Using SUM columns to measure nutrient uptake and root respiration of loblolly pine seedlings. (S07-lucash182533-Poster)

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Abstract:

Although a portion of the energy derived from respiration is used for nitrogen uptake, few studies have simultaneously measured root respiration and nitrogen uptake. In this study, respiration and nitrogen uptake were simultaneously measured in loblolly pine seedlings grown in soil-uptake-monitoring (SUM) columns filled with sand. The seedlings were grown in SUM columns for two months. To determine how current supply of photosynthate affects uptake, nitrogen uptake was measured under both light and dark conditions. Nitrogen uptake was measured by filling columns with a known volume and concentration of nutrient solution. After 2hrs, the leachate was removed by a vacuum pump, and analyzed for NO3- and NH4+. During the uptake measurements, root respiration was measured in the column headspace using a LI-COR 6200. The measurements were repeated using a range of nutrient solution concentrations to estimate the cost of ion uptake.

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