

# **SUSTAINABLE PLANTS FOR MEDITERRANEAN HORTICULTURE IN ISRAEL**

Ori Fragman-Sapir

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Rising water costs and expensive maintenance have led us to plan sustainable gardens. For such gardens we seek plants that are both waterwise and that require little maintenance.

There are already thousands of ornamental species and varieties in Israel, as well as a vast inventory of plants that have been imported from all over the world. From among these we have chosen those that are most suitable for a sustainable garden. This article is based on our experience at the Jerusalem Botanical Gardens and in Israel generally.

Purist gardeners keep seasonal and water-wasting plants out of their sustainable gardens. They create ecological Mediterranean gardens, which do not bloom in summer and which often have an arid appearance. Another type of sustainable garden is the arid succulent garden. Locally these kinds of gardens do not appeal to the general public and our challenge is to supply a variety of attractive and sustainable plants that will blend into gardens and give a lush, green appearance. Incidentally, it is not necessary to give up water-wasting plants altogether, many of which are beautiful and impressive, and give the garden a fresh look. They should, however, be used wisely and concentrated in a few visible locations, with a separate irrigation system.

The cultivation and use of sustainable plants has given rise to a debate in the local gardening industry. On the one hand there is a demand for such plants, but on the other hand they have a low replacement rate, and consequently the market for them is smaller. It is more profitable for growers to offer us plants which need to be replaced frequently. Nurseries are full of such plants – impressive flowering plants, many of which are seasonal or which keep a good appearance for no more than a few years. As mentioned above, their frequent replacement and maintenance involve high costs.

In this article I shall deal with various groups of plants, each of which is of importance to private and municipal gardening. Since it is impossible to cover all the recommended plants, I have chosen a representative selection in the hope that these will arouse your curiosity.

### **Local wild flowers**

The wild flora of Israel is rich, and includes more than 2,400 native plants (Fragman *et al.*, 1999). There are many who wish to grow local wild plants in their garden, since these plants represent for us contact with the land, with the country, with religions and with scenes from distant history. Wild plants are also adapted to local conditions and are therefore considered more durable than imported ornamental plants. However, in our experience they present numerous problems. Many wild plants are suitable for the dry mediterranean climate, with its long, hot and dry summers, which makes many of them sensitive to summer irrigation and to excessive irrigation in general. Some of them will rot under summer irrigation, e.g. the Common Cyclamen (*Cyclamen persicum*) and the Three-Lobed Sage (*Salvia fruticosa*). Others will turn brittle and will be more exposed to disease, such as the Mount Tabor Oak (*Quercus ithaburensis*) and the Sea Squill (*Drimys maritima* syn. *Urginea maritima*). As slow growers, many wild plants are not suitable for the rhythm of garden development. Additional problems include the fact that many wild plants are poisonous and thorny, others bloom for a very short period only, and many are not available in nurseries. Nevertheless, there are quite a few wild plants that can be integrated into sustainable gardens – the emphasis being on “integration”. In the first serious publication on the subject, Gertman and Heller (2006) listed the main local wild plants of Israel that can be considered for gardening. However, there are many others that are suitable for various garden situations. In this article I shall list quite a few of them. I should like to emphasise that many wild trees and shrubs are extremely durable, do not require irrigation after becoming established and can be integrated into unirrigated corners of the garden. Smaller plants can be integrated into rockeries or garden beds that can be left dry or

with little irrigation in summer. Such garden beds may be left at the margins of the garden, in an area where there is little maintenance.

### **Trees**

The skeleton of the garden is made up of trees and shrubs. In Israel this includes a wide range of species and varieties that are suitable for various conditions; once established (after a year to three years), many trees and shrubs are sustainable plants. In Nissim Pines' excellent book *Ornamental Trees in Israel*, one may read more on the variety of trees that are suitable for various conditions.

Two local wild trees of the *Pistacia* genus are sustainable in the garden. The Palestine Pistachio (*Pistacia palaestina*) and Atlantic Pistachio (*Pistacia atlantica*) are probably the only local trees with impressive autumn foliage. The former is a small tree, suitable for intimate situations in a small garden, while the second is an impressive tree which is very resistant to dryness. The Syrian Maple (*Acer obtusifolium*) is a small evergreen tree, which grows in the wild in northern Israel as well as in Cyprus and Syria; it serves as a successful street and garden tree.

Sustainable trees might frequently constitute a problem. The Mediterranean Buckthorn (*Rhamnus alaternus*), the Brazilian Pepper Tree (*Schinus terebinthifolia*), the Bead Tree (*Melia azedarach*) and many others spread and their seedlings or suckers constitute a nuisance. In these cases, even though the trees themselves do not require special care, and certainly not irrigation, they require weeding, thus reducing their value in a sustainable garden.

The Mount Tabor Oak (*Quercus ithaburensis*) is the oak most recommended for a Mediterranean garden. It is a durable deciduous tree that requires no, or very little, irrigation. It has a single trunk and a round canopy which provides important shade in summer while enabling the sun's rays to penetrate and provide heat in winter – unlike the Palestine Oak (*Quercus calliprinos*), which is a prickly evergreen with a dense scrubby appearance, and consequently less recommended.

## **Shrubs**

The lowest part of the garden's skeleton is made up of shrubs, which may constitute individual focal plants or clumps and may also provide a solution for other purposes, such as screening and fencing. Like many trees, numerous shrubs are sustainable after the establishment stage. Here we present a selection of wild species, some better known than others.

The Mastic Tree or lentisk (*Pistacia lentiscus*) is an evergreen shrub. On the margins of the Valley of the Cross in Jerusalem there is an impressive group of Mastic Trees planted in the 1950s. These live without irrigation and are pruned from time to time. The Mastic Tree is also a successful ornamental plant in the desert region, where, however, it requires some irrigation. This *Pistacia* has evergreen foliage and fruit that is red and black, of additional ornamental value.

Spanish Broom (*Spartium junceum*) is a tall, leafless, local shrub. Its appearance is green and special all year round. In April it is covered for a short period with fragrant yellow flowers. This shrub does not require irrigation after establishment and after around 10 years may be renovated by pruning down to ground level.

The White Weeping Broom (*Retama raetam*) is a desert shrub which has also penetrated into the Mediterranean region. Under cultivation, after a year of establishment, the shrub grows without problem and without any irrigation. Its leafless appearance gives it a special look. An added value is that it flowers in early spring, when the plant provides the garden with a white, fragrant touch.

Needless to say, the common myrtle (*Myrtus communis*) and the oleander (*Nerium oleander*) are perfect sustainable shrubs, widely used throughout the Mediterranean region and beyond. It is surprising that the oleander, which is common in nature along rivers and watercourses, is considered a waterwise plant in cultivation. Along roadsides it enjoys the runoff water that flows on to the road and saturates its margins, but it is frequently planted – and thrives – in much drier locations. The same is true of the Chaste Tree (*Vitex agnus-castus*), a plant of damp habitats, which is considered a waterwise plant under garden conditions.

Most of the ornamental plants that are suitable for the desert region are tropical plants requiring much irrigation. There are two local shrubs, however, that are waterwise. The Apple of Sodom (*Calotropis procera*) is a tall shrub or low tree which grows in the wild in Israel from Eilat all the way up the Jordan Valley. It is important to note that this plant is poisonous, but it is waterwise and does not require any special care. Its fissured trunk, beautiful inflorescences and enormous bloated fruit (hence its common name) are impressive. The plant is sensitive to cold and is particularly suitable for the area of its natural habitat, as well other frost-free places. The Fig Caper (*Capparis cartilaginea*) is a shrub of the Eilat area (South Israel). This shrub has a fresh, green look throughout the year. With a little additional irrigation it grows to a diameter of 3-4 metres. The leaves are round and fleshy. The plant blooms in summer with white flowers, followed by red hanging fruit. This plant does not exist in the gardening market but it is highly recommended, since there are few waterwise plants with such a fresh appearance that are suitable for the real desert.



*Capparis cartilaginea*

drawing by Freda Cox

Beyond the local shrubs, Australia provides us with several interesting shrubs, all of which are waterwise. These include various evergreen species of *Eremophila* and *Grevillea*. With regular irrigation they flower in summer for many months. The *Dodonaea* hybrids 'Dana' and 'Dror' were created by Mrs Sima Kagan of the Volcani Institute. Neither variety requires irrigation and both have impressive foliage and purple fruit. *Callistemon* 'Little John' is a low and rigid shrub which is drought-resistant and flowers almost all year round. The Flame Bush (*Templetonia retusa*) is a leguminous shrub with a magnificent red inflorescence in winter. It is successful without irrigation, or with little irrigation.

Additional waterwise plants are *Leucophyllum* species and varieties, which originate in the United States and produce magnificent pink flowers in summer; the Red Orchid Bush (*Bauhinia galpinii*), a tall shrub from South Africa with a beautiful red inflorescence in summer; the Bush Germander (*Teucrium fruticans*), a Mediterranean shrub with blue flowers that grows without irrigation; *Bougainvillea* 'Mini Thai', which is a small, sculptural hybrid; and the Natal Plum (*Carissa macrocarpa*) which can be used as a groundcover plant.

## **Annuals**

In Israel there are over 1,000 wild annuals, many scores of them with beautiful blooms and most of which are Mediterranean. Most of the annuals in Israel germinate in autumn with the arrival of the strong rains (usually during November), grow in winter, bloom in spring, bear fruit at the end of spring, and distribute their seeds from the end of spring and some throughout the summer and even autumn. This life cycle is adapted first and foremost to survival in the long, hot and dry summers. Annuals survive the summer in the form of dry and dormant seeds, which turn active with the shortening of the days and the damp provided by the rain. Many people thus think that annuals are suitable for a sustainable garden and that they require no care after the initial sowing. This is wrong. It is recommended to sow the seeds in small flowerpots and then plant out seedlings in the ground. After a year or two the flower carpet is liable to dwindle and weeds may supplant

our flowers. In addition, various mechanisms regulate the germination of the seeds upon the arrival of rain and not all of them germinate at once, so that only part of the seeds one sows actually germinate in garden conditions.

One of the noticeable advantages of annuals in the garden is their rapid growth, so that results are obtained after a relatively short time. Much experience has been gained in the acclimatisation and cultivation work at the Jerusalem Botanical Gardens since the 1980s, and in Kibbutz Giv'at Brenner. In the course of this work some recommended species were selected. For most of these plants germination is simple and the results are excellent, even without any irrigation. However, seeds must be collected every year. Additional simple actions which contribute to the intensification of the annual appearance are: irrigation when there is a lack of rain; early sowing in September; the pruning of the buds on upper branches to encourage branching out; and the mixing of various species, each of which blooms in a different period or which create good colour combinations.



*Anemone coronaria*  
drawing by Megan Bozkurt

The Blue Mountain Lupin (*Lupinus pilosus*) is one of the most impressive annuals. It has fingered leaves and elongated blue inflorescences. Unlike other annuals, the seeds of the lupin germinate easily and compete successfully with weeds. One can easily create blue carpets since the plant self-seeds every year. Other recommended annuals are Painted Sage (*Salvia viridis*), Syrian cornflower-thistle (*Centaurea cyanoides*), Egyptian campion (*Silene aegyptiaca*), Palestine Campion (*Silene palaestina*), Semitic Poppy (*Papaver umbonatum*), Palestinian honeywort (*Cerintho palaestina*), Egyptian Honesty (*Ricotia lunaria*) and many others. Seeds of many of these plants are collected by the Jerusalem Botanical Garden's volunteers and are available at the Garden's shop.

### **Grasses and their likes**

Perennial grasses (the *Poaceae* family) grow in dense tufts and provide a unique appearance in a garden of broad-leaved plants. Many of the grasses and their likes look as if they are waterwise plants but in fact require regular irrigation. Shaggy Hyparrhenia (*Hyparrhenia hirta*) grows throughout Israel. This is a strong plant that spreads spontaneously, which is both its advantage and frequently also its disadvantage. It is an aggressive plant that is liable to push out other plants in the garden. Due to this characteristic it is used mainly on roadsides where there is minimal care, and as a slope stabiliser. In winter the plant dies out and may be cut down to its base. When the temperature rises once more the plant turns green and looks especially good in summer, with little or no irrigation. The Purple Fountain Grass (*Pennisetum setaceum*) has a similar growth rate, but is even more aggressive. It is suitable for gardens, but also for squares and parks. Its shortcoming is that its seeds germinate easily in unwanted locations.

The winter-flowering Algerian Iris (*Iris unguicularis*) is a perennial Mediterranean plant which grows in the form of tufts. The leaves are green all year round and when not in flower the plant looks like a grass. From autumn to spring beautiful large flowers open among the leaves. From a gardening point of view the winter-flowering Algerian Iris is interesting since it grows and blooms in conditions varying from shade to full sunlight.



Few plants can bloom in such a large range of conditions. The plant is also resistant to various soil conditions as long as there is good drainage and requires little irrigation. Large old plants should be divided once every few years, thus multiplying and renewing them.

### **Sub-shrubs and perennials**

Choosing low-growing sustainable plants to fill the spaces in the garden – plants that will present a dense and uniform appearance and impressive flowers or fruits – is not easy. In the Jerusalem Botanical Garden thousands of species and varieties have been tried out over the years. Despite the many failures, much experience has been gathered regarding many scores of low-growing species that are suitable for a variety of situations in a sustainable garden. The trick is to choose plants that will not only survive conditions of stress but will also present an impressive appearance under such conditions and over years. This category includes herbaceous perennials as well as sub-shrubs with a woody base. Among the plants in this category are varieties of *Gazania*, the African Iris (*Dietes bicolor*), and the Compact Gold Coin (*Pallenis maritima* syn. *Asteriscus maritimus*), each with a different and unique appearance.

The Pink Dusty Miller (*Centaurea gymnocarpa*), the Velvet Centaurea (*Centaurea cineraria*) and the Silver Groundsel (*Jacobaea maritima* syn. *Senecio cineraria*) (both of which are also known as Dusty Miller) and the Tick Berry (*Chrysanthemoides incana*) are arid plants with a special grey appearance. The latter is especially resistant to drought.

Creeping Myoporum (*Myoporum parvifolium*) is another popular plant, of Australian origin, which has several cultivated varieties. It is an excellent groundcover plant and the taller varieties also serve as shrubs. It thrives with limited irrigation and creates impressive green areas in full sun or partial shade. The white flowers in summer are not particularly impressive. Other plants recommended are: the Yellow Horned Poppy (*Glaucium flavum*) – a biennial plant that grows on the Mediterranean coast and like other coastal plants is extremely tough in a variety of conditions; the Bristly Hollyhock (*Alcea setosa*) and the Common Hollyhock (*Alcea rosea*) – biennial

plants that self-seed and renew themselves spontaneously; the Lengua de pájaro de Tirajana (*Globularia sarcophylla*) – a sub-shrub from the Canary Islands that blooms almost year-round; the Common Emu Bush (*Eremophila glabra*) – a low Australian plant with silvery foliage that serves as a successful groundcover plant; the Golden Daisy Bush (*Euryops pectinatus*) – a sub-shrub with impressive yellow flowers; and species of *Santolina*, with their compact green or silvery appearance.

Among the new plants on the Israeli gardening market we note the Woolly Jerusalem Sage (*Phlomis lanata*) – a low-growing sub-shrub of the *Lamiaceae* family, which produces its blooms in yellow whorls in late spring and early summer. Its height is 50 cm and it is durable with regular irrigation, but one may stop irrigating it after it has become established.

### **Succulents**

More than any other group of plants, the fleshy plants represent sustainable gardening. Many of them are very tough and require very little care. Two local recommended succulents are the Mediterranean Stonecrop (*Sedum sediforme*), a perennial succulent with tall greenish summer inflorescences and decorative dense leaf clusters. This plant is suitable for rock gardens and the edges of flowerbeds and grows with little irrigation under conditions of semi-shade. After it has become established one can stop irrigation. Its cuttings root easily and it is therefore easily propagated. Samphire or Sea Fennel (*Crithmum maritimum*) is another local plant which grows in the wild along the Mediterranean coast. It withstands cold and has a green and fresh appearance all year round without additional irrigation.

### **Bulbs**

There is no need to elaborate on how beautiful is a corner in the garden in which there are the erect stems of squills (*Drimia*), a colourful carpet of anemones, or a dark wall lit up by scores of wild cyclamen flowers. Most bulbs are suitable for the sustainable garden. They disappear in the hot season, thus avoiding the summer, and sprout again in autumn. It is important to bear in mind that some of them are very sensitive

to dampness in summer (*Cyclamen* and *Narcissus*) and that they all require well-drained soil.

The Sea Squill (*Drimia maritima*) is one of the most highly recommended plants for a sustainable garden. The fact that it blooms at the end of summer and in early autumn, at a time when there are few native flowers, is important, and the leaves are beautiful and green for many months, until summer. The Sea Squill may be irrigated a little towards the end of summer in order to push its flowering forward a little. The squill's bulbs spread and after a few years create beautiful clusters. In every cluster of bulbs several will bloom, and thus there will be flowering every year.

*Cyclamen persicum* is the national flower of Israel. Its wild type is highly recommended. The plant has many advantages as a garden and pot plant: the flowers are beautiful, the foliage is varied, the blooming period is long, the number of flowers per plant is large, the tuber lives for many years, and – most important of all – flowering occurs in shady conditions. The plant is suitable for small gardens, most of which are shaded by buildings and trees. In recent years it has become possible to purchase tubers of the wild type. Although this cyclamen may be grown in conditions of absolute shade, it will thrive in semi-shade, in conditions of filtered light and even in full sunlight. It is possible to prolong its 'rainy season' by means of additional irrigation in autumn and in periods when rain is lacking in winter and spring, until the beginning of May. This will enable the plant to create a larger tuber that will develop more leaves and more flowers the following year. It is important to leave the tubers dry in summer. It is also important to remember that this species is not hardy.

The Crown Anemone (*Anemone coronaria*) constitutes one of the most worthwhile investments in gardening. The reasons for this are the long flowering period, the variety of colours and the low price of this plant. It is possible to purchase several hundred tubers and create a flowering carpet. The additional advantage of the anemone is that the tubers live for several years, and seeds that are distributed from the fruit also germinate and bloom after two or three years. The plant requires no special care.

The Broadleaf Wild Leek (*Allium ampeloprasum*) develops a tall scape and a purple or greenish flowering head in early summer. The plant has not undergone selection or special care, and consequently the bulbs will not bloom all year round. However, with the planting of many bulbs some will bloom every year. Even though this is a Mediterranean plant, it is suitable for the margins of irrigated flowerbeds where it will enjoy surplus water.

Other recommended plants from this group are varieties of the common narcissus (*Narcissus tazetta*), the Mesopotamian Iris (*Iris mesopotamica*), the Hyacinth Squill (*Scilla hyacinthoides*), the Mediterranean Sea Daffodil (*Pancratium maritimum*), *Vagaria* (*Vagaria parviflora*) and many others.



*Cyclamen persicum*, the national flower of Israel  
drawing by Megan Bozkurt

To sum up, the choice of appropriate plants for a garden is not simple. Various plants are suitable for different situations and we may not always be aware of what exactly will suit the ecological niches created in our own garden. The way to succeed is, of course, by trial and error.

More information about the Jerusalem Botanical Gardens may be found on our website [www.botanic.co.il](http://www.botanic.co.il) and on our Facebook pages.

**Bibliography:**

- Gertman Y. & Heller A. (2006), *Wild Plants in the Ornamental Garden* (in Hebrew), The Ministry of Agriculture and Rural Development, and the University Botanical Garden Jerusalem.
- Heller A. (2008), 'A Sustainable Garden' (in Hebrew), *Gan Venof*, Vol. 63, No. 3, pp. 64-66.
- Hermon H. & Metzger G. (2007), *Plant Catalogue* (in Hebrew), the Metzger Nursery, Second edition.
- Pines N. (2008), *Ornamental Trees in Israel* (in Hebrew), published by the author.
- Fragman, O., Plitmann, U., Heller, D. & Shmida A. (1999). *Checklist and Ecological Data-Base of the Flora of Israel and its Surroundings*. Israel Nature and National Parks Protection Authority.
- Brenzel K.N. (ed.) (2012), *The New Sunset Western Garden Book*. 9th edition. Sunset Publishing.

*Translated from the Hebrew by Susan Hattis Rolef*

Seed of *Alcea rosea*, *Carissa macrocarpa*, *Crithmum maritimum*, *Drimys maritima*, *Pallenis maritima*, *Pancreatium maritimum*, *Salvia fruticosa* and *Vitex agnus-castus* is available from the MGS Seed Exchange. Contact Chantal Guiraud, [mgsseedlist@gmail.com](mailto:mgsseedlist@gmail.com).