

My Garden Laboratory

Rainwater harvesting for house supply and drinking.

The concept of collecting and using rainwater is well known has been tried before in our Woodhall backyard. But its usefulness has become far more apparent in recent years, especially as the ground water supply is being depleted by over exploitation mainly by surrounding households. This following account reveals the steps that I have taken to utilise rainwater for all the requirements of household use. Our shallow 16m deep tubewell is now almost dry with only about a metre of water left in the bottom. Starting last year and continuing this year (2025) we have been using water collected and stored in earlier times in 3 x 5000li tanks. But even the water in these tanks is being used up. Without a ground supply and no connection to the municipal supply (which is not fit for drinking since its source, Lake Chivero, is highly polluted, I decided to concentrate on rainwater harvesting for all domestic use. In February 2025 the tubewell depth measured 16.7m and the water depth 3.25m. It was decided to use a bucket bailer pump to extract water and a new larger one using 110mm pipe and a one-inch brass non return valve was prepared and used. This development is described elsewhere. But the water extracted was not of high-quality containing sediment which required settlement. Also, the increased population surrounding us, using septic tanks and soakaways posed a possibility of contaminations of the upper ground water. A decision was made to attempt to use rainwater for all home use using roof collector on the house, a tin roof collector, and a series of what can be described as “rain catchers.” These consisted of circular sail cloths used from old sailing boats mounted on PVC supports. Two were made from a beautiful yellow sail from our cruiser Aurora. These were covered by strong shade cloth. Rainwater fed from these 2 “rain catchers” were fed into clean dustbins beneath them and the water transferred by bucket into 2 X 1000li water storage tanks. This clear water was collected and placed in water filters in the kitchen using Doulton candle filters. Rainwater collected from the roof collected first in a lower 1000li tanks and then pumped into an upper 1000li tank and then pumped again to various tanks. This step-by-step process allow any sediment in the water to settle out. By February 26th, 2025, all 3 X 5000li tanks were full, both 2 X1000li tanks collecting water from the rain catchers were full and the concrete tank supply the “house tank” was full. The house tank supplies the flush toilet, and kitchen and bathroom taps. Water is also stored in dustbins for cloths washing and for shower water.

Rainwater has been collected in a large brick-built tank at the bottom of the garden for some years and its water used mainly for watering plants in the dry season. The tank which is 2.7m wide and 80cm deep is covered with 3 layers of thick shade cloth. This allows water to pass through but very little light. It requires very little attention, just sweeping off any leaves that fall on the shade both.

In addition two 1000li water tanks were used to collect rainwater from the roof through a gutter and then send this water to various tanks.



The large brick tank covered with 3 layers of thick shade cloth.



Adding the water from the 1000li tanks supplied by the “rain catchers|” to two water filters in the kitchen both using Doulton candle. The pale yellow one using 2 candle filters was made in India and came from Kenya. The filter to its left is home-made with buckets, a single Doulton candle filter and a tap.



A bottle of double Doulton water in the kitchen. Later improved techniques using large rain catchers improved the technique of producing safe drinking water from rainwater. The resulting water is safe, pleasant to drink and has no chemical content.

Using larger “rain catchers” and collecting in 1000li tanks

This method developed from much smaller “rain catchers” which had been successful but caught limited amounts of rainwater which was suitable for sending to the kitchen filter.



Smaller “rain catchers” developed good quality water but in limited amounts. 0.9litres per mm rain



The first of two collectors and the two 1000li tanks which stores the collected water. The material used for the 2 larger “rain catchers” came from a beautiful sail on our cruiser called Aurora. I hesitated to use it at first, but the boat itself being made of wood had been scrapped years ago, but the sail was perfect. It provided enough material to make 2 rain catchers. These were supported by a ring of PVC pipes as shown.

The Method



The sail is mounted over the poly pipe ring and cut accordingly. In the centre a hole is made and a PVC down pipe is fitted to direct water from the rain catcher to a dustbin beneath where the rainwater is temporarily stored. The central entrance to the downpipe is slightly elevated.

And holes in the sail (for earlier rope attachment) are covered. It is also possible to use UV stabilised plastic sheet in place of sailcloth. Not all of us are Sailors! Since the collector material is exposed directly to the sun it is covered with thick shade cloth which protects it from the sun and also makes easier removing leaves which fall on the collector.



In this unit rainwater is collected in a dustbin underneath the collector. The lid has a hole in it through which the collector down pipe passes.



The downpipe from beneath



A second rain catcher being made.



Two rain catchers were made from the sail cloth. The larger 2m diameter collector caught 3.2 litres of water per mm of rain and the smaller 1.75m diameter collector caught 2.8 litres of rain making a total of 6 litres per mm of rain. The rain catchers are covered with thick shade cloth to protect from the sun.

Collecting water from the dustbins



Pipes fitted to the bottom of each dustbin allowed water to be passed into buckets as shown.



Three buckets full. Often 6 buckets could be collected.



Collecting clear rainwater from the eastern tank



The tank gate valve is opened, and the water piped into the 5litre bottles. These are taken to the kitchen. It takes only a few seconds to fill the bottles.

The rainwater roof collectors and tanks and distribution



Two 1000li tanks were purchased. The lower one collected water from the gutter collecting water from one section of the house roof. Water was pumped from the lower tank to the upper tank. This reduced the amount of sediment in the water. Early rains are flushed to waste.



A bucket was attached to the gutter which was opened up and also to a downpipe which led water into the tank. Water coming down the downpipe passed through a leaf catcher into the tank.



Another view of the 2 tanks.



The outlet from the upper tank can be seen and links to a water pump to direct water to various tanks in the garden.



The 2 pumps used to pump water from lower tank (left) and from upper tank to various tanks in the garden.



View of lower tank with pump lowered down. And the pipe from the pump leading to the upper tank.



Pipe leading from the lower tank to the upper tank. The pump fitted to the upper tank leads water to various tanks in the garden. The photo on the right shows the pipe leading to one of the 5000li tanks. Water is also pumped to the brick tank next to the 2000li “house tank” which supplies the house with water. There are 3 X 5000li water tanks.

Tin roof collector



The downpipe from the gutter can be subdivided and reveals a stainless-steel screen to catch any leaves



The clean dustbin beneath catches rainwater through a funnel made from the top of a 2 litre bottle. Holes are made in the bottle cap and dustbin lid and bonded in place.



Tin sheets were laid on a previous car port and a PVC gutter was used to collect rainwater and direct it into a dustbin beneath. Rain gauge - rainwater has been monitored for ten years.



Our power supply from the national grid (called Zesa) is inconsistent. So we use an alternative power supply every day at some time. This is a most valuable asset to the house and home. We call it the "BOX."