STRUCTURAL AND FUNCTIONAL CHARACTERISTICS OF THE PHOTOSYNTHETIC APPARATUS OF *PINUS SYLVESTRIS* (PINACEAE) REGROWTH IN THE MIDDLE TAIGA SUBZONE OF THE EUROPEAN NORTH-EAST

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The ultrastructure, pigment content during the vegetation season, and photosynthetic activity of one-year-old needles of Scots pine (*Pinus sylvestris* L.) young trees on cutting place were studied. The needles are characterized by the content of a sufficient pool of pigments (chlorophylls 1.55–1.80, carotenoids – 0.38–0.49 mg/g dry weight) during the vegetation season, which allows the woody plant to absorb CO_2 from spring to autumn. The adaptation of the pigment system to environmental factors during this period is accompanied by changes in the ratio of its components. A positive correlation was shown between the total number of green pigments and photosynthetic membranes per chloroplast section ($r = 0.99$). They have a distinct seasonal dynamics: an increase from spring to mid-summer and a decrease by the end of the vegetation season. The adaptation of needles to low temperatures is accompanied by a decrease of starch in plastids, their displacement from the cell wall into cytoplasm depths, where a significant amount of lipid globules accumulates. Features of one-year-old needles of young trees are a significant increase of plastid number during the growth of current year shoots and a high assimilation number (5.40 mg CO_2 / mg chlorophyll per hour) which indicates a high photosynthetic activity of chlorophyll.

Keywords: Pinus sylvestris, needles, mesophyll, ultrastructure, pigments, photosynthesis, respiration, regrowth, felling

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