Does watering with willow water stimulate faster root growth?

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Abstract

Many nursery grown container plants are produced by taking cuttings of stems material and rooting them. In order to optimize this process, a number of treatments are often applied to unrooted cuttings. Studies have shown that watering cuttings with a solution made from branches of Willow trees (Salix sp.) can increase the percentage of cuttings that develop roots. (Karmini and Mansouri 2012). In order to test this, I watered two flats each of five species, one with tap water and the other with a willow water solution. In order to approximate typical nursery practices, each cutting was initially treated with Dip N' Gro Liquid Rooting Concentrate, a chemical rooting hormone. Throughout the experiment I monitored the development of roots to see if willow water solution improves rooting in a typical nursery setting. Two species; *Myrica californica* and *Keckielia antihirrhinoides,* showed positive results for root growth when watered with willow water while the rest of the plants required longer time to root.

Background

Willow (Salix sp.) contains both Salicylic acid and Indolebutyric acid (IBA). Salicylic acid is a natural compound that is involved in fruit maturity and senescence, and IBA is a naturally occurring plant hormone that is used in many commercial plant rooting products such as fertilome Root Stimulator and Plant Starter Solution 4-10-3, Dip N'Gro Liquid Rooting Concentrate, Greenlight Concentrate Root Stimulator and Starter Solution. Goodding's black willow (*Salix gooddingii*) and Arroyo willow (*Salix lasiolepis*) were the two willows that were used in the experiment. The objective of this experiment is to test the effects of compounds found in willow water (salicylic acid and IBA) on rooting of cuttings of select species.

Methods

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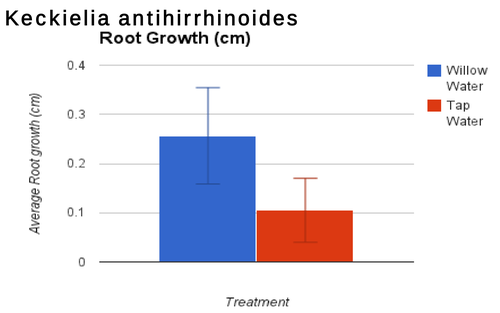
The research project had a control (regular watering with tap water) and willow water treatment for the following plants:

- *Keckiella antirrhinoides* (Plantaginaceae)
- *Arctostaphylos refugiensis* (Ericaceae)
- *Oemleria cerasiformis* (Rosaceae)
- *Myrica californica* (Myricaceae)
- *Arctostaphylos insularis* (Ericaceae)

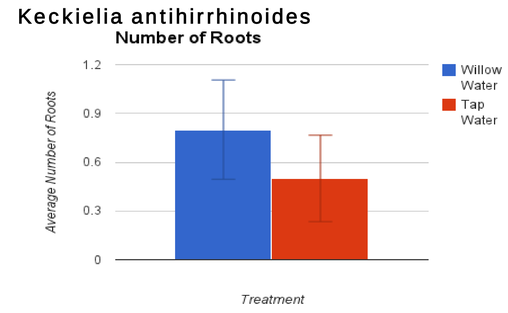
All cuttings were stuck in perlite flats and watered twice a week with their respective treatments.

Preparation of willow water:
Gather willow branches that are flexible and young, pencil thick size is best at about 3 ft in length. Strip the branches of all leaves. Cut branches into 3 inch pieces and wrap pieces in a bundle with rubber band, let soak in 1 to 2 parts of hot water for 24 hours. Dilute the willow water and pour over experiment plants.
The gathering and preparation of the willow water was done on Mondays and Thursdays and the plants would be watered the following day (Tuesday and Friday). This experiment was done in 4 weeks time.

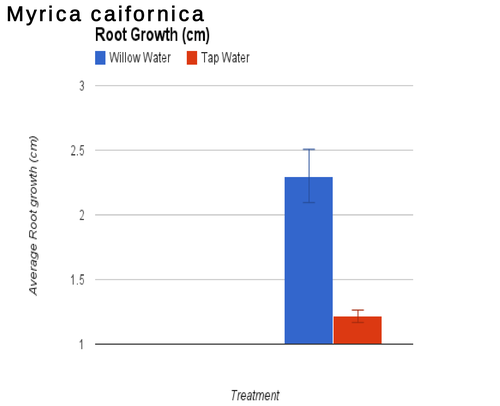
*All were dipped in hormonal root growth and all were cuttings meaning that they had no roots to begin with.



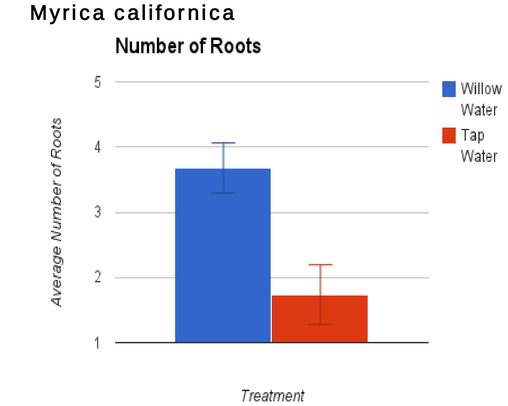
- *Keckiella antihirrhinoides* root growth after 5 weeks.



- Number of roots per plant on *Keckielia antihirrhinoides* after 5 weeks.

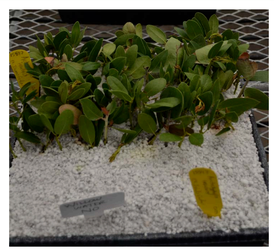


- *Myrica californica* root growth after 5 weeks.



- Number of roots per plant on *Myrica californica*

Ruler used for measuring roots.



Arctostaphylos insularis cuttings stuck in perlite flat.

Results

Not only did the cuttings that were treated with willow water root faster, they also produced more roots per plant (figures 1-4). The *Keckiella antirrhinoides* and *Myrica californica* had the most success with root growth and number of roots per plant. Both the *Arctostaphylos refugiensis* and *Arctostaphylos insularis* root at a slower pace so there was no significant root growth in either of these. The *Oemleria cerasiformis* hardly produced any roots, they too take a number of months before rooting begins.

Acknowledgements

I would like to thank the executive director of RSABG Dr. Lucinda McDade, my mentors Naomi Fraga and Antonio Sanchez. In addition I would to thank Citrus College for the opportunity and the STEM grant which made my research possible.