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ABOVE- AND BELOW-GROUND NUTRIENT TISSUE CONCENTRATION AND LEAF PIGMENT CHANGES IN PATAGONIAN WOODY SEEDLINGS GROWN UNDER LIGHT AND SOIL MOISTURE GRADIENTS

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□ To understand the ecophysiology of natural regeneration above- and below-ground nutrient tissue concentration and leaf pigment changes in *Nothofagus pumilio* (*lenga*) seedlings grown in three light intensities (4%, 26% and 64% of natural irradiance) and two soil moisture levels (40–60% and 80–100% soil capacity) under greenhouse controlled conditions were evaluated. Carbon (C), nitrogen (N), phosphorus (P), magnesium (Mg), potassium (K), calcium (Ca) and pigment (chlorophylls and carotenoids) were measured on seedlings. Carbon, N, Mg, K and Ca increased in low light intensity and soil moisture treatments, while P decreased. Nutrients were higher in above- than in below-ground biomass. Chlorophylls were lower in high light treatments, while carotenoids increased their content. All pigments were greater in low soil moisture treatments. These changes are closely related to their photosynthetic plasticity and biomass compartmentalization. Plants growing in high light were more efficient to produce the same amount of plant biomass.

Keywords: silviculture, nutrient models, nitrogen, carbon, ecophysiology, regeneration

INTRODUCTION

In southern Patagonian forests, seedlings often survive for long periods of time in the shaded understory with a potential advantage in reestablishment canopy structure after natural or antropropic disturbances (Rebertus and Veblen, 1993; Heinemann et al., 2000; Martínez Pastur et al., 2000). These changes modify the availability of light and soil moisture at the understory level, among others factors (Frangi and Richter, 1994; Caldentey et al.,

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