Geophysical Research Abstracts
Vol. 18, EGU2016-3715, 2016
EGU General Assembly 2016

Lighting intensity of the soilsurface and restocking of oak groves

Victor Slepykh (2), Anna Zubko (2), and Nina Povolotkaia (1)

(1) FSBI «Pyatigorsk Research Institute of Curortology of the Federal Medico-Biological Agency», (2) Kislovodsk branch of the scientific department of FSBI «Sochi National Park» of the Ministry of Natural Resources and Environment of the Russian Federation

Oak groves of Caucasian Mineral Vody region (CMVR) possess a high ecological and balneological potential which defines the significance of their preservation and reproduction [1].
The role assessment of lighting intensity on renewal of oak groves was carried out on four trial squares (ts) in natural sixty-seven years old forest stand with prevalence of English oak (Quercus robur L.) with unimodal sity (type of the habitat – C1). The illumination was measured at the grass level by the universal measuring instrument of meteoparameters ATT-9508 with an illumination sensor of ATA-1591. The assessment of reforestation was carried out according to the established standards [2].
In the winter of 2005 there was conducted a selecting cutting cabin of the forest stand according to a local method on ts2 with intensity 30%, on ts4 - 50% after which the illumination on the soil surface in relation to illumination of an open place in the summer of 2005 increased from 4.9% to 33.9% on ts2, and from 5.9% to 24.4% on ts4. But by 2014 the illumination decreased till 3.0% on ts2, till 5.4% on ts4 because of an intensive soil grassing down. The control was carried out by ts1 and ts3 on which from 2005 to 2014 the illumination of the soil surface decreased from 4 to 2% as a result of the development of all storeys.
As a result due to an intensive soil grassing-down, the total quantity of young oak trees decreased from 2005 to 2014 from 25.6 thousand pcs/ha to 5.9 thousand pcs/ha on ts2; on from 17.3 thousand pcs/ha to 4.0 thousand pcs/ha on ts4.
At the same time the total quantity of young oak trees on control squares increased respectively for 1.4% (from 18.8 thousand pcs/ha to 19.1 thousand pcs/ha) on ts1, for 38.7% (from 25.2 thousand pcs/ha to 41.1 thousand pcs/ha).
The experiment showed that small young oak trees perishes in the first years of their life from a lack of light and competition from grasland vegetation without providing successful reforestation.
Conclusion. So it is necessary to carry out forestry methods in oak groves of Caucasian Mineral Vody region to preserve of oak sprout and young oak growth under the crown cover of a maternal forest stand. The researches are still going on.

References.
1. Slepikh, V.V. Successions and bioclimate of oak groves in the resort region of Caucasian Mineral Waters / V.V.Slepykh, N.P. Povolotkaia // Resort medicine, No. 3, 2015. – P. 18-27.
2. The reference book of the standards for the North Caucaian. - M.: All-Russian Research Center lesresurs, 1995.-152 p.