Original article

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Influence of Explant Sterilization Conditions and Lighting on the Morphogenesis of Economically Valuable Forms of Birch and Aspen *in vitro* Culture

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Abstract. *The results of studies on the influence of the explant sterilization mode and lighting conditions during clonal micropropagation of economically valuable hardwoods at the stage of introduction in in vitro culture. Objects of study are explants of Betula neoalaskana, B. pendula var. carelica, B. ulmifolia, B. papyrifera and Populus tremula (triploid and diploid forms). Use the method of clonal micropropagation is necessary to preserve the gene pool and mass cultivation of rare and economically valuable species and its forms. Obtaining a primary antiseptic culture is one of the most time-consuming and important stages of clonal micropropagation of plants. The highest viability of non-lignified birch explants (45–55 %) in culture in vitro is observed during sterilization: B. ulmifolia and B. papyrifera – in a solution of ethanol 96 % (1 min) and Chloramine B 5 % (10 min), B. neoalaskana – ethanol 96 % (1 min) and copper sulfate 0.01 % (3 min), B. pendula var. carelica – ethanol 96 % (1 min) and Belizna 5 % (15 min). The highest viability of P. tremula explants of triploid and diploid forms (85–90 %) is noted during sterilization with a 0.2 % silver nitrate solution (10 min). Explants of the studied species and forms of woody plants introduced into in vitro culture differed significantly in its response to lighting. Explants of all studied species of birch in culture in vitro have highest values of the number and total length of microshoots when using LED lighting with alternating white, red and blue spectrum (5.2–5.7 pieces and 33.6–38.3 cm respectively), P. tremula – white light fluorescent lamps (5.1–6.0 pieces and 35.2–48.4 cm respectively).*

Key words: *birch, aspen, clonal micropropagation, in vitro, explant, lighting conditions, viability, sterilizing agent, light, shoot formation.*

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