

# AGE DYNAMICS OF NATURAL OAK REFORESTATION AMOUNT UNDER THE RIPENING PLANTATIONS SHELTER

*S.E. Sendonin, Ph.D. (Forestry)*

Oak forests, which cover 24% of forest area and are widespread in all regions of our state (from western to eastern borders, in all natural zones – in the forest-steppe, Polissya, Carpathians and mountainous Crimea) occupy an important place among natural resources of Ukraine.

Scientists were interested in the investigation of the natural seed regeneration of oak in the forest-steppe for a long time in the past century and in our time.

S.S. Pyatnistky determined the presence of preliminary reforestation under the shelter of mature forests. This scientist organized condition survey of reforestation in oak forests of 22 forest estate lands where in most cases there were from 10 to 100 thousand ps. ha<sup>-1</sup> of preliminary oak reforestation.

The results of oak forests observation by M.M. Didenko testify of intensive oak seed production in 2006, resulting in self-seeding density under shelter plantations ranged from 196,4 thousand ps. ha<sup>-1</sup> in 2007 to 40,4 thousand ps. ha<sup>-1</sup> in 2008.

**Aim of research** – to retrace age dynamics of growing and development of oak undergrowth under the shelter of maturing plantations when changing its components, silvicultural and taxational indicators of tree stand and light regime.

**Materials and research technique.** A.A. Pobedinsky's technique was used for the studying of renewable forest processes, according to which plots are laid on three parallel lines to obtain reliable data. The area of plots was 4 m<sup>2</sup>.

To study the specific impact of light regime changes on undergrowth dynamics the measuring of diurnal course of radiant energy transmission by forest stand were carried out.

**Research results.** Analyzing summary data it is important to emphasize that the year before study initiation in this area thinning was done, during which small gaps were formed. This, in turn, increased more light entry both in crown

planting and under its shelter ( $T_Q = 14,0\%$ ) and contributed to a better litter location and increased seed production in the plantation.

Thus favorable conditions for germination of acorns and quantity increasing of not only the one-year growth of oak in this sector, but also for seedling emergence to one year were formed. Also after thinning a small number of 2- and 3-year-old undergrowth was preserved, which was connected with shelter gates. Observing further age dynamics of oak undergrowth it should be noted that its age is gradually increased compared with 2004, and seedling and self-seeding emergence and their quantity decreased. Undergrowth reached the greatest age in 2008, where a small amount of it in the age of five was observed. In 2009 there was an intensive oak seed production that gave a significant amount of seedlings in 2010 even at lower coefficient of radiant energy. Further a significant number of seedlings and self-seeding gradually decreased, having reached maximum 4 years of age as a result of reducing the amount of light under shelter plantings.

**Conclusions.** Proceeding from the received results of the study it is possible to highlight the following:

1. The qualitative thinning gives positive results in oak seed formation improving and density reduction of litter that facilitate a better germination and rooting of shoots.
2. Maximum age of undergrowth varies within 4-5 years, therefore to ensure its conservation for the future reference in reforestation principal felling should be planned in 2-3 years after heavy oak seed production.
3. An important factor is also the light that influences the dynamics of previous natural seed regeneration; therefore it is important to control it through liquefaction of more shade-tolerant and sustaining associate species undergrowth.