

Original article

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The Influence of Nitrogen Fertilizers on the Seasonal Growth of Scots Pine Needles in Peat-bog Soils of the North of Russia

Lilia V. Zarubina¹*Doctor of Agricultural Sciences***Sergey S. Makarov²***Doctor of Agricultural Sciences*

Abstract. The article presents the results of a study of the characteristics of seasonal growth and the formation of the assimilation apparatus in *P. sylvestris* in a sphagnum forest type in the northern taiga of the European part of Russia after the application of nitrogen fertilizer. Waterlogging of the soil profile and low content of mineral nutrition elements in sphagnum plantations lead to a decrease in the functional activity of the pine root system, which directly affects the growth and development of the aboveground part of woody plants, reducing the stock and productivity of the forest stand as a whole. Nitrogen fertilizers applied to swampy pine forests have a positive effect on the annual growth of shoots and needles of *P. sylvestris*. The result of an increase in the intensity and duration of needle growth and its functional activity is an increase in the viability of pine and an increase in its annual growth, an increase in the productivity of excessively moistened pine stands. It has been established that the dependence of the growth rate of needles and physiological processes on weather conditions and the state of GWL in pine in swampy stands is fully preserved even with increased nitrogen nutrition. The main increase in young needles of *P. sylvestris* in sphagnum pine forests occurs in July. To obtain the greatest effect from the use of nitrogen fertilizer in waterlogged pine forests, first of all, it is necessary to carry out drainage work through shallow reclamation with a ditch depth of 50 cm and a distance between them of 30–50 m, followed – after 2 years – by applying nitrogen at a dose of 180 kg/ha.

Key words: Scots pine, sphagnum pine forest, trees, nitrogen fertilizer, physiological processes, seasonal growth of needles.

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¹ Vologda State Dairy Academy named after N.V. Vereshchagin, Professor of the Department of Forestry (Vologda, Russian Federation), liliya270975@yandex.ru

² Russian Timiryazev State Agrarian University, Head of Decorative Gardening and Lawn Science Chair (Moscow, Russian Federation); Northern (Arctic) Federal University named after M.V. Lomonosov, Professor of the Landscape Architecture and Artificial Forests Chair (Arkhangelsk, Russian Federation), makarov_serg44@mail.ru