INFLUENCE OF SOIL ON FORMATION OF OVERGROUND AND UNDERGROUND PARTS OF COMMON OAK.

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The diversity of the environment encourages researchers to study the expression of various properties of plant species in their ability to adapt to extreme conditions habitat. Afforestation gets a special attention in complex terrain urban ecosystems. In this respect, the study of influence of soil conditions on the formation of aboveground and underground parts of the oak is quite important.

The purpose of research - setting depending on soil conditions influence the formation of aboveground and underground parts of oak on sod-podzolic sandy soils in dry pine site.

Analyzing the literature data, it should be noted that between the structure of the root system and soil conditions are close relationship.

The conditions of dry pine trees are not peculiar to the spread of common oak, therefore his appearance here is a unique phenomenon. Our research has focused on setting depending on soil conditions influence the formation of aboveground and underground parts of oak on sod-podzolic sandy soils in dry pine site. Profile of the soil has no clear differentiation on the horizon. Humus shallow is less than 15 cm and contain 0,6-1,3% of humus. Soil texture makes it water-air properties. A small amount of clay fractions (5-10%) can not create at least some structure that causes large water penetration and small humidity.

The excavation of soil samples were carried out in November 2014 (in leafless condition). At the average aboveground parameters a prototype age of 13 and a height of 62cm was chosen among self-seeding of common oak in the plantations pine of 50 ages.

The total phytomass of plants was 220,32 g in wet state; in a completely dry – 179,48 g. The relative weight of roots in total root phytomass was 67%. Crown was formed by five trunks, one of which eventually dropped. The shape of the crown elongated in a north-south by 64 cm, east-west - 49 cm. Horizontal projection of the crown area is 0.15 m^2. The maximum diameter of the root collar in the bark is 3,7 cm and transverse to it – 2,7 cm. The diameters of the root collar without bark are 3,0 cm and 2,0 cm, respectively. Maximum annual rings were 13.

The volume of aboveground parts specified by xylem method is 730 cm^3, which is 39,4% of the total plant. The weight of aboveground parts in a raw state was 73,65 g and in dry – 60,12 g, the moisture of wood wass 18,4%.

The depth of penetration of taproot is 44 cm, while its length reaches 53 cm. The maximum southward horizontal roots stretched by 96 centimeters, to the north - 131 cm, east - 38 cm, west - 20 cm. Horizontal projection area of the root system is 0,62 m^2. The tested specimen of common oak has a special (incomplete) root system in which the five selected in the classification, there are three subsystems: subsystem taproot; subsystem horizontal roots, placed in the top 30 cm of soil and copies the form of relief, extends to a distance of 2,27 m in the north-south direction; subsystem oblique-vertical roots. It should be noted that the ratio of active roots and leading indicators on the weight and volume consists for leading and surface parameters and length indicate the advantage of leading active roots. Despite the fact that the mass of roots leading dominated (84% of the total mass of roots) almost 5 times, but the active surface roots, which is in direct contact with the soil, is greater by 1.6 times.

In order to assess good adaptation of studied plant to these oak extreme sites of growth we analyzed the comparative silviculture-morphological characteristics of oak trees that grow in optimal conditions. Shallow penetration of the root system, small weight and its small area of nutrition led to significant differences in the amount of ground power prototype. Self-seed of oak on sod-podzolic sandy soil, which corresponds to a dry pine site has extremely strict conditions for their growth and development. The development of oak in extreme conditions affected on all morphological parameters as above-ground parts of the plant and its root system. Aboveground part formed in a bush, and the root system is superficial. The most silviculture-morphological parameters of root systems were in ten times lower than in the model tree. However, due to adaptation to extreme growing conditions, the relative weight of roots in the total phytomass of experimental plants appeared in double. This confirms the high plasticity of oak in adapting to soil conditions, the ability to detect ameliorative effect that can be used to consolidate the affected urban areas with similar soil conditions.