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CHARACTERISTICS OF STAND CONDITION OF FOREST PROTECTION PLANTINGS IN THE VICINITY OF PLATNIROVSKAYA VILLAGE ON THE EXAMPLE OF LLC «SPHERE»

Abstract*: the purpose of this article is to study the state of protective forest strips on the example of LLC «SPHERE» of the Krasnodar Territory, to assess their phyto-sanitary condition with the prospect of further use of the results for planning a project for their reclamation. The scientific novelty is in the fact that an assessment of the living condition of the forest stand of the protective forest strips of LLC «SPHERE» of the Krasnodar Territory was carried out.*

Keywords*: land reclamation, forest protection plantations, geobotanical description, bonitet, environmental assessment.*

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ХАРАКТЕРИСТИКА СОСТОЯНИЯ ДРЕВОСТОЯ ЛЕСОЗАЩИТНЫХ НАСАЖДЕНИЙ В ОКРЕСТНОСТЯХ СТАНИЦЫ ПЛАТНИРОВСКАЯ НА ПРИМЕРЕ ООО «СФЕРА»

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***Аннотация**: цель статьи заключается в изучении состояния полезащитных лесных полос на примере ООО «СФЕРА» Краснодарского края, оценке их фитосанитарного состояния с перспективой дальнейшего использования результатов для планирования проекта по их рекультивации. Научная новизна состоит в том, что впервые была проведена оценка фитосанитарного состояния полезащитных лесных полос ООО «СФЕРА» Краснодарского края.*

***Ключевые слова**: мелиорация, лесозащитные насаждения, геоботаническое описание, бонитет, экологическая оценка.*

Protective forest planting is a natural or artificial forest planting on non-forest lands of the forest fund or lands of other categories that has protective functions, improves climatic, hydrological, and other environmental conditions, to protect natural, agricultural, industrial, municipal, transport and other facilities from adverse natural and anthropogenic influences [2]. Forest belts are divided according to their functions: windproof, water-regulating, pasture-protecting, coastal, shore-protecting, riverbed, and roadside forest belts.

In the process of conducting the research, such tasks are solved as: 1) the establishment of the species composition of protective forest plantations; 2) the measurement of morphological indicators; 3) the assessment of the phytosanitary condition and the study of the species diversity of agrocenoses.

Forest belts are vital in agrocenoses of steppe landscapes. Therefore, the assessment of the state of the forest stand of forest protection plantations of LLC «SPHERE» of the Krasnodar Territory is important for conducting rational nature management. The data obtained during field research can be used to plan a project for their reclamation, since the landing took place in the 50s and 70s.

Research methods: 1) the route method. This method helps to determine the diversity of phytocenoses, their placement in ecological niches; 2) geobotanical description. At the first stage, a 10×10 meters platform is laid. The selected 4 trees are the endpoints. Next, the number of trees on the selected site is calculated. Trunk diameters are determined using a measuring fork. Environmental assessments are established (according to GOST R 57973–2017) [1], a bonitet (on the scale of M.M. Orlov, 1931) [5].

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The characteristics of forest strips was carried out by the help of A.S. Zernov's work «Plants of the Western Caucasus of Russia. Field atlas», which contains information on 1211 species of vascular spore and seed plants [3].

The studies of protective and reclamation plantings were carried out in the vicinity of Platnirovskaya village on the territory of LLC «SPHERE». These forest belts have a windproof function (Fig. 1). The characteristics of the forest belt 1 (Fig. 2 – A.A. Pavlenko's archive photo). Coordinates: 45.36611 northern latitude, 39.27203 eastern longitude. The length of the surveyed area is 20 m, the width is 14,9 m. The land area is 298 m^2. The dominant species are: common ash (*Fraxinus excelsior*) and tatar maple *(Acer tataricum)*.

Figure 1. Cartographic diagram of the studied forest-reclamation plantation

Figure 2. Protective and reclamation plantings of LLC «SPHERE» (forest belt No. 1)

Description of the composition of the studied accounting area: celtis (*Celtis australis*) – 7 pieces (h = 1.5 m, category 2); common mahaleb (*Prunus mahaleb*) – 11 pieces (h = 3 m, category; 2) single-leaf hawthorn *(Crataegus monogram)* – 2 pieces, h = 3.4 m, category 2); common ash *(Fraxinus excelsior)* – 10 pieces (h = 6 m, category 3); tatar maple *(Acer tataricum)* – 17 pieces (h = 4.8 m, category 3). A total of 67 trees were examined on the site [4]. The table shows the data on the tree species condition for the test site (table 1).

Table 1

Tree species of protective and reclamation plantations of LLC «SPHERE»

(forest belt No. 1)

№	*Tree species*	*h, m*	*l, cm*	*Bonitet*	*The sanitary condition of the tree stand*

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1	Common ash	9,3	17	5	4
2	Common ash	11	34	4	4
3	Common ash	13,6	19	4	4
4	Common ash	11,9	29	4	4
5	Common ash	11	50	4	4
6	Common ash	5,95	16	5	3
7	Tatar maple	6,8	12	5	3
8	Common ash	11	36	4	4
9	Common ash	5,1	10	5	3
10	Common ash	10	30	4	3
11	Common ash	4,25	31	5	3
12	Common ash	11,9	34	4	3
13	Common ash	4,25	15	5	3
14	Common ash	3,4	29	5	4
15	Common ash	6,8	14	5	3
16	Common ash	11,1	23	4	4
17	Common ash	11,3	27	4	4
18	Common ash	11,2	30	4	4
19	Common ash	10,9	30	4	4
20	Tatar maple	4,25	10	5	3

The composition of each tier of the plantation was described separately. The share of participation in the composition of the tier of each species was estimated by the number of plants. The formula of the composition of the plantings: 9A1M (A – common ash, M – Tatar maple). The table below shows the average values on each tree species (table 2).

Table 2

Average values of the main tree species of protective and reclamation plantations of LLC «SPHERE» (forest belt No. 1)

№	*Tree species*	*h, m*	*d, cm*	*Bonitet*	*The sanitary condition of the tree stand*
1	Common ash	8,3	26	4	4
2	Tatar maple	5,5	11	5	3

In addition, living ground cover and forest litter were collected and weighed (table 3).

Table 3

Data on living ground cover and forest litter on forest belt

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№	*Weight of the forest litter, g*	*Weight of the living ground cover, g*	*Weight of the forest litter + living ground cover, g*	*Weight of the dry forest litter, g*	*Weight of the dry living ground cover, g*	*Weight of the dry forest litter + living ground cover*	
						g / m^2	t / ha
1	Absent	400	400	Absent	150	150	1,5

The number of fallen trees was calculated – 11 pieces, stumps – 3 pieces. During the study sessions, the following values were calculated: a) the average distance between rows is 2,4 m; b) the average distance between trees is 1,3 m; c) the feeding area: S feeding area (SF) = 1,3 × 2,4 = 3,12 m^2; d) Preservation coefficient (PC) = number of trees per hectare / number of trees per hectare through the power feeding the area of the power supply. SFPC = 671 / 3205 = 0,21. As part of the protective and reclamation plantations of LLC «SPHERE» (forest belt No. 1), the dominant species are common ash (*Fraxinus excelsior*) and Tatar maple (*Acer tataricum*). The category of the sanitary condition of the stand corresponds to 3 (severely weakened) and 4 (shrinking), the bonitet corresponds to class 4 and 5. The design of the investigated forest reclamation plant is tracery.

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