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Growing Media Options: Take the Test Before the Lesson©

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INTRODUCTION

Container crop producers are experiencing rising costs and concern for future availability of substrate components used to grow container plants. Rising fuel costs have dramatically affected the cost of Canadian peat moss. Additionally growers are experiencing increased prices and shortages of pine bark. Over the last 40 years nursery container crop producers have depended on pine bark as a by-product of forest operations. Pulp mills, fuel pellet mills, and other industries are increasingly turning to pine bark as a source of fuel, reducing supplies available to the horticultural market. Competition and increasing costs of substrate components threaten the future economic profitability of the floriculture and nursery industry. Therefore, investigation of alternative container substrates is necessary and paramount for sustainable container crop production practices.

Desirable physical and chemical characteristics of container substrate components have been described in many horticultural publications. Certainly, initial adequate air-filled porosity (AFP), stability resistance to decomposition during production, moderate pH, acceptable initial electrical conductivity, and balanced initial nutrient levels are cited as important parameters for evaluating alternative potting components. Testing these characteristics of experimental potting mixes before wide adoption for general use in greenhouses or nurseries as a potting substrate for new container crops is necessary to avoid problems during production cycles.

This article describes three testing procedures that growers can use to evaluate the efficacy of alternative potting components being considered for growing container crops. Air-filled porosity (AFP) is a very important physical characteristic of container substrates. Knowing the AFP of a potting mix provides knowledge useful for choosing container geometry suitable for a particular substrate, appropriate irrigation application and nutrient management practices. The first objective of this presentation is to describe a "home remedy" procedure for measuring AFP of container substrates that can achieve "reasonably" consistent results. The second objective is to measure nutrients soluble in the container substrate held within a container. Electrical conductivity (EC) increases proportionally with the dissolved salts (nutrients from substrate components or fertilizers) present in the solution. Therefore, measuring EC indicates the nutrient concentrations that will be initially experienced by roots of container-grown plants. Leaching fraction is proposed as one way for growers to determine if an irrigation system is dispensing irrigation for an appropriate length of time to adequately water the crop without over watering. Over watering may cause an excessive amount of water to flow out of the bottom of the container. High percentages of leachate leaving containers leaches nutrients from the container and results in larger volume of runoff that must be collected in detention or retention structures or filtered by landscape vegetative features. Therefore the third objective of this presentation is to provide growers with a procedure to measure leaching to determine if experimental substrates are compatible