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southwest



  
**Arizona Nursery Association**  
*Where Growing Businesses Can Thrive*

**THIS ISSUE:**  
**VIRTUAL SHADE** - Join us online 9/4!  
Member Profile – Rillito Nursery

# southwest**Horticulture**

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*Southwest***HORTICULTURE** Magazine

### Mission Statement

SouthwestHorticulture Magazine is the official news and educational publication of the Arizona Nursery Association, its members, affiliates and officers. It provides opportunities for academics to publish research of importance to ANA members, communicates significant information about ANA members and events, contains information that increases knowledge within the industry and presents a professional image of our members and affiliates. It offers advertising space to ANA members and non-members, which generates revenues in excess of publication costs.

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## Features

10 Member Profile – Rillito Nursery



The image is a promotional graphic for the 2020 SHADE event. It features a stylized tree with a yellow-green canopy and a brown trunk, set against a light blue background. The word "SHADE" is written in large, bold, dark grey letters. Above it, "2020" is written in a smaller, light blue font. Below "SHADE", the text "southwest horticulture annual day of education" is written in a smaller, light blue font. At the bottom, "PRESENTED VIRTUALLY FRIDAY SEPTEMBER 4TH, 2020" is written in large, bold, dark grey letters. The number "11" is visible in the bottom left corner of the graphic.

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Cover Photo: Photo provided by Katie Lasseter of Rillito Nursery and Garden Center

# Rain Water Harvesting Saves Water and Supports Healthy Trees

*Ursula K. Schuch, School of Plant Sciences, University of Arizona*

Water conservation is an important issue in the Southwest. Many urban landscapes use native or desert-adapted plants to reduce the amount of irrigation needed. Harvesting rainwater is another strategy to supplement irrigation and reduce potable water use. Rainwater harvesting has become more popular in recent years for both commercial and private properties to conserve water. Other benefits include reducing stormwater runoff, flooding, and soil erosion, and getting free, good quality water for irrigating plants.

The City of Tucson is the first city in the United States that has established an ordinance requiring mandatory rainwater harvesting for commercial properties. The ordinance requires that 50% of the landscape irrigation needs are met from harvested rainwater after a period of plant establishment. This ordinance was adopted in 2010 and applies to new commercial properties built after that time. Properties submit a rainwater harvesting plan to indicate how much water will be captured and guided into water harvesting infiltration areas. An annual water budget is calculated based on the type and number of plants specified in the landscape plan and allows 50% of the landscape irrigation needs, while the other half will be supplied by the harvested rainwater.

In a recent project, we assessed the efficacy of water conservation and tree health in commercial landscapes subject to the City of Tucson Rainwater Harvesting Ordinance. We evaluated 20 commercial properties, 19 of which used passive rainwater harvesting systems. Rainwater is directed from building roofs, parking areas, sidewalks, and other unpaved areas through curb cuts and grading into depressions or water infiltration areas in the landscape. Overflow water is directed into the street drains to prevent flooding on the property.

We evaluated water use by comparing the proposed water use based on the annual water allocation of a property to the actual annual water used for landscape irrigation. A separate outdoor meter measured the amount of water used for irrigation. We found that annual irrigation applications from 2013 to 2019 varied at the 20 sites from year to year. Over four years, only four properties exceeded their annual water budget. Those not in compliance with the rainwater harvesting ordinance were smaller properties with annual allocations of less than 45,000 gallons per year. Properties with a 45,000 to 150,000-gallon annual budget stayed well below their allocation.

Monthly irrigation was not consistently matched to

seasonal evapotranspiration demand and often was not taking rainfall events into account. Some sites applied very low amounts of water year-round. Landscape plants installed at all sites were, with few exceptions, native or desert-adapted and tolerated the low irrigation amounts well. Rainwater harvesting may have contributed to successful plant growth. Further gains in water conservation will be possible by connecting a rain gauge to the irrigation controller and by programming the irrigation clock to the seasonal evapotranspiration demand.

Efficient rainwater harvesting depends on the correct installation and maintenance of the infrastructure specified in the rainwater harvesting plan. Grading at the site to direct water into the infiltration basins, basin depth and coverage, rate of infiltration, and provisions for overflow need to accommodate the amount of harvested water. Grading at several properties did not accommodate the flow of rainwater into the infiltration areas but instead resulted in flooded areas in parking lots or direct runoff into the storm drain. Some infiltration areas, especially small cutouts for trees in parking lots, were shallow with a very small surface area that quickly filled and emptied through curb cuts with little time to infiltrate. Larger planting areas with greater basin volume could collect and store more water in the plant root zone. Securing water inlets and basin sides with large diameter rocks prevents soil erosion and degradation of the basins.

Trees are important components of landscapes and provide many environmental and aesthetic services. Municipalities require a certain number of trees on commercial properties based on parking spots, distance along the street, and landscaped area. For this project, we asked how many of the trees specified in the landscape plan are present at each site, and what is their health status? The majority of properties had between 20 and 60 trees specified, two had fewer, and two had more. Fifteen properties had between 65% and more than 100% of the trees that were specified in the landscape plan. The missing trees did not seem to be related to rainwater harvesting infrastructure but to restricted root zones, expansive canopies interfering with larger vehicles, and canopies blocking business signage. On average, 80% of trees on each property were healthy. Poor tree health was not related to rainwater harvesting but was often a result of improper maintenance practices.

This project was possible through support from the Arizona Department of Forestry and Fire Management, the US Forest Service, and cooperation with the City of Tucson.

