A simple, inexpensive subirrigation system can be made using children’s plastic swimming pools. This system supplies irrigation water more evenly to large deciduous plants in containers than do overhead methods, and it can be combined with a typical injector so that plants can be fertigated.


KEY WORDS
irrigation, fertilization, container nursery

NOMENCLATURE
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"kiddy" swimming pools are being used to subirrigate a variety of seedlings in an efficient and cost-effective manner.

The subirrigation system consists of a main irrigation pipe, an inexpensive timer, and distributor pipes that run from the main pipe to each pool. PVC pipes were used to reduce cost. Simple hand valves are used to regulate which pools receive water. The timer can be set for a specified time sufficient to allow the pools to fill. A small hole cut into the bottom of each pool is fitted with a neoprene stopper that is manually pulled to allow the pools to drain after the containers have soaked for the specified time (Figure 1).

The pools have been set on top of recycled metal frames that were formerly used as shelving in the refrigerated storage units. These frames were placed atop cinder blocks in order to elevate the seedlings, making them less accessible to rodents and disease. It is
important to fully support underneath the pools, as they will collapse if left unsupported due to the weight of the containers and water.

Lucky Peak Nursery currently subirrigates cottonwoods (Populus spp. L. [Salicaceae]), willows (Salix spp. L. [Salicaceae]), dogwoods (Cornus spp. L. [Cornaceae]), and boxelders (Acer negundo L. [Aceraceae]) grown in 3.8-L (1-gal) Tree Pots™ (Stuewe & Sons, Corvallis, Oregon). Approximately 130 of these containers fit in each pool and about 1 h is needed to saturate the medium (Figure 2). The pools are located outside and on the north side of a greenhouse to provide plants with more shade during the hottest hours of the day. Potted plants have been kept in this system from 1 to 2 y; however, given the lack of problems to date, it appears that plants may be able to be subirrigated in this manner even longer. The irrigation line running to the pools is also attached to the injector so plants in the pools can be on a fertilizing and watering regime. After the medium is saturated, the stoppers are pulled and excess water is allowed to drain onto the ground. It might be possible to grow wetland plants in another pool positioned below the pool of broadleaved species, thereby putting the drain water to better use (after giving due consideration to compatibility of fertilizer regimes, of course).

This innovative system's price will depend on how many subirrigation pools are desired. The approximate total cost of this system on a per pool basis is around US$ 20, notably less than what one would pay for a manufactured, high-tech subirrigation system. The "kiddy pool" subirrigation system is a cost-effective way to ensure that large deciduous plants are adequately and uniformly watered, and it can increase the amount of growing space available for production. Color and pattern of the kiddy pools can be chosen based on the nursery manager's preference.

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REFERENCES
