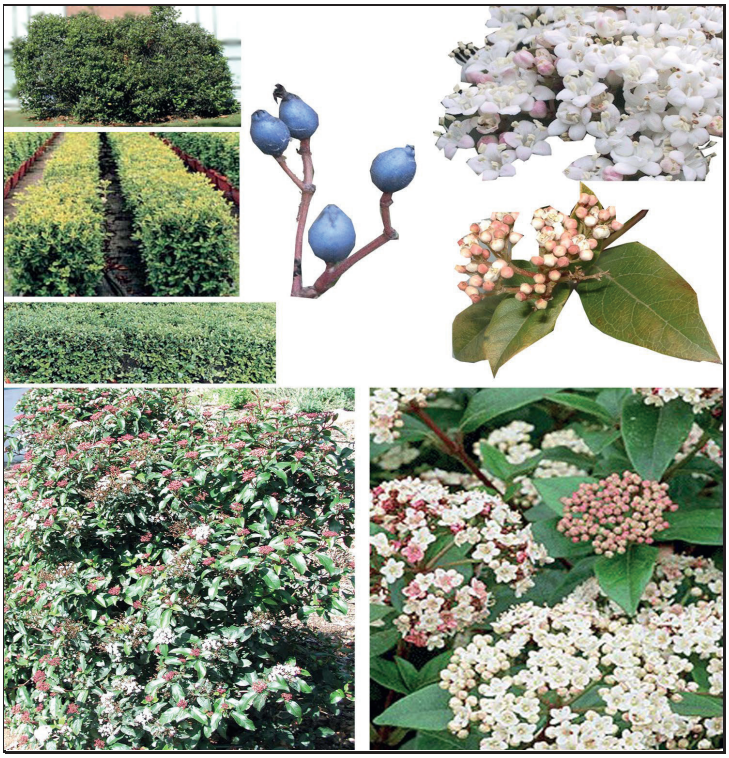
| | |
|---|---|
| **DIVISION:** | SPERMATOPHYTE |
| **SUBDIVISION:** | ANGIOSPERMS |
| **TYPE:** | DICOTYLEDONS |
| **ORDER:** | DIPSACALES |
| **FAMILY:** | CAPRIFOLIACEAE |

### VARIETIES

*COMPACTUM, PURPUREUM*
*EVE PRICE, VARIEGATUM*
*LUCIDUM*
*MACROPHYLLUM*

### MORPHOLOGY

| | | |
|---|---|---|
| **Trunk** | Bark: SMOOTH | Color: RED |
| **Leaf** | COMPOUND: NO | |
| EVERGREEN | HARDNESS: CORIACEOUS | |
| SIZE: 3-10 CM | ARRANGEMENT: OPPOSITE | |
| | VENATION: PINNATE | |
| | SHAPE: OVAL-LANCEOLATE | |
| COLOR: US: DARK GREEN | MARGIN: ENTIRE | |
| LS: GREEN | APEX: ACCUMINATE | |
| TEXTURE: US: ROUGH | LEAF BASE: ROUNDED | |
| LS: ROUGH | PETIOLE: SHORT | |
| **Flower** | Type: HERMAPHRODITE | Reproduction: HERMAPHRODITE |
| SIZE AND TYPE: 0.8-1 CM | Flowering: CYMOSE 8-10 CM | Fragrant: YES |
| **Fruit** | Type: DRUPE | Color: BLACK |
| SIZE: 0.6-0.8 CM | Edible: NO | Fruiting season: SEP-NOV |
| **Growth** | Rate: MEDIUM | Longevity: 50-100 YEARS |



### ECOLOGY

| | | |
|---|---|---|
| **Climate** | Temperature: -17ºC; H2; Z5 | Drought resistant: MODERATE |
| ALTITUDE: 0-1200 | Sun exposure: SUN | Frost resistant: YES |
| IRRIGATION: MODERATE | | |
| **Soil** | Texture: LOAMY/SANDY | Salt resistant: MODERATE |
| pH: 5-8 | Drainage: MODERATE | Lime resistant: MODERATE |
| FERTILITY: MODERATE | | |

### USES

| Resistances | | Applications | | | |
|---|---|---|---|---|---|
| COASTAL: | 2ND LINE | SLOPES: | YES | CARPET: | YES |
| POLLUTION: | YES | RIVERBANKS: | YES | WINDBREAKER: | YES |
| WIND: | YES | GROUPS: | YES | ISOLATED: | YES |

### POINTS OF INTEREST

Although native to the Mediterranean region, it is not prominent in the central part of the Iberian Peninsula. It can be found in shady areas together with holm oaks, strawberry trees and other thick bushes grow. The inflorescence is flat and has a very decorative purplish white color. It is one of the most floriferous and decorative evergreen hedges. It can be used as a formal hedge through pruning and as an informal hedge. In this second case, it may need quite large space. The fruits and leaves have medicinal properties. It is protected in the Balearic Islands (Decree 24/1992, of March 12, B.O.C.A.I.B. of 2-4-1992).

TYPICAL SPACING FOR HEDGES: 1-1.5 m

### PLANTING AND PLANT HEALTH

Planting can take place in its dormant stage and when it is not flowering. Pruning must be done after flowering. Transplanting is not complicated. This species is not prone to serious pests and diseases.

### 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 | Height (cm) | Topiary shapes |
|---|---|---|
| CT3 | 25-40 | Yes |
| CT6 | 50-60 | Yes |
| CT10 | 80-100 | Yes |
| CT40 | 80-100 | Yes |

## Subchapter 9.3 Commercialization, Use and Planting

The general conditions of commercialization and use of hedge species are similar to those in chapters of this book since we can form hedges with trees (deciduous or evergreen leaves), shrubs, medicinal and aromatic plants... Therefore, depending on the type of plant used to form a hedge, we must refer to the corresponding chapter.

### PLANTING

The place where a hedge is going to be planted must be well studied including the appropriate choice of species. When a hedge extends for a long distance, it might find shady and sunny areas and therefore the species cannot be sensitive to either condition. Otherwise, the part of the hedge located in an inadequate place with have a deficient growth and will look unsightly.

Planting must be done in the best conditions, both at the right time (usually with the cold temperatures of late winter) and in early spring.

If small plants are used, they can be supplied in a bare root or container format.

The soil must be adequate for the species and the place where they will be planted should not be waterlogged or have poor drainage. A hedge must be correctly zoned and provided with the best growing conditions: good substrate, adequate irrigation (drip system), periodic fertilization, drainage, without competition in its root system.

**Figure 9.3.1: Plants in containers for hedges. *Laurus nobilis***

### MAINTENANCE: PRUNING

Ornamental shrubs require pruning to achieve either many flowers or a compact shape. To alleviate the effects of pruning, shrubs must be well cared for (free of pests and diseases). This implies that they are well aerated, well-watered and well fertilized.

#### The purpose of pruning

- The aim of formative pruning is to give the bush the desired shape for the purpose we intend whether it is a free-growing shrub or a regular form (low, tall hedge, topiary).

- In adult plants pruning is done to obtain a greater number of flowers, fruits, compactness or if it is a formal hedge, to maintain the shape established in its youthful state.

- Pruning will keep the plant clean of dry branches and rejuvenated through the continuous production of foliage.

- Through the removal of infected branches, pruning can also serve to maintain the health of a diseased plant.

**Figure 9.3.2: Cutting mechanically an informal hedge of *Buxus sempervirens***

**Times for pruning**

There are two typical pruning times: in winter and autumn when plants are dormant or at the beginning of spring to avoid complications due to frost. Summer pruning or green pruning is also possible, which is carried out when the plant is in its vegetative growth from spring to late summer.

In the case of flowery hedges, we must know on what type of wood the flowers grow and the time of flowering. This is important since pruning can impede the flowering process. Those that flower on young wood from that year, are pruned in late winter. Those that flower on old wood from the previous year are pruned after flowering.

**Types of pruning**

*Formative pruning:* This will produce the desired shape and is carried out during the first periods of the plant´s life.

*Maintenance pruning (or regular/selective pruning):* This is the next step once formative pruning has been completed. This will ensure that the hedge keeps the shape required for the project. It must be maintained as set out in the project report: compact green, with flowers or with fruits.

*Green pruning:* This is done while the plant is growing. It is carried out on the growing young parts, either shortening the twigs or trimming them in order to produce secondary branches and thus achieve a compact shape of the bush.

*Rejuvenation pruning:* This can take place when the plant is very old and the aim is to achieve new vegetation. This type of pruning is usually traumatic, and the bush become quite disfigured.

**Pruning cuts**

- The tools use to prune must be sharp and disinfected.

- The cut is made in a bevel a few millimeters from the bud or twig and with an opposite inclination to the bud.

- The cut must be made at the height of a bud or twig that goes outwards or in the direction desired by the professional.

- The cut will be made up to a bud or twig.

- When the buds are opposite, the cut is made up to the height of the two, if we are interested in a particular direction, we would eliminate the bud or twig in the unwanted direction.

- In the case of dry branches, it is necessary to cut up to the height of the first branch or where the first green bud appears.

**Figure 9.3.3: Using a scaffold to prune a hedge**

**CRITERIA FOR PRUNING ACCORDING TO FLOWERING**

**Group 1: Shrubs with flowers in apical buds formed during the same growing period (flowering by the end of spring or summer)**

These shrubs flower in spring or summer at the ends of the shoots or wood of that same year. Since the buds that have flowered will no longer do so, they must be removed so that new ones emerge. Depending on the desired number and size of the flower, it will be pruned in winter at different heights: leaving 2 to 5 buds on the branches of the previous season counted from their base for normal flowering or, if you prefer fewer but larger flowers, leave 2 or 3 buds. These are the buds that will contain the flowers that will sprout in spring.

This group includes species suitable to form flowering hedges or borders such as:

- Adelfa (*Nerium oleander*)
- Hibisco (*Hibiscus rosa-sinensis*)
- Lantana (*Lantana camara*)
- Rosemary (*Rosmarinus officinalis*)
- Veronica (*Hebe sp*.)

*Cleaning:* Eliminate undesirable parts of the plant, preferably in winter however, it can be carried out at any time of the year.

*Pruning for flowering:* Should take place in the winter months, when the intense cold has passed, around mid-February in the Northern Hemisphere. If the climate is warm as in the Mediterranean, it can be done anytime during the winter.

Pruning to promote the yearly growth of flowers can be done together with the cleaning

**Group 2: Shrubs with flowers in lateral or axillar twigs formed during the same growing period (flowering by the end of spring or summer)**

Species in this group that are suitable to form hedges and borders are included below:

- Durillo (*Viburnum tinus*)
- Hydrangea (*Hydrangea macrophylla*)
- Rhododendrun (*Rhododendron sp*.)
- Viburnum (*Viburnum opulus*)

*Cleaning:* Eliminate undesirable parts of the plant, preferably in winter however, it can be carried out at any time of the year.

*Pruning for flowering:* This group of hedges flower very early. The buds at the ends of the previous year's branches are the ones that produce flowers and the rest provide buds or leaves. They should not be pruned in winter, but rather when flowering has finished, since cutting the branches before flowering would eliminate the flower buds. All the branches of the year must be cut just above the second or third bud counted from its base. It is these buds that in the following year will produce a flower at the tip. Pruning to clean can be combined with pruning for flowering. Although it is preferable to do the former in winter (in dormant stage).

**Group 3: Shrubs with flowers in apical buds formed during the previous growing season (flowering in early spring, and some, in early summer)**

Species in this group that are suitable to form hedges and borders are included below:

- Forsythia (*Forsythia sp*.)
- Tamarix tetandra (*Tamarix tetandra*)
- Thymus (*Thymus sp.*)

*Cleaning:* Eliminate undesirable parts of the plant, preferably in winter however, it can be carried out at any time of the year.

*Pruning for flowering:* Plants in this group flower in early spring and flowers sprout from lateral buds of the previous year's branches. Once the flowering is over, the branches must be cut at ground level so that it regrows strongly. Alternatively, the plant can also be lowered to 30 or 40 centimeters from the ground, which also eliminates all the old wood.

**Group 4: Shrubs with flowers in small twigs and branches from the previous growing season (flowering in spring)**

Species from this group that are suitable to form hedges and borders are included below:

- Hawthorn (*Crataegus sp.*)
- Prunus (*Prunus sp*.)

*Cleaning :* Eliminate undesirable parts of the plant, preferably in winter however, it can be carried out at any time of the year.

*Pruning for flowering:* In these species flowering is prior to foliation, the first occurring at the end of winter or at the beginning of spring, in buds on branches that usually are more than 2 years old. It is therefore necessary to maintain these old branches by lightly pruning the terminal branches of the year, which facilitates the appearance of new flower buds. Pruning will be done at the end of winter and before sprouting.

**Pruning hedges that produce fruit**

- English holly (*Ilex aquifolium*)
- Cotoneaster (C*otoneaster spp.*)
- Scarlet firethorn (*Pyracantha coccinea*)
- Japanese Skimmia (*Skimmia japonica*)
- Strawberry tree (*Arbutus unedo*)
- Blackberry (*Rubus spp.*)

The greatest ornamental value of this group lies in its fruits. They require very little pruning and should be carried out in winter. Additionally, every 3 or 4 years a rejuvenation pruning is recommended to reduce intensively the size of the bush.