

Herbicide-Treated Mulches Effective Method Of Weed Control

COLUMBUS, Ohio — Mulches pretreated with herbicides have been found to be an effective method of weed control on ornamental plants grown in nursery or landscape settings.

The results of an Ohio State University study to measure the productivity of herbicide-treated mulches on weed control and plant toxicity have shown that certain organic mulches pretreated with herbicides produced near-perfect weed control and showed minimal phytotoxicity up to 130 days after application.

Such results are beneficial to landscape and nursery industries since the efficacy of pre-emergent herbicides would be extended, reducing the need for repeated chemical applications over the course of a growing season.

The research is being funded by the Horticultural Research Institute, the Ohio Research Endowment, the USDA and several nurseries in the Dayton/Springfield area.

Hannah Mathers, an Ohio State University nursery and landscape specialist, said the pretreated mulches provided better control than mulches or herbicides applied directly to the soil or plant and lasted

longer than the normal 45-day herbicide application.

"The mulches treated with herbicides had a 1.5 fold increase over herbicide applications by themselves and a 1.8 fold increase over mulches by themselves," said Mathers. "That's a pretty significant result. There's something going on there where the two together gives superior efficacy over mulches or chemicals alone."

The researchers studied the performance of seven organic mulches (pine nuggets, cypress, Douglas fir, hardwood bark, rice hulls, cocoa bean shells, and PennMulch — a recycled palletized paper product) treated with two herbicides (Surflan and Flumioxazin — not yet registered for ornamentals) on various broad-leaved evergreens, conifers and deciduous shrubs.

Weed control was given a visual rating of zero to 10, with a "10" providing perfect weed control. Plant toxicity was also ranked from zero to 10, with a zero indicating perfect plant health. Herbicide was applied to a 15 square foot area of a single layer of mulch using the same field application rates required in the nursery and landscape industries.

Based on the results, rice hulls and hardwood bark treated with either Surflan or Flumioxazin provided the best weed control with minimal toxicity to the plants. "For example, at 45 days the pretreated hardwood had a perfect '10' in weed control and a '2.1' in phytotoxicity. Anything below a '3' for phytotoxicity is considered commercially acceptable," said Mathers.

Other pretreated mulches, like pine nuggets, also appeared to outshine the performance of stand-alone mulches and herbicides. "A half-rate of Surflan on pine nuggets brought phytotoxicity down lower than even half of what would normally be applied with a chemical by itself," said Mathers. "Pine nuggets performed well with Surflan providing almost as effective weed control as hardwood bark or rice hulls."

Researchers speculate the herbicides bind to the mulches, creating a slow-release carrier that not only improves upon weed control and reduces plant toxicity, but also produces a more environmentally sound product by reducing leaching.

"Most of the chemical that is applied directly onto plants leaches away because of its

water solubility," said Mathers. "So much of it leaches away through pots that you may apply 100 percent of the chemical but you have only about 30 percent of the actual chemical to do anything with. The rest is just lost." In the landscape the chemical leaches into the environment as run-off. In nursery production, lost chemicals are the result of improper calibration and run-off from plastic or gravel, which increases the need for multiple applications.

Mathers and graduate students Luke Case and Nathan Tuttle plan to study exactly where the majority of the herbicide that is applied to the

mulch resides, whether it's in the mulch, within the plant soil or at the bottom of the container.

"If we can scientifically show that the chemicals are binding to the mulches, then we have a product that can be applied to plants and we won't have to worry about any leaching into water sources," said Mathers. "Also, a product that can give you weed control for a whole season is a big deal to a landscape maintenance company. If you can guarantee total weed control to your customers, it makes you look good and that's good business."

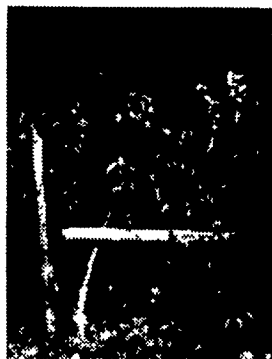


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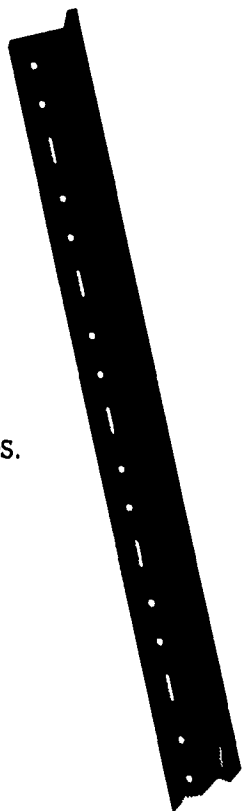


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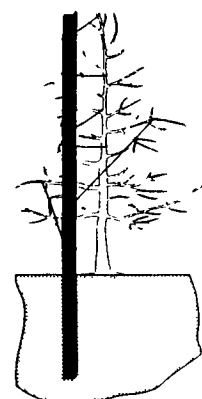
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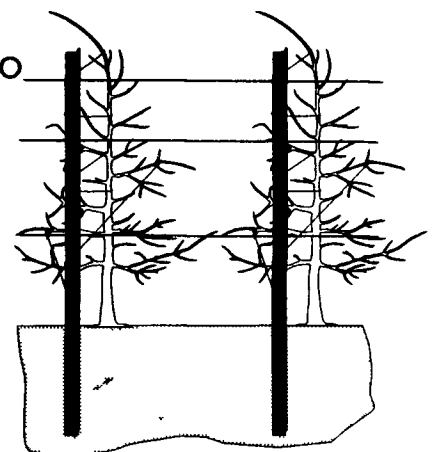
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