Growth, biomass allocation and plant nitrogen concentration in Chilean temperate rainforest tree seedlings: Effects of nutrient availability

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Seedlings of nine southern Chilean trees were grown at three nutrient supply rates, to examine the roles of growth rate, biomass distribution and nutrient use traits in determining species natural distributions on resource gradients. Relative growth rate (RGR) showed no overall relationship with species site requirements, although RGR of fertile-site species tended to be more responsive to nutrient supply. In the low-nutrient treatment, infertility-tolerant Fitzroya cupressoides showed a higher RGR rank than a fertility-demanding species (Laurelia philippiana) which outgrew it substantially at the highest supply rate. This reversal of RGR ranks was associated with divergent nutrient use responses: at high nutrient supply both spp. had similar plant nitrogen concentrations (PNC), whereas at the low supply rate Fitzroya's production of biomass per unit of assimilated N was twice that of Laurelia's. However, this pattern does not appear to serve as a general explanation of the respective