

Original article

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Assessment of Competition in the Spruce Population under the Canopy of South Taiga Birch Forests of Different Stages of Age Development

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Abstract. The results of determining the dynamics of intrapopulation competition are presented of the spruce layer under the canopy of southern taiga birch forests aged from 40 to 115 years (Northern LOS ILAN, Yaroslavl region). For the analysis, we used the CVU competition index, which was calculated based on the ratio of tree crown volumes (according to Biding). The competition index (CVU) was used to analyze the relationships between the layers of the spruce population in the stand, between the leading and competing trees of the same layer. Intrapopulation competition of spruce layer is considered at various stages of age development of birch forests: the youth stage (intensive thinning and growth of birch at the age of 11 to 50 years), maturity (decrease in the rate of thinning and growth, 51–80 years) and aging (weak thinning and growth, 81–120 years). The calculation of the competition index CVU was carried out taking into account the dynamics in the parcel structure of plantings. The competition of spruce trees in the second tier of the population gradually increases from CVU = 0.2 in the youth stage (birch age 41–50 years) to CVU = 5.2 in the first half of the aging stage (91–100 years).

In the second half of the aging stage (101–115 years), the CVU index decreases to 3.1. The value of the CVU index changes in accordance with the dynamics in the parcels structure at different stages of plantings ontogenesis is studied. The weighted average value of the CVU index in the second tier of spruce, taking into account the representation of parcels in each age stage of birch, is: at the maturity stage – 1.94, at the maturity stage – 1.56 and increases to 3.1 at the aging stage. Calculated taking into account the representation of parcels in each age stage of birch, the weighted average value of the CVU index in the second tier of spruce is: in the youth stage of birch – 1.94, in the stage of maturity – 1.56 and increases to 3.1 in the stage of aging.

Key words: southern taiga birch forests, age stages, spruce population, competition index.

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