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GROWING OF OAK CULTURES IN FLOODPLAIN RIVER PRIPYAT TERRITORY OF THE NATIONAL PARK "PRIPYAT"

The results of the five-year study of cultures of oak, created two sites, located in the left bank of the floodplain. Pripyat in the territory of the National Park "Pripyat". Object no. 1 is located in the central part of the floodplain on the turf gleyey and gley sandy soils. Object no. 2 is located in the floodplain of the riverbed on a combination of Nuclear-podzolic sandy and sandy loam soils of various moisture sandy slabozader-nennymi sediments and small areas of turf gleyey sandy loam soil.

It is found that in the central part of the height of the flood oak average twice higher than the flood side riverbed. Approximately 50% of the test specimens are characterized by oak-hundredth you within 20–40 cm. Individual oak specimens in riverbed of the flood reached a height of 78 cm and 144 cm in the middle. The first oak growth in height in the extremely arid 2015 in the riverbed of the flood recorded in 15% of the trees, and in the central 44%. Included Quantity-tion of trees that have marked the second highest gains, reduced by 3–5 times. It was noted in edanie young oak shoots wild animals and drying it on a high sandy ridges in the riverbed of the floodplain. In the central part of the floodplain survival and preservation of oak is quite high.

Key words: bottomland oaks, oak, forest plantations, floodplain, floodplain soil, sand, sandy loam, and the central part of the riverine floodplain, height, height growth.

Introduction. Floodplain oak woods grow in conditions of periodic flooding of plantations and soils by floodwaters. On the area of preferential protection of the National Park "Pripyat" grow 5,905 hectares, or 19.4% of floodplain forests, of which, according to the 2006 forest management data, floodplain oak woods occupy 3,391 ha. Currently, there is deterioration of the state and reduction of the area of floodplain oak woods. Over the past 45 years, the area of floodplain oak woods reduced by 14.9%, the degree of closeness and proportion of English oak in their structure decreased, the share of other species increased. Under the influence of certain factors (hydrological regime change and climatic conditions, diseases and stem pests, lack of forestry care and measures of insects control), oak trees in the floodplain oak forests dry out and plantings decay [1, 2].

One of the objectives of silvicultural science and practice is to protect and increase the square of floodplain oak woods that perform environmental, water protection and water regulation functions, are the medium for the growth of flora and specific fauna habitat.

There are not many scientific papers covering the features of growth and reproduction of floodplain plantations, including oak woods. To draw a conclusion about the current state of oak woods is extremely difficult. The negative in relation to floodplain oak woodsprotection and their state dominate in the literature.

The development of natural areas of preferential protection State program provided for the restoration of floodplain oak woods in the National Park "Pripyatsky". One way to increase the areas of oak growing in the floodplain is the creation of this tree species man – made plantations.

Floodplain soils in different soil and climatic zones differ by their characteristics, composition and properties, since soil formation factors, such as climate, topography, parent rock, vegetation change. Even within Belarus, alluvial deposits are characterized by a great diversity, depending on the origin, mineralogical and chemical composition of drained parent rocks. This feature is typical for floodplains of the river Pripyat the drained area of which is represented by the territory of the taiga-forest zone and forest-steppe, where the soils are formed on the moraine, fluvioglacial, loess-like, biogenic deposits and loess. On this basis, it may be confirmed, that the alluvial deposits in the Pripyat floodplain can essentially differ by their composition and properties of both the area and depth of the soil profile and thus have an impact on the composition and properties of the floodplain soils.

In the floodplain of the Pripyat especially in the part of the riverbed sandy alluvium dominates. It was stated that the level of groundwater in the Pripyat floodplain soils formed on sandy and sabulous alluvium dependson the level of water in the river [3].

There is no information about growth peculiarities of English oak (*Quercus robur* L.) in terms of Pripyat Polessie, characteristics of soil conditions and their dynamics, features of flood emergence of 100–200-year-old. One can only conclude that climate change has happened, carrying out of reclamation has changed the forest cover of the drained area, and accordingly, time and speed of snow escape, the depth of soil freezing, turbulence of flood.

The paper sets a goal to analyze the growth of English oak in man-made plantations, established in various parts of the Pripyat floodplain in the "Pripyatsky" National Park.

Main part. English oak (*Quercus robur* L.) cultures of 2010 planting were chosen as objects of study. The work attracts interest due to the sharp decrease of the water level in the river, moisture content reducing in the soil in 2015.

Object no. 1 occupies an area of over 15 hectares, it is located on the left bank of the central part of the Pripyat floodplain. The relief is flat with slightly higher and lower lands. Sod gley alluvial sabulous soil is on the higher land of the relief. The humus horizon capacity is 15–20 cm with humus content of 2–4%. Current acidity in the humus horizon varies in the range of pH 4.9–5.2. On the lower lands sod gley alluvial sabulous soil has humus horizon of 20–40 cm and the humus content is 4–8%, and the current acidity of pH is 4.8–5.0. The plot is very densely covered with willows, the average height of which is in the range of 50–120 cm.

Object no. 2 occupies an area of 9 hectares, it is located on the left bank of the riverbed floodplain part. The relief of the plot is small hilly, hillocky. The highlands are marked by sand deposits poorly covered with vegetation. The soil cover is represented by a combination of the following soil types: sod-podzolic sandy floodplain; sod-podzolic sandy temporarily abundant moisturized floodplain; sod-podzolic gley sabulous floodplain, sod gley sabulous floodplain.

The humus horizon capacity of sod-podzolic soils varies from 10 cm on the highlands of the relief to 15–20 cm on the lowlands with humus content 1.0–2.5%. Current acidity of pH is 4.3–4.5. The sod soils take humus horizon of 20–30 cm with humus content of 4–5% on the plot of the object no. 2. Current acidity is pH 5.2.

The soil preparation on the plots was carried out with the plow PKL-70. Planting scheme was 2.5×1.0 m. Planting of English oak (*Quercus robur* L.) seedlings was carried out at the bottom of the furrow under Kolesov sword.

Identification of soils was carried out in field conditions, by laying small pits and ditches. Granulometric composition of the soil was determined by field methods. The humus content was determined by Tyurin in modification of V. N. Simakov, current acidity was measured in pH meter [4].

On the object no. 1 on the testplot (PP) of 0.2 hectares – 17 rows (755 trees) were studied, and on the object no. 2 on the area of 0.5 hectares – 22 rows (2,086 trees).

The results obtained (Table 1) showed a significant difference in the growth of English oak (*Quercus robur* L.) independence on growth conditions.

During 5 years in the central part of the floodplain (object no. 1) in the test area almost 100% establishment and the preservation of English oak (*Quercus robur* L.) was determined.

On the second object, primarily because of the variegation of soil, there is a significant death of planted oak seedlings in the first and next years after planting.

The average height of the studied oak forest plants is characterized by low indexes on test areas, although on the object no. 1 it is by 48% higher of compared with the object no. 2 (riverbed part of the floodplain).

In 2015, the first increase in height in the central part of the floodplain in the test area was observed in 44% of the oaks, and the average value of it was 5.7 cm. The second increase was observed only in 14% of oaks, but the average value was 7.6 cm. Individual, well developed, and undamaged specimens in 2015 have the first and the second highest increase of 30 cm.

On the riverbed of the floodplain in the experimental area in 2015, the first increase was observed in only 15% of the oaks, and the average height increase was 2.9 cm, which is 2 times less than on the previous object. The second increase was observed in only 3% of the trees grown on sod-podzolic gley and sod gley floodplain sabulous soils. The maximum value of the first increment was 26 cm, and the second – 9 cm.

The number of oaks, which height increase was observed in 2015, was dependent, in our opinion, both on the weather and ontheir damage of wild animals in the autumn-winter-spring period.

Table 1

Indicators of height and annual growth (for 2015) of oaks

Amount of oaks on PP (growing / shrunken), pcs.	Average and the largest height, cm	The first increase		The second increase	
		oftrees, pcs./%	average and the largest, cm	of trees, pcs./%	average and the largest, cm
Object no. 1 – central floodplain					
754/1	42.4/144.0	335/44	5.7/30.0	105/14	7.6/30.0
Object no. 2 – riverbed floodplain					
1,598/488	28.5/78.0	311/15	2.9/26.0	56/3	2.8/9.0

Oaks height gradation analysis (Table 2) showed that almost half of the test specimens are included in the gradation of 20–40 cm on the both objects.

Table 2

Oak trees height gradation

Height gradation, cm	Amount of trees	
	pcs.	%
Object no. 1 – central floodplain		
0–20	54	7
20–40	**338**	**45**
40–60	216	29
60–80	94	12
80–100	32	4
100–120	12	2
120–140	7	1
140–160	1	0
Object no. 2 – riverbed floodplain		
0–20	403	25
20–40	**839**	**53**
40–60	320	20
60–80	36	2

However, on the object no. 1, the amount of 40 cm height oak plants was 48%, while individual specimenshave reached the height of 144 cm (Table 1). On the object no. 2 oak plantsamount of height 40 cm was 22%, and some specimens have reached a height of only 78 cm.

Conclusion. Studies have shown that the plots of test English oak (*Quercus robur* L.) forest plants are characterized by a high diversity of soils.

The growth of oak on the studied areas depends on the relief (micro-relief) and granulometric composition of the river alluvium.

In the terms of the central part of the Pripyat floodplain, in the 5-year-old forest plantations oak is characterized by the average height and the annual increase in height 2 times greater than the same plants growing in the floodplain of the riverbed.

On sandy ridges in the riverbedof floodplain there is no need to carry out oak planting, and it would be more rational to carry out planting by small plots or biogroups on slightly elevated areas containingsod-podzolic and sod gley sabulous floodplain soils.

Oak growth (average height, average annual height increase, stalk formation) on the test plots can be substantially increased and improved if prevent eating away young shoots by wild animals.

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