Outdoor water use

Around 40% of household water is typically used outdoors.

There are many easy ways to reduce outdoor water use, save money, time and effort, and benefit the natural environment.

Garden design

Paved areas increase heat radiation and water runoff from the site. Minimise the use of paving in outdoor areas.

Group plants with similar water needs together. Divide plants into high, medium and low water-use zones in your garden. (see the appendix *Landscaping and garden design*)

Grow high water-use plants together.

Examples of plants for water-use zones

High water-use — Lawns, most vegetables, fruit trees, exotic shrubs like azaleas and camellias, flowering herbaceous annuals and many bulbs

Medium water-use — Hardy vegetables like pumpkins and potatoes, hardy fruit trees and vines like nut trees and grapes, many herbs, some exotic shrubs, most grey or hairy leafed (tomentose) plants, roses and daisies

Low water-use — Most Australian natives including banksias, grevilleas and eucalypts; succulents and cacti, olive trees and some exotic ornamentals such as bougainvillea

Plant trees to create natural shade and windbreaks to reduce evaporation. Locate high water-use plants in areas where they are sheltered from drying winds and strong sunlight.

Where possible, use alternative water sources, such as rainwater or greywater, for high water-use plants.

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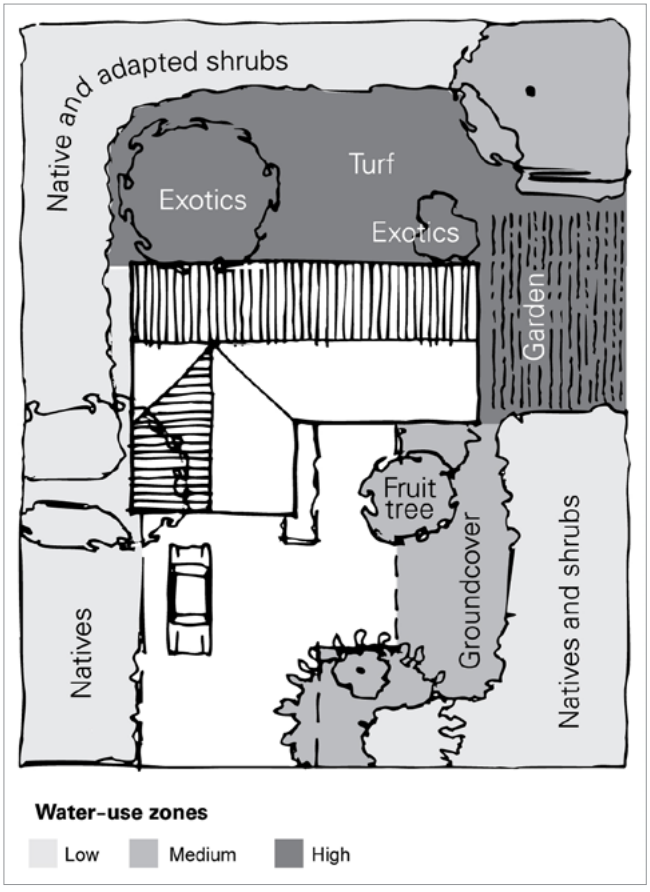


Group plants with similar water needs together.

Soil improvement

Soil types and water availability

Water holding capacity is determined by the texture of the soil and levels of organic matter. The greater particle surface area of finer soils gives them a greater capacity to hold water.

The three main soil types are sand, loam and clay. Sandy soils drain rapidly; clay soils hold water but make it difficult for many plants to grow; loam soils are between the two. A soil with plenty of organic matter and a mixture of fine and coarse particles that form into small composite particles (called 'peds') is ideal.

Hardy, deep rooted plants can help break up poor soils and adding composted organic matter encourages microbial activity and worms to improve soil condition and moisture retention.

Soil testing

A simple test to identify soil type is to take a handful of soil from the garden and add just enough water to mould it into a ball. Test soil from various sites and from different depths in the garden.

Sandy soils crumble and don't form a ball. They are light coloured, have little or no smell. Water drains away rapidly and they are low in nutrients.

Loam soils form a ball that is friable, usually brown with a pleasantly 'earthy' smell. They hold and drain water well and provide good levels of nutrients. Loams are best for plants.

Clay soils ball easily and range in colour from white to red or dark brown. Clay has fine, dense particles that do not allow water to soak in easily, and become hard and resist water when dry. They may be high in nutrients that are unavailable to most plants.

Improving soil

Add organic material. The water and nutrient holding capacity of sand and clay soils can be improved by the addition of organic matter such as manure, leaf mould, worm farm castings and compost. Dig in to a depth of 15–20cm.

Gypsum and sand added to clay soils help break the clay into clumps, and improve air space and drainage. Add gypsum at the rate of 0.5–1.0kg/m^2. A combination of gypsum, sand and composted organic matter produces the best results in clay soils.

Chemical additives often produce a quick fix but may have adverse environmental impacts in the medium or long term. Natural methods are better. Make use of organic food waste by using a home composting system or worm farm to supply natural soil conditioner and fertiliser — and reduce waste going to landfill.

Water crystals and soil wetting agents can increase soil moisture for use by plants. Soil wetting agents allow water to penetrate dry soil surfaces and prevent runoff; water crystals help store water in the soil.

Lawns

Reduce lawn area

Lawns consume up to 90% of water and most of the energy used in most gardens. They also take the most time and money to maintain. Lawns need mowing, weeding, edging and fertilising, and equipment requires fuel and maintenance.

Reducing lawn area is the easiest way to save water. Create garden beds or spread mulch in areas used infrequently or where grass grows poorly.

Replace lawn areas with porous paving, pebbles or drought-tolerant ground covers such as prostrate grevilleas, snake vine (*Hibbertia scandens*) or myoporum. Seek advice at your local plant nursery.

Vegetable gardens produce low-cost food for the household and save on 'food miles'.

Reduce water use on lawns

Different grass types have different watering needs. Select a turf that needs less water such as couch, Queensland blue couch, buffalo, Nioaka and Nathus

Green (*Sporobolus virginicus*), tall fescues and carpet grass. Many blends and species are region specific. Ask your local plant nursery for the most suitable low water species for your climate and soil type.

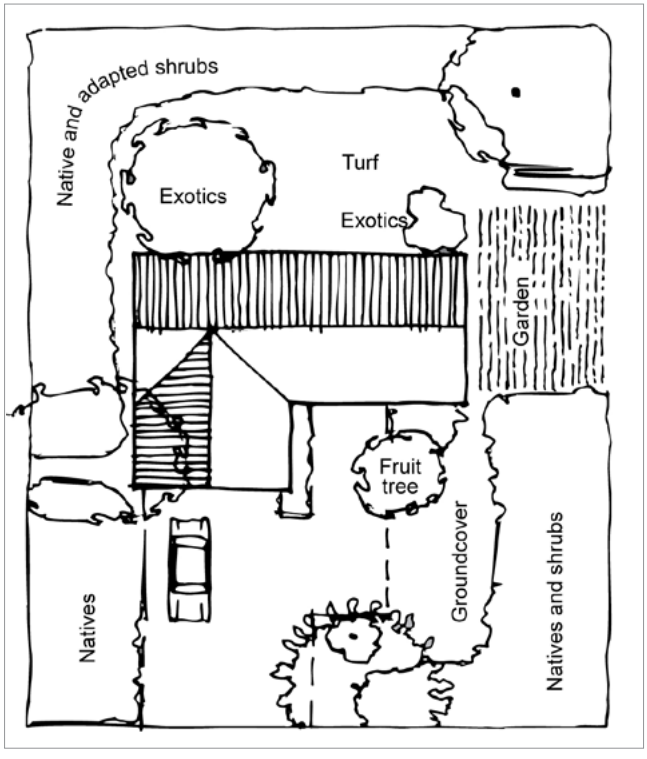
Do not 'scalp' the lawn. Set your mower to cut 4cm or higher. This encourages a deeper root system and the longer grass blades shade the soil, reducing evaporation.

Water only when the lawn is showing signs of stress. Long, slow soakings that allow water to penetrate to a depth of about 15cm encourage a deeper, more hardy root system.

A lightly fertilised lawn uses up to 30% less water than an unfertilised lawn of the same grass type. A diluted spray of the liquid drained from your composting worm farm (or purchased from a commercial vermiculture operation) is ideal fertiliser. It returns your waste to the soil and plants.

Plant selection

Select plants that suit the soil and garden conditions. Local indigenous plants have evolved to handle local conditions. Many other Australian native plants have evolved to cope with very little water.



Careful plant selection can make an interesting and attractive low water-use garden.

Some exotics from South Africa, California and the Mediterranean also cope well with limited water. But that may also mean they have the potential to become environmental weeds. Check with your local natural resources or catchment board particularly in outer urban or country zones and near conservation areas.

> *Avoid changing gardens during summer when more moisture is lost from disturbed soils and it is difficult for new plants or lawns to survive.*

Explore your neighbourhood to discover what appears to grow well in your area. Take note of street trees, which are rarely watered or maintained.

Incorporating native plants into the garden provides habitat and food for birds and insects. They, in turn, can aid in pest control and pollination.

Mulching

Mulching is an essential element of a water-efficient garden. Mulching around plants saves water by preventing evaporation and reducing runoff.

Mulching limits weed growth and can improve soil conditions (depending on the type of mulch).

Mulch can be in the form of leaves and grass clippings, sawdust, rocks and gravel, straw and other crop residues, bark and woodchips. Coarse mulch is excellent for reducing weeds and keeping soil cool but it won't improve the soil. Some nitrogen-rich fertilisers may need to be added before the mulch is laid. Medium and fine mulch are also good for limiting weed growth but can wear faster over time. This can be prevented by less frequent watering.

Before mulching, clear weeds, break up the soil crust and water the area. Spread mulch evenly to a depth of 7–10cm. If you are using fine mulch like sawdust then a thin layer of around 2.5cm is sufficient. Reapply mulch at least once a year, or as it breaks down. Do not allow organic mulch to touch woody plant stems and trunks or it may cause collar rot and kill the plant.

Mulch reduces evaporation, limits weed growth and can improve soil condition.

Watering

Water early in the morning or evening as this allows water to penetrate before it evaporates. Early morning watering allows plants to use the water throughout the day.

Less frequent, deep soakings train plant roots to grow down into the soil and increase the drought tolerance of plants. Water the roots, not the leaves. Water on the leaves evaporates easily and can lead to scorching.

Controlling weeds reduces competition for water with your plants.

> *Occasional deep soakings train plant roots to grow down into the soil and increase drought tolerance.*

Ideally, fertilise plants with organic liquid fertiliser or compost. Dry fertilisers take up some water from the soil and can raise salt levels.

Hand-held watering could be more efficient than a poorly designed automatic watering system.

Water saving equipment and products

Install alternative water supplies such rainwater tanks and greywater systems (see *Wastewater reuse*). Generally speaking most water is used internally in toilet flushing, and in laundries, showers and baths, which can be used as greywater for garden irrigation.

A home incorporating whole-of-house water design collects rainwater to use internally and uses it a second time for greywater irrigation.

Poorly designed and inefficient automatic irrigation systems may use more water than hand-held hoses and sprinklers. Automatic systems set to turn on regardless of weather conditions and soil moisture content waste water. Systems not adjusted to seasonal needs may deliver water too fast, resulting in runoff, or supply more water than plants require.

Install soil moisture sensors that trigger cut-off switches when it rains and adjust watering duration according to soil moisture levels.

Drip irrigation is the most efficient system. It delivers water to the roots of individual plants and minimises evaporation and wind drift. Reticulated drip systems are preferable.

Drip irrigation is the most efficient watering system.

Reticulated systems control drip feeding for maximum efficiency.

Water-storing crystals can hold hundreds of times their weight in water. When mixed with water they form a soft gel and retain a reservoir of moisture for plant roots during dry periods. Some products can be sprayed onto plant surfaces to reduce sunburn and water loss.

Soil wetting agents allow water to penetrate deeply into soil.

Humectants, or moistening agents, attract moisture from air spaces in the soil and are particularly effective in sandy soils.

Beyond the garden

Water used outdoors for activities other than gardening can also be saved.

Wash your car or boat at a car wash that recycles water and detergents. At home, washing the car (or dog) on the lawn prevents water and detergent flowing down the drain. Choose a different place on the lawn each time.

Wash the car with a spray gun that has a trigger control.

Lawns have a limited ability to take up the nutrients from detergents. If the lawn becomes water-logged or deteriorates, your car may be compacting the soil or nutrient levels are too high. Aerate the lawn and switch to the car wash for a few months.

Swimming pool covers significantly reduce evaporative losses and can save 11,000–30,000L of water a year. An overfilled swimming pool can lose more water through splashing.

Use a broom instead of a hose to clean paths and the outside of buildings.

Save up to 30,000L of water a year by covering your swimming pool.

Smart Approved WaterMark

Further reduce water use outdoors by choosing products and services labelled with a Smart Approved WaterMark. This label is approved for primarily outdoor goods and services that satisfy a set of criteria as assessed by technical experts, to effectively achieve water savings. Look for the Smart Approved WaterMark on items and services, or check the database of approved products and services at www.smartwatermark.info.

Outdoor goods and services with the Smart Approved WaterMark can save water.

It may be possible to obtain rebates on water efficient garden equipment. Your local council should be able to advise you.

References and additional reading

Contact your state, territory or local government for further information on outdoor water use: www.gov.au

Online calculators to help determine outdoor water savings:
– Victoria, www2.smartgardenwatering.org.au/
– Sydney, www.ap.urscorp.com/watertool/

Savewater Alliance. www.savewater.com.au

Smart Approved WaterMark. www.smartwatermark.info

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