

Water conservation

at the Royal Botanic Gardens Melbourne

RBG Melbourne is widely recognised as one of the world's finest botanic gardens. There are 12,000 species and 52,000 individual plants in the living collections, including trees and other plants of great cultural value. Many of these plants are rare or irreplaceable, and some are even extinct in the wild. It is important that the survival of these plants and the heritage-listed landscape is guaranteed by an adequate supply of water.

Water conservation is also an important objective for the Royal Botanic Gardens Melbourne. In 2005-6, RBG Melbourne used only about 40% of the amount of water for irrigation that was used a decade ago. We have achieved this through staff training and awareness of water issues, irrigation system development, and improved horticultural practices.

In December 2005, and with the continuing partnership and support of South East Water Limited, a Water Audit of domestic water use was commissioned of all RBG-managed facilities. This has contributed to a reduction of around 18% in domestic water consumption for 2005-06 compared to 2004-05.

The Royal Botanic Gardens Melbourne is continuing to work with South East Water Limited to minimise water usage during the current water restrictions.

Water Management Plan

The Royal Botanic Gardens is committed to improving long-term water use sustainability. A Water Management Plan is being developed currently in partnership with South East Water Limited for both sites: Cranbourne and Melbourne Gardens. This Water Management Plan is expected to address landscape, environmental, economic and social needs for more efficient use of water, and to secure viable water resources for the protection of the heritage landscape and future enjoyment of the Victorian community.

How does the Royal Botanic Gardens conserve water?

Our staff are trained in current irrigation management practices and use a weather-based irrigation scheduling system that incorporates plant requirements, climatic conditions, soil water-holding capacity, and plant root depths. The RBG aims to maintain plant health, rather than promote excessive growth. Efficient irrigation scheduling means that the right amount of water is applied at the right time.

Composted mulch is used on garden beds at depths of 50-75mm. The mulch reduces soil water losses and improves the water-holding capacity of the soil.

The RBGM uses water-sensitive design principles for all new landscape areas. The Water Conservation Garden and indigenous landscape at Long Island are key examples of this approach. The following collections feature plants adapted to dry conditions:

- Arid Collections (cacti and succulents)
- Californian Collection
- Grey Garden
- Cycad Collection
- Lower Yarra River Habitat (indigenous plants of Melbourne)
- Southern Africa Collection

Turf areas are being progressively converted to warm-season grasses, which typically use up to 30% less water than cool-season grasses such as Ryegrass.

Irrigation in each area takes in to account the water requirements of the plants in that area, the soil properties and the prevailing weather conditions. RBG technical staff closely monitor the central control irrigation system.

An automatic weather station provides climatic data for effective irrigation management. The use of the weather station data contributes to significant water savings each year.

The performance of the irrigation system equipment and sprinklers is regularly checked.

Staff training is a key factor in improving irrigation management and reducing water consumption.

More detailed information can be found at:

<http://www.rbg.vic.gov.au/>

How can you conserve water in your own garden?

1. Decide what areas or plants actually need additional watering

Many plants will survive on the water supplied by natural rainfall. For example, locally-native species are adapted to the weather conditions in your area. Many plant species from arid and Mediterranean climates can also survive for long periods without rain or supplementary irrigation.

2. Irrigate your plants according to weather conditions

How often you water your plants will need to be adjusted from week to week. Depending on rainfall, no irrigation will normally be needed for established plantings in winter compared to typically once every 7-14 days in summer. Regularly adjust timers and controllers to ensure the right amount of water is applied at the right time.

3. Group together plants with similar water requirements.

Some plants need more water than others. By grouping plants with similar water requirements, you can help to prevent over- or under-watering individual plants. It can also simplify the design and operation of a watering system.

4. Choose plants with adaptations that make them natural water conservers.

In general, plants with hairy, succulent or wax-coated leaves or with fine, stiff foliage are adapted to growing in dry environments. Grey-or silver-foliaged plants are also usually suited to dry conditions.

5. Apply a layer of mulch annually to help minimise water-loss from the soil.

Mulch improves the long-term water-holding capacity of the soil and also restricts weed growth that may compete with plants for water. It should be applied in layers from 50-75mm thick. Mulch that is too thick or too fine may prevent rainfall and or irrigation from reaching the soil.

6. Consider replacing part or all of a lawn with a woody groundcover or change to selected *warm-season grasses or locally native grassland.

Cool-season grasses such as Ryegrass usually need regular watering. *Warm-season grasses such as Buffalo, Couch or Kikuyu use water more efficiently (up to 30% less) and more readily tolerate drought. Locally-native grasses are adapted to seasonally dry weather

7. Water deeply between the evening and early morning.

This is when evaporation from soil and transpiration from plants is at its lowest. Watering deeply provides a larger 'reservoir' of water in the soil and also encourages the development of deep root systems that are more drought resistant. About 10mm (sandy soils) to about 30-40mm (loamy soils) of water may need to be applied to wet the soil to a suitable root-zone depth.

8. Get to know your garden and its water needs.

Conditions within a garden can vary dramatically. There might be cool, shady areas or hot, dry areas; sections with well-drained soils or boggy soils; sloped or flat areas. Take advantage of this by choosing plants that are suited to the 'local' conditions or microclimates of your garden.

9. Understand the performance of your irrigation system

There is more to watering your plants than just turning on a tap or setting a timer. A well-designed irrigation system will apply water uniformly and at the correct precipitation rate. High watering rates (>10-15mm/hr) can result in runoff rather than infiltrating the soil. Check the uniformity of watering and the application rate by using a number of catch-cans (pet food tins) spaced evenly between sprinkler heads. Measure depth of water in tins (in mm) after watering to work out average precipitation rate and the uniformity of your watering system.

10. Improve your soil.

In new garden beds, incorporate about 40mm of good quality, well-composted, fine organic matter in the top 200mm of the soil profile. This should improve the water-holding capacity of the soil. For established gardens, the regular application of mulch will also improve water-holding capacity by gradually increasing the organic content of the soil.

** Some warm-season grasses can be environmental weeds and invade natural habitats. Please check if this will be a problem for your local area with horticultural experts or local government prior to planting any of these species.*

More detailed Information can be found at:

RBG Melbourne Website

<http://www.rbg.vic.gov.au/>

South East Water Limited

(General ways to save water for residents)

http://www.southeastwater.com.au/sewl/index.asp?link_id=30.362

(Irrigation Management)

http://www.southeastwater.com.au/sewl/index.asp?link_id=30.33

Irrigation Association Australia Limited

("Your Guide to Good Garden Watering")

<http://www.irrigation.org.au/download/standards/Home%20Gardener%20FINAL%20web.pdf>