



USDA-CSREES 2007 National Water Quality Conference

Amending soilless substrate with calcined versus pasturized clay for production of poinsettias

The nursery industry is reducing wastewater discharge volumes and nutrient concentrations therein. A 3-month study greenhouse container study was conducted during fall 2005 to compare plant growth and leachate properties for 'Prestige' poinsettias grown in a commercial peat-based substrate used alone or amended with either calcined or pasteurized attapulgite-type clay (10% v/v). Methods were developed based on best management practices for small scale growers with open irrigation systems. Nutrients were supplied by a commercial controlled release fertilizer (19-6-12) added at the product label rate at the beginning of the study. Containers were irrigated when container capacity dropped to a predetermined level with sufficient volume of tap water to achieve a leaching fraction around 0.2. Leachate was collected from each container at each irrigation event and soluble salts quantified. Shoot dry weight was greater with the Georgia calcined clay and the no clay treatments in comparison with the Mississippi calcined clay and the California pasteurized clay treatments. Electrical conductivity (EC) of leachate from the pasteurized clay was 2-3X higher than that of the other treatments at the beginning of the study, with the difference diminishing by crop finish. The lowest average leachate EC level during the study was obtained with the Georgia calcined clay. Data suggest that incorporation of a calcined Georgia clay (10% v/v) results in plant growth equivalent to the control while reducing discharge of excess soluble salts.

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