From Forest Nursery Notes, Winter 2012

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Annual Crop Growth in Substrates Amended With Sweetgum, Hickory, and Red Cedar©

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Peat has served as an industry standard for greenhouse substrates for over 50 years. Its continued availability, inert characteristics, as well as its ability to stay relatively pathogen-free have all contributed to its success in the horticulture industry. However, due to increased harvesting restrictions, as well as increased shipping costs, the future availability of peat is a largely unknown factor in greenhouse production. Our study evaluated three possible alternative substrates for greenhouse use, including sweetgum (SG), hickory (H), and eastern red cedar (RC). Three greenhouse annual crops (petunia, impatiens, and vinca) were planted in varying ratios of these three wood species mixed with peat. Plants grown with SG and H as amendments did not perform as well as plants in a grower's standard [peat : perlite (3 : 1, v/v)] mix with respect to flower number, growth indices, and plant dry weight. However, plants grown in RC tended to be equivalent to those grown in a peat 75 : perlite 25 (v/v) grower's standard. Data showed that greenhouse producers could amend their standard greenhouse substrate with up to 50% RC with little to no differences in plant growth and overall plant quality.

INTRODUCTION

For the past 40 to 50 years, peat and pine bark have served as industry standards for substrates in the greenhouse and nursery industries because of several inherit qualities; both are readily available and generally pathogen-free. However, due to numerous projected changes, the future availability of these two media is questionable. Peat supplies are decreasing due to increased harvesting regulations, along with increases in fuel costs for the shipping of peat from Canada. This has caused growers to seek alternative greenhouse substrates with equivalent physical characteristics (Greg Young, pers. commun.). Therefore, development of alternative substrates has been a major focus of research efforts.

Hardwoods and hardwood barks have both been evaluated as alternative substrate amendments (Self, 1975; Kenna and Whitcomb, 1985; Broussard et al., 1999). In 1975, results were obtained showing that the best growth of two azalea species was from "pine shavings followed by cedar shavings" (Self, 1975). Kenna and Whitcomb (1985) evaluated hardwood chips of both post oak (*Quercus stellata*