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Assimilation apparatus variability of beech transplants grown in variable light conditions of blue spruce shelter

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The paper evaluates the differences in the selected characteristics of the assimilation apparatus of beech transplants growing in various light conditions of blue spruce small pole stage in the Jizerské hory Mts. in the Czech Republic. The leaf area, chemical parameters, and photosynthetic capacity measured by the method of chlorophyll fluorescence were established. Light conditions of individual beech trees were determined by means of processing a hemisphere photograph of the crown space. The research revealed a significant trend of decreasing nitrogen content with increasing irradiance of the beech. The foliage of the sheltered beech trees exhibited higher contents of phosphorus and potassium. The average specific leaf mass (SLM) of the beech under crowns was lower (0.303 contrary to 0.499 g/dm² in gap) and the respective variants did not differ in average leaf size. A significantly higher maximum fluorescence and a maximum quantum yield (0.854 contrary to 0.803 in gap) were found under crowns. A significant variance was also observed in the absorption capacity. It follows that the beech showed adaptation to the light conditions defined by its location within the stand of blue spruce.

Keywords:

beech transplants; light; nutrient content of leaves; fluorescence of chlorophyll; leaf area

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