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Age Aspect in the Study of Spruce Growth under the Canopy of Birch Forests in the Southern Taiga of the European Part of Russia

A. Deryugin
Institute of Forest Science Russian Academy of Sciences, Senior Researcher, Candidate of Agricultural Sciences, Uspenskoe, Odintsovo district, Moscow region, Russian Federation, da45@mail.ru

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The study of growth or of different ages under the canopy of 70-year-old birch by North LOS Institute of Forest Science RAS in the two test areas. 296 model spruce trees were cut down here. Their age varied from 21 to 66 years, height – from 1 to 17 m. Birch forests belong to stands with a late renewal of spruce (the period of renewal of the main part of the population – 35–40 years, age 31–40 years). The age-related generations of 21–30, 41–50, and 51–60 years are less represented. The growth of spruce was analyzed based on measurements of model trees with their division into four 10-year generations.

The analysis of average periodical (over a 5-year period) increases showed the following. In the studied phytocenoses, with the late renewal of spruce, a small part of the spruce population (age generation 51–60 years) does not significantly affect the growth of the next two generations (31–40 and 41–50 years). This is explained by the small density of crowns (0.14) of the trees of the first generation. Crowns of trees of the second generation increase the closeness to 0,38. However, this did not significantly affect the growth of trees for 31–40 years. The regeneration and subsequent growth of generation for 21–30 years occurred with a crown density of 0,87. This has a negative impact on growth. Studies have not established a significant difference in the growth of the first three generations of spruce.

During the first 50 years of growth and development, all age-related generations in the spruce population differ in the value of taxational indicators from the values in the existing growth tables. To adequately reflect the growth of the spruce population in the birch forests of the southern taiga, it is necessary to develop a model for the formation of such stands.