

Biodegradable mulches successfully control weeds in container-grown arborvitae

November 17 2011

Traditionally addressed through hand-weeding and/or herbicide application, controlling weeds is one of most costly operations in nursery production. Increased labor costs have made hand-weeding prohibitive as the sole method of weed control, and although herbicides may be effective and less expensive, non-target herbicide loss can be as high as 86% and can harm the environment. To address the economic and environmental impact of weed problems, nursery producers are looking for more sustainable and cost-efficient techniques to control weeds in container-grown plants.

Building on previous research that proved that mulching materials can be successfully used as alternatives to chemical weed control, scientists in Italy evaluated the effectiveness of biodegradable mulches for [weed control](#) in container-grown 'Martin' giant arborvitae (*Thuja plicata*) and measured the effects of the mulches on [evaporation](#) and substrate temperature. The study premiered in a research report published in *HortTechnology*.

The experiments were conducted in an experimental nursery near Como, Italy. The nursery consisted of a tunnel covered with a translucent film to protect containers from precipitation. The research was performed on 2-year-old giant arborvitae plants. Four biodegradable mulching materials were tested and compared with a chemical control (oxadiazon) and a non-mulched/non-treated control. Two levels of overhead irrigation were evaluated: daily irrigation to container capacity (classified as "well-watered") and daily irrigation to 30% of container

capacity (classified as "water stressed"). Plants were either hand-weeded three times during the growing season or not weeded until the end of the growing season.

According to corresponding author Gabriele Amoroso, the results showed that mulches limited weed growth to the same extent as the chemical control. In the first year of the study, mulched plants resulted in a higher shoot dry weight than non-treated and non-mulched plants, while in the second year, no differences were observed. No mulching materials were found to reduce the pot temperature. "The black color of the 3-L containers was probably the main factor driving substrate temperature increase, indicating mulching materials did not affect substrate temperatures", noted Amoroso.

In both experiments container water content was unaffected by mulching materials. Results seem to demonstrate that transpiration is the main component of water loss from container-grown giant arborvitae plants.

The scientists concluded that their findings can help ornamental plant growers by giving them more information about the effects of mulching on plant growth, substrate temperature, and water content in containerized plant production.

More information: The complete study and abstract are available on the ASHS HortTechnology electronic journal web site:
[horttech.ashspublications.org/ ... nt/abstract/20/6/957](https://horttech.ashspublications.org/...nt/abstract/20/6/957)

Provided by American Society for Horticultural Science

Citation: Biodegradable mulches successfully control weeds in container-grown arborvitae (2011, November 17) retrieved 2 May 2024 from <https://phys.org/news/2011-11-biodegradable-mulches->

[successfully-weeds-container-grown.html](https://phys.org/news/2019/05/successfully-weeds-container-grown.html)

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.