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SURVIVAL AND PRESERVATION ABILITY OF THE COMMON OAK FOREST CROPS

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The indices of survival and preservation ability of the common oak forest crops developed from the saplings with containerized (the experiment) and non-containerized (the control) root system in the State Enterprise Chuguev-Babchansk Forestry Area and the State Enterprise Vovchansk Forestry Area of Kharkiv Regional Forestry and Hunting Department were investigated.

The survival and preservation ability of the common oak saplings in experimental variants considerably exceeded the control during all years of the research.

The common oak, planting material with containerized root system, survival ability, preservation ability.

The use of planting material with containerized root system for developing forest crops has many advantages as compared with traditionally grown saplings in nurseries and greenhouses. These advantages are: plant traumatizing reduction during the process of culture replantation as well as the possibility to prolong the period of forest culture development, applying growth regulators, fertilizers and other substances for every plant at necessary expenses rate [2, 4, 6, 7, 8].

The researches of some authors [1, 4, 5, 10] testify to the fact that one of the most important advantages of the planting material with containerized root system is its high survival ability which makes it possible to reduce expenses for planting new forest crops during the following years.

Investigating the efficiency of the use of planting material with containerized root system was usually limited by only one year after their planting into the soil, sometimes the data of examination of six or ten- year-old plants were given but

without their comparison with the corresponding crops developed from the saplings with containerized root system.

The aim of the research – studying the problem of any positive effect from the use of seedlings with containerized root system in reforestation and the rate of its preservation within the forest crops growing period. The value of the positive effect is based on the value of survival and preservation capacity rate of the common oak saplings in forest crops developed from the saplings with containerized root system as compared with the crops developed from the seedlings with non-containerized root system within the first year of their growing period.

The materials and methods of the research. The one- year-old seedlings of common oak were grown according to the technology proposed by us on the nursery plots of the State Enterprise Chuguyev-Babchansk Forestry Area and the State Enterprise Vovchansk Forestry Area [9]. On the eve of planting the planting material in the containers was watered up to the complete moisture content of the substratum and while planting the saplings with the substratum clods were separated from the containers. The soil on the forestry area was prepared beforehand by forming the rectilinear stripes 100 cm width and 10-12 cm depth. The distance between the centers of the stripes was equal to 3.0 m and the planting step was 1.0 m. The planting was carried out in the middle of the stripes into the hole made by hand with a metal spade 10-12 cm depth. The experimental forest crops are developed clean by structure, simple by form and further in time.

The control was presented by one- year-old common oak seedlings traditionally grown with non-containerized root system on the nursery plots of the forest areas above- mentioned and planted on the forest plantation using the Kolesov Sword.

The results of the research. In oak forest crops the survival ability of the seedlings with non- containerized root system within the first year of the growing season was equal to 79.1% (table 1). Within the following years this figure was gradually decreasing under the influence of some factors (unfavorable weather

conditions, insect injuring etc.) while the preservation decrease rate was gradually running down. During the first year of the research the survival ability followed by the preservation ability of the common oak saplings in the crops developed from the saplings with containerized root system was considerably higher than the preservation ability of the crops developed from the seedlings with non-containerized root system by 15.5-19.8%.

Table 1. Survival and preservation ability of the common oak saplings in forest crops

The age of the forest cultures, years	Survival (preservation) ability(%)of the saplings in the crops developed from the seedlings with root system		Difference as compared with the control %	t_{fact}
	containerized	non-containerized		
1	90.4 ± 2,08	79.1 ± 2.88	14.3	3.14
2	84.4 ± 2.57	73.1 ± 3.14	15.5	2.76
3	79.4 ± 2.89	66.3 ± 3.34	19.8	2.95
4	76.8 ± 2.98	65.8 ± 3.35	16.7	2.43

Note: $t_{0.001} = 3.3$; $t_{0.01} = 2.6$; $t_{0.05} = 2.0$; $t_{0.1} = 1.7$.

During the first year of plant growing season the difference according to this index is true with $P<0.05$, within the years 2- 4 with $P < 0.01$.

The analyses of the data of one-year-old saplings survival ability and preservation ability of two- and four –year-old forest crops of the common oak seedlings testifies to much higher value of this index with using the seedlings with containerized root system (figure 1).

The calculations reflected in fig. 1 testify that within four years of the experiment the average survival ability of the oak crops developed from the seedlings with containerized root system decreased by 15.0% while the crops developed from the seedlings with non-containerized root system by 16.8%.

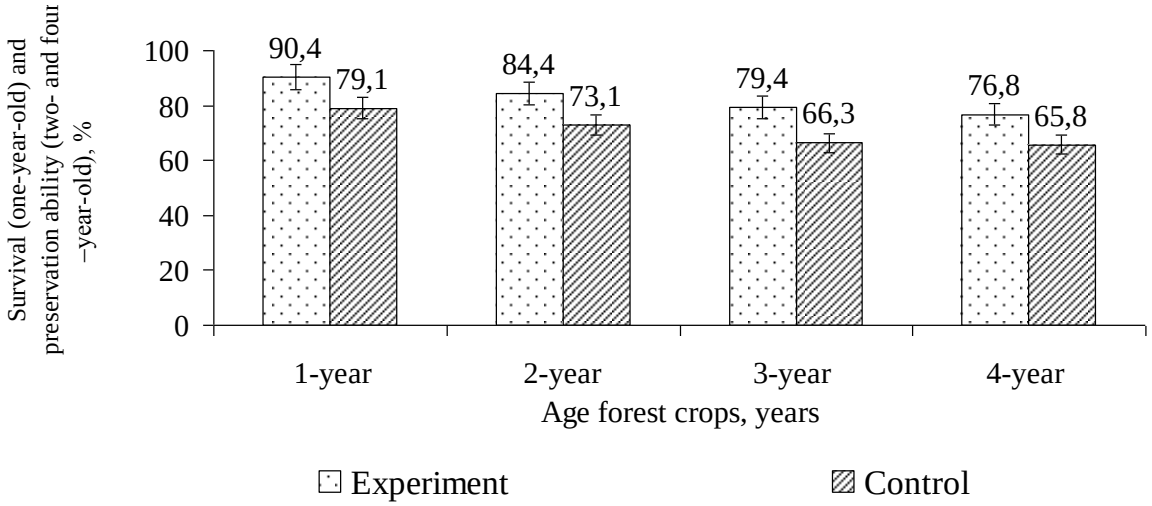

Figure 1. Survival and preservation ability of the common oak saplings in experimental forest crops.

This means that within the first years of the growing period both abiotic and biotic factors influenced the reduction rate of plants survival ability but due to the better survival ability of the seedlings grown with containerized root system within the first year of the growing period most of the saplings developed of this kind of planting material preserved better by the end of the fourth year of the growing period.

The Conclusion

Within four years of the investigation survival and preservation ability of the common oak forest crops developed from the seedlings with containerized root system was much higher than the corresponding index of the crops developed from the seedlings with non- containerized root system.

Literature

1. Vedmid M.M. Survival Ability and Growth of the Common Pine Crops Developed of the Planting Material with Containerized Root System / M.M. Vedmid, O.I. Lyalin // Forestry and Agro-forestry Melioration. – Kh., 2009. - Issue 116. – P. 146 – 152.

2. Garanovich I.M. New Technological Methods of Quality Increase of Forest Crops Saplings / I.M. Garanovich, Ye.N. Gorodetskaya, I.P. Afanaskina, A.V. Zelenkevich // The Current State of Forest Vegetation and its Rational Use : intern. scient. pract. conference – Khabarovsk , 2006 . – P. 168 – 171.

3. Gordiyenko M.I. Forest Crops / M.I. Gordiyenko, M.M. Guz , Yu.M. Debrynyuk, V.M. Maurer. – Lviv : Kamula, 2005. – 608 p.

4. Zhigunov A.V. The Theory and Practice of Growing Planting Material with Containerized Root System / A.V. Zhigunov – SP b.: SPbSRIF, 2009. – 293 p.

5. Kabanina S.V. Containerized Method of Growing Planting Material and the Prospects of its Introduction into Nurseries of Saratov Region / S.V. Kabanina, M.Yu. Sergadeyeva, K.B. Balina, O.V. Mikhaylov, V.B. Lyubimov; under editing. of Lyubimov. – Balashov ; Nickolayev, 2004. - 20 p.

6. Lyalin O.I. The Substratum for Developing Forest Crops With Containerized Root System / O.I. Lyalin // Materials of the 5-th State Scientific Practical Conference “ Agrarian Science to Industry”. – Bila Tserkva; Bila Tserkva NAU, 2006. – P. 23.

7. Lyalin O.I. Container as an Important Element of Producing Planting Material with Containerized Root System / O.I. Lyalin // Forest Typology in Ukraine : Current State, Development Prospects: The Materials of the XI-th Pogrebnyak Readings (October, 10- 12, 2007, Kharkiv). – Kh.: UK SRIFA, 2007. – P. 134 – 135.

8. Lyalin O.I. The Economic Component of Growing Common Oak Saplings with Containerized Root System / O.I. Lyalin // Theses of the report at the scientific conference of teachers, researches, post graduate students and applicants of KHNAU named after V.V. Dokuchayev, (January, 11-14, 2011, Kharkiv). - Kh.: KHNAU, 2011. – P. 156-158.

9. Lyalin O.I. The Improvement of the Technology of Growing Oak and Pine Saplings with Containerized Root System under the Conditions of Left- Bank Forest - Steppe Region : the thesis for a Candidate Degree of Agricultural Sciences

: speciality 06.03.01 “Forest Crops and Phytomelioration“ / O.I. Lyalin - Kh. , 2012. – 20 p.

10 Maurer V.M. The Current State and the Ways of Planting Material Supply Improvement for Reforestation / V.M. Maurer // Theses of the report at the scientific conference of teachers, researchers and post graduate students and the 64- th students’ scientific conference . – K.: NULES, 2010 - P. 55 – 56.