

## Aquatic Plants

**TIP** ➤ Add plants for surface coverage. In most situations waterlily pads (or other specialized floating leave of **ROOTED** macrophytes, i.e. water hawthorn (*Aponogeton distachyos*) and *Nymphoides* sp.) will help decrease evaporation. Lily pads on the pond surface are not only beneficial in reducing water loss, but add beauty to the pond.

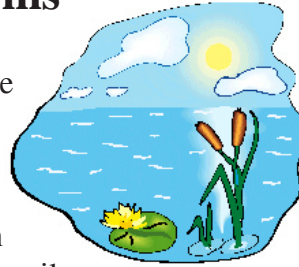
Marginal or bog plants that grow above the water or around the edges of the pond may slightly increase water use due to evapotranspiration (ET). However, plants may shade water and block winds hitting the open water surface, which decreases evaporation.

Water lettuce, hyacinths and most floating plants lose more water to evaporation.



## Glossory of terms

**Transpiration** is the process of plants absorbing water, usually through the roots, resulting in evaporation into the atmosphere primarily through the leaves.



**Evapotranspiration (ET)** is the water lost to the atmosphere by two processes - evaporation and transpiration. Evaporation is the loss from open bodies of water, such as lakes and reservoirs, wetlands, bare soil, and snow cover; transpiration is the loss from living-plant surfaces.

ET is affected by:

- Air temperature and humidity
- Soil temperature
- Wind speed and direction
- Solar radiation
- Precipitation

**Macrophyte** is the botanical term for plants in the aquatic habitat, excluding bacteria and algae.

To determine water replenishment by the inch when topping a pond; multiply length x width, divide by 12, and multiply by 7.5. This equals the number of gallons added by the inch. For a round pool multiply diameter x diameter, divide by 12, multiply by 5.9.

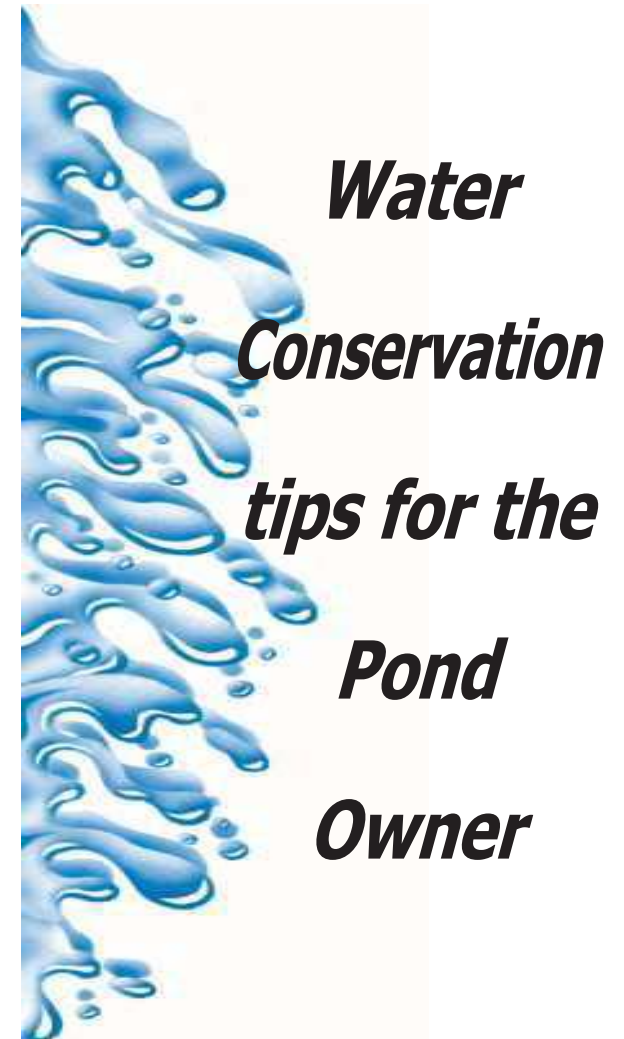
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Colorado Water Garden Society

<http://www.colowatergardensociety.org>

Information compiled by Colorado Water Garden Society and APR Landscape Co. Sources include American Water Resources Association Bulletins.

# Drought & Ponds



Looking beyond the obvious amenities of a pond, such as its relaxing, melodic sounds and the visual pleasures of viewing fish glide through the water, it provides a vital life necessity for insects and wildlife - water.

Water gardens provide water in an otherwise arid environment during drought conditions when natural creeks, streams and ponds are extremely low to dry.

An established pond surrounded by a naturalized landscape uses less water - nearly half as much as a bluegrass or fescue lawn of the same area. A typical pond will require one inch or less of water to replenish water lost to evapotranspiration each week. If a pond requires more water this, there are tips and conservation measures which can help decrease water use.



**TIP** ➤ When adding water, it is best done in late evening or early morning – less windy, more humid, cooler temperatures.

## Pond Location & Design

**TIP** ➤ *Disconnect all automatic refill devices. If you had a leak it would be impossible to know it until you got your water bill. Auto-fill valves increase risks of an undetected leak causing fish death from chlorine and chloramine toxicity. Drought is a time for a more hands on approach to pond keeping.*

Soil and plant material adjoining a pond's edge may wick water from the pond. A waterproof barrier is required for separation.

Partially-shaded ponds and wind-protected ponds require less water than open, exposed ponds.

Shallow water, less than 6 inches deep at a pond's edge, lined with rocks or gravel, evaporates at a more rapid rate than edges with a foot or more of depth.

## Waterfalls & Fountains

**TIP** ➤ *Turn off waterfalls and fountains except when you are around to enjoy them. A good idea would be to put all pumps on a timer that runs for only a few hours every day. Waterfalls and fountains result in increased evaporation.*

**TIP** ➤ *Turn off waterfalls and fountains in dry, windy weather.*

There are more water-wise ways to keep oxygen in the pond for the benefit of fish. Install air pumps which provide oxygen without excess evaporation. Two aquarium air pumps will keep a 12'x12' pond aerated without water loss and use less electricity than a water pump. Air pumps can be run year round, keeping water unfrozen in the winter, allowing for gas exchange for fish. Aquarium air pumps are available



at most pet supply stores, along with tubing and air stones. They do need to be protected from the elements, but putting them under a plastic bowl or inside a plastic box with a hole drilled for cords and tubes works well.

Don't oversize your pond pump. It is recommended that water should recirculate once every two hours. Increased velocity and excessive waterfall height increases water loss due to aerial dispersement increasing evaporation. Fountains, long watercourses and pond turbidity also increase water loss.

