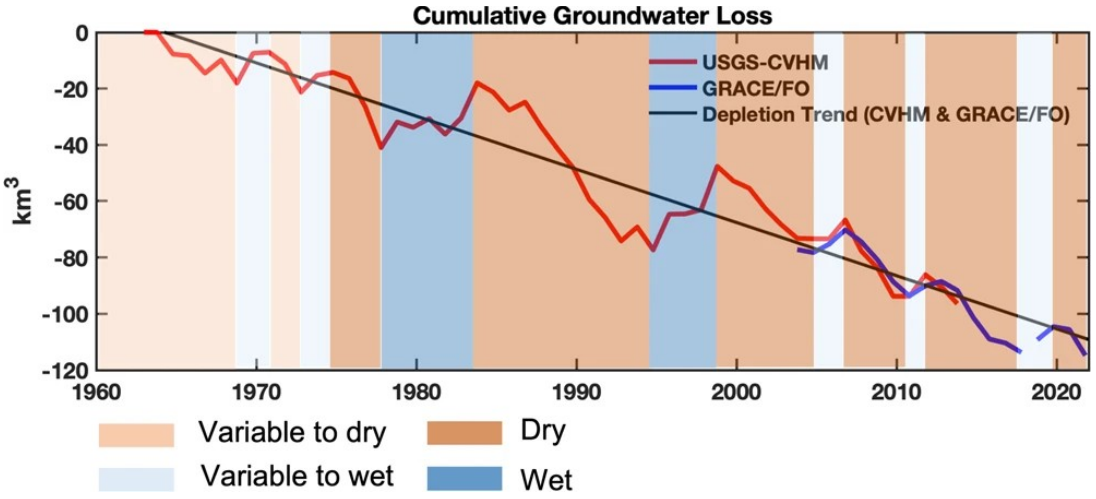
Water Saving Garden

Ladies and gentlemen, we have a problem

The availability of water in California's Central Valley is declining at an alarming rate. Plots of formerly productive farm land are now being sold just for the rights of the water beneath them. It is expected that those plots will never again be farmed (since they no longer have access to water).

No amount of governmental hand-waving or mandates will ever be able to restore these water reserves. Beyond this, the aquifers where water was once stored near the surface have begun to collapse – lowering the actual ground level by 30' and more in some areas. Nature will never be able to recover these aquifers.

The best we can do is attempt to capture and store every available raindrop and snowflake our increasingly fickle weather system provides.



Conceivably, a system of subterranean membranes could be deployed. But even if we could truck in a reduced water supply, the loss of water by surface evaporation would still be in play.

I am no expert on gardening, but I have grown a few things and experimented a bit. A number of years ago I dug out a small basin (about 5' wide by 8' long, by 30" deep, and lined it with plastic so it could contain water. I ran a piece of drain pipe along the bottom, bedded it in gravel, and installed a riser to the surface so I could monitor the water level – and adjust it if desired.

The gardens planted above this basin seemed to need less water than those surrounding it, but less subjective evidence would be needed to prove it.

The original ovoid section eventually featured a combination of vegetables and decorative plants

We left town for a couple of weeks immediately after adding a few more bedding plants of vegetables and a flowers. The garden would go sixteen days with no care.

The garden didn't miss us a bit. Upon return the bedding plants seemed to have doubled in size, and the petunias were very happy. Nothing more was done that year other than to harvest a few tomatoes and butternut squash.

My next step was to dig a crescent-shaped trench about 18" wide by 30" deep by 12' long in a section of neglected lawn. I lined this with plastic and planted a row of sunflowers. Although I abandoned the sunflower project the next year, the weeds did not ignore it. Indeed, upon maturity, the weeds above this crescent that volunteered in spite of otherwise total neglect, were several times higher than the surrounding growth.

So now we have empirical evidence that the liner alone does in fact conserve water.

An additional technique was then explored.

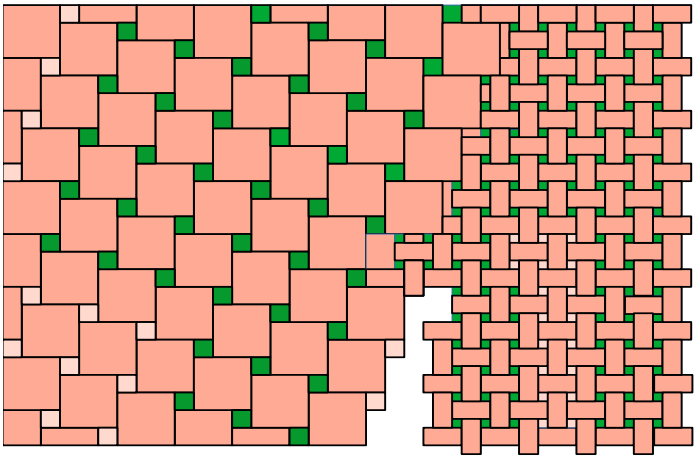
Where do weeds thrive? Seriously, if you were looking for small green unwatered plants in the landscape about town in late summer, where might you find them? How about adjacent to sidewalks and driveways, and even in cracks in seldom used pavement?

So cover your membrane-enhanced garden with 12" cement pavers that are offset to allow holes exposing only about ten percent of the surface of the ground to show through. For plants that require less spacing, develop a pattern from 4" by 8" pavers – although you would need to leave some of the spaces unplanted to allow pathways. Plant your things in these holes and you save about ninety percent of the surface evaporation.

I am guessing (here we go again) that the combination of a membrane below and pavers above would make it possible to grow modest gardens on unimproved property with the amount of water you could carry in containers in hand carts or the trunk of a car!

Incidental to all this, your weeding efforts are reduced by the same percentage as your surface evaporation.

The pavers could be temporarily removed if compost etc. needed to be added to the garden. Furthermore, the water could be flushed and changed through the riser – should such amending become necessary.



Although we have abundant evidence from sidewalk-hugging weeds that such coverings systems would work, I have been exploring this concept in my own garden.

These water saving techniques represent a radical departure from current gardening practices. The labor intensity and material costs would make it far too expensive for commercial farming at the square mile scale – at least for now.

Meanwhile, it occurred to me that perhaps the reddish pavers are getting hotter than naturally gray concrete in sidewalks and driveways. So during the middle of a 101 degree day, I measured a few temperatures on a couple of full-sun sections. In one area the average red paver temperature was 133, whereas the nearby concrete driveway temperature averaged 125 – eight degrees cooler. When I compared gray sidewalk temperatures with adjacent decorative red pavers, the pavers were 142, with the sidewalk being 124 – 18 degrees cooler. So apparently, gray pavers would be preferred.

An initial trial involving freshly sprouted seedlings was a total failure (during 100 degree weather). So I tried again using bedding plants with well developed root balls and stem systems.

Based upon my theories and experiences to date, I did a paver experiment: On the first of September. I planted a few bedding plants and a single tender butternut squash seedling (barely visible in the lower center of the picture to the right). Silly me, but I actually felt a twinge of guilt in planting a hopeful young seedling that would be doomed to soon die of frost.

Hot dry weather and red pavers notwithstanding, the size of the lone squash plant exploded during the following weeks. Eventually I harvested at least one full-sized squash and a few smaller ones.

I suspect that much of the farming techniques as we have known them in the Central Valley will require significant changes to survive. But those who continue to compete in this game will receive ever-increasing prices for what they do produce. Never mind the fact that food shortages will continue to spiral.

In my opinion, it is time for a bold exploration into redesigning the food provision infrastructure. Any truly productive thinking will not merely address the obvious impending disaster, but will design a path that can adapt to foreseeable future challenges. For this, we may need an entirely new team of players.

People who are growing enough food to meet their own needs and donate to agencies that give food to others, will at some point be able to barter food for the labor to develop gardens on other properties, when access to food becomes a problem.

The challenge now is to take these lessons and compile them into a flexible design that could be reliably replicated. Besides repeatability, we should also consider potential expandibility to commercial scales. This next phase is addressed in 03040-trench format.