

THE INTENSITY OF PHOTOSYNTHESIS OF LARCH IN DIFFERENT ECOLOGICAL CONDITIONS

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Light, like the heat is to climatic factors. Solar energy is of great importance in the life of plants, actively participating in the administration of a number of physiological processes and the most important of them is photosynthesis. In photosynthesis occurs transformation of the kinetic energy of sunlight into chemical energy. Synthesized from carbon dioxide and water carbohydrates are the main nutritional materials, providing vital processes of plant organisms.

Forest transforms flows of light, and the degree of change associated with construction and structure of phytocenosis. Under the canopy of the forest formed a kind of luminous atmosphere in the form of a direct sunlight on clearings and the canopy gaps, glare and diffuse radiation.

The fact of light reduction under the forest canopy requires no proof, and the possibility of settlement on the forest plot of a new generation of trees, when the main limiting factor is the light that is determined by the minimal light allowances forest species. Weak illumination under the forest canopy largely limits the resumption of light demanding species. But during germination of seeds of larches the lack of light is not a strong limiting factor. Pop-shoots do not require for its existence high light conditions and their growth is more dependent on the availability of moisture and heat.

The seeding of coniferous species (2-5 years) also has no obvious signs of oppression mother stand in low competition from the undergrowth and grass-shrub layer. The light stage of larch and pine starts with undergrowth. During this period, the plants, the scarcity of light energy, even if there is a sufficient amount of nutrients and moisture, reduce the intensity of growth processes, felt depressed and helps eliminate. In accordance with the above, the aim of our study was a comparative study of the intensity of photosynthesis of natural regeneration of Siberian larch, which grows under the canopy of maternal forest and glades. The method used assimilation Kolb, providing sufficient accuracy [2].

Work carried out in forest areas, burnt by fire of medium strength, which eliminated the competition from lower tiers of vegetation communities. To avoid artificial lowering the intensity of photosynthesis, due to the lack of carbon dioxide in a closed chamber, selected volume Kolb, the number of photosynthetic mass and exposure, while allowing reductions in carbon dioxide concentration not more than 25 percent.

Considering all the above recommendations, we used the Kolb, having a volume of 3 liters. The exposition of experience 6-12 minutes. To determine photosynthesis took formed needles with the growth of shoots (middle part of auxiblast), because it has

higher productivity of [1]. In addition, the breath, the young pine needles, recently started the development, can prevail over the photosynthesis [3]. The number of self-seeding - 50-100 pieces, with each plant taken one needle. The experiments were conducted in triplicate. The study was carried out early in the morning from 9 to 11 hours, either in clear sunny weather or constant clouds.

For each experiment was determined illumination (Lux Yu-16), temperature and relative humidity, carbon dioxide content. For a basis was taken factor light, because it is crucial in determining the energy of photosynthesis [1]. Studies have shown that in sun energy absorption of carbon dioxide by sowing on clearings at illumination of 28 thousand Lux was 4,22 mg/g*h, and under the canopy (illumination of 6 thousand Lux) to 0.63 mg/g*h.

In the absence of direct solar radiation intensity of photosynthesis decreased: in the Windows canopy of trees, when the value of the luminous flux - 8 thousand Lux, this indicator is equal to 0.78 mg/g*h, and under a grove of larch (illumination 3 thousand Lux) - 0.2 mg/g*h. As we can see, the foregoing differences remained, though not in the same proportions. It should be noted that in larger shading production plants carbon dioxide increases, and photosynthesis can acquire a negative trend. This trend is observed in the afternoon when the air temperature is high and direct solar radiation.

These materials are intended to illustrate the dependence of one of the basic physiological processes of photosynthesis, from the light regime of vegetation. In the forest optimal light conditions are formed in the Windows canopy and on clearings, free from lower layers of vegetation. Research has shown that in such an environment, the sowing of larch better growth and higher biometrics.

References

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