PLANTS AND PLANTING IN MEDITERRANEAN LANDSCAPES
(VOLUME 1)

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Chapter 6 GROUNDCOVERS

Subchapter 6.1 Introduction

INTRODUCTION

In Tudor England, walkable meadows in garden areas were reclaimed meadows cut with scythes. In the 16th century, they were created with chamomile and grass that, according to a gardener of the time, "the more you stepped on it, the faster it grew." Short-stem aromatic plants became popular in the 17th century and native thyme, mints and chamomiles were frequently used in England. One of the most famous chamomile tapestries in Britain is that of Buckingham Palace, which is mixed with grass and cut with a lawn mower. There, even in the driest summers, *Anthemis nobilis* (Figure 6.1.1) withstands heavy use and maintains its greenness even when the grass has lost it. The best is the *Treneague* variety for its compactness.

Figure 6.1.1: Anthemis nobilis

In today's gardens, land without herbaceous vegetation around trees and shrubs has low aesthetic value, in addition to being prone to weeds resulting in increased maintenance costs. The absence of plant cover also brings with it greater aridity since there is no shade to screen the direct sunlight on the ground and prevent water evaporation. In nature, if soil moisture and fertility are good, it is unusual to see bare land.

Therefore, the introduction of groundcovers is not about establishing walkable meadows throughout the garden, but rather creating a low-height green carpet by using plants that form dense groups and have short stems, or creeping species that cover the ground with their foliage.

On other occasions the situation is different. For example, when there are areas in the garden that, due to excess shade, drought, or humidity, do not allow a lawn to grow correctly. There, a series of non-grass groundcover species can grow and replace the classical meadow although, in some cases, they might not tolerate trampling.

In general, ground cover plants are those species that naturally and without cutting reach a height that ranges between 2 and 30 cm, although in a broader sense they might also include species more than 1 m tall.

They can be annual, biennial or perennial, woody, succulent or herbaceous. Its growth habit can be widely varied and have an extensive or concentrated growth pattern, vigorous or slow development, and different shapes and profiles. We can find deciduous, semi-persistent and evergreen species, conifers, and angiosperms.

Within all the diversity that can be found among groundcover plants, there is one constant characteristic; the abundance of vegetation when the correct species is properly chosen, planted and cultivated. Groundcovers can be ground-hugging plants such as *Saxifraga* and *Thymus*, or low evergreen shrubs such as creeping juniper, *Erica and Cotoneaster horizontalis*. Even the tallest shrubs, such as *Berberis, Choisya, Eleagnus* and *Potentilla*, have low branches thick enough to inhibit most weeds. Other non-woody species with large leaves that cover the ground during the summer are also suitable for this purpose, such as *Hosta, Acanthus* and *Ligularia dentata*.

The best species for dry shade are *Vinca minor* (20 cm), especially the varieties Bowles' Variety or *La Graveana, Coerulea Plena* and *Multiplex*; *Pachysandra terminalis* its *Variegata* form, *P. procumbens, Lysimachia nummularia Aurea* and *Lamium maculatum*. In sun and shade the following species do well: *Coprosma x Kirkilii, Duchesnea indica, Fragaria vesca, Polygonum capitatum* and *Dichondra repens* (deep shade or sun).

In the case of areas with steep slopes, species that retain the soil efficiently should be chosen (*Nepeta spp., Juniperus sabina, "Tamariscifolia"* (50 cm tall) and different varieties of *J. horizontalis* (40 cm), *Cotoneaster horizontalis, C. adpressus* and *C. microphyllus* (10cm), Vinca major (20cm), *Hypericum calycinum* (30 cm)

For places with moist soil, species such as *Cotoneaster dammeri* (30cm), *Lysimachia nummularia* and its "Aurea form", or the creeping *Cornus canadensis* can be chosen; in waterlogged areas, the *Myosotis palustris* and the water clover *Menyanthes palustris* are suitable.

Among the flowering plants, the *Arabis, Auberieta, Epimedium, Tiarella, Nepeta* and *Phlox subulata* are recommended, which give attractive blooms in spring. *Saponaria ocymoides* creeps among rocks and covers bare ground but needs sun and good drainage; the *Hypericum calycinum* is ideal for shady places and soil with some constant humidity; *Galium odoratum (Asperula odorata)* is interesting, as are the creeping species of the Cytisus genus, such as *Cytissus x kewensis* and *C. procumbens*.

Groundcover species with colored foliage can be of interest such as *Heuchera* "Palace Purple," *Pachysandra terminalis* "Variegata" and species of Epimedium, *Juniperus sabina* "Tamariscifolia" (50cm), *V. procumbens* "Nana", *Picea abies* "Procumbens" and yews *Taxus baccata* "Cavendishisi" and T.b. "Procumbens".

Among the deciduous species are *Ajuga reptans* "Variegata" (20cm) with cream variegated foliage, A. r. "Atropurpurea" with purple leaves and the A. r. "Multicolor" or "Rainbow", with bronze, pink and yellow leaves. There is a purple four-leaf clover (*Trifolium repens* "Purpurascens") and *Lamium maculatum* is also of interest.

There are also groundcover plants with silver leaves for sunny and dry places. Among them are *Artemisia schmidtiana* "Nana," *A. brachyloba*, Stachys lanata "Sylver carpet" and *S. byzantina. Cerastium tomentosum* (10cm). In addition, *Nepeta hederaceae* "Variegata" are also highly recommended.

Certain short-stemmed plants resist trampling from time to time, although it should not be abused. Some of the most tolerant are *Sagina glabra* (S. filifera), of which the "Aurea" variety is especially showy. The

Minuartia (*Arenaria or Alsina*) *verna caespitosa* "Aurea" is also recommended. Among the species which prefers moist and well-drained soils we can find *Acaena buchanani* and *A. microphylla* (20cm), *Sedum acre, Phyla nodiflora* (*Lippea repens*) (deciduous), *Armeria caespitosa, Achillea millefolium, Arctotheca calendula* (invasive), *Fragaria chilloensis, Gazania, Grevillea rosmarinifolia, Verbena peruviana, Cotula squalida* and *Mentha pulegium*.

The *Dichondra repens* is noteworthy as it can withstand light trampling. It is a non-grass species with small, rounded leaves that can cover large surfaces with a 5 to 10 cm high carpet. It is not recommended in cold areas (resists up to -9 ºC).

Figure 6.1.2. *Dichondra*.

Other groundcover species such as: *Pachysandra, Hedera, Lysimachia nummularia, Chysanthemum (Tanacetum) haradjanii, Erigeron harvinskianus* (*E. mucronatus*) cannot tolerate trampling. Species such as *Frankenia laevis* and *Campanula cochleariifolia* (*C. pusilla*) also form attractive carpets however they also cannot tolerate trampling.

Also recommended are *Raoulia hookeri, R. australis* and *R. tenuicaulis, Gypsophila repens* "Fratensis" and *Globularia meridionalis (G. bellidifolia)*, which grow well on limestone soils. *Parochetus communis* is suitable for moist, shady gardens.

The following species are suitable for the Mediterranean garden and form a carpet with an irregular surface: *Achillea tomentosa, Baccharis pilularis, Felicia amelloides, Helianthemum nummularium, Lantana montevidensis, Lithiodora diffusa, Osteospermum fruticosum, Pelargonium tomentosum* and *Teucrium chamaedrys.*

The "cushion-like" species used in Mediterranean gardens are usually plants that require special drainage: *Aurinia saxatilis, Ballota, Cerastium, Dianthus deltoides, Erigeron karvinskianus, Iberis saxatilis, I. sempervirens, Lavandula, Phylica ericoides, Rosmarinus officinalis* "Prostratus," *Santolina spp.* and the *Verbena tenuisecta*, (very tolerant to drought).

Some species recommended for the Mediterranean garden have bushy growth and are between 20 and 40 cm tall: *Arctostaphylos hookeri* "Monterrey Carpet", *Ceanothus thyrsiflorus* var. *repens* (100cm) and *Cotoneaster dammeri* "Lowfast".

In addition to those mentioned in previous paragraphs, there are also climbers and twiners that are excellent groundcovers in Mediterranean gardens, such as: *Macfadyena (Doxantha) unguis-cati, Hardenia violacea,*

Lonicera japonica, L. pileata, Pelargonium peltatum, Trachelospermum jasminoides and *Tropaeolum majus* for full sun, *Vinca difformis and Ficus repens* for sun and shade, and *x Fatsedara lizei* for shade.

Other groundcover species that are suitable for Mediterranean gardens are: *Carissa grandiflora* "Postrata," *Coprosma repens, Cornus canadensis, Ostheosporum (Dimorphoteca) repens, Euonymus fortunei, Hypericum x moserianum, Lamium maculatum, Lysimachia nummularia, Drosanthemum spp, Aptenia cordifolia, Muehlembeckia complexa, Myoporum parvifolium, Nepeta x faasenii, Ophiopogon japonicus, O. jaburan, Verbena radicans, V. repens.* The succulent species *Lampranthus spp., Carpobrotus spp.* are also interesting species.

Many varieties of thyme can be used as groundcovers, all of which are evergreen, aromatic and with white, pink or red flowers. Thyme masses or clumps can be made using one or several of its species such as: *Thymus serphyllum (T. drucei)*, mainly its "Pink Chintz" and "Snowdrift" varieties, *T. X citriodorus* "Aureus" (20cm in size) and the variegated form "Silver Queen", *T. herba-barona*, and *T. drucei var*. pseudolanuginosus.

Species such as: *Saxifraga paniculata (S. aizoon) S. burseniana*, S. x "Jenkinsae" and *Oxalis magellanica* are ideal for shaded areas.

The following groundcover plants are also of special interest: *Cotoneaster dammneri* "Major" (10 cm high), *C. microphyllus* "Streib´s Finding" (10cm), *C.salicifolius* var. *repens* (20cm), *Hedera helix* "Shamrock"(20cm), *Rosa* "Snow carpet"(10cm), *Rubus* "Betty Ashurner"(30cm), *Rubus tricolor* (30cm), *Juniperus horizontalis* "Andorra Compacta" (40cm), *J. squamata* "Blue carpet"(30cm), *Acaena microphylla* (20cm), *Alyssum saxatile* (20cm), *Arabis blepharophylla* (10cm), *Festuca glauca* (30cm), *Polygonum affine* (30cm), *Sagina subulata* (10cm) and *Salvia officinalis* "Purpuracens" (30cm).

TYPOLOGY OF GROUNDCOVER PLANTS

In the following figures 6.1.3 and 6.1.4 we can appreciate the different types of groundcover plants.

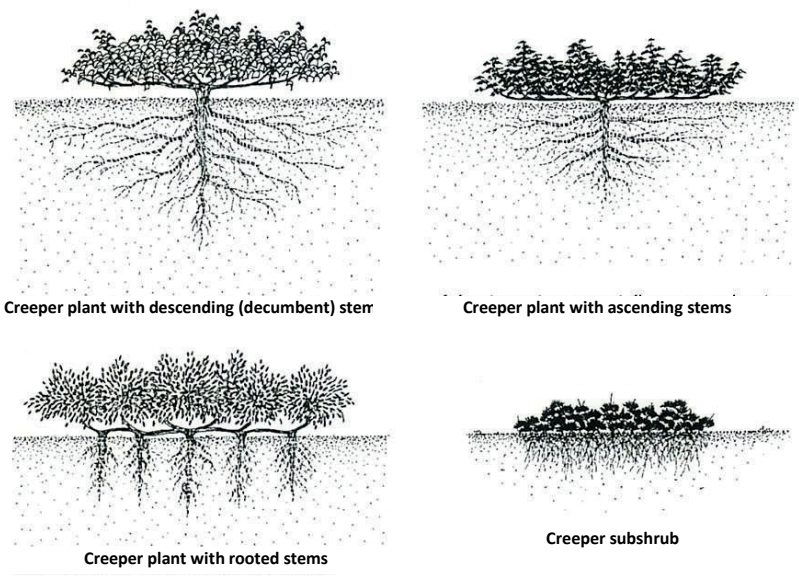


Figure 6.1.3: Types of groundcovers plants I (NTJ 07J C.O.I.T.A.P.A.C.)

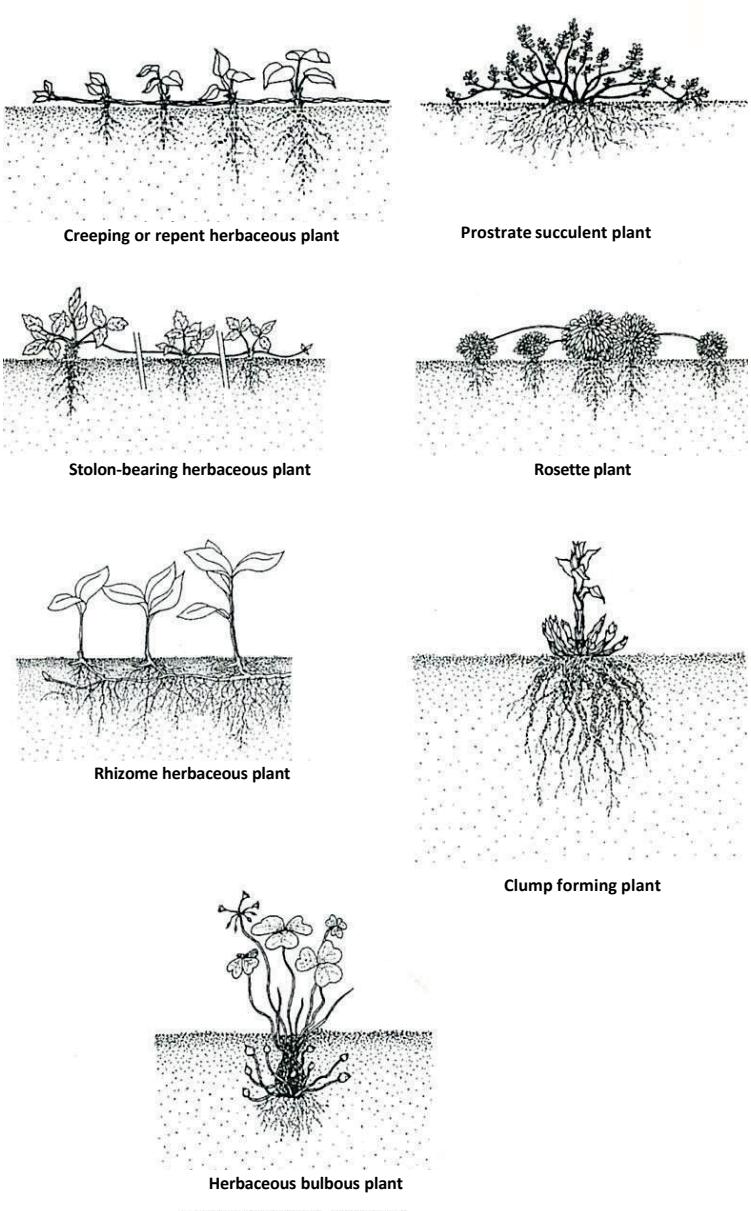


Figura 6.1.4: Types of II (NTJ 07J C.O.I.T.A.P.A.C.)

ADVANTAGES OF USING GROUNDCOVERS AND CREEPERS

Soil

They improve the stabilization of sloping soils, preventing erosion. They increase the porosity of the soil and prevent compaction, in addition to enriching it with organic matter from its plant residues.

Maintenance

The maintenance of most groundcover plants is notably cheaper than that of lawns, both in open areas and in areas that are difficult for machinery to access (patios, large halls in commercial areas, street medians, patches of garden at the foot of trees or shrubs, places with steep slopes...) In addition, these plants save irrigation water by reducing the evaporation of soil moisture.

Aesthetic

Groundcover plants, properly chosen and planted together, can unify compositions including different materials. They also serve to soften angular built elements (paths, facades, enclosures) and better integrate them into the greenery of the garden.

The perception of dimensions in the garden can be modified through a careful selection and use of groundcovers, choosing them according to their textures and colors. Small textures and neutral or cold colors increase the feeling of amplitude and big textures and warm colors have the opposite effect.

The considerable number of groundcover species create and endless number of combinations thus avoiding monotonous or repeated a landscape designs.

Recommendations

1- Using too many species in a composition with groundcovers should be avoided. Ideally only one or few species should be used, even for big areas.

2- In general, the species with larger leaves should be planted in parks or garden areas where the scale is greater, and those with small leaves in small gardens or in secluded corners.

3- The soil, irrigation, temperature, and lighting needs of the groundcover plants and the other species that will form the set must be considered, and the choice must be made based on the compatibility of the ecological requirements of each species.

Subchapter 6.2 Species

This chapter outlines **18 species of groundcover plants** used in landscape design. They have been selected primarily for their ornamental use, botanical interest, or other characteristics. As a result, an in-depth analysis is carried out in this subchapter.

Firstly, a table shows the different parameters and values that have been used to describe each species in its specific botanic datasheet.

Each datasheet describes for each species its botanical and ecological aspects, uses, cultivation, and other characteristics of interest, including its commercialization. This information is complemented by photographic information, which shows the general appearance of the species and different morphological details.

PARAMETERS AND VALUES USED IN THE BOTANIC DATASHEET	
TAXONOMY	
TAXONOMIC RANKS	DIVISION, SUBDIVISION, TYPE, ORDER, FAMILY
VARIETIES	OTHER VARIETIES OF INTEREST
STRUCTURE	
SHAPE	ROUNDED, OVAL, COLUMNAR, CONE, EXTENDED, IRREGULAR, PARASOL, FAN-SHAPED, HORIZONTAL, PALMIFORM, PENDULAR, HERBACEOUS, GRAMINOID
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, SCATTERED, 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
COMPOUNDS	NO COMPOUND LEAVES YES. COMPOUNDS: IMPARIPINNATE, PARIPINNATE, TRIFOLIATE, PALMATE, PALMIFORM, PALM, PINNATE, BIPINNATE
HARDNESS	CORIACEOUS, SOFT, SUCCULENT, HARD, SUB CORIACEOUS
ARRANGEMENT	OPPOSITE, ALTERNATE, ROSETTE, VERTICAL
VENATION	PINNATE, PALMATE, PARALLEL, RETICULATE, SCALY, 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
LEAF MARGIN	ENTIRE, CILIATE, DENTATE, CRENATE, SERRATED, DOUBLE SERRATED, LOBED, DOUBLE LOBED
APEX	ACUTE, CUSPIDATE, OBTUSE, RETUSE,
LEAF BASE	ATTENUATE, CORDATE, ROUNDED, ASYMMETRIC
PETIOLE	LONG, SHORT, SESSILE, WIDE
FLOWER	
SIZE	HERMAPHRODITE (MALE/FEMALE FLOWERS): (CM OR MM)
TYPE	UNISEXUAL, 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, PINE CONE
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 **CLASSIFICATION ACCORDING TO EUROPEAN REGULATION**: (SEE MAP) G2____ HOT GREENHOUSES IN SOUTHERN EUROPE G1____ COLD GREENHOUSES IN SOUTHERN EUROPE H5____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM OºC TO -5ºC H4____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -5ºC TO -10ºC H3____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -10ºC TO -15ºC H2____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -15ºC TO -20ºC H1____ THE PLANT SUPPORTS MINIMUM TEMPERATURES FROM -20 **CLASSIFICATION INTERNATIONAL REGULATIONS.** ACCORDING TO MINIMUM TEMPERATURE RANGES Z1____SUPPORT MINIMUM TEMPERATURES OF -50ºC Z2____ SUPPORT MINIMUM TEMPERATURES OF -50ºC TO -40ºC Z3____ SUPPORT MINIMUM TEMPERATURES OF -40ºC TO -30ºC Z4____ SUPPORT MINIMUM TEMPERATURES OF -30ºC TO -20ºC Z5____ SUPPORT MINIMUM TEMPERATURES OF -20ºC TO -10ºC Z6____ SUPPORT MINIMUM TEMPERATURES OF -10ºC TO -0ºC Z7____ SUPPORT MINIMUM TEMPERATURES OF -0ºC TO 10ºC Z8____ SUPPORT MINIMUM TEMPERATURES OF 10ºC TO 20ºC Z9____ SUPPORT MINIMUM TEMPERATURES OF 20ºC TO 30ºC Z10___ SUPPORT MINIMUM TEMPERATURES OF 30ºC TO 40ºC 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, 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	1ST LINE, 2ND LINE, NO.
POLLUTION	HIGH, MODERATE, LOW
WIND	HIGH, MODERATE, LOW
APPLICATIONS	

IN SLOPES CLIMBERS HANGING PAVEMENTS 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

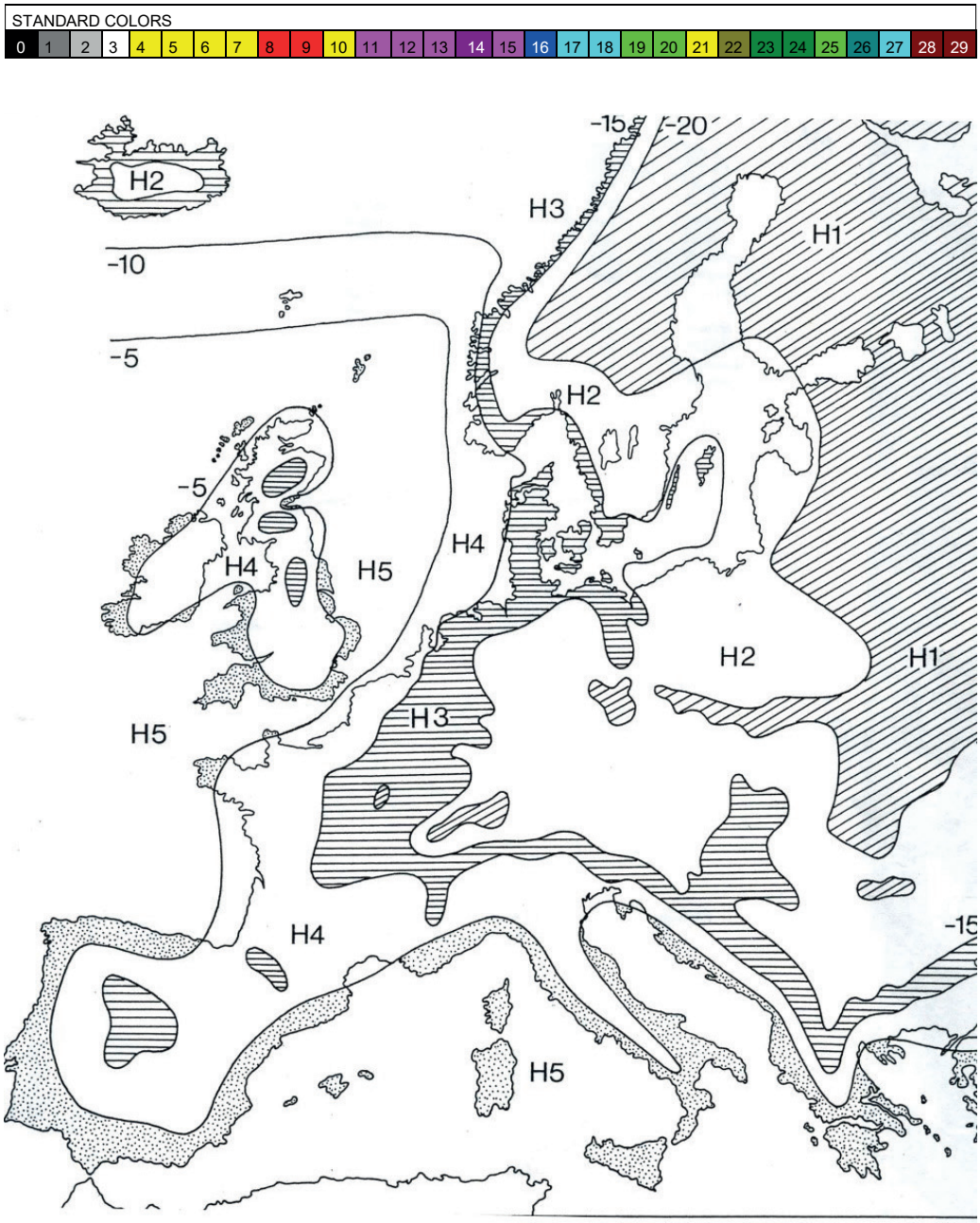


Figure 6.2.1: Thermal classification map according to European regulations

LIST OF GROUNDCOVER SPECIES DESCRIBED

1. *Aptenia cordifolia*
2. *Asparagus densiflorus*
3. *Carpobrotus acinaciformis*
4. *Carpobrotus edulis*
5. *Cerastium tomentosum*
6. *Drosanthemum floribundum*
7. *Felicia amelloides*
8. *Festuca cinerea*
9. *Gazania x hybrida*
10. *Hedera helix*
11. *Hypericum calycinum*
12. *Lampranthus aureus*
13. *Lampranthus spectabilis*
14. *Lantana montevidensis*
15. *Lobularia maritima*
16. *Ophiopogon japonicus*
17. *Verbena x hybrida*
18. *Vinca Major*

APTENIA

GROUND COVER

Aptenia cordifolia

APTENIA (SPANISH) | VALENCIAN | ROCK ROSE (ENGLISH) | APTENIA (FRENCH)

STRUCTURE		
Shape: EXTENDED	Height: 0.05-0/20 M	Diameter: 4-6 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	CARYOPHYLLACEAE
FAMILY:	AIZOACEAE

VARIETIES
RED APPLE
VARIEGATA
SUNNY SUE

MORPHOLOGY

Stem: UNDERG NO; CREEPING YES; WOODY NO; CLIMBING NO

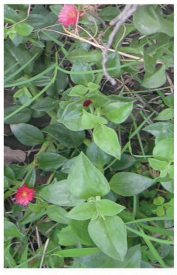
Leaf: EVERGREEN; SIZE: 1.5-5.5 CM; COLOR: US:GREEN, LS:GREEN; TEXTURE: US: SMOOTH, LS: SMOOTH
COMPOUND: NO; HARDNESS: FLESHY; ARRANGEMENT: OPPOSITE; VENATION: PINNATE; SHAPE: OVATE; MARGIN: ENTIRE; APEX: ACUTE; LEAF BASE: ATTENUATE; PETIOLE: SHORT

Flower: SIZE: 1 CM
Type: HERMAPHRODITE; Reproduction: HERMAPHRODITE; Flowering; Fragrant: NO

Fruit: SIZE:
Type: CAPSULE; Color; Edible; Fruiting season

Growth
Rate: MODERATE; Longevity: VIGOROUS





ECOLOGY

Climate: ALTITUDE: 0-200; IRRIGATION: LOW
Temperature: 0ºC,H5,Z7; Drought resistant: MODERATE; Sun exposure: FULL SUN; Frost resistant: NO

Soil: pH: 6.5-8; FERTILITY: MODERATE
Texture: LOAMY/SANDY; Salt resistant: MODERATE/HIGH; Drainage: HIGH; Lime resistant: MODERATE

USES

Resistances: COASTAL: YES; POLLUTION: MODERATE; WIND: MODERATE

Applications: SLOPES: YES; CREEPER: NO; HANGING: YES; + PAVEMENT: NO; ISOLATED: YES

POINTS OF INTEREST

Succulent ground cover plant with bright green fleshy leaves and profuse flowering. It densely covers the ground and has a tendency to branch abundantly, which makes it especially suitable for covering walls and slopes. Due to its resistance to the coastal environment, it makes it an ideal species in coastal gardens. The natural density of the carpet inhibits the development of weeds.

SPACING: 0.50 M

PLANTING AND PLANT HEALTH

Despite its resistance to drought, it needs a regular irrigation programme and well-drained soil. Given its sensitivity to frost, in cold areas it is convenient to protect the area of the garden where it is located or plant cuttings in protected pots to transplant the following spring. Despite its rusticity in terms of soil, it is convenient to fertilize lightly in autumn and spring with any type of organic fertilizer.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season

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

Cultivation Calandar

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 (L)	Length (m)	Topiary shapes
CT(2)		
CT(3)		

ASPARAGUS *Asparagus densiflorus*

GROUND COVER

ESPARRAGUERA AFRICANA (SPANISH) | VALENCIAN | SPRENGUER'S ASPARAGUS FERN (ENGLISH) | ASPARAGUS (FRENCH)

STRUCTURE

Shape	Height	Diameter
EXTENDED	1-2 M	1-2 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOYILEDONS
ORDER:	ASPARAGACEAES
FAMILY:	ASPARAGACEAE

VARIETIES
SPRENGERI

MORPHOLOGY

Stem
UNDERG CREEPING: NO / YES
WOODY: NO
CLIMBING: NO

Leaf
EVERGREEN (CLADODES)
SIZE: 0.5-1.5 CM
COLOR: US: GREEN; LS: GREEN
TEXTURE: US: SMOOTH; LS: SMOOTH

COMPOUND:	NO
HARDNESS:	SOFT
ARRANGEMENT:	VERTICILATE
VENATION:	
SHAPE:	LINEAR
MARGIN:	SMOOTH
APEX:	ACUTE
LEAF BASE:	ATTENUATE
PETIOLE:	SESSILE

Flower
SIZE: 0.2-0.5 CM

Type	Reproduction
HERMAPHRODITE	HERMAPHRODITE
Flowering	Fragrant
	NO

Fruit
SIZE:

Type	Color
BERRY	RED
Edible	Fruiting season

Growth

Rate	Longevity
MODERATE	VIGOROUS

ECOLOGY

Climate
ALTITUDE: 0-400
IRRIGATION: MOD/HIGH

Temperature	Drought resistant
0ºC,H5,Z7	NO
Sun exposure	Frost resistant
SHADE	NO

Soil
pH: 6.5-7.5
FERTILITY: MODERATE

Texture	Salt resistant
LOAMY	NO
Drainage	Lime resistant
MODERATE	MODERATE

USES

Resistances		Applications			
COASTAL:	LOW	SLOPES:	YES	HANGING:	YES
POLLUTION:	LOW	CLIMBERS:	YES	+PAVEMENTS:	NO
WIND:	MODERATE			ISOLATED:	YES

POINTS OF INTEREST

Originally from Southern Africa and tropical Asia, in their natural state, asparagus grows as climbers supported by larger plants. Of the many species that make up the genus, only a few are used for their ornamental value. In general, they are very easy to grow species, adaptable to the outdoors. Its feathery appearance always stands out especially if used as a hanging plant.

SPACING: 0.50-1 M

PLANTING AND PLANT HEALTH

Not demanding in environmental humidity. However, they are not resistant to dry environments. They prefer moderate temperatures, although they tolerate notable differences. Branches will yellow in poor lighting or direct sunlight. They are rustic in terms of soils but appreciate a spring-summer fertilization and a moderate irrigation programme. In the spring, the clumps can be divided by arranging them in new smaller pots.

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 (L)	Diameter (cm)	Topiary shapes
CT(2)	15	
CT(3)	18	
CT(7)	22	
CT(10)	24	
CT(30)	36	

CARPOBROTUS

GROUND COVER

Carpobrotus acinaciformis

FLOR DEL CUCHILLO (SPANISH) | VALENCIAN | ELANDS SOURFIG (ENGLISH) | GRIFFE, DOIGT DE SORCIÈRE (FRENCH)

STRUCTURE		
Shape: EXTENDED	Height: 0.15 M	Diameter: 4-6 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOYILEDONS
ORDER:	CARYOPHYLLACEAE
FAMILY:	AIZOACEAE

VARIETIES

MORPHOLOGY

Stem	UNDERG: NO / CREEPING: YES	WOODY: NO / CLIMBING: NO
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: FLESHY	
SIZE: 9 CM	ARRANGEMENT: OPPOSITE	
	VENATION:	
	SHAPE: CYLINDRICAL/CURVED	
COLOR: US:GREEN	MARGIN:	
LS:GREEN	APEX: POINTED	
TEXTURE: US:SMOOTH	LEAF BASE: ROUNDED	
LS:SMOOTH	PETIOLE: SESSILE	
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 12 CM	Flowering	Fragrant: NO
Fruit	Type: CAPSULE	Color
	Edible	Fruiting Season
SIZE:		
Growth	Rate: FAST	Longevity: VIGOROUS

FERTILITY:

Climate	Temperature: 0ºC,H5,Z7	Drought resistant: MODERATE
ALTITUDE: 0-200	Sun exposure: FULL SUN	Frost resistant: NO
IRRIGATION: LOW	Texture: LOAMY/SANDY	Salt resistant: YES
Soil	Drainage: HIGH	Lime resistant: MODERATE
pH: 6.5-8		
FERTILITY: MODERATE		

USES

Resistances		Applications			
COASTAL:	YES	SLOPES:	YES	HANGING	YES
POLLUTION:	MODERATE	CLIMBERS:	NO	+PAVEMENTS:	NO
WIND:	MODERATE			ISOLATED:	YES

POINTS OF INTEREST

Native to South Africa. With succulent foliage and creeping branched stems, it is used as an extensive ground cover for dunes and sandy areas. Its high water content makes it heavy and as a result, can be slippery on very sloping ground. It has attractive flowers of variable colors although pink-yellow tones predominate. They produce an edible fruit. Its fast growth and low irrigation programme make it a great value in gardening. However, its invasive nature and its naturalization have made it a threat to the local flora in coastal and dune areas. Given its high water content, it is an excellent fire retardant. The species *Carpobrotus acinaciformis* is used, fundamentally, for terracing of landscaped rocky areas and in dune areas for the protection of the "mounds". In general, this species is widely distributed throughout the Andalusian coast.

SPACING: 0.50 M

PLANTING AND PLANT HEALTH

This species of groundcover needs good lighting, sunny exposure, temperate climate (although it can tolerate frost). It accepts all type of soil and is resistant to salt.

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	Length (cm)	Topiary shapes
CT	15	
CT	20	

CARPOBROTUS *Carpobrotus edulis*

GROUND COVER

UÑA DE GATO/LEON (SPANISH) | VALENCIAN | HOTTENTOT FIG (ENGLISH) | GRIFFES DE SORCIÉRE (FRENCH)

STRUCTURE		
Shape: EXTENDED	Height: 0.15 M	Diameter: 4-6 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOYILEDONS
ORDER:	CARYOPHYLLACEAE
FAMILY:	AIZOACEAE

VARIETIES

MORPHOLOGY		
Stem	UNDERG: NO; CREEPING: YES	WOODY: NO; CLIMBING: NO
Leaf	COMPOUND: NO; HARDNESS: FLESHY; ARRANGEMENT: OPPOSITE; VENTATION:	SHAPE: CYLINDRICAL/CURVED; MARGIN: SMOOTH; APEX: SHARP; LEAF BASE: ROUND; PETIOLE: SESSILE
EVERGREEN; SIZE: 4-13 CM; COLOR: US:GREEN LS:GREEN; TEXTURE: US:SMOOTH LS:SMOOTH		
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 8-10 CM	Flowering: FLORET	Fragrant: NO
Fruit	Type: CAPSULE	Color
SIZE:	Edible: YES	Fruiting Season
Growth	Rate: FAST	Longevity: VIGOROUS

ECOLOGY		
Climate	Temperature: 0ºC,H5 ,Z7	Drought resistant: TOLERANT
ALTITUDE: 0-200; IRRIGATION: LOW	Sun exposure: FULL SUN	Frost resistant: NO
Soil	Texture: LOAMY/SANDY	Salt resistant: YES
pH: 6.5-8; FERTILITY: LOW	Drainage: HIGH	Frost resistant: YES

USES		
Resistances	Applications	
COASTAL: YES	SLOPES: YES	HANGING: YES
POLLUTION: MODERATE	CLIMBERS: NO	+PAVEMENT: NO
WIND: MODERATE		ISOLATED : YES

POINTS OF INTEREST

Originally from South Africa. With succulent foliage and creeping branched stems, it is used as an extensive ground cover for dunes and sandy areas. Its high water content makes it heavy and as a result, can be slippery on very sloping ground. It has attractive flowers of variable color although pink-yellow tones predominate. They produce an edible fruit. Its fast growth rate and its low irrigation programme makes it a great value in gardening. However, its invasive nature and its naturalization has made it a threat to the local flora in coastal and dune areas. Given its high water content, it is an excellent fire retardant.

PLANTING AND PLANTING HEALTH

It needs good lighting, sunny exposure, temperate climate, although it can tolerate frost. This species accepts all types of soil and is very resistant to salinity.

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

ENE	FEB	MAR	ABR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC

Fungicides | Pesticides | Fertilizers

COMMERCIALIZATION

Presentation	Length (cm)	Topiary shapes
CT	15	
CT	20	

CERASTIUM

Cerastium tomentosum

GROUND COVER

ROCALLA BLANCA (SPANISH) · VALENCIAN · SNOW IN SUMMER (ENGLISH) · CERAISTE VELU (FRENCH)

STRUCTURE		
Shape: ROUND	Height: 0.15-0.20 M	Diameter: 0.25-0.30 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	CARYOPHYLLALES
FAMILY:	CARYOPHYLLACEAE

VARIETIES

MORPHOLOGY

Stem	UNDERG: YES; CREEPING: YES	WOODY: NO; CLIMBING: NO
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: SOFT	
SIZE: 1-3 CM	ARRANGEMENT: OPPOSITE	
	VENATION: PINNATE	
	SHAPE: LINEAR-LANCEOLATE	
COLOR: US:DULL GRAY LS:DULL GRAY	MARGIN: OVAL/CURVED AT ENDS	
	APEX: ACUTE	
TEXTURE: US:TOMENTOSE LS:TOMENTOSE	LEAF BASE: ATTENUATE	
	PETIOLE: SHORT	
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 2.5 CM	Flowering: ISOLATED	Fragrant: NO
Fruit	Type: CAPSULE	Color
SIZE:	Edible	Fruiting Season
Growth	Rate: FAST	Longevity: VIGOROUS

ECOLOGY

Climate	Temperature: 0ºC, H5, Z7	Drought resistant: MODERATE
ALTITUDE: 0-200	Sun exposure: FULL SUN	Frost resistant: NO
IRRIGATION: MODERATE		
Soil	Texture: LOAMY	Salt resistant: NO
pH: 6.5-7.5	Drainage: HIGH	Lime resistant: YES
FERTILITY: POOR		

USES

Resistances		Applications			
COASTAL:	MODERATE	SLOPES:	YES	HANGING:	NO
POLLUTION:	MODERATE	CLIMBERS:	NO	+PAVEMENT:	NO
WIND:	MODERATE			ISOLATED:	YES

POINTS OF INTEREST

This species of cerastium produces numerous thin shoots. Tomentose refers to the silky, silvery, frizzy and entangled hairs that cover the leaves. It develops in tight clusters that grow adapting to the shape of the land or fall like vegetable hair if they are planted on top of a low wall or in some type of container. It is suitable for marginal areas of the garden, between rocks or on slopes. It produces a special effect on the top of stone walls or growing on the edges or between the steps of a staircase. It is ideal for framing a path made with stone slabs. It can also be planted in flower boxes on terraces and balconies.

SPACING: 0.30 M

PLANTING AND PLANT HEALTH

It needs permeable and well-drained soil. In areas that are too dry and hot, it requires complementary weekly irrigations. It grows best in alkaline soils that are poor in nutrients, which helps maintain the gray color of its leaves. To densify its growth prune after flowering. Propagation is simple by dividing the bushes in autumn or spring and by means of non-flowering cuttings taken in early or late summer.

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 (L)	Length (cm)	Topiary shapes
CT(2)	15	

DROSANTHEMUM

GROUND COVER

Drosanthemum floribundum

MESEM PENDULA, ROCIO ROSA (SPANISH) | VALENCIAN | PURPLE CARPET (ENGLISH) | DROSANTHÈME FLORIFÈRE (FRENCH)

STRUCTURE		
Shape: EXTENDED	Height: 0.05-0.10 M	Diameter: 0.6-2 M
		Root: SCATTERED

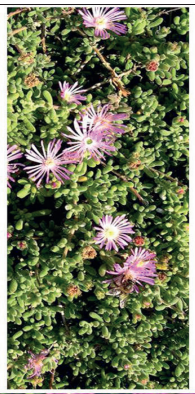
DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	CARYOPHYLLACEAE
FAMILY:	AIZOACEAE

VARIETIES

MORPHOLOGY

Stem	UNDERG: NO; CREEPING: YES	WOODY: NO; CLIMBING: NO
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: FLESHY	
SIZE: 0.7-1.2 CM	ARRANGEMENT: OPPOSITE	
	VENATION:	
	SHAPE: CYLINDRICAL	
COLOR: US:GREEN/GRAY	MARGIN: SMOOTH	
LS:GREEN/GRAY	APEX: ROUND	
TEXTURE: US:TOMENTOSE	LEAF BASE: ROUND	
LS:TOMENTOSE	PETIOLE: SHORT	
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 2-3.5 CM	Flowering: FLORET	Fragant: NO
Fruit	Type: CAPSULE	Color
SIZE:	Edible	Fruiting season
Growth	Rate: FAST	Longevity: VIGOROUS






ECOLOGY

Climate	Temperature: 0ºC,H5,Z7	Drought resistant: MODERATE
ALTITUDE: 0-200	Sun exposure: FULL SUN	Frost resistant: NO
IRRIGATION: LOW		
Soil	Texture: LOAMY/SANDY	Salt resistant: MODERATE/HIGH
pH: 6.5-8	Drainage: HIGH	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES

Resistances		Aplicaciones			
COASTAL:	YES	SLOPES:	YES	HANGING:	YES
POLLUTION:	MODERATE	CLIMBERS:	NO	+PAVEMENT:	NO
WIND:	MODERATE			ISOLATED:	YES

POINTS OF INTEREST

This species is both botanically and morphologically related with those of the genus *Lampranthus*. Its name comes from the Greek words "Drosos" meaning dew and "Anthos" flower, referring to the luminous appearance of many of the species of the genust that "collect" the morning dew on its tomentose leaves. It is the ideal plant to cover coastal gardens in hot summer areas. Normally, the flowers that give it the nickname of "purple carpet" open at noon and close again in the afternoon, except on gray days, when they remain closed. An individual plant can cover up to 2 m^2 during its 5 to 7 years of life. Trimming after flowering allows it to maintain its compactness.

SPACING: 0.50 M

PLANTING AND PLANT HEALTH

A very hardy species, this plant resists heat, frost and drought in any type of garden, except in clay soils. They can be propagated by rooted twigs or cuttings, although they usually propagate by seed.

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	Length (cm)	Topiary shapes

FELICIA

Felicia amelloides

GROUND COVER

MARGARITA AZUL SPANISH | VALENCIAN | BLUE DAISY ENGLISH | MARGUERITE DU CAP FRENCH

STRUCTURE		
Shape: ROUND/EXTENDED	Height: 10-25 CM	Diameter: 1-2 M
		Root: SCATTERED

DIVISION:	PHFANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOYILEDONS
ORDER:	ASTERALES
FAMILY:	COMPOSITAE

VARIETY
JOLLY (DWARF)

MORPHOLOGY		
Stem	UNDERG: NO	WOODY: NO
	CREEPING: YES	CLIMBING: NO
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: SOFT	
SIZE: up to 3CM	ARRANGEMENT: ALTERNATE	
	VENATION: PINNATE	
	SHAPE: OBLONG	
COLOR: US:GREEN LS:GREEN	MARGIN: ENTIRE	
	APEX: ACUTE	
TEXTURE: US:SMOOTH LS:SMOOTH	LEAF BASE: ATTENUATE	
	PETIOLE: SESSILE	
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE:	Flowering:	Fragrant: NO
INFLORESCENCE IN FLORET (4CM)		
Fruit	Type: ACHENE	Color:
SIZE:	Edible:	Fruiting season:
Growth	Rate: MODERATE	Longevity: VIGOROUS

ECOLOGY		
Climate	Temperature: 0ºC	Drought resistant: NO
ALTITUDE: 0-400	Sun exposure: SUN/PARTIAL SHADE	Frost resistant: NO
IRRIGATION: MOD/HIGH		
Soil	Texture: LOAMY	Salt resistant: NO
pH: 6.5-7.5	Drainage: MODERATE	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES		
Resistances	Applications	
COASTAL: LOW	SLOPES: YES	HANGING: NO
POLLUTION: LOW	CLIMBERS: NO	+PAVEMENT: NO
WIND: MODERATE		ISOLATED: YES

POINTS OF INTEREST

Native to South Africa. It is commonly known as the blue daisy. It is a spreading shrub that quickly covers the ground and nearby plants. It blooms all year. It can live indoors but is usually planted in gardens in full sun, in pots, on balconies or hanging baskets. The flower remains closed on cloudy days. The cut of the first flowers allows to have a second flowering at the beginning of autumn. The "Jolly" variety is dwarf.

SPACING: 0.30-0.50 M

PLANTING AND PLANT HEALTH

Trimming the blue daisy favors more intense flowering and compact growth (severe pruning in summer). It accepts most types of soil and is resistant to drought. This species is suitable for sunny coastal locations both in the garden and in a pot. It is easily propagated with cuttings or seeds. It requires a moderate irrigation programme as well as light, well-drained soils.

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	Length (cm)	Topiary shapes

FESTUCA

Festuca cinerea

GROUND COVER

FESTUCA (SPANISH)	VALENCIAN	BLUE FESCUE (ENGLISH)	FÉTUQUE BLEUE (FRENCH)

STRUCTURE

Shape	Height	Diameter
GRAMINOID/GRAMINEAE	0.10-0.12 M	20-25 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	POALES
FAMILY:	GRAMINAE

VARIETIES

MORPHOLOGY

Stem: UNDERG NO; CREEPING NO; WOODY NO; CLIMBING NO

Leaf: EVERGREEN; SIZE: 10-12 CM; COLOR: US:LIGHT BLUE, LS:LIGHT BLUE; TEXTURE: US: SMOOTH, LS: SMOOTH

COMPOUND:	NO
HARDNESS:	SOFT
ARRANGEMENT:	
VENATION:	LINEAR
SHAPE:	LINEAR
MARGIN:	ENTIRE
APEX:	ACUTE
LEAF BASE:	ATTENUATE
PETIOLE:	SESSILE

Flower: SIZE:

Type	Reproduction
HERMAPHRODITE	HERMAPHRODITE
Flowering: INFLORESCENCE IN SPIKE (30 MM)	Fragrant: NO

Fruit: SIZE:

Type	Color
Edible	Fruiting season

Growth

Rate	Longevity
MEDIUM	VIGOROUS

ECOLOGY

Climate: ALTITUDE: 0-400; IRRIGATION: MODERATE

Temperature	Drought resistant
-5ºC	YES
Sun exposure	Frost resistant
SUN/PARTIAL SHADE	MODERATE

Soil: pH: 6.5-8; FERTILITY: MODERATE

Texture	Salt resistant
LOAMY	NO
Drainage	Lime resistant
HIGH	MODERATE

USES

Resistances		Applications			
COASTAL:	YES	SLOPES:	YES	HANGING:	NO
POLLUTION:	MODERATE	CLIMBERS:	NO	+PAVEMENT:	NO
WIND:	YES	GROUPS:	YES	ISOLATED:	YES

POINTS OF INTEREST

This species is known for its exotic icy blue color that thrives in summer months and is ideal as an ornamental grass. Perfect as a garden border or ground cover, it is widely planted in rock gardens or in dry riverbeds. Highly prized in Asian gardens and landscapes in areas prone to drought. Combines well with small perennials that will not outgrow it. Planted in compact groups, it forms a surprising carpet that maintains its bluish color while other grasses turn yellow in summer.

SPACING: 0.25 M

PLANTING AND PLANT HEALTH

Constant watering during the initial growing season is recommended so that a deep and extensive root system can be established. To achieve a neat appearance, old foliage must be removed so that new leaves can emerge. Divide the bushes every 2 or 3 years in early spring to maintain their vigor thereby achieving propagation that maintains the features of the original plant.

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 ☐ Division ☐ Pruning X

Treatment Calendar

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

Fungicides ☐ Pesticides ☐ Fertilizers ☐

COMMERCIALIZATION

Presentation (L)	Length (cm)	Topiary shapes
CT(2)	30	
CT(3)	30	

GAZANIA

Gazania x hybrida

GROUND COVER

GAZANIA SPANISH	VALENCIAN	AFRICAN DAISY, GAZANIA ENGLISH	GAZANIE FRENCH

STRUCTURE

Shape	Height	Diameter
EXTENDED	0.15-2.5 M	1.5-2.5 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	ASTERALES
FAMILY:	ASTERACEAE

VARIETIES

MORPHOLOGY

Stem	UNDERG NO / CREEPING YES	WOODY NO / CLIMBING NO
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: SOFT	
SIZE: 9 CM	ARRANGEMENT: ALTERNATE	
	VENATION: PINNATE	
	SHAPE: PINNATIFID/LOBED	
COLOR: US:LIGHT GREEN LS:BLUE GREEN	MARGIN: ENTIRE	
	APEX: ACUTE	
TEXTURE: US:TOMENTOSE LS: TOMENTOSE	LESF BASE: ATTENUATE	
	PETIOLE: SHORT	
Flower	Type: HERMAPHRODUTE	Reproduction: HERMAPHRODITE
SIZE: 7-10 CM	Flowering: INFLORESCENCE IN FLORET (7)	Fragrant: NO
Fruit	Type: ACHENE	Color
SIZE:	Edible	Fruiting season
Growth	Rate: HIGH	Longevity: VIGOROUS

ECOLOGY

Climate	Temperature: -2ºC, H5, Z6	Drought resistant: MODERATE
ALTITUDE: 0-400	Sun exposure: FULL SUN	Frost resistant: LIGHT
IRRIGATION: MODERATE		
Soil	Texture: LOAMY	Salt resistant: MODERATE
pH: 6,5-8	Drainage: MODERATE	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES

Resistances		Applications			
COASTAL:	MOD/HIGH	SLOPES:	YES	HANGING:	YES
POLLUTION:	MOD/HIGH	CLIMBERS:	NO	+PAVEMENT:	NO
WIND:	MOD/HIGH			ISOLATED	YES

POINTS OF INTEREST

Native to South Africa. This plant has dense clusters of foliage that form a carpet on slopes as well as in rockeries. The best blooms occur with warm temperatures (>24ºC), night temperatures above 10ºC and full sun exposure. The flowers close at night and the rosette leaves fold upwards. It blooms mainly during the summer and also intermittently throughout the year. Suitable for rocky or coastal gardens, to fix soils and to stabilize slopes.

SPACING: 0.40 M

PLANTING AND PLANT HEALTH

Gazanias can accept all types of soil as long as they are well drained. In summer it has to be watered once or twice a month, but keeping the leaves dry. Gravel mulch is beneficial. Propagation occurs by division, cutting, and more slowly by seed.

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 (L)	Length (cm)	Topiary shape
CT(2)	20	

HEDERA

Hedera helix

GROUND COVER

HIEDRA	HEURA	IVY	LIERRE
SPANISH	VALENCIAN	ENGLISH	FRENCH

STRUCTURE

Shape	Height	Diameter
CLIMBING	10-25 M	5 M
		Root
		SCATTERING

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	UMBELLALES
FAMILY:	ARALIACEAE

VARIETIES

There are many varieties with different shapes including the variegated variety and those with different colored leaves.

MORPHOLOGY

Stem	UNDERG	Yes	WOODY	Yes
	CREEPING	Yes	CLIMBING	Yes
Leaf	COMPOUND:	NO		
	HARDNESS:	SOFT		
EVERGREEN	ARRANGEMENT:	ALTERNATE		
SIZE: 5 CM	VENATION:	PINNATE		
	SHAPE:	RHOMBOID		
COLOR US:DARK GREEN	MARGIN:	ENTIRE		
LS:LIGHT GREEN	APEX:	ACUTE		
TEXTURE: US:SMOOTH	LEAF BASE:	ATTENUATE		
LS:SMOOTH	PETIOLE:	LONG		
Flower	Type	HERMAPHRODITE	Reproduction	HERMAPHRODITE
SIZE:	Flowering	UMBLES IN RACEMES (4-5)	Fragrant	NO
Fruit	Type	BERRY	Color	BLACK
SIZE: __	Edible		Fruiting season	MARCH
Growth	Rate	FAST	Longevity	>100 YEARS

ECOLOGY

Climate	Temperature	-5ºC ,H4 ,Z6	Drought resistant	MODERATE
ALTITUDE: 0-1000	Sun exposure	SUN/SHADE	Frost resistant	MODERATE
IRRIGATION: MODERATE				
Soil	Texture	ALL TYPES	Salt resistant	LOW
pH: 6.5-8	Drainage	__	Lime resistant	MODERATE
FERTILITY: MODERATE				

USES

Resistances		Aplicaciones			
COASTAL:	MODERATE	SLOPES:	YES	HANGING:	YES
POLLUTION:	MODERATE	CLIMBERS:	YES	+PAVEMENT:	NO
WIND:	MODERATE			ISOLATED	YES

POINTS OF INTEREST

Ivy is versatile and very easy to grow both in the garden and on terraces. As climbing plants they can quickly cover walls using their adventitious roots. The ivy is also a ground cover plant since it can easily emit new adventitious roots in the nodes that touch the ground. Ivy can cover large areas of the ground, such as those located under trees that do not have very dense crowns, slopes or herbaceous covers. It prefers medium-high humidity and although it adapts to both sunny and shaded exposure, it prefers the latter. Pruning includes trimming the edges once or twice a year (in February or March) so that new shoots come out in spring and avoid disheveled and loose plants. When tying them to walls, a long shoot can also be tied horizontally so that, from this horizontal guide, new vertical shoots emerge that allow the plant to be widened from the base.

PLANTING AND PLANT HEALTH

Its propagation is normally carried out by cutting the apical stem 7.5 to 10 cm in length or by cuttings of one or three nodes with leaves. It is preferable to place them directly in the pot where they are going to be grown to avoid casualties in the transplant. In nurseries, the temperature must be kept close to 20ºC and using a mist or fogging system is convenient. The ease and time of rooting vary according to the varieties; the green ones for instance are faster than the variegated species. Cutting can be done at any time of the year. *Xanthomonas*, *Colletrotrichum* and *Alternaria* fungi cause the appearance of leaf spots and are combated with products containing copper. If the ivy is attacked by the cochineal bug, the leaves will weaken and therefore fall. Those attacked by aphids show twisted terminal stems in spring.

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				

Sowing Planting Pruning X

Treatment Calendar

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

Fungicides Pesticides Fertilizers

COMMERCIALIZATION

Presentation(L)	Length (cm)	Topiary shapes
CT(2)	80/100	
CT(3)	100/125	
CT(7)	125/150	
CT(30)	150/175	
CT(50)	175/200	
CT(85)	200/250	

HYPERICUM

GROUND COVER

Hypericum calycinum

HIPERICO SPANISH | VALENCIAN | ROSE OF SHARON ENGLISH | MILLEPERTUIS FRENCH

STRUCTURE		
Shape	Height	Diameter
EXTENDED	0.3-0.6 M	1.5 M +
		Root
		SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	THEALES
FAMILY:	GUTTIFERAE

VARIETIES

MORPHOLOGY		
Stem	UNDERG NO	WOODY YES
	CREEPING NO	CLIMBING NO
Leaf	COMPOUND:	NO
	HARDNESS:	SOFT
SEMI-EVERGREEN	ARRANGEMENT:	ALTERNATE
SIZE: 4.5-10 CM	VENATION:	PINNATE
	SHAPE:	OVATE
COLOR: US:GREEN	MARGIN:	ENTIRE
LS:GREEN	APEX:	ACUTE
TEXTURE: US: SMOOTH	LEAF BASE:	ATTENUATE
LS: SMOOTH	PETIOLE:	SESSILE
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 2.5-4 CM	Flowering: SOLITARY	Fragrant: NO
Fruit	Type: CAPSULE	Color
SIZE:	Edible	Fruitign season
Growth	Rate: MEDIUM	Longevity: 0-20 YEARS

ECOLOGY		
Climate	Temperature: -5ºC,H4,Z6	Drought resistant: LOW
ALTITUDE: 0-1000	Sun exposure: SUN/PARTIAL SHADE	Frost resistant: MODERATE
IRRIGATION: MODERATE		
Soil	Texture: AL TYPES	Salt resistant: HIGH
pH: 6.5-7.5	Drainage: MODERATE	Lime resistant: MODERATE/HIGH
FERTILITY: POOR		

USES		
Resistances	Applications	
COASTAL: YES	SLOPES: YES	HANGING: NO
POLLUTION: MODERATE	CLIMBERS: NO	+PAVEMENT: NO
WIND: MOD/HIGH		ISOLATED: YES

POINTS OF INTEREST

Native to Southeastern Europe and Western Asia Minor. This species of groundcover is an evergreen carpet that spreads rapidly which, together with the abundance, duration and color of its flowering, makes it very suitable for flower beds and to cover steep slopes. It prefers exposure to full sun, blooming less if it is located in semi-shade. This is an invasive species of ground cover.

SPACING : 0.50 M

PLANTING AND PLANT HEALTH

If cut every other year to the ground in early spring (March) it blooms on new growth. In the annual pruning it is advisable to cut the stems in half at the end of spring. The larger ones require a less drastic cutting. In spring the upper third of the branches are removed. It tolerates drought and it is necessary to avoid waterlogging. It accepts all types of soils but prefers loose ones. It grows very well on sandy soils and tolerates salinity.

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 (L)	Length (cm)	Topiary shapes
CT(20)	30-40	
CT(25)	40-60	

LAMPRANTHUS

Lampranthus aureus

GROUND COVER

MESEM		GOLDEN ICE PLANT, VYGIE	VYGIE
SPANISH	VALENCIAN	ENGLISH	FRENCH

STRUCTURE

Shape	Height	Diameter
EXTENDED	0.30-0.40 M	40 M
		Root
		SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	CARYOPHYLLACEAE
FAMILY:	AIZOACEAE

VARIETIES

MORPHOLOGY

Stem	UNDERG	NO	WOODY	NO
	CREEPING	YES	CLIMBING	NO
Leaf	COMPOUND:	NO		
EVERGREEN	HARDNESS:	FLESHY		
SIZE: 5 CM	ARRANGEMENT:	OPPOSITE		
	VENATION:			
	SHAPE:	CYLINDRICAL		
COLOR: US:GREEN/GRAY	MARGIN:			
LS:GREEN/GRAY	APEX:	OBTUSE		
TEXTURE: US:SMOOTH	LEAF BASE:	ROUNDED		
LS:SMOOTH	PETIOLE:	SHORT		
Flower	Type		Reproduction	
SIZE: 2.5-3.5 CM	HERMAPHRODITE		HERMAPHRODITE	
	Flowering		Fragrant	
	FLORET		NO	
Fruit	Type		Color	
	CAPSULE			
SIZE:	Edible		Fruiting season	
Growth	Rate		Longevity	
	MODERATE		VIGOROUS	

ECOLOGY

Climate	Temperature	Drought resistant
	0ºC	MODERATE
ALTITUDE: 0-200	Sun exposure	Frost resistant
IRRIGATION: LOW	FULL SUN	NO
Soil	Texture	Salt resistant
	LOAMY/SANDY	MODERATE/HIGH
pH: 6.5-8	Drainage	Lime resistant
FERTILITY: MODERATE	HIGH	MODERATE

USES

Resistances		Applications			
COASTAL:	MODERATE	SLOPES:	YES	HANGING:	YES
POLLUTION:	MODERATE	CREEPING:	NO	+PAVEMENT:	NO
WIND:	MODERATE			ISOLATED	YES

POINTS OF INTEREST

This species, like the *Mesembryamthemum* species, is native to South Africa. It forms a 25 cm high carpet that can be spread over large surfaces. Pink flowers perists over long period of time. It is a hardy species that prefers sandy and well-drained soils and is somewhat drought resistant during the summer months. The flowers open in spring, carpeting the countryside with their vivid color. Since it is not walkable, the arrangement of interspersed slabs on the ground between the plants allows pedestrian to circulate and to maintain the plant. Cut back slightly after flowering.

SPACING: 0.50M.

PLANTING AND PLANT HEALTH

Propagation by cuttings to be cut after flowering and inserted into the ground or between sunny rocks. It can also be propagated by seeds.

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	Length (cm)	Topiary forms
CT	<15	
CT	15-20	

LAMPRANTHUS

GROUND COVER

Lampranthus spectabilis

MESEM ROSADO, LAMPRANTHUS (SPANISH) | (VALENCIAN) | TRAILING ICE PLANT (ENGLISH) | LAMPRANTHUS (FRENCH)

STRUCTURE		
Shape: EXTENDED	Height: 0.15-0.30 M	Diameter: 0.40-1 M
		Root: SCATTERED

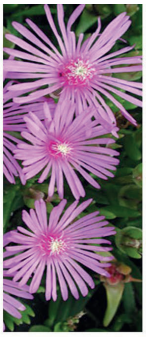
DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	CARYOPHYLLACEAE
FAMILY:	AIZOACEAE

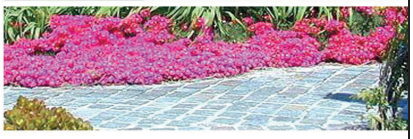
VARIETIES

MORPHOLOGY		
Stem	UNDERG: NO; CREEPING: YES	WOODY: NO; CLIMBING: NO
Leaf	COMPOUND: NO; HARDNESS: FLESHY; ARRANGEMENT: OPPOSITE; VENATION: —; SHAPE: CYLINDRICAL; MARGIN: ENTIRE; APEX: POINTED; LEAF BASE: ROUNDED; PETIOLE: SHORT	
EVERGREEN		
SIZE: 5-8 CM		
COLOR: US:GREEN/GRAY; LS:GREEN/GRAY		
TEXTURE: US: SMOOTH; LS: SMOOTH		
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 5-7 CM	Flowering: FLORET	Fragrant: NO
Fruit	Type: CAPSULE	Color
	Edible	Fruiting season
SIZE:		
Growth	Rate: MODERATE	Longevity: VIGOROUS

ECOLOGY		
Climate	Temperature: 0ºC,H5	Drought resistan: MODERATE
ALTITUDE: 0-200	Sun exposure: FULL SUN	Frost resistant: NO
IRRIGATION: LOW		
Soil	Texture: LOAMY/SANDY	Salt resistant: MODERATE/HIGH
pH: 6.5-8	Drainage: HIGH	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES				
Resistances		Applications		
COASTAL:	MOD/HIGH	SLOPES:	YES	HANGING: YES
POLLUTION:	MODERATE	CLIMBER:	NO	+PAVEMENT: NO
WIND:	MODERATE			ISOLATED: YES


POINTS OF INTEREST

This species, like the *Mesembryanthemum* species,is Native to South Africa. It forms a 25 cm high carpet that can be spread over large surfaces. Pink flowers perists over long period of time. It is a highly rustic species that prefers sandy and well-drained soils and is somewhat drought resistant during the summer months. The flowers open in spring, carpeting the countryside with their vivid color. Since it is not walkable, the arrangement of interspersed slabs on the ground between the plants allows pedestrian to circulate and to maintain the plant. Cut back slightly after flowering.

SPACING: 0.50 M

PLANTING AND PLANT HEALTH

Propagation is done by cuttings to be cut after flowering and inserted into the ground or between sunny rocks. It can also be propagated by seeds.

CHROMATIC CALENDAR

Foliage, Flowering and Fruiting Season

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

Cultivation Calender

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	Length (cm)	Topiary shapes
CT	<15	
CT	15-20	

LANTANA

Lantana montevidensis

GROUND COVER

LANTANA (SPANISH) · VALENCIAN · TRAILING LANTANA (ENGLISH) · LANTANA (FRENCH)

STRUCTURE		
Shape: EXTENDED	Height: 0.25-0.40 M	Diameter: Up to 2 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONES
ORDER:	LAMIALES
FAMILY:	VERBENACEAE

VARIETIES

MORPHOLOGY		
Stem	UNDERG: NO / CREEPING: YES	WOODY: NO / CLIMBING: NO
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: SOFT	
SIZE: 3.5 CM	ARRANGEMENT: OPPOSITE	
	VENATION: PINNATE	
	SHAPE: OVATE	
COLOR: US:GREEN/GRAY	MARGIN: DENATE	
LS:GREEN/GRAY	APEX: ACUTE	
TEXTURE: US:TOMENTOSE	LEAF BASE: ATTENUATE	
LS:TOMENTOSE	PETIOLE: SHORT	
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHROPDITE
SIZE: 7-8 MM	Flowering: INFLORESCENCE IN FLORET (2.5-3.5 CM)	Fragrant: YES
Fruit	Type	Color
SIZE:	Edible	Fruiting season
Growth	Rate: MODERATE	Longevity: VIGOROUS





ECOLOGY		
Climate	Temperature: 0ºC,H5,Z7	Drought resistant: MODERATE
ALTITUDE: 0-400	Sun exposure: SUN	Frost resistant: LIGHT
IRRIGATION: MODERATE		
Soil	Texture: LOAMY	Salt resistant: MODERATE
pH: 6.5-8	Drainage: MODERATE	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES		
Resistances	Applications	
COASTAL: MODERATE	SLOPES: YES	HANGING: YES
POLLUTION: MODERATE	CLIMBER: NO	+PAVEMENT: NO
WIND: MOD/HIGH		ISOLATED: YES

POINTS OF INTEREST

Native to Central and South America. This groundcover shrub guarantees long-lasting and colorful flowering. In warm climates it is evergreen and produces flowers for most of the year. In cooler climates it is deciduous and produces flowers from summer to late fall. It is resistant and easy-to-grow that can hang down walls and pots. Lilac verbena-like flowers cover the leaves during the hottest season.

SPACING: 0.40 M

PLANTING AND PLANT HEALTH

It needs full sun exposure and mild winters. It tolerates most soil types but requires good drainage. Responds well to mulching. It requires a high irrigation programme once or twice a month. Pruning in spring causes vigorous growth but if the aim is to contain its development, pruning only the tips is recommended. Propagation occurs by cuttings although it can also be done by seed. It is considered an invasive species in South Africa.

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 (L)	Length (cm)	Topiary shapes
CT(2)		
CT(3)		
CT(7)		

LOBULARIA

GROUND COVER

Lobularia maritima

LOBULARIA SPANISH | VALENCIAN | SWEET ALYSSUM ENGLISH | ALISE ODORANTE FRENCH

STRUCTURE		
Shape: EXTENDED	Height: 0.5-0.20 M	Diameter: 25 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	PAPAVERALES
FAMILY:	BRASSICACEAE

VARIETIES

CARPET OF SNOW

MORPHOLOGY		
Stem	UNDERG: NO; CREEPING: YES	WOODY: NO; CLIMBING: NO
Leaf	COMPOUND: NO; HARDNESS: SOFT; ARRANGEMENT: ALTERNATE; VENATION: PINNATE; SHAPE: LANCEOLATE; MARGIN: ENTIRE; APEX: ACUTE; LEAF BASE: ATTENUATE; PETIOLE: SHORT	
EVERGREEN; SIZE: 1-4 CM; COLOR: US:GREEN LS:GREEN; TEXTURE: US:TOMENTOSE LS:TOMENTOSE		
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 0.3-0.4 CM	Flowering: CORYMB (2-3 CM)	Fragrance: NO
Fruit	Type	Color
SIZE:	Edible	Fruiting season
Growth	Rate: MODERATE	Longevity: VIGOROUS

ECOLOGY		
Climate	Temperature: 0ºC,H5 ,Z7	Drought resistant: NO
ALTITUDE: 0-400	Sun exposure: FULL SUN	Frost resistant: NO
IRRIGATION: MODERATE		
Soil	Texture: ALL TYPES	Salt resistant: LOW
pH: 6.5-7.5	Drainage: MODERATE	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES		
Resistances	Applications	
COASTAL: MODERATE	SLOPES: YES	HANGING: YES
POLLUTION: MODERATE	CLIMBER: YES	+PAVEMENT: NO
WIND: MODERATE		ISOLATED: YES

POINTS OF INTEREST

The sea cress is an annual or perennial creeping groundcover (20 cm) that produces a profuse white bloom. It grows very well in hot climates and tolerates maritime conditions. It also grows well on dry, sandy soils and dry walls. Despite being a short-cycle perennial, it loses its compact growth habit if grown for more than a year and is therefore often grown as an annual. The *Carpet of Snow* variety, with larger flowers, forms a dense white carpet especially valued in rockeries. In Spain it was traditionally used to combat scurvy given its vitamin C content as well as its diuretic properties. The leaves, stems and young flowers can be used as a dressing in salads and other dishes.

SPACING: 0.25 M.

PLANTING AND PLANT HEALTH

Pruning after flowering is recommended. After planting, it grows rapidly, and can become invasive.

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	Length (cm)	Topiary shapes
CT(2L)		
CT(3L)		

Ophiopogon

GROUND COVER

Ophiopogon japonicus

OFIOPOGON (SPANISH) | VALENCIAN | FOUNTAIN PLANT, MONKEY GRASS (ENGLISH) | BARBE DE SERPENT (FRENCH)

STRUCTURE		
Shape: GRAMINOIDS	Height: 0.15-0.20 M	Diameter: 0.20-0.25 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	LILIALES
FAMILY:	LILIACEAE

VARIETIES

ALBUS

KYOTO - DWARF

MORPHOLOGY		
Stem	UNDERG: NO; CREEPING: YES	WOODY: NO; CLIMBING: NO
Leaf	COMPOUND: NO; HARDNESS: SOFT; ARRANGEMENT: ROSETTE; VENATION: LINEAR; SHAPE: LINEAR; MARGIN: ENTIRE; APEX: ACUTE; LEAF BASE: ATTENUATE; PETIOLE: SESSILE	
EVERGREEN		
SIZE: 10-20 CM		
COLOR: US:GREEN; LS:GREEN		
TEXTURE: US: SMOOTH; LS: SMOOTH		
Flower	Type: HERMAPHODRITE	Reproduction: HERMAPHRODITE
SIZE:	Flowering: INFLORESCENCE IN SPIKE (5-10 CM)	Fragrant: NO
Fruit	Type: CAPSULE	Color: DARK BLUE
SIZE:	Edible	Fruiting season
Growth	Rate: MODERATE/FAST	Longevity: VIGOROUS

ECOLOGY		
Climate	Temperature: -2ºC (H5, Z6)	Drought resistant: LOW
ALTITUDE: __	Sun exposure: SHADE/PARTIAL SHADE	Frost resistant: LIGHT
IRRIGATION: MODERATE		
Soil	Texture: LOAMY	Salt resistant: LOW
Ph: 6.5-8	Drainage: MODERATE	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES		
Resistances	Applications	
COASTAL: MODERATE	SLOPES: NO	HANGING: NO
POLLUTION: MODERATE	CLIMBER: NO	+PAVEMENT: NO
WIND: MOD/HIGH		ISOLATED: YES

POINTS OF INTEREST

Its linear leaves create a surface that is similar to grass, which it can replace in small areas. It is also used for borders or as a background for more colorful plants. In summer it forms inflorescences that grow from long stolons and tuberous roots, forming short and erect racemes of lilac or purple-colored flowers of little interest since they remain hidden among the dense foliage as well as the small blue fruits that follow them. The "Albus" variety is white, "Kyoto Dwarf" is dense and 3-5 cm tall. Both plants produce small dark blue fruits.

SPACING: 0.30 M

PLANTING AND PLANT HEALTH

This is an undemanding and slow-growing species which grows easily in mulched humus enriched soil and adapts well to poorer soils. The soil must be kept moist although the plant has some resistance to drought. Propagation by seed or the rhizomes can be divided in spring. Requires very little maintainance.

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 (L)	Length (cm)	Topiary shapes
CT(1)	20	
CT(2)	25	
CT(3)	30	

Verbena

Verbena x hybrida

GROUND COVER

VERBENA SPANISH | VALENCIAN | HYBRID VERBENA ENGLISH | VERBEINE HYBRIDE FRENCH

STRUCTURE		
Shape: EXTENDED	Height: 0.30-0.40 M	Diameter: 0.80-1.5 M
		Root: SCATTERED

DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	LAMIALES
FAMILY:	VERBENACEAE

VARIETIES

MORPHOLOGY

Stem	UNDERG: NO; CREEPING: YES	WOODY: NO; CLIMBING: NO
Leaf	COMPOUND: NO	
EVERGREEN	HARDNESS: SOFT	
SIZE: 8 CM	ARRANGMENT: OPPOSITE	
LEAFLET: NO	VENATION: PINNATE	
COLOR: US:GREEN LS:GREEN	SHAPE: OVAL	
	MARGIN: DENTATE	
TEXTURE: US:SMOOTH LS:SMOOTH	APEX: ACUTE	
	LEAF BASE: ATTENUATE	
	PETIOLE: SHORT	
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 2-3 CM	Flowering: INFLORESCENCE IN CORYMB	Fragrant: YES
Fruit	Type	Color
SIZE:	Edible	Fruiting season
Growth	Rate: MODERATE	Longevity: VIGOROUS

ECOLOGY

Climate	Temperature: 0ºC,H5,Z7	Drought resistant: MODERATE
ALTITUDE: 0-400	Sun exposure: FULL	Frost resistant: LIGHT
IRRIGATION: MODERATE		
Soil	Texture: LOAMY	Salt resistant: MODERATE
pH: 6.5-8	Drainage: MODERATE	Lime resistant: MODERATE
FERTILITY : MODERATE		

USES

Resistances		Applications			
COASTAL:	MODERATE	SLOPES:	YES	HANGING:	YES
POLLUTION:	MODERATE	CLIMBER:	NO	+PAVEMENT:	NO
WIND:	MOD/HIGH			ISOLATED:	YES

POINTS OF INTEREST

The verbena forms a compact floral carpet thanks to its abundant branches covered by cleft leaves. It is a fast growing plant that quickly covers the ground around it within a few weeks. When hanging down slopes they generate a very showy flowery green carpet. They are often used to decorate raised planters or hanging baskets. They are sensitive to fungal attack, so an interspersed irrigation programme in large doses is recommended at mid-morning.

SPACING: 0.40 M

PLANTING AND PLANT HEALTH

Verbena seeds should be germinated at the beginning of March in a warm seedbed and in small pots that facilitate their subsequent transplant. Once germinated and somewhat developed, the most vigorous one will be selected in each pot, discarding the others. After a short hardening period, they will be moved to their final location in April, beginning to flower after three or five weeks. In places with a mild winter, a second budding in spring may occur, which will be more intense if all the plants are pruned flush in November or December.

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 (L)	Length (cm)	Topiary shapes
CT(1)		
CT(3)		

Vinca

Vinca major

GROUND COVER

HIERBA DONCELLA (SPANISH) | VALENCIAN | BIGLEAF PERYWINKLE (ENGLISH) | GRANDE PERVENCHE (FRENCH)

STRUCTURE		
Shape: EXTENDED	Height: 0.20-0.30 M	Diameter: Up to 2 M
		Root: SCATTERED

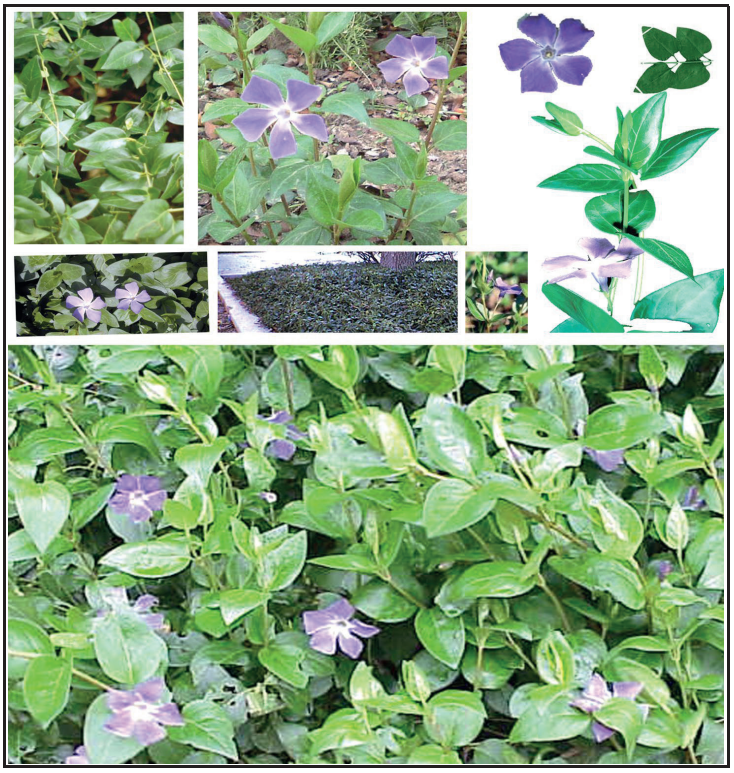
DIVISION:	PHANEROGAMS
SUBDIVISION:	ANGIOSPERMS
TYPE:	DICOTYLEDONS
ORDER:	GENTIANALES
FAMILY:	APOCYNACEAE

VARIETIES

MORPHOLOGY		
Stem	UNDERG: No / CREEPING: Yes	WOODY: No / CLIMBING: No
Leaf	COMPOUND: NO HARDNESS: SOFT ARRANGEMENT: OPPOSITE VENATION: PINNATE SHAPE: OVAL MARGIN: ENTIRE APEX: ACUTE LEAF BASE: ATTENUATE PETIOLE: SHORT	
EVERGREEN SIZE: 3-5.5 CM COLOR: US:GREEN LS:GREEN TEXTURE: US:SMOOTH LS:SMOOTH		
Flower	Type: HERMAPHRODITE	Reproduction: HERMAPHRODITE
SIZE: 4-4.5 CM	Flowering: ISOLATED	Fragrant: NO
Fruit	Type: FLORET	Color
SIZE:	Edible	Fruiting season
Growth	Rate: MODERATE/HIGH	Longevity: VIGOROUS

ECOLOGY		
Climate	Temperature: -3ºC	Drought resistant: MODERATE
ALTITUDE: 0-400	Sun exposure: SHADE/PARTIAL SHADE	Frost resistant: LIGHT
IRRIGATION: MODERATE		
Soil	Texture: LOAMY	Salt resistant: LOW
pH: 6.5-8	Drainage: MODERATE	Lime resistant: MODERATE
FERTILITY: MODERATE		

USES		
Resistances	Applications	
COASTAL: MODERATE	SLOPES: YES	HANGING: YES
POLLUTION: MODERATE	CLIMBER: NO	+PAVEMENT: NO
WIND: MOD/HIGH		ISOLATED: YES



POINTS OF INTEREST

Its main use is in gardening, small hedges, humid corners,clearings, and filling the bases of trees and especially for the attractiveness of its 3 to 5 cm flowers that range from blue to purple. It requires very little maintainance and thrives in sun or shade, although most varieties are better suited to shade. It is ideal for controlling soil erosion or shading slopes, for ground cover under trees and shrubs, and for window planters.

SPACING : 0.40 M

PLANTING AND PLANT HEALTH

They adapt well to loose, humus-rich, moist soils. Most varieties spread quickly and may require pruning. If planted with the spacing recommended, it should provide complete cover in one year except on very dry soils. Depending on whether it is located in the sun or in the shade, it will produce more flowers or more foliage. Propagate by cuttings or by separating a piece of shoot that has rooted.

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 (L)	Length (cm)	Topiary shapes
CT(2)	45	
CT(3)	45	

Subchapter 6.3 Commercialization, use and planting

COMMERCIALIZATION

Groundcover plants can be commercialized: bare root, root ball or container. Although the most usual format is in a container.

Groundcover plants cultivated in containers

Firstly, the plants must have a sufficiently developed root system before planting. This can be checked when the plant is removed from the container since the root ball should be cohesive enough to maintain its shape.

Types of containers:

- Container
- Truncated cone pot
- Truncated pyramid pot
- Seed plug tray (for seedlings and rooted cuttings)

Plant size

The indications on Tables 6.3.1 and 6.3.2 should be followed:

Classification of width (cm)	Classification according to number of main stems and stolons.
5/10	1
10/20	2
20/30	3/4
30/40	5/7
40/60	8/12
60/80	
80/100	

Table 6.3.1: Classification of groundcover plants according to width and number of main stems (NTJ 07J C.O.I.T.A.P.A.C.)

Plant width in cm	Minimum volume of container in liters	
	Shrub and subshrubs	Herbaceous plants
5/10	0.5	0.5
10/20	0.5/1	0.5
20/30	1/1.5	1
30/40	1.5/2	
40/60	2/2.5	
60/80	3/5	
80/100	5/7.5	

Table 6.3.2: Minimum recommend volume of container according to plant width (NTJ 07J C.O.I.T.A.P.A.C.)

USES

Façade base and vegetative elements

Groundcover plants can be used to hide undesirable aspects in the lower parts of façades or to create and highlight a visual base besides a building. They can also be used to accentuate the appearance of a monument or some special specimen of trees or bushes.

When buildings have noticeable vertical lines, a green layer or base that clearly marks a horizontal line a few decimeters from the ground can be of interest. In this situation, water runoff from the roofs and the necessary waterproofing of the lower part of the façades must be considered. Plants that grow near façades receive less light and therefore the appropriate species must be chosen. In these cases, a gentle slope on the ground towards the outside is of interest, which in certain compositions should not influence the horizontality of the upper plane of the plant set. Likewise, the effect of the groundcovers root system on different infrastructures (water, electricity, drainage…) must be considered when they are located around one building.

The use of groundcover plants as a visual base for larger plants is an important topic in garden design and should be given proper attention. In some cases, it deals with framing the presence of trunks or bush bases; on others, the objective is to achieve the visual connection of different trees or shrubs through a green base with a homogeneous and continuous texture and chromatic tone.

Grasses for pavements

To soften the harsh effects of the pieces that make up the pavement of a pathway, or an esplanade, plants can be grown in their interstices. For this, the soil must be well prepared at a depth of about 15-20 cm.

If quick covering is needed, Aubrieta, Helianthemum and Phlox subulata, are recommended which give internal spots of pink, white, red, purple, orange and yellow, and should be cut back to 15 cm after flowering. The following species are also suitable for this purpose: *Armeria caespitosa, Thymus serphyllum, Dianthus gratianopolitanus* (D. caesius)*, D. arenarius, D x arvernensis, Veronica prostrata* (V. rupestris)*, Hypericum reptans, Linaria alpina, Acantholimon glumaceum, Globularia meridionalis (G. bellidifolia), Androsace sarmentosa, Gentiana acaulis, G. septemfida, Campanula pulla,* and *C. x haylodgensis*.

Other uses

Some groundcovers, especially those with fleshy stems and leaves, function as firebreaks in places where there are barbecues. In these sites, the use of resinous and other flammable species must be avoided.

It can sometimes be of interest to intersperse some bulbous plants among the groundcover set. The use of tulips, hyacinths or daffodils add a special attraction and provide a remarkable chromatic touch at the beginning of spring, when some of the groundcover species are still in their winter stage and display their worst characteristics. With the same objective, annual flower or foliage species can be planted, but always considering the main rule of interspersing, which determines the size ratio and indicates that the height of the groundcover should not be greater than 1/3 to ½ of the size of the foliage of the bulbous or annuals.

Using groundcovers as mulch can inhibit the development of weeds. These “mulch” species can sometimes replace grass in areas where trampling is not frequent (*Ophiopogon*) and ornamental meadows or lawns are not required.

Groundcover species can play an interesting role when used to visually accentuate a special element of the landscape such as stairs, entrances, rock gardens, and various ornamental elements. By considering the

groundcover features (foliage, bark, stems, flowers) and proportions, a slight, medium, or intense emphasis can be achieved.

Another common use for this group of species is to mark limits, delineate boundaries, identify zones, and protect embankments (see Table 6.3.3).

Plant	Height (cm)	Ornamental purpose
Acaena buchanii	10	Yellow flowering in warm season
Achillea millefolium	15	White flowering in warm season
Ajuga reptans	10	Blue flowering in warm season
Anthemis tinctoria	40	Yellow flowering in warm-temperate season
Armeria maritime	10-20	Pink flowering in warm season
Bergenia cordifolia	20-30	Red flowering in cold season
Capparia spinosa	20-50	white bloom
Carpobrothus	15-20	Red-yellow flowering in warm season
Cerastium tomentosum	5-10	White flowering in warm-temperate season
Dichondra repens	5-10	Evergreen foliage
Drosanthemum floribundum	5-10 15-20	Violet flowering in warm season
Gazania splendens	5-10	Yellow flowering in warm season
Glechoma hederacea	10-20	Tinged foliage
Hedera helix	3-5	Intense foliage
Helxine soleirolii	15-20	compact foliage
Hypericum clycinum	10-20	Yellow flowering in warm season
Lamprantrus	3-5	Orange flowering in warm season
Lippia canescens	30-50	White flowering in warm season
Lysimachia nummularia	20-30	Yellow flowering in warm season
Nepeta musinii	10-15	Blue flowering in warm season
Ononis	15-20	Yellow flowering in warm season
Ophipogon japonicum	15-25	Lilac flowering in warm season
Pachysandra terminalis	30-60	White flowering in warm season
Pyracantha	2-3	Red fruiting in cold season
Sagina subulata	10-20	White flowering in warm season
Saxifraga	10-15	White flowering in warm season
Sedum	10-25	Varied flowering in warm season
Spergularia rubra	10-20	Violet flowering in warm-temperate season
Stachys lanata	5-10	Silver foliage
Thymus serpyllum	10-20	Violet flowering in warm season
Tradescantia	3-6	Glossy foliage
Verbena repens	10-20	Violet flowering in warm season
Vinca	10-20	Blue flowering in warm-temperate season
Viola		Violet flowering in warm-temperate season

Table 6.3.3: Groundcover plants to protect embankments

PLANTING AND SOWING

Plants are supplied in different formats depending on the plant group to which they belong: herbaceous plants in an 8-12 cm pot or container, or in plug trays. Groundcover shrubs and conifers in a 15 or 17 cm container.

There are more groundcover species suited for humid shady areas than for dry sunny areas. As a result, an adequate preparation of the soil is recommended and enhancing it with organic matter and peat to achieve greater moisture retention. In subsequent years, new organic contributions must be carried out for this same purpose.

The best time to plant groundcovers depend on the species and the climatic conditions of the area in question. In cold areas, planting in spring is more recommended however it can also be carried out in the summer months. It is nevertheless advisable not to postpone it until the end of summer since the plants may not be sufficiently settled when the cold arrives. In warm temperate zones they can be planted in early spring or autumn.

Most creepers and groundcover plants are soil hardy nevertheless they prefer well prepared, enhanced, fertilized and well-drained soil. Likewise, temperature, lighting and water requirements of different species must be studied, so that the most appropriate ones are chosen for each climate and microclimate.

Before planting, it is necessary to carry out the normal preparatory tasks including the elimination of weeds and their roots. The soil will be ameliorated by providing 400-800 Kg/area (100 m^2) of organic matter, which can be quality manure or the material commonly used in gardening (2% of urban organic waste free of glass, metal and plastic + 60 % pomace + 20% manure). In very clayey soils, it is advisable to add 2-3 m^3/area of siliceous sand, especially if mediterranean or xerophyte species are to be planted. Mineral or inorganic fertilizers will be provided at a rate of 8-13 grams/m^2 of complex 9-18-27.

Plant	Standards (cm)	Nº Plants/m^2 or linear meter
Shrubs		
Dwarf or slow growth	45-60	3-5
Medium	100-120	1
Vigorous	150-180	1 plant/2-3 m^2
Rose bushes	45-60	3-4
Perennials		
Medium	30-50	4-11
Vigorous	60-150	1-3
Small herbaceous	20-30	11-25

Table 6.3.4: Planting standards

In some groundcover species, such as *Dichondra repens*, sowing is recommended and can be done from May to October, using a dose of 5gr/m^2.

Subchapter 6.4 Maintenance

GENERAL CONDITIONS OF MAINTENANCE

Groundcover species require minimal maintenance and although this is one of their most interesting features, this could lead to their abandonment. Periodic watering, occasional weeding (until it has the adequate density that inhibits weed development), soil improvement, trimming, pest and disease control, and replanting are still necessary.

Consistent watering is especially important immediately after planting; this will prevent wilting and encourage a strong root system. Many groundcover species have a certain resistance to drought, so once established, excesses should be avoided, especially in autumn, winter and the first part of spring.

Weed control - which is minimal once the groundcovers have grown - must be thorough and consistent in the first months after planting. This will become less necessary once good preventive practices for eliminating weeds have been carried out on the ground. Residual pre-emergence herbicides can also be used to prevent the appearance of these undesirable species during the planting period.

For most groundcover plants, an annual pruning or trimming is ideal. This improves light penetration inside the plants and better ventilation resulting in vigorous budding and development, and subsequently, plants become more branched and leafier.

The spring-flowering species should be cut back immediately after flowering ends, while those that flower in summer and autumn should be cut back in spring. For herbaceous species that lose their foliage in winter, dead stems and leaves should be removed in the fall or winter. In the case of sub-woody or woody species, the removal of no more than a third of the length of the branches is recommended. In other groundcovers such as Dichondra, watering is less frequent than in the case of lawns (once a month at most).

Most groundcover species need an adequate fertilization program. In general, slow releasing fertilizers of nitrogen and potassium are sufficient; Phosphorus does not need to be provided in a slow releasing format since it has low solubility.

The recommended N-P-K (Nitrogen, Phosphorus and Potassium) ratio is usually 2-1-2, for example a 10-5-10 formulation and can be applied at a rate of 0.75 kg N per area (100m2) in mid-spring and 0.5kg N per area in early autumn. Likewise, it will be convenient to make regular contributions of organic matter, preferably in November and at a rate of 150 kg/area and year.

Some groundcover species, especially those that propagate vegetatively by dividing the bush, develop so densely that they become overpopulated, with which growth is limited and flowering is reduced in quantity and showiness. To stop this from occurring, an annual thinning is recommended and adding organic matter and new soil to the thinning sites.

In order to establish groundcovers correctly, careful, attention must be given to the distribution of the plants in the assigned surface. This will ensure quick coverage and avoid competition for available space or the loss of its distinguishing features.

Therefore, prior to planting, it is convenient to know each plant’s potential and to calculate its approximate extension and to consider the root and stolon development.

Hummock-like species are the most controllable, however, other species, such as *Hypericum calycinum* and peppermint, grow through underground roots, which can create an invasive habit. Species such as

Campanula gromerata, Euphorbia robbiae and *Anaphales triplinervis* also spread through their roots.

Other plants (*Tiarella, Symphytum grandiflorum, Stachys lanata* and *Ajuga)* spread by rooting from the nodes of the stems and branches. This makes easy to control their growth by cutting the branches in the area where there is excess.

Others, like *Alchemilla mollis*, multiply by seed with impressive speed. It is advisable to avoid planting *Saponaria officinalis* among other shrubs and *Mentha gentilis* in a mix of herbaceous plants since both species are so expansive that they should only be used where the growth of any other plant is not required.

Maintenance Schedule

March
Treatment with Abamectina 0.35 cc p.c./ l + Thiram 80% 2.5 g p.c./l
General adjustments planting

April
Planting and fertilizers

May
Treatment with Metilpirimifos 1.75 g p.c./ l + Thiram 80% 2.5 g p.c./l
Remove weeds
Maintenance pruning

June
Deadheading

July
Treatment with Fenvalerato 0.75 cc p.c./ l +Dienocloro 0.9 g p.c./l
Deadheading

August
Deadheading

September
Treatment with Abamectina 0.35 cc p.c./ l + Thiram 80% 2.5 g p.c./l

October and November
Planting
Maintenance pruning
Deep fertilizers

December
Treatment with Zineb 80% 2.5 g p.c./l
Weeding

February
Treatment with Zineb 80% 2.5 g p.c./l
Planting
Pruning