

Recycling pecan wood for commercial growing substrates

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Hedge-pruning pecan trees generates significant tonnages of wood biomass. A study established good potential for pecan wood chips to partially replace peatmoss in greenhouse potting substrates, and outlined steps needed to turn a pecan wood "eco-cycle" into reality. Credit: Lester Boyse.

In the ornamental greenhouse and nursery industries, concerns over peatmoss availability, cost, and harvest restrictions have created an imminent need to identify alternative substrates used in the production of potted plants. Growers are looking to chipped wood products used as substrates, hoping to supplement peatmoss without the need for extensive changes in production practices. Scientists at New Mexico State University tested pecan wood for its feasibility as a substrate and revealed several recommendations that can inform growers' choices.

The authors of the study in the February 2016 issue of *HortScience* say there has been limited research into the use of hardwood chips in greenhouse [substrates](#), as most studies have focused on soft woods such as pine. "Research is needed to determine growth and performance of [potted plants](#) in response to pecan wood-amended substrates, particularly for how fertilization practices should be modified to address potential nutrient limitations," they explained. "Commercial production of pecan generates significant woody biomass from hedge prunings with little economic value," said Geno Picchioni, corresponding author of the study. "Value-added uses could aid pecan growers, and one possible use is [wood chips](#) for potting substrates to lessen dependence on peatmoss, thereby aiding [greenhouse growers](#)."

The research design featured pecan wood substrates made of a peat-based formulation containing 67% peatmoss, 21% rice hulls, and 12% rockwool by volume. 'Carpino' garden chrysanthemum plants were grown for 60 days in five pecan wood chip substrate levels that substituted 0%, 25%, 50%, 75%, and 100% of peatmoss by volume. Three water-soluble fertilizer rates (nitrogen at 0, 200, or 400 mg·L⁻¹) were applied with each irrigation and to each of the wood substitution treatments.

According to the authors, the findings supported several issues that had been previously determined, including high leaching fractions,

reductions in substrate fertility, increases in substrate pH, and reductions in shoot growth and leaf nutrient levels. "High water-soluble fertilizer at 400-N proved necessary with even the smallest substitution of pecan wood chips (25%) to achieve comparable growth as a conventional system with only peatmoss and 200-N," the authors noted. They said that the study showed a positive opportunity for using pecan wood chips in greenhouse substrates, but suggested that adjustments to water and fertilizer management are needed to realize the potential of the product.

"When shredded pecan branches are recycled to the orchard floor, they complete a closed wood eco-cycle that, in New Mexico, may be the most reasonable disposal option at this time," Picchioni said. "Based on our findings, greenhouse crops have potential to become part of the cycle and provide a value-added option for pecan growers, which has proven successful in southern pine forests and plantations."

More information: *HortScience* , hortsci.ashspublications.org/content/51/2/177.abstract

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