

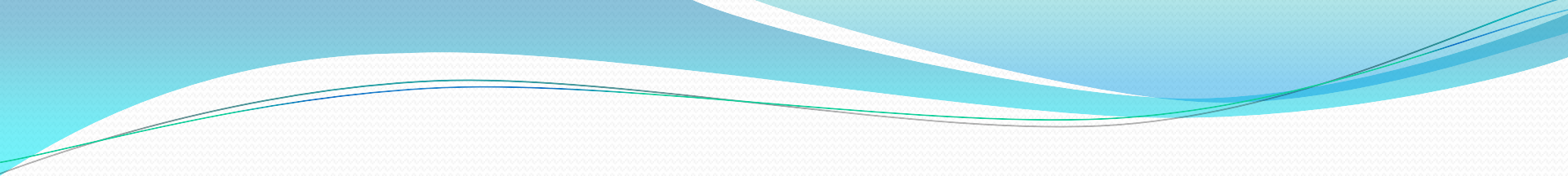
Water Use & Gardening in Southeast Arizona

by
Dave & Edna Weigel

Introduction

David and Edna Weigel are members of Sky Island Unitarian Universalist Church in Sierra Vista. They try to live their environmental values daily. When Dave and Edna moved to the southeast corner of Arizona, Edna planned to grow fruits and vegetables to sell. Then she learned the Upper San Pedro (Sierra Vista area) aquifer was being pumped at an unsustainable rate. Despite conservation efforts, over-pumping continues as the local population grows.





Edna concluded her environmental ethics don't allow her to garden with unsustainably pumped tap water. She now gardens on 3/4 acre near Bisbee, but she does it with harvested rainwater and a little graywater. Life is full of compromises and, admittedly, we eat produce from the farmers market and from the food co-op which we have every reason to believe was grown with unsustainably pumped water.

Edna, along with something like 2000 other citizen scientists around Arizona, records her rainfall on [Rainlog.org](https://rainlog.org) which is sponsored by U of A. With 12 years of records at our current location, annual precipitation has ranged from 10.00 to 19.26 inches with a June thru September total ranging from 7.13 to 15.89 inches. In fact, the only months when we always have significant rain are July, August, and September. September doesn't always have much. This is very different from other parts of the state so you may want to zoom into your region on the Rainlog homepage map to see what your neighbors report during various months.

The shortage of rainfall along with low humidity and hot, dry winds in early summer present special gardening challenges. Edna wants to grow as much of our own food as possible so she delays planting some short-season crops like tepary beans until the summer rains start. She starts many vegetables in our attached greenhouse which, by the way, provides our household winter heat.



Attached south facing greenhouse/sunspace

She delays planting these out as long as she dares.



Tomato Seedlings

Some vegetables need to be transplanted outside before monsoon rains arrive which means lots of irrigation even with shade cloth providing sun and wind protection.



Hoops & shade cloth providing wind and sun protection

Thus, she saves as much rainwater in tanks as she can during monsoons then makes the most of whatever rain falls throughout the year.



A few of our rainwater storage tanks

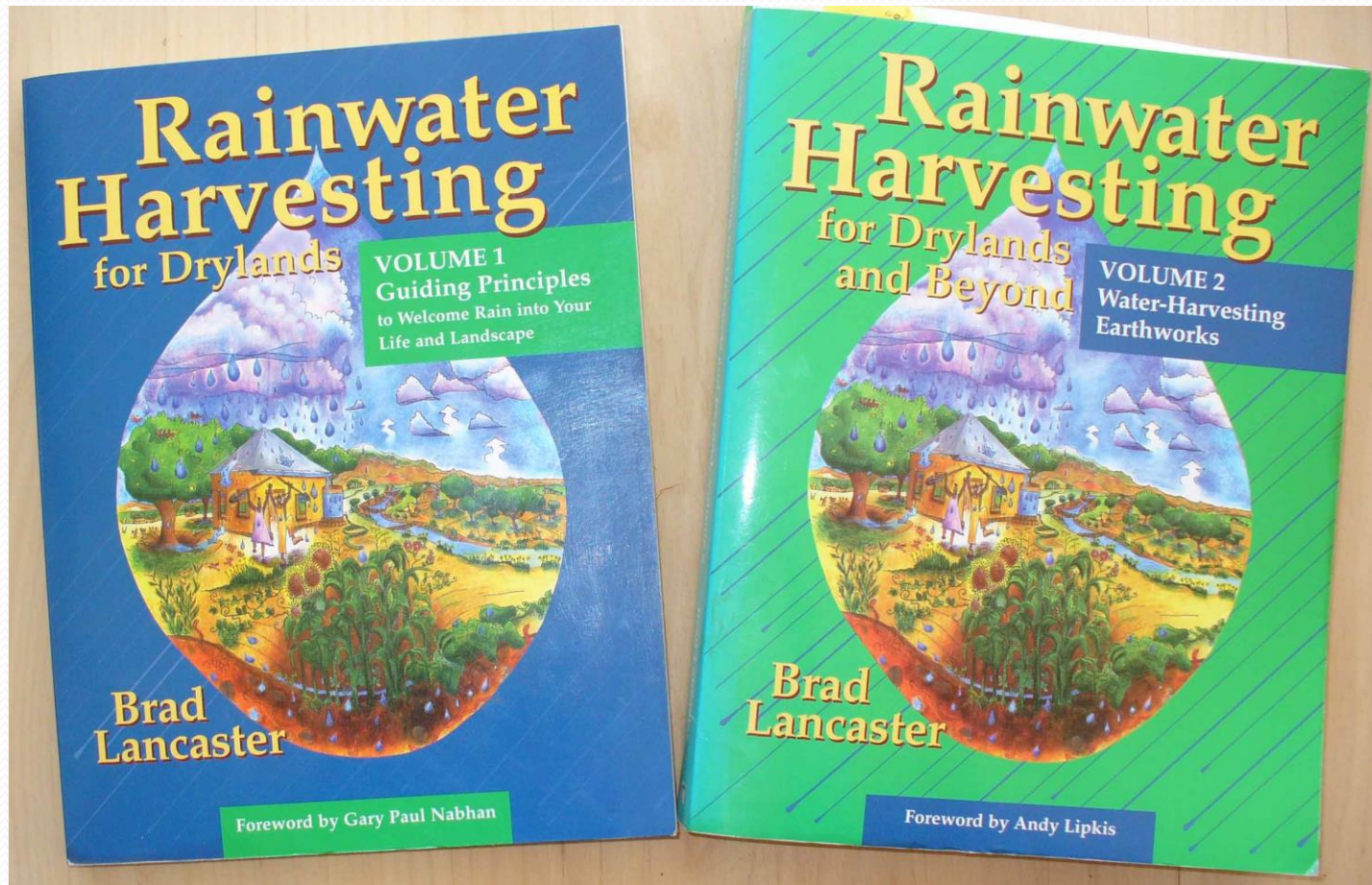
Water will run off of soil during rainfall events over about 0.2 inches. (Runoff may start earlier or later depending on how wet or dry the soil is, vegetation or lack of it, how fast the rain falls, etc.). Many city and suburban lots are shaped to dispose of rainfall by getting it beyond the property line as fast as possible. Edna has shaped our yard to hold water so it has time to soak in. Sunken beds collect rainwater rather than drain it away. Here's a pair of photos taken the first summer we lived at our present location. Edna had just started preparing her garden beds. The photo on the left was taken right after a 1.33 inch rain. The one on the right was taken about six hours later. Although you can see water in the street from other properties in the upper left hand corner of the first photo, none of the water on our property ran off to the street. It soaked in despite an underlying layer of caliche.



This next photo taken during the same rainstorm illustrates the importance of planning how to deal with excess water to avoid flooding during generous rainstorms. That's one of two 2500 gallon tanks attached to our house. We have 550 gallon tanks on our garage and on our shed plus a 1600 gallon tank and various smaller tanks making a total of a little over 9000 gallons of storage capacity.



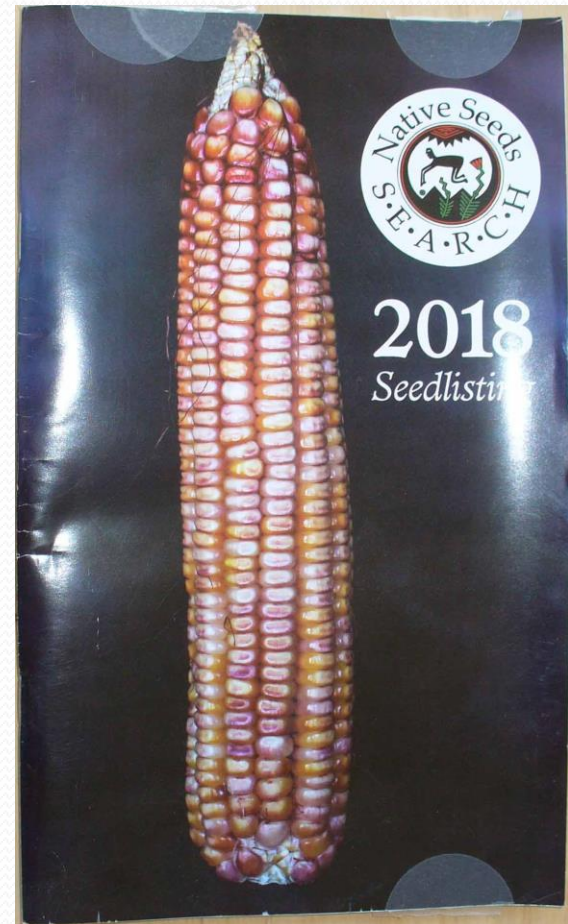
1" of rain delivers 62 gallons to every 100 square feet. That adds up quickly for an average-sized home and lot. Tucsonan Brad Lancaster has written two good books on rainwater harvesting. For more ideas, look for Brad's Rainwater Harvesting for Drylands, Volumes 1 and 2 in your public library or search for it on line.



Native Seeds Search

<https://shop.nativeseeds.org/>

Edna searches for vegetable varieties that do well in this climate and continues to experiment with different irrigation methods in an attempt to use water more efficiently. She grows a number of varieties from Native Seeds/SEARCH which is based in Tucson.



Although Edna uses what graywater is available, our household does not produce much graywater. We designed our house so the tankless hot water heater is close to both kitchen and bathroom and Edna saves for the garden the gallon of water it takes to get kitchen sink water hot as well as the dish rinse water.



Dish washing rinse water going to water outside plants

In 1997, we bought the most water-efficient washing machine we could find at that time. It used about 16 gallons of water for a big load. When it wore out, we replaced it with one that is advertised to use 9 gallons per “normal” load. It actually uses more like 11 gallons for a load almost as big as the old machine used 16 gallons for.



New low water use washing machine

We designed our plumbing so bathroom sinks, shower, and laundry water can be caught in a bucket outside the house and carried to trees or it can be distributed via an underground system to any of three groups of trees using diverter valves designed for swimming pool filters



Gray water outlet & diverter valve

By gardening with harvested rainwater, Edna is able to grow a large garden without tap water . By conservative household use of tap water inside the house, we keep our water bill low for an average of 500 gallons per month for the two of us.



Harvest stored in the pantry

Our lifestyle isn't just about water conservation. We work together; while Edna concentrates mostly on gardening with rainwater, I concentrate on renewable energy and energy conservation. Our photovoltaics are tied into the grid so that we feed the grid on sunny days and take from the grid at night and on cloudy days. Thus we don't need batteries. We produce more than enough electricity for household use plus recharging the batteries for our plug-in hybrid car.



3.5 KW Solar Arrays

Contact Info if you have any questions

- Edna's Email: ednaweigel@gmail.com
- Dave's Email: davidweigel77@gmail.com