

Drought Proof Your Garden with Waterwise Tips

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1. Harvest rain water from house roof (tanks)

How much rainfall can I collect?

Using Melbourne's *long term average* rainfall, you can calculate the amount of rainfall

- that falls on your house/garage/shed roof, and
- how much of this you can potentially collect and store

If your entire roof area is about 250m² (an average 28sq home), then if you were able to collect **all** of the rainfall from the roof, you would have 250 x 600 = 150,000 litres of clean rain water per *average* year

However, most people are unable to collect all of their roof water, so you need to consider the area of your roof from which you can collect the water.

A rectangular section of the roof with a length of 15m and a width of 10m has an area of (10m x 15m) 150m².

Total volume of rain water collected per year would be (150 x 600) 90,000 litres

For a standard double garage, at say 6m x 8m (48m²)

=> 48 x 600 = 2,400 litres rain water per year

Remember, the majority of Melbourne's rainfall occurs in August/September/October (variable) whereas you will need water right through December/January/February/March and perhaps into April. So, your aim should be to collect as much water as possible, ie a 2000 litre tank won't last long at 20mins watering a week with an ordinary garden hose. The volume used per week would be 850 litres and the tank would only have the capacity of 2½ weeks of watering.

Tank Types

There are many tank types available: plastic, steel, concrete, bladders. They come in many shapes, colours and sizes. The cheapest are the round plastic ones, but they conversely are the most difficult to fit in your back, side and front yards. The range in tank shapes and construction materials available gives you greater scope to incorporate water storage tanks in your garden.

2. Storage and use of grey water

The use of grey water represents an opportunity to make use of an alternative water source to our rainfall, as it is estimated that an average household produces between 400L to 500L of grey water a day.

Grey water forms a large portion of waste water and can be either:

- light grey water (from the shower, bathroom sink and laundry), or
- dark grey water – from the kitchen

There are significant factors which must be considered when contemplating the use of grey water:

1. A licensed plumber must perform work involving alterations to a sewer
2. Diverting grey water away from the sewer systems may require permission from the relevant local water authority
3. Each state and territory has different regulations that govern storage, dispersal and intended usage of grey water.

There are a plethora of grey water systems currently available.

In general, these systems can be divided into two groups:

1. Simple diverter systems

These merely divert the grey water from the sewer system without any treatment taking place

2. 'Divert and treat' systems

These divert the grey water through a number of 'treatment steps' in order to improve the quality of the end product – the water

As of June 2007, Victorian legislation allows for **untreated** grey water to be diverted from the house, and used for **sub-surface** garden irrigation only. This water must not be stored for longer than 24 hours. The water cannot be utilized for micro-spray, pop-up or shrub spray irrigator, nor for inside the home (toilet flushing for example).

Treated grey water is classified based on a number of chemical parameters:

Class A standard grey water can be stored indefinitely and used in all types of irrigation systems, as well as for flushing toilets. Use of this water is exempt from water restrictions, and as such can be used at any time.

However there is a direct relationship between the effectiveness of a grey water system and the cost of its installation and maintenance. Therefore budget will be the controlling element. Grey water systems can range from a simple diverter 'tap' (plus necessary hoses, etc.) through to a fully integrated, automated treatment plant which produces up to 700 litres of Class A grey water per day which will vary in cost depending on whether it is being installed as part of a new house construction (approx \$10k) or an existing house (retrofit) (approx \$13-14k). These estimates are merely a guide if budgeting constraints are right.

Effects of Untreated Grey Water

It is important to understand, even on a basic level, the effects of diverting **untreated** grey water to the garden.

In general, grey water can contain a variety of contaminants, including soaps, detergents, oils, viruses, fungi, bacteria and salts. Of these, detergents (soaps) and salts are the most critical when it comes to using grey water in the garden.

Reuse of laundry grey water can lead to increasing salt content in the garden soil. This salt (usually high in sodium and phosphorous) build up can be extensive in clay type soils where the salt cannot be quickly and easily leached.

The salt usually comes from laundry detergents. The amount of phosphorous is critical because relatively low levels can be detrimental or even toxic to most native plants. Laundry detergents in Australia are labeled according to phosphorous content – for details see www.lanfaxlabs.com.au

A further impact of salts in grey water is that those associated with laundry detergents are often alkaline, and thus can alter the garden soil pH. This can affect the absorption of certain nutrients by plants because different elements/nutrients are soluble at different levels of pH.

The use of antibacterial/antifungal cleaners in the home can also impact on the grey water quality – and therefore the garden – if it is to be diverted without adequate treatment. There are beneficial bacteria and fungi in the soil, and these can be killed as a consequence.

In simple terms, although recycling household grey water for use in the garden is a fantastic way of conserving our precious drinking water – the implications of simply diverting untreated grey water to the garden needs to be understood in order to avoid long term contamination of the soil. The fact that grey water treatment plants cost money (to install and maintain) has to be weighed against the potential for this contamination. But, unlike rainwater – which is only seasonally available and therefore requires significant storage capacities – grey water is generated everyday in an average household through showering and washing normally.

3. Addition of organic material such as compost or water holding granules

Adding 'body' to your soil (especially if your soil is very sandy) will increase its water-storage capacity and keep the moisture available longer. Organic materials such as mushroom compost, 'blood & bone' or compost can add nutrients to the soil, in addition to increasing water holding capacity for your plants.

4. Use of surface mulch such as eucamulch or even river pebbles

- This keeps soil cool in summer, and warm in winter
- Minimises evaporation, and therefore minimises moisture loss
- Protects surface roots of shallow rooted plants from sun
- Protects soil from wind and water erosion
- Can cut weeding by up to 80%

5. Lawn

There are a number of drought tolerant lawn varieties available

a) **Soft Leaf Buffalo***

There are a couple of great relatively new varieties available which are much softer underfoot than traditional buffalo grasses. They also have the advantage of a much shorter dormancy period, ie that time during Melbourne's winter when they tend to brown off.

- "Sir Walter" buffalo
- "Palmetto"
- "Sapphire"

b) **Soft Leaf Couches***

As with the new buffalo varieties, "Santa Ana" couch is a fantastic drought tolerant, soft green lawn.

c) **"Tall Fescue" turf***

This turf has always been used in Melbourne and is very drought tolerant. However, it needs to be kept relatively long to avoid heat stress (~40mm), and if it does suffer die back, will not repair itself.

** Both the Couches and the Buffalo grass varieties tend to be able to recover from die back because they have a spreading growth habit; growing by rhizomes underneath the soil surface. The "Tall Fescue" is a 'clumping' grass and does not have these rhizomes, and as such does not tend to have this capacity for recovery.*

d) **Kikuyu turf/grass**

This is very tough, drought resistant and withstands lots of traffic use. It is a good choice for dogs.

e) **Synthetic turf**

There are now numerous types of artificial turf grasses available, for example

- Tiger Turf®
- Smart Grass®
- Limonta New Grass®
- Gecko®
- HG 24/7®
- and many others.

They vary in looks, durability AND REALISM.

Synthetic turf provides year round green with no watering, weeding or mowing.

6. Design Tips

a) Group plants of similar water requirements together.

Sometimes it is possible to have significant parts of your garden highly drought proof, and then small strategic parts which may require some more water. This then can be the focus of any water you collect via tanks, etc., rather than trying to water the entire garden equally.

b) Use taller, hardier shrubs and trees to create protection for smaller, less hardier plants below.

c) Be aware of the huge range of drought tolerant plants available - there is more to drought proof gardens than just yuccas, succulents, flaxes, grasses and harsh natives.
Note that **not all** natives are drought tolerant.

d) Most plants can be 'taught' to flourish on much less water by reducing their watering gradually over time.