

**WATER CONSERVATION TECHNIQUES FOR URBAN GARDENERS**

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This resource sheet was developed for urban community gardeners facing a possible drought situation in the summer and fall of 1981. It is our hope, however, that water conservation will become a way of life for all time – not just during the four-year droughts, which affect our area about every 20 years. This commitment should be of particular importance to all of us who work hard to create oasis of green among the asphalt and concrete of our cities.

We know that all plants need some water. What we must learn to do is make the most effective use of the water available, just as gardeners and farmers in water scarce countries have done for hundreds of years.

Soil Preparation – A first step is adding organic material to your garden soil to increase water retention; additions of compost, peat moss, humus, and vermiculite will increase its capacity to make best use of rainfall and irrigation; heavy, clayey soils which feel sticky and plastic when moist are particularly in need of such enrichment – otherwise prolonged dry spells will cause deep cracks leading to increased evaporation and destruction of plant life. This is best done in the spring when soil is still moist; deep cultivation of the soil during the drought periods of the late summer and fall may actually encourage evaporation of water from the soil. Therefore, the time to prepare the soil is in the early spring – March and April.

Mulches – A mulch is considered to be anything that can be applied as a soil cover that reduces water loss and prevents weed growth.

A layer of mulch on the ground surface around trees and shrubs can reduce evaporation significantly, moderate soil temperatures, discourage weeds, and help prevent soil compaction. Suggested mulches are woodchips, peat moss, compost, leaves, grass clippings, salt hay, etc.

Berms – Sometimes the most cherished plants in the urban landscape are its trees and shrubs; they provide screens from street noise and air pollution, as well as offering welcome shade from hot summer sun and protection from drying winds. These valuable plants can survive with only infrequent, but thorough, watering. By digging shallow trenches and building a “berm” or wall around the circumference at the drip line, the bowl-shaped depressions serve to “capture” rainfall and whatever water the gardener can give; the water is directed to the root system where it is really needed the most – not just around the trunk.

Another method is to make holes one foot in depth with a soil auger in a circle about 6 ½ feet from the base of the trunk; again, this will cause water to reach down into the root system around the drip line.

The trunks of young trees should be wrapped with burlap for their first five years; as well as deterring borer damage and sucker growth, this will reduce evaporation and prevent sunburn.

Pruning – Pruning overgrown shrubs, hedges and vines at the proper time of year will both reduce water use and revitalize the plants. The following spring – and summer-flowering shrubs should be pruned immediately after flowering; if pruned before their flowering period, they will not flower:

Deutzia	Lilacs	Roses
Forsythia	Mockorange	Weigela
Kerria	Rose of Sharon	Winter Jasmine

Severe pruning of trees should not be attempted in times of drought; exposing previously shaded leaves to the sun increases their rate of moisture loss through evaporation (transpiration), and sunburn and windburn can result.

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Wind Protection – Anti-desiccant sprays such as Wiltpruf are bio-degradable films which seal in moisture; they can be used on trees and shrubs to prevent moisture loss during windy, dry spells in the late summer and fall when drought conditions may be at their worst. These sprays are of particular value to evergreens because they give winter protection as well. Be sure to apply the anti-desiccant after the plants have been thoroughly watered, following the manufacturer's instructions on the label carefully.

Other wind protection measures include the use of snow fencing and burlap screens; a thick hedge of plants suitable for northeastern seashore planting can also be effective.

Fertilizer – During dry spells, fertilize sparingly, if at all. Besides causing salt buildup and burning of roots, rapidly growing plants require more water.

Weeding & Thinning – Be sure that the soil underneath shrubs and trees is kept weed free during dry spells; weeds will compete with the plants for available water.

You may want to thin out plants that are placed too closely together; this will allow the remaining plants to make best use of the soil reservoir.

Drought-Tolerant Plants – Most plants can be trained to need less water. In selecting new plants think of environments such as deserts and seashores that occur in nature where wind, heat and little water influence plant life. There are many sources for lists of annuals, perennials, shrubs, vines and trees that are most likely to survive periods of drought. (See CENYC's City Lot Resource Sheet. Some of these plants may already be in your garden.

New or young plants necessarily have higher water requirements than older plants. If you do install new plants, be sure to set them out in the early spring when soil may still be moist and plan to water them regularly for the first year.

You may wish to learn something about the actual water needs of the plants already in your garden: in general, the shallow-rooted varieties, such as azaleas, primulas, chrysanthemums, rhododendrons, hybrid roses, and dahlias require more water than deep-rooted varieties; maples are also shallow-rooted and, of course, vegetables are very heavy water users.

Rainfall Catchment – If your garden is fortunate enough to have a rainspout coming from the roof of an adjacent building by all means place a barrel or drum beneath it; the rainfall captured will be invaluable for filling watering cans during dry spells; be sure that the container is covered after each rainfall to prevent mosquito breeding; adding a package of "fish tank" charcoal will help reduce algae buildup.

Milk cartons and cans, with tops cut off, holes punched around the lower perimeter and filled with sandy soil can be sunk around the drip lines of shrubs and small trees; these are helpful in ensuring that water reaches down the root system. Another practice is the use of paper towel or toilet paper cardboard tubes filled with gravel at the drip line.

For those gardens with lily ponds, the placement of flat rocks tilted inwards around the rim will guide rainfall into the pond.

Shallow pie tins and bowls should be placed around the garden – not in tree or shrub pits – to catch rainfall. Contents can then be added to your barrel or drum reservoirs.

When To Water – In many cases older, established shrubs and trees (in your garden for three or more years) require only infrequent watering but are nonetheless over watered. Watering should be done when only absolutely necessary.

Younger plants should be encouraged to endure some dry spells – they may need just one or two thorough waterings if they have been started in the spring when the soil is constantly moist. The secret is, of course, deep soaking: frequent surface waterings with a hose do not provide good irrigation to any plant material; slow, steady intake into the drip-line area – preferably through a canvas soil soaker or drip hose – done only when actually needed is the correct irrigation technique.

Do not water your trees and shrubs until the first symptoms of water stress develop. To test for water stress, first check the soil by taking a small sample in your hand; try to roll or squeeze it into a ball; if the sample will not mold into a ball, it is too dry to supply water to plants; soil should be sampled in several locations and at depths of 6 inches to 3 feet at the drip line. Do not wait until you see such symptoms as wilting leaves, heavy leaf fall, death of young leaves, and shiny leaves becoming dull or turning gray-green. Any of these symptoms will tell you that immediate irrigation is necessary.

To avoid evaporation of the water that you must give, and consequently water waste, always irrigate in the early morning or in the evening – never when the sun is shining brightly.

Watering Techniques – Watering with a hose may be impossible for urban gardeners if the New York City Department of Environmental Protection continues to forbid the use of fire hydrant or adjacent building water. Heavy-duty sprinkling cans will be a must during the drought cycle. These can be filled with whatever rainwater you have been able to preserve on your site, or with wastewater requested from adjacent building residents. Actually, the fine, gentle spray from the sprinkling can is best for beds of seedlings.

If some limited use of tap or hydrant water is allowed for community gardens this summer and fall, be sure that your hose has a fine spray nozzle with a thumb-release shut off valve. Also, turn off the hose at once if you see any runoff; this is an indication that you are applying water faster than the soil can absorb it; the hose may need smaller nozzles, or the soil may have been too compacted; always loosen soil first by gentle cultivation.

Use Of Waste Water – Household waste water – also called “graywater” – can be used on plants within certain guidelines: do not use wash or rinse water that contains chlorine bleaches (such as Clorox) or laundry products that contain boron compounds (generally known as “borax”). Both the chlorine and the boron will damage plants; this will usually show up as “leaf burning”.

If the water contains detergents without bleach or borax, it is safe to use in the garden. Of course it is possible to save household water other than that from laundry: water can be saved in a container in the kitchen from the tea kettle, from heating convenience foods, and boiling eggs; in fact, any cooking water that does not contain salt is usable. Bath water can also be saved and recycled for the garden.

To ensure your garden’s survival during dry spells, plan ahead by:

- Enhancing the organic content of your soil this spring and start a large compost heap
- Making the most of spring rains by planting appropriate plants at the proper time
- Mulching and installing deep watering devices around the perimeter of your trees and shrubs
- Starting a garden reservoir for water by acquiring plastic or metal drums now
- Save gallon jugs for distribution to neighborhood residents for storing gray water
- Put up a bulletin board for notices asking neighbors to save water for the garden.

Water and soil – two of our most precious natural resources – are not renewable. The roots of plants hold soil in place and prevent soil erosion during periods of heavy stress from extreme weather conditions such as drought. Scientists have predicted that our area will be in a drought cycle through 1985. All urban residents should learn to practice water conservation in the future – not just in this period. Indeed, time saved by eliminating frequent, tedious watering can be spent more creatively.

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The New York City Department of Environmental Protection has banned nonessential use of water including lawn sprinkling since January 1981. But according to a spokesman, community gardeners that feel justified in claiming extreme hardship and whose water conservation efforts encompass a comprehensive program including recycling of gray water and simply need a few water storage containers filled once a week ay write to the Commissioner and request a waiver from this current regulation. In addition, an exemption from the existing regulation that fire hydrant users have a permit and pay a daily usage fee may be included in the request. The fine at present for unauthorized water usage whether from the hydrant or home is \$50 or more. If reservoir levels rise later this spring there may be an easing of regulations. To stay abreast of current regulations call the Department of Environmental Protection for information: (212) 966-7500.

## References

University of California. Division of Agricultural Sciences. April 1977.  
California Department of Water Resources. April 1977.  
Wyman's Gardening Encyclopedia. MacMillan. 1971.