Nitrogen Nutrition of Western Redcedar, Western Hemlock and Salal: Species-Specific Mechanisms. (S04-bennett114822-Oral)

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Abstract:

Cedar-hemlock (CH) forests on Vancouver Island have thick forest floors with large total N contents and low NO3- and NH4+ concentrations. Western redcedar, western hemlock and salal growing in these forests are N-limited but show different productivities. The co-occurrence of the three species in N-poor CH forests and their respective productivities may be the result of: 1. utilizing different N forms. 2. having different rooting distributions allowing them to access spatially separated N pools. The importance of these two mechanisms in providing N to cedar, hemlock and salal in CH forests was evaluated. All three species were able to take up glutamic acid intact and showed similar abilities to access NO3-, NH4+, glutamic acid, protein and protein-tannin compounds. The vertical fine root distributions of cedar, hemlock and salal were measured in CH forests, and salal and hemlock were found to have the highest root densities in the upper forest floor while the distribution of cedar roots was more even. Accessing spatially separated N pools may therefore, in part, explain the different productivities of cedar, hemlock and salal in CH forests.

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