

Chapter 4: Selecting plants for your water-conserving garden

Topics to be covered in this chapter

- I. Major functions of plant materials
- II. Appropriate plant selection
- III. Native plants
- IV. Safety considerations
- V. Selecting plants at the nursery
- VI. Planting in containers
- VII. Design tips for plant placement

Definitions

Accent plant: a plant with special characteristics that attracts attention due to its flowering color, leaf texture, height, or form; this plant is usually used to provide a focal point to a particular grouping of plants.



Fig. 4.1: The strong architectural form of the Golden-tooth Aloe (*Aloe nobilis*) provides a focal point in this plant grouping where it is used as an accent plant.

Annuals: herbaceous plants that complete their growing cycle in a single season and must be planted anew each year.

Border: annuals or perennials developed to form rows or masses placed along a path, or at the edge of a planter.

Herbaceous plants: non-woody plants that have flexible, green stems.

Oasis area: small, highly visible and highly maintained, and the lushest area of the landscape - such as the public zone, or area around the patio - that contains high water-use plants. The plants in these zones need to be watered regularly in the absence of rainfall.



Fig. 4.2: The oasis area should be placed closest to the house to provide maximum use and enjoyment.

Perennials: herbaceous or woody plants that continue to live from year to year.

Specimen tree: a tree with particularly impressive characteristics embodied in its flowers, leaf texture, or form. Specimen trees can be planted alone or in groups, usually in the most important areas of the garden, and generally are installed as mature plants, when their true form and unique, individual character has begun to emerge. Specimen plants tend to be more expensive than are plant materials used en masse.



Fig. 4.3: The lacy and graceful Silk Tree (*Albizia julibrissin*) with its flat spreading crown functions as a specimen tree in a prominent location near the entrance to a residence.

Succulent: a plant that stores water in its leaves and stems, and occasionally in its roots. The water-storing part of a succulent plant is swollen, often greatly so. This attribute creates conspicuous and often striking growth forms, and therefore, most succulents can be used as accents, if they are large enough to be readily noticed.



Fig. 4.4: Sempervivum sp. is a succulent that stores water in its fleshy leaves.

Introduction

Whether establishing a new garden or renovating an existing one, proper plant selection is very important towards creating a successful garden. When selecting plants, focus on detail, and plan for combinations of plants based on their design characteristics such as size, texture, color, and form. Before purchasing the plants, evaluate your choices according to the intended aesthetic, spatial, and climatic functions of the plants. As you begin to select and introduce the plants into your landscape, situate them where they can most effectively perform their intended functions, while taking care to group together plants of similar water requirements.

I. Major functions of plant materials

Aesthetics:

The visual principles of color, texture, scale, and rhythm can be used to create an aesthetically pleasing planting environment. Special plants of high visual interest, such as specimen trees or perennial borders, can be used to dramatize certain views. Plants can also unify other design elements, serve as neutral backgrounds to focal points, can relate a structure to its surrounding site, and reduce the ‘hardness’ of the adjacent or surrounding architecture.

Creating pleasant microclimates:

One can influence the microclimate of an outdoor space through the careful placement of trees and shrubs, so as to block excessive sun or wind.

Tips

- Trees with dense canopies produce dense shade that may restrict what you can grow underneath them. On the other hand, trees that produce filtered shade provide protection from the sun and allow undergrowth.
- Plants intended as a windbreak should be planted perpendicular to the prevailing winds, and should consist of several rows of different plants types (e.g. one row of trees, one row of shrubs, one row of smaller shrubs), to minimize wind infiltration.

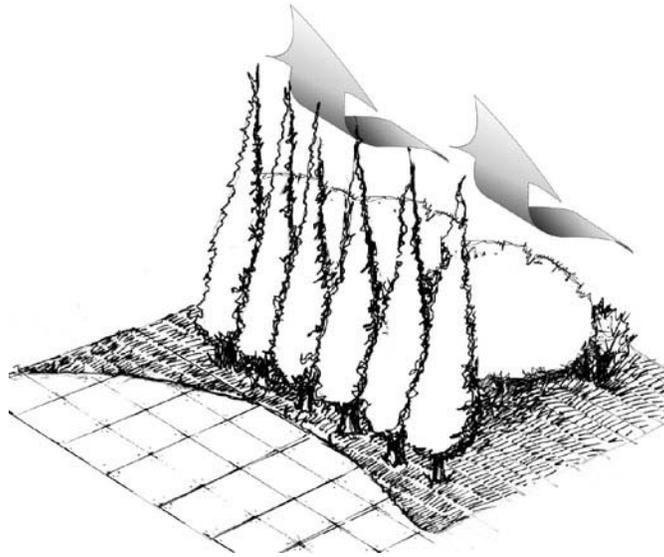


Fig. 4.5: The use of sturdy, evergreen plants with dense foliage provides an effective windbreak.

Screening:

Plants that act as visual screens can range from semi-transparent to uninviting thorny hedges. Such screens can be used to provide privacy, mark boundaries, discourage intruders, or block unpleasant views. Screen plants should be dense and tall enough to provide a visual barrier.

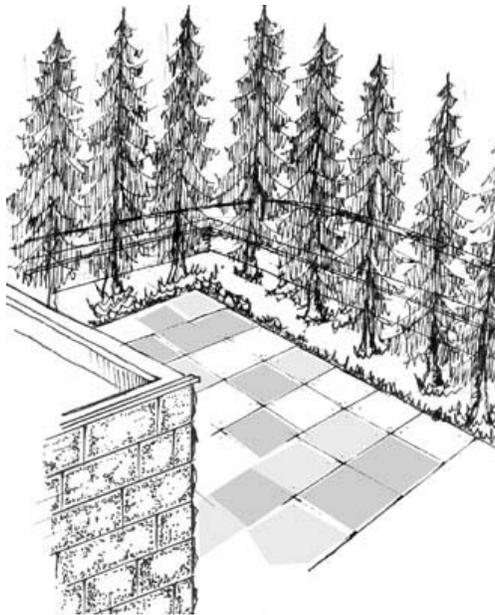


Fig. 4.6: Plants as visual screens.

Space defining elements in the landscape:

Plants can serve the same functions that many “hard” building materials serve: to form outdoor walls, fences, and canopies that define spaces or circulation routes.

Although they require more space than hard building materials, plants typically are less expensive to buy and install, and require little maintenance, if properly chosen.

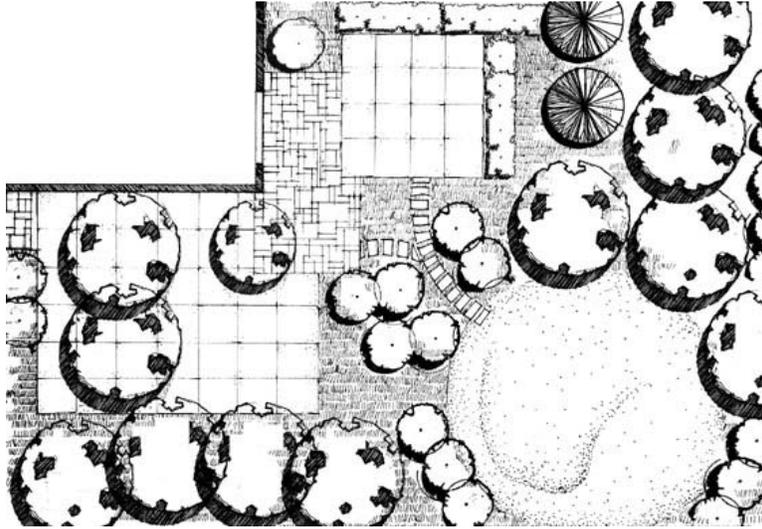


Fig. 4.7: Plants as space-defining elements.

Tips

- Use dense and low growing plants as ground covers.
- To create a canopy, use plants that have adequately dense leaves to define an overhead space, and that are tall enough to walk under, without the need for constant pruning.
- Use deciduous vines for overhead trellises, to allow the winter sun to enter.

Wildlife attraction:

Planting can attract birds, butterflies, or other forms of wildlife for human enjoyment. Conspicuous fruits, both fleshy and dry, attract birds, and showy, nectar-bearing flowers may attract hummingbirds and butterflies.

Environmental stabilization:

Plants can be used to stabilize eroded slopes and to revitalize damaged soils. When using plants to prevent water erosion, such as on a slope, use plants with fibrous roots, and low-growing plants with dense foliage that is close to the ground.

II. Appropriate plant selection

A number of issues need to be taken into consideration when selecting plants for your water-conserving garden. In addition to selecting drought-tolerant plants, select plants that are compatible with the design of your landscape and that are well suited to your site and local environment. Choose plants that can tolerate the site's soil type and light levels. For example, although junipers are extremely drought tolerant, they cannot tolerate wet soils or heavy shade.



Fig. 4.8: An example of a water-conserving garden that incorporates a variety of drought tolerant plants including a perennial border of *Coreopsis* (*Coreopsis auriculata*), Rosemary (*Rosmarinus officinalis*), and Japanese Barberry (*Berberis thunbergii*).

Other important criteria to consider when selecting plants for your garden include the following:

- Hardiness (resistance to frost).
- Growth-rate: slow-growing plants might require less maintenance (such as pruning and sheathing), than do fast-growing ones; but these plants take considerable time to reach their desired size.
- Mature size and form: consider if the plant will remain in scale with the rest of the landscape as it matures, and if it will compete with other plants for space, nutrients, and water.
- Striking form and/or showy flowers: accent plants have bold forms and/or showy flowers that can add interest and color to the landscape.
- Texture: consider if the leaf texture is fine, medium, or coarse, and if it combines well with the adjacent plants.

Plant texture

- Coarse textured plants such as *Echeveria imbricata* (Hen and Chickens) are highly visible and bold plants with large leaves. They have an informal feel to them, and also serve to provide clear focal points in the landscape.
- Moderate textured plants such as *Berberis thunbergii* (Japanese Barberry) are less transparent and are stronger in silhouette than are coarse-textured plants. They serve to unify a composition and to provide a link between coarse and fine-textured plants.
- Fine textured plants such as *Artemisia arborescens* (Faith Raven) have small leaves, thin branches and twigs, and/or a tight dense habit of growth. They provide a soft and delicate look to the landscape, and a neutral background for other plants.



Fig. 4.9: Hen and Chicken (*Echeveria imbricate*) is an example of a coarse textured plant with large bold leaves.



Fig. 4.10: Japanese Barberry (*Berberis thunbergii*) is an example of a medium textured plant.



Fig. 4.11: Faith Raven (*Artemisia arborescens*) is an example of a fine textured plant with small leaves and twigs.

- Color: color is an easily discernable visual quality in plants that is clearly present in the foliage, flower, fruit, twigs and branches, and trunk bark. Dark colors convey a quiet, peaceful feeling, and give a sense of solidity and weight. Bright colors convey a light cheerful atmosphere. Flower color can be used as an accent that provides contrast to the green summer foliage. Use plants with different flowering seasons, so that your garden is in bloom throughout the year.

- Functional use: study if the plant is suitable for its intended location and purpose. For example, a large plant or tree in front of a window facing a pleasant view might block that view. On the other hand, a large plant or tree in front of a west-facing window will provide protection from the harsh afternoon summer sun.

III. Native plants

Jordan is blessed with a variety of beautiful native plants that are intrinsically tolerant to drought conditions. Because of their adaptability to arid regions, they are ideal for use in water conserving gardens and in the larger landscape context. They also provide other benefits such as affording habitat for native fauna. Moreover, native plants provide color throughout the year, since their various species have different blooming seasons.

Unfortunately, most of these plants are not yet commercially available at nurseries; among the aims of the CSBE project on water conserving landscapes is to encourage their commercial propagation. In this context, it is imperative that these plants are not harvested from the wild and that purchased native plants are obtained from professional nurseries that have propagated them.



Fig. 4.12: Cyclamen (*Cyclamen persicum*) is an example of Jordan's rich and diverse native flora.

IV. Safety considerations

Designing a safe environment depends on matching the proper plant with the proper place. A number of safety issues should be considered when determining the location of a given plant in the landscape.

Ask the following questions

- Is the plant poisonous?
- How much litter does it produce?
- What is the natural strength of its limbs?
- Will drooping branches obstruct pathways?
- Will its roots break pavements?
- Does it have thorns?
- Does it attract stinging insects or other pests?

Plants that can cause hazards or nuisances

Hazard/Nuisance	Species	Comments
Poisonous plants	Privet, Oleander	Children might be tempted to sample bright-colored berries or leaves.
Debris: fruits and nuts	Olive, Chinaberry	Berries and nuts can be slippery or difficult to walk on. They may result in floor litter, and can stain paved surfaces.
Cones and seed pods	Pines, Carob	Cones, while having many decorative uses, can cause problems for pedestrians and small-wheeled vehicles.

Drooping branches	Willow, Bottlebrush	Branches can drop below minimum clearances on walkways, and may cause facial and eye injury.
Shallow roots	Willow, Pepper Tree	Surface root systems can break apart paved surfaces.
Odor	Mimosa, Carob (male)	Emit unpleasant odors during flowering season.
Thorns and spikes	Barberry, Firethorn	Plants with thorns or spikes can be painful and dangerous to brush against or fall into.
Insects and pests	Fruit trees	Not recommended near seating areas.

V. Selecting plants at the nursery

When you are ready to select an individual plant, keep the following factors in mind:

- Proportion of the size of the plant to the size of its container: select a plant that is of average size relative to its container. Do not pick the largest plant, which may have had its roots overgrow in relation to the container size, nor the smallest plant, which may not have been in the container too long.

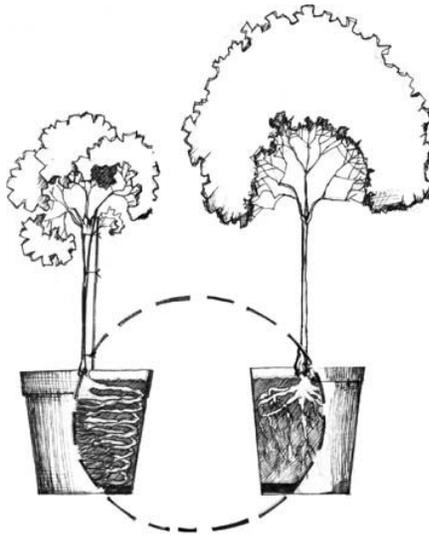


Fig. 4.13: When selecting a plant at a nursery, check its size relative to its container, and make sure it is vigorous and healthy.

- Vigor and health of the plant: look for a plant that has a strong trunk and that can stand alone without a stake. Also, look for trees that clearly taper from the bottom to the top. Limbs should be strong and healthy, and branches should be evenly spaced vertically and radially around the trunk(s) with wide branch angles.

Beware

- Make sure that there is no evidence of insects or disease. Beware of signs such as holes in leaves, discolored foliage, markings left by insects, etc.
- The leaves should be uniform in size and color.
- There should be no fungus or weed problems in the container.
- The trunk and branches should not be bruised, broken, or damaged.
- Bruised, tattered, or torn foliage, and dried or shriveled twigs and buds might indicate wind drying, in addition to insect damage and disease.

VI. Planting in containers

Planting in containers of varying shapes and heights can serve to display foliage textures and forms, and to provide lively color and form to your terrace or hardscaped areas. However, a few issues need to be taken into consideration when planting in containers:

- Plants in containers need more watering than those planted directly in the ground. However, you can reduce the amount of water they require by choosing the most suitable plants, containers, and soil mix.
- Your container garden might be your oasis area, where you can place desirable plants that have higher water needs.
- Many drought-resistant plants are well suited for containers, since they can tolerate water deprivation for considerable periods of time.
- Water-retaining crystals, non-porous containers, and mulches can be used to reduce the amount of water that the plants need. When exposed to water, water-retaining crystals swell with water and act as micro-reservoirs, slowly releasing moisture into the soil mix. Add these crystals before planting, and only use the recommended amounts.
- Make sure that your containers have proper drainage, so as to prevent root rotting. Otherwise, water tends to collect in the container, saturate the soil, and prevent it from breathing, thus causing the roots to rot.
- Although terracotta containers provide aesthetically pleasing results, their porosity will cause the soil to quickly dry out. Painting or sealing such containers with varnish from the inside will reduce moisture loss.
- Plastic and fiberglass containers retain moisture well, but can gain considerable heat when exposed to the sun. Placing them inside another container, such as a wooden planter, will help reduce moisture loss.
- Whenever possible, choose large containers, since the larger the volume of the soil mix, the slower it dries out. Also, grouping containers allows them to protect one another from the heat and drying winds.
- Soil tends to get compacted in containers, and this prevents the soil from "breathing." Consequently, it is necessary to change the soil on a regular basis. The water-retaining crystals mentioned above create spaces between the soil particles and therefore help reduce soil compaction in containers.



Fig. 4.14: Planting in containers serves to emphasize a plant's dramatic foliage and forms.

VII. Design tips for plant placement

- Use odd numbered groupings (1, 3, 5, ...), to give a more natural look to the landscape.
- Use bands of low-growing plants or ground covers to tie together and unify groups of taller shrubs.
- Space your plants properly to ensure easy maintenance and efficient use of water (taking into account the mature height and spread of the plants). Over-planting not only increases buying and installation costs, but also results in long term maintenance problems, since the plants will get entangled with each other and will compete for water and nutrients.
- Select plants with sizes and forms that allow them to fit in their intended location without the need for extensive and constant shearing and pruning. Some plants are naturally tall and thin, others short and spreading. Also, some are irregular in form and have widely spaced branches, and others are compact in form and have dense foliage.
- Avoid using of too many types of plants. Otherwise, your landscape will lack unity.
- Create water zones by grouping together plants of similar water requirements. This will help you create a water-efficient garden.



Fig. 4.15: In order to increase a garden's efficiency in water consumption, plants with differing water needs should not be grouped together. For example, it is not recommended to group English Ivy (*Hedera helix*), which requires regular irrigation, next to Agaves (*Agave sp.*), which do not require irrigation after establishment.

Plant selection tables:

For lists of drought tolerant as well as water consuming plants, please refer to the manual's appendices.