

# Water Conservation for Container Plants

Sandra Hurlbut  
Water Wise Program



COLLEGE OF AGRICULTURE  
AND LIFE SCIENCES

COOPERATIVE EXTENSION  
Cochise County

# Typical Water Conservation Products

- 💧 Vermiculite
- 💧 Peat moss
- 💧 Coconut basket liners
- 💧 Coconut coir
- 💧 Hydro gels, polymer crystals, or water gels\*

# Unique Water Conservation Ideas



💧 Diapers



💧 Quilting fabric for wicking

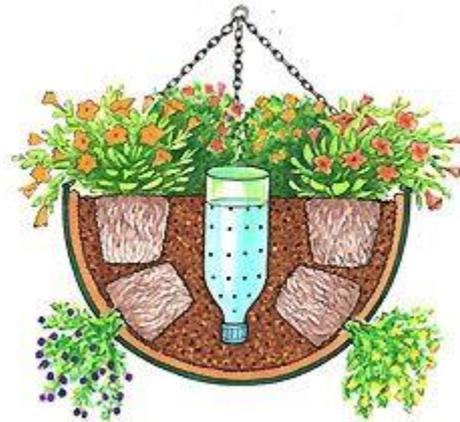
💧 Water saucer in planter



# Water Conservation Ideas Using Bottles



Watering cones



Bottle in a basket



Glass bottle wicks

# Soda Bottle Drip Feeder for Garden Plants



1. Use 2 liter soda bottles or milk jugs (BPA free is best for this use on vegetables, but regular bottles are fine for flowers and shrubs).
2. Use small pin or needle to poke holes down the side - and bottom - of the bottle and towards the side of the root growth.
3. **NOTE: the picture shows too many holes and they are too large.**
4. Smaller holes will facilitate slow irrigation of the root zone and promote better growth.



# Soda Bottle Drip Feeder for Garden Plants



## TIPS

- Harvest rain water for an extra pure watering source!
- Placing the bottle in a nylon stocking keeps most of the dirt out of the bottle.
- Keep the caps on the bottles to prevent sitting water and mosquitos.



# Wine Bottle Drip Feeder for Garden Plants



If you're concerned with chemicals in plastics, here's a terra cotta product that you can use with wine bottles.

Now you can really have fun watching your plants grow!

# Decorative “Plant Nanny” products...



<http://plantnanny.com/products/>

# Garden Tip:

Listotic.com



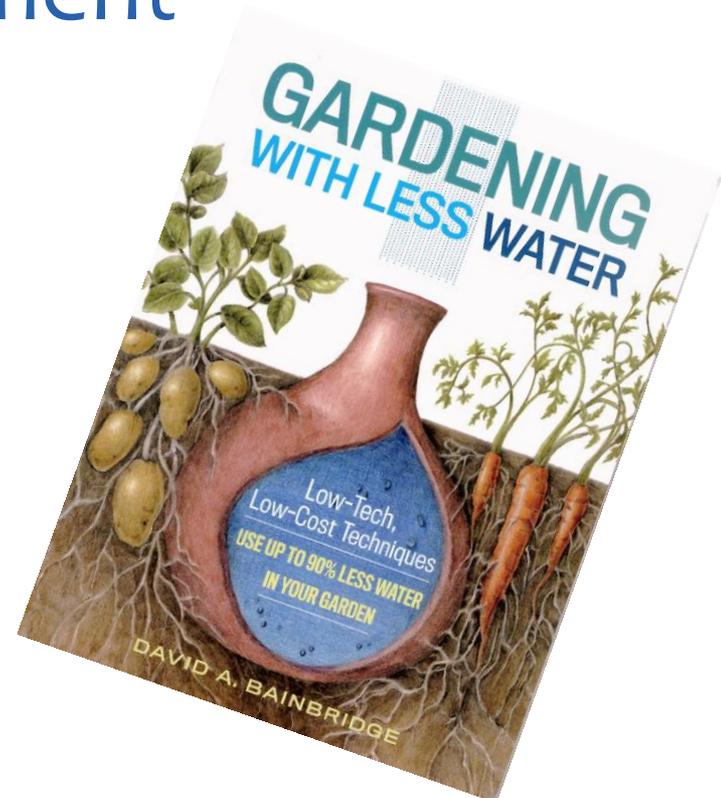
Plant your **seeds** around an empty **plastic pot** to create a well for easier and deeper root **watering**.



# Water Conservation in Container Plants -Experiment-

Goal: To determine which water conservation method works best for container plants.

Used methods from Bainbridge book.



## Experiment Set Up

Petunias used (regular water use)

- Two controls – hand watered
- Two buried clay pots
- Two wicks with poly-line
- Two porous capsules with reservoir
- One sub-irrigation system



Water measurements tested with moisture meter



## Materials

1. Obtained buckets from Fry's
2. Drilled 9 - 1/4" drain holes
3. Blended potted mix wit 2/3 bag of peat moss
4. Saturated soil mix – left in buckets for 2 days



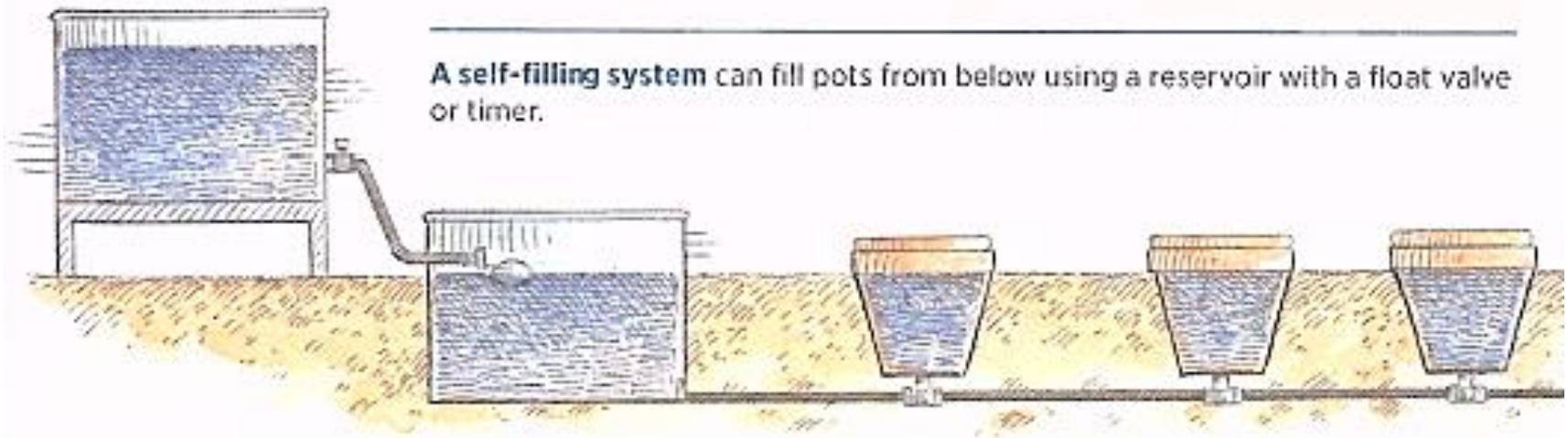
# Buried Clay Pots

## Method

- ◆ Four inch clay pots with ½” cork inserted in bottom.
- ◆ Filled with ~480 mls water
- ◆ Buried in soil and covered with base



# Buried Clay Pot – Other Modifications

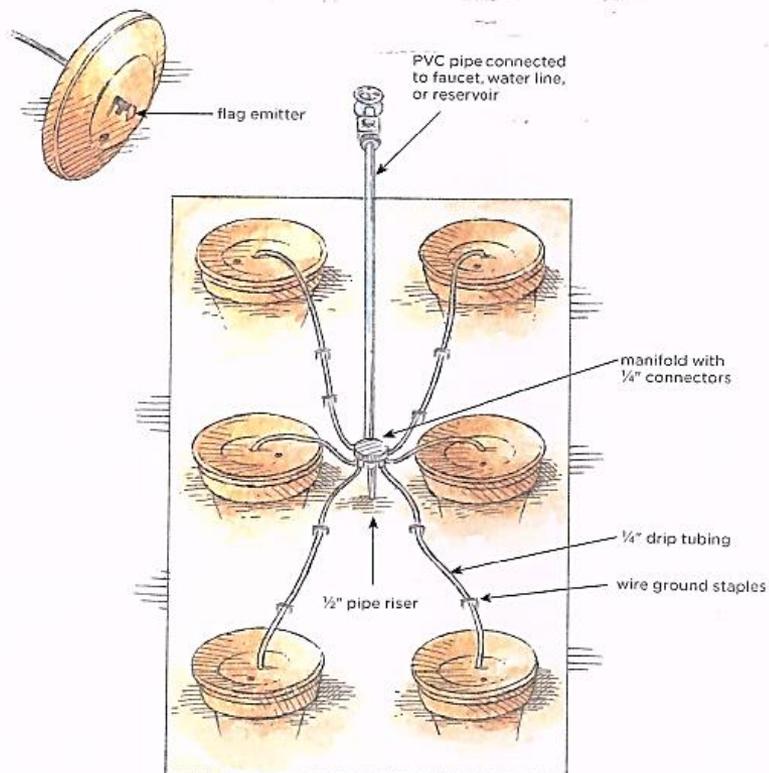


Source: “Gardening with Less Water” – David Bainbridge, p. 31

# Buried Clay Pot – Other Modifications

## Self-Filling Pot Systems

Buried clay pots are usually filled individually, but if you will be away often or don't want to bother filling them by hand, they can be connected to a reservoir or water system.



Combined with  
drip irrigation....

Source: "Gardening with Less Water" – David Bainbridge, p. 30

# Buried Porous Capsule



1. Enlarge drainage hole with  $\frac{1}{2}$ " bit
2. Epoxy  $\frac{1}{2}$ " threaded to barbed onto clay pots and into bottles
3. Bottles are used as a water reservoir
4. Cut around top of the bottle  $\frac{3}{4}$  way around to use as opening to add water.
5. Connect clay pot to bottle using  $\frac{1}{2}$ " plastic hose.

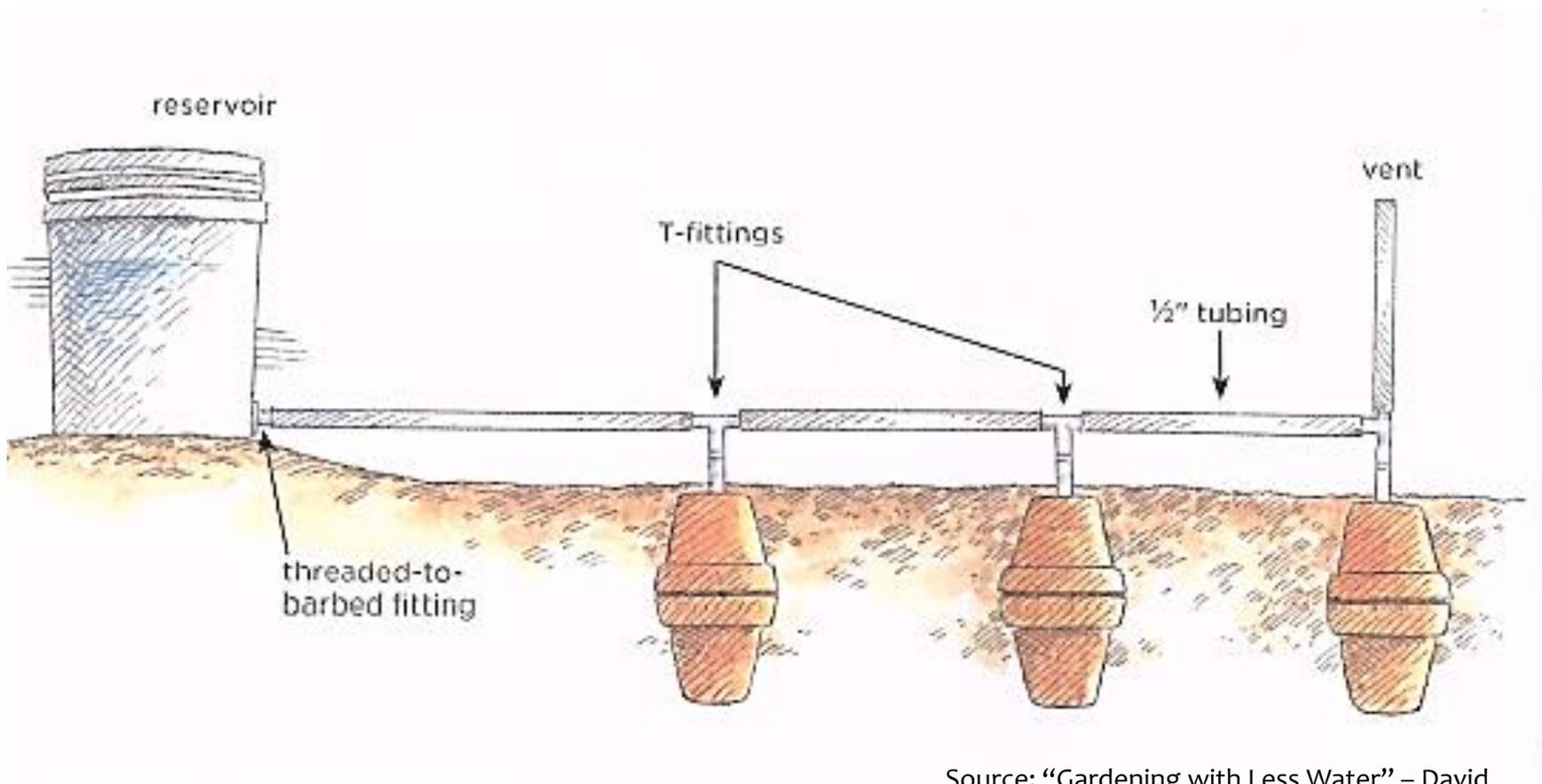
# Buried Porous Capsule



# Buried Porous Capsule with Reservoir



# Porous Capsule – Other Modifications



Source: "Gardening with Less Water" – David Bainbridge, p. 40

# Wicks



1. Drill  $\frac{1}{2}$ " hole into bottle caps.
2. Insert washed polyester clothes line into  $\frac{1}{2}$ " plastic tubing.
3. Leave enough extra clothes line to run around root zone of plants.
4. Bury the clothes line into the soil at root zone of plants.
5. Fill bottle with water and set inside planter.



# Wicks



# Aren't They Pretty?



Day 1 – March 10th

## Day 7- March 16th



1. Control - purple
2. Buried clay pot



3. Wick - purple
4. Porous capsule w/ reservoir



5. Control - pink
6. Buried clay pot



7. Wick - pink
8. Porous capsule w/ reservoir

## Day 15- March 25th



1. Control -purple
2. Buried clay pot



3. Wick -purple
4. Porous capsule w/ reservoir



5. Control - pink
6. Buried clay pot



7. Wick -pink
8. Porous capsule w/ reservoir

## Day 26- April 4th



1. Control - purple
2. Buried clay pot



3. Wick - purple
4. Porous capsule w/ reservoir



5. Control - pink
6. Buried clay pot



7. Wick - pink
8. Porous capsule w/ reservoir

# The Results

	Purple Control	Buried Clay Pot	Wick	Porous Capsule	Pink Control	Buried Clay Pot	Wick	Porous Capsule
TOTAL WATER (ml)	2400	3360	1500	2460	1920	2400	1600	1980
H2O (+/-)	-	+40%	-37.5%	+2.5%	-	+25%	-17%	+3%
HEALTH	Wilted	Worst	Lost flowers	Best	Best	Worst	Lost flowers	Best
	Came back	Wilted	Came back	Flowers throughout	Flowers through out	Lost flowers wilted	Came back	Flowers throughout
AVERAGE BOTH SETS	2160	2880	1550	2220				



## Other Thoughts

- 💧 Impressed with wicks – consistent moisture throughout experiment.
- 💧 Buried clay pots – too much surface exposure? Ollias would be better.
- 💧 Impressed with porous capsules – did not really use reservoir feature.

## If I did this again...

- Would let plants get established first.
- Use a larger number of plants.
- Run the experiment longer.
- Would mark moisture line a little better on moisture meter for more consistent readings.

# Sub-Irrigated Planters (SIPs)

## **Benefits of SIPs:**

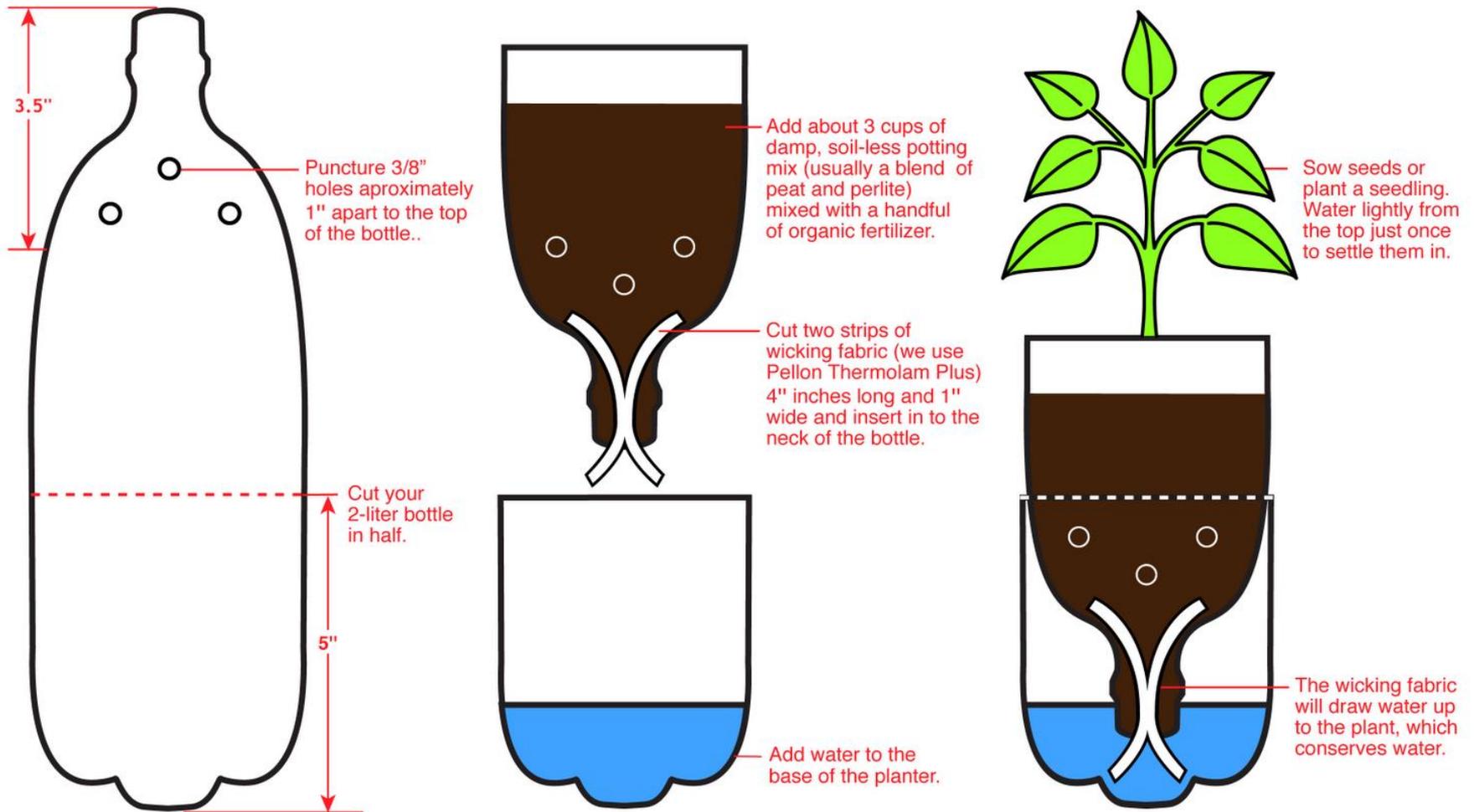
- Water is introduced to the plant from the bottom of the planter by means of capillary action.
- They can hold large volumes of water without over-watering plants.
- You don't need to water as frequently. Just fill it up until the planter until it starts draining from the overflow tube, and you're good to go for a week or two.

# Sub-Irrigated Planters (SIPs)

## Benefits of SIPs:

- ◆ They're portable - you can start plants that are vulnerable to hard frosts sooner, just move them indoors at night/on colder days.
- ◆ The built-in reservoir system gives your plants' roots access to much needed oxygen, in addition to the water.

# How to make a 2-Liter SIP (sub-irrigated planter)



# Sub-Irrigated Planters (SIPs)



**Wicking Bed**



## Sub-Irrigated Planters Preparation



1. Cut pipe to desired length
2. Drill holes in pipe
3. Assemble pipe
4. Prime and glue with PVC cement



## Sub-Irrigated Planters Preparation



5. Drill  $\frac{1}{2}$ " drain hole through side of container about 3" from bottom

6. Insert piping into container

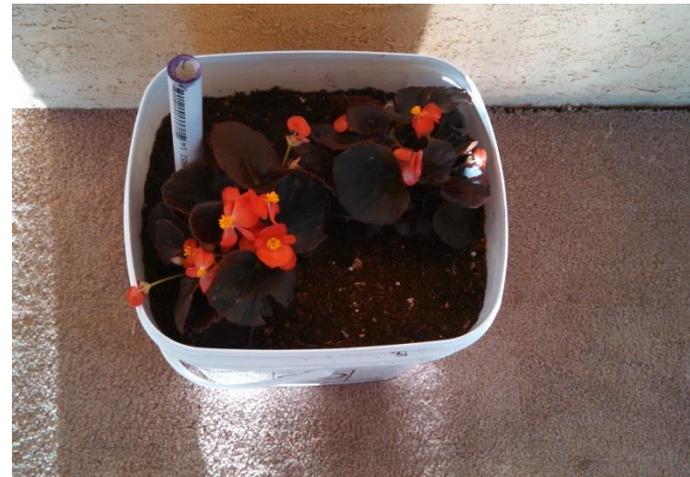
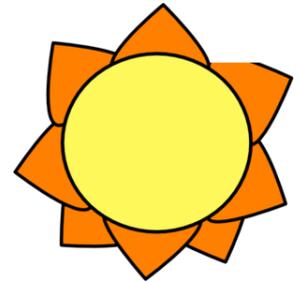
7. Add rocks to about 3"

8. Cut wicking material to cover rocks



# Sub-Irrigated Planters Preparation

9. Fill with soil
10. Moisten
11. Plant



# Sub-Irrigated Planter (SIPs)



March 14th



March 16th



March 20th



March 29th



April 1st



April 4th

# Sub-Irrigated Planter (SIPs)

- ◆ Impressed with sub irrigated planter.
- ◆ Consistent moisture throughout experiment.
- ◆ Could have let it go longer between watering.
- ◆ Plants did well in spite of losing blossoms.

# Deep Pipes– Other Modifications



Source: "Gardening with Less Water" – David Bainbridge, p. 47

*Thank you!*



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