



**Root Watering System**  
Healthy tree growth right out of the box.



# Root Watering System: Proven Results



**Study:** Deep-Root Watering Study

**University:** College of Agriculture and Life Sciences, University of Arizona, Dr. Ursula Schuch

**Challenge:** *Many transplanted trees and shrubs suffer from low survival rate, mainly due to poor root system establishment.*

**Study:** To test the effect of deep-root watering, the University of Arizona College of Agriculture and Life Sciences conducted a study designed by plant scientist and researcher, Dr. Ursula Schuch.

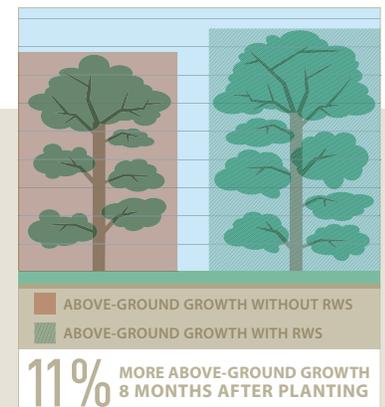
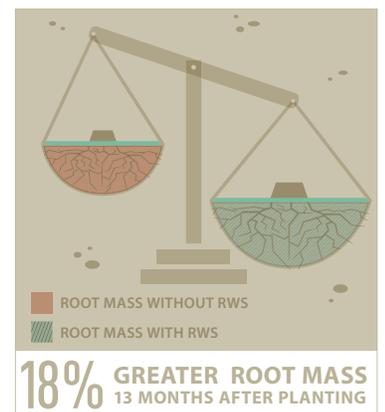
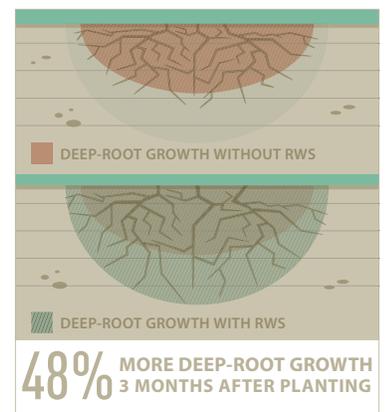
The research included 48 ash trees at a test site. Half of the trees were irrigated with a pair of Rain Bird® RWS-M 18" basket weave canisters that were installed in-ground near the root ball. The other half was surface irrigated with bubblers near the tree stem. All trees received the same volume of water, at the same frequency.

The trees were harvested 3, 8 and 13 months after transplanting, and data was collected.

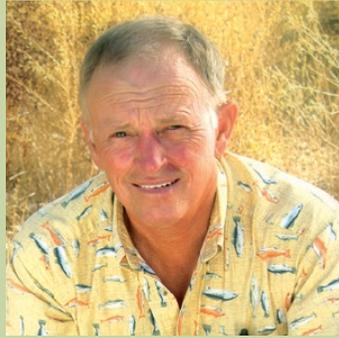
**Impact:** **Deep-Root Growth:** Early deep-root growth greatly improves the likelihood of survival for transplanted trees and shrubs. It allows better anchoring (critical in windy conditions) and also provides a larger reservoir of available soil moisture.

**Root Mass:** Greater root mass means more water, oxygen and nutrient uptake, resulting in a healthier, faster growing tree.

**Result:** Trees that received root watering from the Rain Bird® RWS measured *more deep-root growth, greater root mass and better above-ground growth* than surface-watered trees.



# Rain Bird® RWS improves tree health and survival rate.



**Case Study:** Folsom, CA, housing and commercial development project.

**Contractor:** Greg Houck, Ad Land Venture, Rancho Cordova, CA

**Challenge:** *Planting oak seedlings on 20 acres of coarse, rocky soil that prevents uniform distribution of water.*

## Project:

As this housing and commercial development was completed, tree planting became a major undertaking because California state law requires developers to replace all trees removed during construction. The task fell to contractor Greg Houck. With 200 valley oak seedlings to plant on a 20-acre site, he needed an efficient irrigation method that would help the oaks survive in fairly unfriendly terrain and soil conditions.

Conventional irrigation systems were not an option, due to high levels of water evaporation and inadequate moisture distribution to the roots of the transplanted trees. Drip irrigation was also ruled out because it could not provide enough moisture to establish deep tree roots in this particular application.

On previous projects, Greg had installed a plastic tube with about a dozen hand-drilled holes and a retrofitted bubbler, but he

was never completely satisfied with this do-it-yourself method. Then Rain Bird introduced the RWS specifically designed to bring water, air and nutrients to tree roots. Greg selected the RWS with a 1401 bubbler, check valve and grate (RWS-B-C-1401) for his project.

Each RWS unit is made of a 36-inch long perforated mesh tube, which can be cut to length. The tube is perforated with more than 14,000 holes, allowing water to permeate the ground at the root bulb while providing excellent aeration. The design encourages trees to develop long, deep roots, which helps them become established, even in soil that is less than ideal for tree transplants.



## Result:

***One year after planting, the trees show “extremely good vitality,”***

according to Greg. In a typical transplant project like this, as many as 20% of the trees do not survive, but Greg only lost one tree out of the 200 planted, thanks to the Rain Bird® RWS. “If you’re looking for long-term vitality and healthy trees,” Greg concluded, “this is an excellent tool.”



## Specifying tree irrigation is easy with Rain Bird® RWS.



**Case Study:** Boise, ID, State Veterans Cemetery.

**Specifier:** Ross Rooper, Beck & Baird Landscape Architecture, Boise.

**Challenge:** *Specifying an appropriate irrigation system for more than 600 young trees transplanted to roughly 12 acres of sandy soil that is not naturally conducive to tree growth.*

### Project:



RWS with Soil Sock

For decades, Idaho was the only state without a state-run veterans cemetery. Thanks to a generous land donation, however, Idaho was finally able to get federal grant money to make the cemetery a reality.

The donated land featured a slope with grades ranging from 15–60° and required significant reshaping and stabilization through the planting of trees, shrubs, grass and other groundcover. Not only that, it became apparent that irrigation would be a challenge because the soil was so sandy that not a single rock was found as construction and landscaping crews excavated more than 1,000 cubic yards of soil.

Landscape architect Ross Rooper knew his best bet was to focus on as much indigenous vegetation as possible, so most of the cemetery was replanted in naturally growing Idaho fescue and sagebrush. Although the soil in this particular location wasn't naturally compatible

with trees, more than 600 young trees were designed into the plan as a tribute to the forests that shape Idaho's horizons. Irrigating the trees was an absolute necessity.

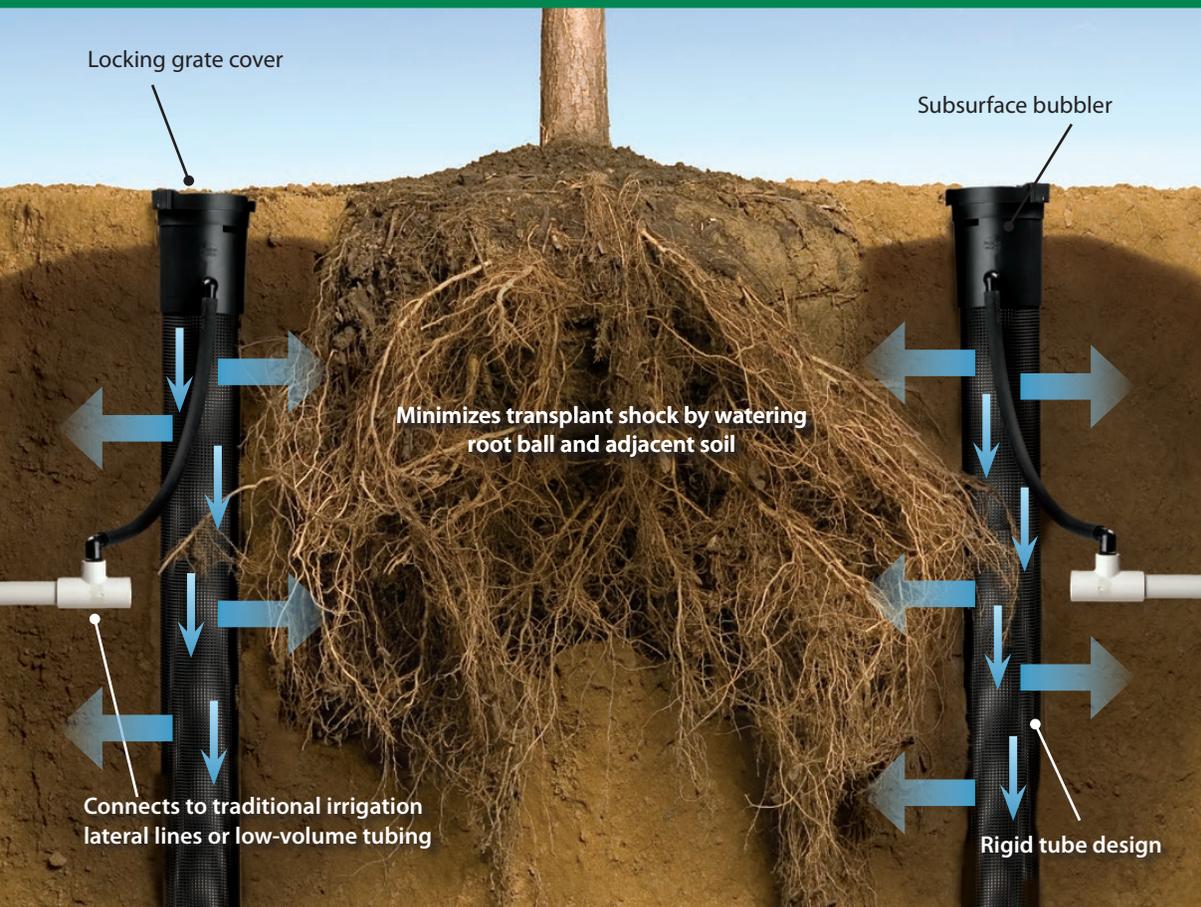
Ross was planning to design a custom tree irrigation system when Rain Bird supplier Chaz McCallister of Horizon Landscape & Irrigation Solutions showed him the new Rain Bird® RWS. "My first impression of the RWS was that it was the perfect ready-made solution for the cemetery project," Ross recalled.

He immediately specified 1,250 Rain Bird® RWS-B-C-1401 units with Soil Socks. Because of the sandy soil, he needed the units to encourage lateral root growth, so each RWS was cut to 24 inches. He also specified the Soil Socks to prevent the sand from infiltrating the RWS mesh tube.

### Result:

*Ross is pleased with the self-contained nature of the Rain Bird® RWS because he didn't have to specify a host of small parts for each root watering unit. Also, "Rain Bird has a really good reputation," he said. "I knew I was specifying a good product."*





## RWS Key Benefits

### Investment Protection

- Deep and broad roots yield transplantation survivability, stability in high winds, fast and healthy growth.

### Watering Efficiency

- Subsurface irrigation minimizes run-off and evaporation.

### Landscape Aesthetics

- Installs at grade and helps minimize damage to hardscapes.

**Patented design saves time, money and enhances installation flexibility.**

All Rain Bird® RWS products are pre-assembled and ready to install. You'll save time and money, your trees are more likely to develop deep and robust root growth, and your customers will be satisfied with the results.

#### Minimizes transplant shock

- Directs water to root ball and adjacent soil
- Supplements top-down soaking

#### Deeper and broader roots

- Quicker tree and shrub growth
- Provide a stable foundation against high winds

#### Subsurface bubbler

- Reduces waste due to run-off
- Minimizes evaporation

#### Supports drip irrigation installations

- Orderable without a swing assembly or fittings to support direct connection to a drip system
- Compatible with Rain Bird's EMT-6XERI six outlet drip manifold
- Side ports allow distribution of 1/4" drip tube to nearby emitters
- Supports use of Rain Bird's OPERIND Drip System Operation Indicator

#### Aesthetically pleasing appearance

- Installs at grade level
- Minimizes root damage to hardscapes

#### Rigid mesh tube design

- Mesh material allows for horizontal movement of water and oxygen into root zone
- Unique water channeling feature enables top-to-bottom water dispersion
- Supports pea gravel fill to provide firmness against root compaction

#### Connects to traditional irrigation lateral lines

- Integrated polyethylene swing assembly and spiral barb fittings connect to PVC and PE pipes
- Simplifies attachment to watering pipes

#### Self-contained and factory-assembled

- Comes in three (3) pre-assembled sizes for design flexibility
- Saves time and money by being ready to install out of the box

#### Minimizes personal injury

- Reduces above-ground risers and surface-level roots people can trip over
- Locking grate cover deters vandalism

#### Options for RWS and RWS-M models

- Non-potable water grate cover identification
- Soil Sock prevents fine particles from penetrating tube

# Rain Bird® Root Watering System

MODEL	DESCRIPTION
<b>RWS: 4" diameter x 36" long (10 cm x 91 cm)</b>	
RWS-B-C-1401	Root Watering System with 0.25 GPM (0,95 l/m) bubbler & check valve on riser, 4" (10 cm) grate, versatile swing assembly with ½" (15/21) M NPT inlet
RWS-B-1401	Root Watering System with 0.25 GPM (0,95 l/m) bubbler on riser, 4" (10 cm) grate, versatile swing assembly with ½" (15/21) M NPT inlet
RWS-B-X-1401	Root Watering System with 0.25 GPM (0,95 l/m) bubbler on riser, 4" (10 cm) grate, 18" (46 cm) open swing assembly with ½" (15/21) M NPT inlet
RWS	Root Watering System Basic, 4" (10 cm) grate, ready for customer provided irrigation hardware
RWS-B-C-1402	Root Watering System with 0.50 GPM (1,9 l/m) bubbler & check valve on riser, 4" (10 cm) grate, versatile swing assembly with ½" (15/21) M NPT inlet
RWS-B-1402	Root Watering System with 0.50 GPM (1,9 l/m) bubbler on riser, 4" (10 cm) grate, 12" (31 cm) versatile swing assembly with ½" (15/21) M NPT inlet
RWS-B-C-1404	Root Watering System with 1.00 GPM (3,8 l/m) bubbler & check valve on riser, 4" (10 cm) grate, versatile swing assembly with ½" (15/21) M NPT inlet
<b>RWS-Mini: 4" diameter x 18" long (10 cm x 46 cm)</b>	
RWS-M-B-C-1401	Mini Root Watering System with 0.25 GPM (0,95 l/m) bubbler & check valve on riser, 4" (10 cm) grate, ½" (15/21) M NPT inlet spiral barb elbow
RWS-M-B-1401	Mini Root Watering System with 0.25 GPM (0,95 l/m) bubbler on riser, 4" (10 cm) grate, ½" (15/21) M NPT inlet spiral barb elbow
RWS-M-B-C-1402	Mini Root Watering System with 0.50 GPM (1,9 l/m) bubbler & check valve on riser, 4" (10 cm) grate, ½" (15/21) M NPT inlet spiral barb elbow
RWS-M-B-1402	Mini Root Watering System with 0.50 GPM (1,9 l/m) bubbler & check valve on riser, 4" (10 cm) grate, ½" (15/21) M NPT inlet spiral barb elbow
RWS-M	Mini Root Watering Basic System with 4" (10 cm) grate, ready for customer provided irrigation hardware
<b>RWS/RWS-Mini Accessories</b>	
RWS-SOCK	Root Watering System Soil Sock (6 per bag)
RWS-GRATE-P	Root Watering System 4" (10 cm) Purple Grate
<b>RWS-Supplemental: 2" diameter x 10" long (5 cm x 25 cm)</b>	
RWS-S-B-C-1401	Supplemental Root Watering System with 0.25 GPM (0,95 l/m) bubbler & check valve on riser, 2" (5 cm) snap-on cap and base, ½" (15/21) M NPT inlet spiral barb elbow
RWS-S-B-1401	Supplemental Root Watering System with 0.25 GPM (0,95 l/m) bubbler on riser, 2" (5 cm) snap-on cap and base, ½" (15/21) M NPT inlet spiral barb elbow

Reclaimed Water Models

Visit [www.rainbird.com/RWS](http://www.rainbird.com/RWS) for additional details about the Rain Bird® Root Watering System that promotes healthy tree growth in one complete, factory-assembled package.



**Rain Bird Corporation**  
6991 East Southpoint Road  
Tucson, AZ 85756  
Phone: (520) 741-6100  
Fax: (520) 741-6522

**Technical Service and Support**  
(800) RAINBIRD (U.S. and Canada only)

**Rain Bird Corporation**  
970 West Sierra Madre Avenue  
Azusa, CA 91702  
Phone: (626) 812-3400  
Fax: (626) 812-3411

**Specification Hotline**  
(800) 458-3005 (U.S. and Canada only)

**Rain Bird International, Inc.**  
1000 West Sierra Madre Avenue  
Azusa, CA 91702  
Phone: (626) 963-9311  
Fax: (626) 852-7343

[www.rainbird.com](http://www.rainbird.com)