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ГАЛАХИМ



Title: Biochemical features of Siberian spruce in the plantings of the southern taiga zone of the Udmurt Republic

Authors: Pashkova Anna Sergeevna, Bukharina Irina Leonidovna

Affiliations: Udmurt State University, Izhevsk, Udmurt Republic

Title Biochemical features of Siberian spruce in the plantings of the southern taiga zone of the Udmurt Republic

Names Pashkova A.S., Bukharina I.L.

Affiliations Udmurt State University, Izhevsk, Udmurt Republic

Keywords: siberian spruce, adaptive reactions, photosynthetic pigments, tanins

Research Objective: study of the state of spruce stands in the Udmurt Republic, as well as assessment of their stability and adaptive potential in relation to adverse environmental factors.

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Results The forest plots and the sample areas had significant differences in the morphological profile of the forest floor. In the Yakshur-Bodya forest area, the layer L (A0') did not differ at different points, but the sample areas differed in the mass of the layer F (A0''), where the lowest values were noted at point 3. The area of the sample PP2 had the highest values of the mass of the layer F (A0'') and the lowest values of H (A0'''). In the Igrinsky forest area, the highest mass index of layer L (A0') and the lowest mass index of layer H (A0''') were found in the morphological profile at point 3. In the Kez forest area, the lowest mass index of the morphological layers L (A0') and H (A0''') was also found on PP3, which was characterized by the lowest mass index. It should be noted that in most of the studied forest areas, the lower layer H (A0''') prevailed in the morphological profile of the forest floor by mass, with the exception of PP2 (Yakshur-Bodiinsky forestry) and PP3 (Igrinsky forestry).

When comparing the content of photosynthetic pigments in individuals of good and satisfactory living conditions in different forest areas, it was found that there were no statistically significant differences in the content of chlorophylls and carotenoids. The exception is made by individuals of different living conditions from the sample areas of the Igrinsky forest area, where the content of photosynthetic pigments in individuals of a satisfactory living condition is significantly lower than in individuals of a good one, and all spruce individuals have a high index of stress resistance (the sum of chlorophylls a and b). Similar results were obtained for the content of ascorbic acid in conifers.

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Conclusions The reduction in the area of spruce stands in the Udmurt Republic from 2009 to 2015 amounted to 8%. The largest reduction occurred in the coniferous-deciduous forest zone and amounted to 15%; in the southern taiga zone, the decrease in area was 6%. It should be noted that the data on the area and dynamics of the spruce stands are given on the basis of form 1 8 of the State Forest Register, the information of which is reflected on the basis of updated data. However, the lack of modern field and distance surveys of the Udmurtia stands prevents the obtaining of reliable information about them. Trial plots were laid in areas with the largest reduction in areas of spruce stands, in forestries with a high proportion of dark coniferous species, differing in the degree of reduction in areas of spruce stands, and in the places of their mass drying. Studies have shown that spruce stands are classified as Classes III and IV in productivity. It is noted here that most of the dead trees were highly productive and belonged to Classes I to III. The thinning of the main canopy has led to a change in the plant community, as a result of which succession processes have begun.

In the TPs in a place of mass drying, spruce specimens were found to be in a good living condition, which may indicate the individual characteristics of the surviving plants. Their detailed study and subsequent mapping will allow the use of resistant individuals for reforestation. The forest litter in the studied coniferous stands included three morphological layers. Most of the forest litter completely comprises decomposed residues or litter, ranging from 44% to 77%. A prevalence of the upper undecomposed layer over the semi-decomposed middle layer was noted.

References In general, it can be noted that the adaptive potential of Siberian spruce individuals, associated with the formation of adaptive reactions at the biochemical level, is highest in plants in more northern regions of the republic with more extreme growing conditions

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Thank you for your attention!

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Affiliations: Udmurt State University, Izhevsk, Udmurt Republic

Contact details: Izhevsk, Udmurt State University, ul. Universitetskaya, 1.

Tel: 89199140678
