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THE SPECIALIZATION DEGREE OF WOOD-DESTROING BASIDIAL FUNGI ON TREES IN SAMUR-DAVACHI LOWLAND FORESTS OF AZERBAIJAN

Abstract. *It has been defined that the specialization degree of 22 species of wood-destroing basidial fungi on forest-forming trees in Samur-Davachi lowland forests varies. Among them, 2 species – Trametes versicolor and Fomes fomentarius, have a wide specialization (on 4-5 tree species), 9 species- Trametes cervinus, T. hirzutus, T. vaporarius, Daedalea quersina, Inonotus hispidus, Phellinus robustus, Ph. torulosus, Tyromyces caesius and T. kumatodes, have a narrow specialization (on 1 tree species). The fungi species with a wide specialization have been adapted to one specific tree species more. Most fungi are observed on hornbeam (14 species) and oak (12 species) trees.*
Keywords: *wood-destroing, basidial fungi, forest, trees, specialization degree.*

Introduction. Wood-destroing (tinder) basidial fungi, as an ecological-trophic group, are the typical representatives of forest biocoenosis, and play animportant role in the life of forests. They grow on living stems and roots of the trees, on their dry branches, lying stems and branches, and on the stumps [1, 3].

Most of wood-destroing fungi are polytrophic. Some of them have narrow specialization and may decompose1-2 tree species. Species diversity of these fungi, their spreading and density are the main indicators of the sanitary of the forests and the intensity of the anthropogenic impact. On the other hand, without knowing about the species diversity of the fungi, their density and specialization degree on the trees, it is impossible to know their functional role in the any forest coenosis [2, 4].

In the previous researches, spreading, species composition and density of the wood-destroing fungi spread in Samur-Davachi lowland forests have been studied. It was defined that 22 fungi species spread in these forests belong to 4 families and 12 kinds [5, 6].

The purpose of the presented research is to study the specialization degree of the wood-destroing fungi on the trees of Samur-Davachi lowland forests of Azerbaijan.

Materials and methods. In order to study the specialization degree of the fungi on the trees, the areas of 0.30 ha have been selected and the trees (*Carpinus orientalis, Crataegus caucasia, Morus alba, Populous alba, Prinus cerasifera, Pterocarius pterocaria, Quercus castaneifolia, Salix alba, Tilia dasystyla subsp. caucasica)* with more than 10 cm diameter in these areas have been counted, and all the fungi came across on these trees have been recorded.

All the factual materials have been statistically processed [7].

Results and discussion. To define the specialization degree of the wood-destroing fungi on the trees substrates of Samur-Davachi lowland forests, their frequency density on separate tree species has been explored. Obtained results are presented in the Table. According to the Table, three groups of the fungi can be distinguished by their occurrence density on the trees substrates. The first group includes the relatively wide substrates species, i.e., fungi species occurred on 4-5 plant substrates. This group includes the species *Trametes versicolor, and Fomes fomentarius.* The second group includes fungi species occurred on 2-3 plant substrates. They are the species with medium substrate specifications as *Bjerkandera adusta, Trametes cervinus, Fomitopsis pinicola, Fomitopsis subrosea, Ganoderma applanatum, Ganoderma Lucidum, Phellinus igniarius, Pseudotrametes gibbosa, Polyporus sguamosus,* and *Schizophyllum commune*. The third group includes the species with very narrow specialization, i.e., fungi species

occurred on only one plant substrate. They are *Trametes cervinus, T. hirsutus, T. vaporarius, Daedalea quersina, Inonotus hispidus, Phellinus pomaceus, Phellinus Robustus, Phellinus torulosus, Tyromyses caesius,* and *Tyromyses kumatodes*. Thus, 2 species out of 22 xylotrophic fungi species spreading in Samur-Davachi lowland forests have wide substrate specification, 10 of them have medium substrate specification, and 10 of have very narrow substrate specialization.

Table

The density of the wood-destroing fungi on the tree substrates in Samur-Davachi lowland forests of Azerbaijan

Fungi	Tree substrates								
	Populus alba	*Prinus cerasifera*	*Tilia dasystyla*	*Quercus castaneifolia*	*Salix alba*	*Morus alba*	*Pterocarius pterocaria*	*Crataegus caucasia*	*Carpinus orientalis*
Bjerkandera adusta	6±0.5	-	-	-	-	-	1±0.05	-	-
Coriolus cervinus	-	-	-	-	-	-	-	-	8±0.4
Coriolus hirsutus	-	-	-	-	-	-	-	-	7±0.3
Coriolus vaporarius	-	-	-	-	-	-	-	-	0.5±0.02
Coriolus versicolor	3±0.2	-	3±0.1	5±0.3	-	-	2±0.1	-	64±3.2
Coriolus zonatus	2±0.1	-	2±0.1	-	-	-	-	-	3±0.1
Daedalea quersina	-	-	-	37±2.5	-	-	-	-	-
Fomes fomentarius	-	-	4±0.2	61±3.8	-	-	1±0.06	-	14±1.1
Fomitopsis pinicola	5±0.2	-	-	10±0.8	-	-	-	-	61±3.4
Fomitopsis subrosea	-	-	-	1±0.05	-	-	-	-	1±0.02
Ganoderma Lucidum	-	-	-	52±3.3	-	-	-	-	9±0.6
Ganoderma applanatum	-	-	-	31±2.2	-	-	-	-	5±0.3
Inonotus hispidus	-	-	-	-	-	4±0.2	-	-	-
Phellinus igniarius	-	23±1.4	-	-	10±0.7	-	-	-	-
Phellinus pomaceus	-	28±2.1	-	-	-	-	-	-	-
Phellinus Robustus	-	-	-	3±0.2	-	-	-	-	-
Phellinus Torulosus	-	-	-	4±0.2	-	-	-	-	-
Pseudotrametes gibbosa	3±0.1	-	-	16±0.8	-	-	-	-	5±0.2
Polyporus squamosus	0.5±0.04	-	-	0.5±0.01	-	-	-	-	1±0.04
Tyromyses caesius	0.5±0.03	-	-	-	-	-	-	-	-
Tyromyses kumatodes	-	-	-	-	-	-	-	-	10±0.7
Schizophyllum commune	-	-	-	59±4.1	-	-	-	6±0.3	71±3.4

The fungi with narrow specialization have been adapted to only one tree species. The species *Trametes cervinus, T. hirsutus, T. vaporarius* and *Tyromyses kumatodes* have been specialized only on *Carpinus orientalis* tree, *Daedalea quersina, Phellinus robustus,* and *Phellinus torulosus* – only on *Quercus castaneifolia* tree, *Inonotus hispidus* – only on *Morus alba* tree, *Phellinus pomaceus* – only on *Prinus cerasifera* tree, and *Tyromyses caesius* – only on *Populus alba* tree. Thus, the first ones have been adapted (specialized) to only *Carpinus orientalis* tree, the second ones – on only *Quercus castaneifolia* trees, the third ones – on only *Morus alba* tree, the fourth ones – only on *Prinus cerasifera* tree, and the fifth ones – only on *Populus alba* tree.

The density of the fungi with wide and medium specification on various trees enormously differs. For instance, the density of *Trametes versicolor* on *Carpinus orientalis*, which is widely spread on other trees, has been by 21.3 times more than the density on *Populus alba* and *Tilia dasystyla*, and by 12.8 times more than the density on *Quercus castaneifolia*, and by 32.0 times more than the density on *Pterocariya pterocaria*. The frequency of *Fomes fomentarius* on *Quercus castaneifolia*,

which have wide substrate specification, is more than the frequency on *Tilia dasystyla*, *Pterocarius pterocaria* and *Carpinus orientalis* by 15.3; 61.0 and 4.4, respectively. The frequency of *Fomitopsis pinicola* on *Carpinus orientalis*, which mainly occur on *Populus alba, Quercus castaneifolia* and *Carpinus orientalis*, is by 12.2 times more than the density on *Populus alba*, and by 6.1 times more than the density on *Quercus castaneifolia*. Thus, *Trametes versicolor* and *Fomitopsis pinicola* have been adapted mainly to *Pterocarius pterocaria*, and *Fomes fomentarius* – on *Quercus castaneifolia.*

It should be noted that, 7 fungi species: *Bjerkandera adusta, Trametes versicolor, T. zonatus, Fomitopsis pinicola, Trametes gibbosa, Polyporus sguamosus,* and *Tyromyses caesius,* have been observed on *Populus alba,* however the most frequently occurred species are *Bjerkandera adusta* and *Fomitopsis pinicola,* the least frequently occurred species are *Polyporus sguamosus* and *Tyromyses kumatodes.* The density of the first ones on *Populus alba* has been more than the second ones by 10-12 times (table). Two fungi species: *Phellinus igniarius* and *Phellinus pomaceus* occurred on *Prinus cerasifera* tree have the similar densities. Three fungi species: *Trametes versicolor, T. zonatus* and *Fomes fomentarius* have been observed on *Tilia dasystyla*. The density of occurrence of these fungi on *Tilia dasystyla* does not also significantly differ. The similar results of *Bjerkandera adusta, Trametes versicolor* and *Fomes fomentarius* have also been observed on *Pterocarius pterocaria*. Twelve species have been observed on *Quercus castaneifolia* tree, among which *Fomes fomentarius, Schizophyllum commune* and *Ganoderma applanatum* have very high density, while *Fomitopsis subrosea, Phellinus Robustus, Phellinus torulosus* and *Polyporus sguamosus* have very low density. The density of the first ones has been more than the second ones by 13-122 times. Thus, though, 12 species have been observed on *Quercus castaneifolia*, the species *Fomes fomentarius, Schizophyllum commune* and *Ganoderma applanatum* have been adapted to *Quercus castaneifolia* most. Fourteen fungi species have been observed on *hornbeam*, and among them, *Trametes versicolor, Fomitopsis pinicola* and *Schizophyllum commune* have very high density, while *Trametes vaporarius, T. zonatus, Fomitopsis subrosea* and *Polyporus squamosus* have very low density.

Thus, the occurrence density of the first ones has been more than that of the second ones by 20-142 times (table). Therefore, though, 14 species have been observed on *Carpinus orientalis*, the species *Schizophyllum commune, Trametes versicolor* and *Fomitopsis pinicola* have been adapted to *Quercus castane*ifolia most.

Conclusions and Prospects of further research. It has been identified that the specialization degree of 22 species of wood-destroing basidial fungi on forest-forming trees in Samur-Davachi lowland forests varies. Among them, 2 species: *Trametes versicolor* and *Fomes Fomentarius* have a wide specialization, whereas 9 species: *Trametes cervinus, T. hirzutus, T. vaporarius, Daedalea quersina, Inonotus hispidus, Phellinus robustus, Phellinus torulosus, Tyromyces caesius* and *Tyromyces kumatodes* have a narrow specialization. Most species have been observed on *Carpinus orientalis* (14 species) and *Quercus castaneifolia* (12 species). The species with wide specification also adapt to the specific tree species most.

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