

- August (Abstracts of the All-Union meeting “Application of mineral fertilizers in forestry”), Arkhangelsk: AILiLH, 1986. pp. 52-53.
- Veijalainen A.-M., Heiskanen J., Juntunen M.-L., Lilja A., Tree-seedling compost as a component in sphagnum peat-based growing media for conifer seedlings: Physical and chemical properties, *Acta Horticulturae*, 2008, Vol. 779, pp. 431-438, DOI: 10.17660/ActaHortic.2008.779.54
- Wallin E., Gräns D., Jacobs D.F., Lindström A., Verhoef N., Short-day photoperiods affect expression of genes related to dormancy and freezing tolerance in Norway spruce seedlings, *Annals of Forest Science*, 2017, Vol. 74, No 3, Article № 59, DOI: 10.1007/s13595-017-0655-9.
- Warensjö M., Rune G., Stem straightness and compression wood in a 22-year-old stand of container-grown Scots pine trees, *Silva Fennica*, 2004, Vol. 38, No 2, pp. 143-153.
- Zhang G., Luoranen J., Smolander H., Short-day treatment during the growing period limits shoot growth and increases frost hardiness of hybrid aspen plants in the nursery, *Forestry Studies in China*, 2007, Vol. 9, iss. 4, pp. 262-266, DOI: 10.1007/s11632-007-0041-z
- Zhigunov A.V., Sokolov A.I., Haritonov V.A., *Vyrashhivanie posadochnogo materiala s zakrytoj kornevoj sistemoj v Ust'janskom teplichnom komplekse. Prakticheskie rekomendacii* (Growing containerized planting material in the Ustyansky greenhouse complex. Practical recommendations), Petrozavodsk: Karel'skij nauchnyj centr RAN, 2016, 43 p.

EXPERIENCE ON GROWING OF FOREST CONTAINERIZED SEEDLINGS APPLICABLE TO THE GREENHOUSE COMPLEXES OF THE ARKHANGELSK REGION

S.V. Bobushkina *, A.O. Senkov, D.H. Fayzulin

“Northern Research Institute of Forestry”
Russia, 163062 Arkhangelsk, Nikitova St., 13
* E-mail: svetlana-bobushkina@rambler.ru

Received 25.02.2020

Accepted 24.04.2020

The need to develop and implement innovative forms of reforestation to obtain highly productive tree stands actualize the topic of the article. The purpose of the work is to study and analyze foreign experience and research on the production of softwood containerized planting stock for reforestation and compare it with the practice of greenhouse complexes in the Arkhangelsk region. We used the international bibliographic and abstract database «Scopus», which indexes scientific journals, materials from conferences and publications to search for information. A review of publications has been completed over more than a 20-year period (1999-2019). The world experience study and the results of studies on the cultivation of forest containerized seedlings, in particular, Finland, Sweden, Norway, countries similar in terms of the growth of woody vegetation and the range of tree species to the conditions of the European north of Russia made it possible to highlight current research directions. The treatment of seedlings with a short or long light day; frost resistance of the seedlings; influence of drought, excessive moisture; issues of seedling storage; diseases, pests of seedlings and control of them, as well as problems of selection and seed

production; seed quality and their impact on plant growth; influence of cultivation technology and types of planting stock on the effectiveness of planting refers to them. The use of foreign plants for growing ball-rooted planting stock implies a similar technology for the production of forest seedlings in our region. However, climatic features and the availability of various consumables, such as peat, fertilizers, pesticides, etc., necessitate the adaptation of Scandinavian technologies to local conditions and the development of additional techniques. One of the main production tasks is the achievement of standard indicators by seedlings. It is not always possible to achieve the desired results in harsh taiga conditions, therefore it is necessary to use foreign experience in growing ball-rooted planting stock, which allows to increase the production of standard seedlings without compromising their quality. This is a whole range of measures, including work on breeding and seed production, the formation of a plant substrate, lighting, moisture, observing the temperature regime, storage of seedlings, combating diseases and pests, etc., which ultimately are the components of the success of artificial reforestation

Key words: container tree seedlings, substrate, reforestation, seeds, growing technology, greenhouse complex, seed growing.

Рецензент: к.б.н., н.с. Ручинская Е.В.