WOOD FUNGI – POTENTIAL DESTABILISATION FACTORS OF FOREST ECOSYSTEM. CASE STUDY

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Key words: woods fungi, attack, economic damages**.**
Cuvinte cheie: ciuperci lignicole, atac, pagube economice.

ABSTRACT:

The paper contents the impact of woods fungi of the forestry species in some forests of Suceava district. The study is to bring certain contributions regarding the fungi attack on beech species, focusing mainly on the attack produced by woods fungi, beyond the large economic damages, these fungi also affects the stability of the forest ecosystems.

1. Introduction

The wood fungi, by the frequency of the attack and localization, can affect together with other biotic and abiotic factors the quality of wood.
The fungi that produce the putrefaction of wood are generally localized, at the level of the duramen (C., Delatour, 1990; M., Mititiu, V., Iacob, 1997).

The thematic of the paper is motivated by the great spreading of the wood fungi in the coniferous woods from the department of Suceava, considered the main factors that affect the quality of wood.

The studies made bring a series of data regarding the amplitude and the intensity of the dote produced by the lignicolous fungi especially concerning the attack of the *Hereobasidion annosum* (Fr. Bref.) fungus, dominant species in the studied area M., (Grudnicki, 2002).

2. Material and method

The studies were effectuated in the Pojorâta Forest District (lots 118 D, 134 M, 138), the basic criterion of the chose being determined by the proportion of trees affected by the lignicolous fungi. In these arboretums were placed trial surfaces of 500 m² in which the trees were described and then sounded with the Pressler drill with the aim to extract the growing carrots.

These ones were submitted to the direct observation for determining the proportion of trees affected by dote, at the level 1,3 m, standardized for this kind of measurements.

Further, the carrots were introduced on culture areas with the aim to confirm the presence of the *Heterobasidion annosum* (Fr. Bref.) fungus.

3. Results and discussions

As results from the table below, the chosen arboretums present a relative homogeneity from the point of view of the structure, the type of flora and ecosystem, the variability being surprised at the level of the altitudinal conditions and of the age of the arboretums (table 1).

Table 1. The type of flora and ecosystem.

Forest district	Pojorâta		
Lot	118 D	134 M	138 H
Altitude (m)	1100-1350	1200-1400	990-1100
Exposition	S	S	N
Slope (degrees)	30	30	20
Productivity	Medium	Superior	Medium
Structure	Relative -echien	Relative -echien	Relative -echien
Composition	10 spruce	10 spruce	10 spruce
Age (years)	80	100	110
Flora type	Oxalis-Soldanella	Oxalis – Dentaria	Oxalis – Dentaria
Ecosystem type	1226 –Molidiş mijlociu productiv cu mull-moder pe soluri brune acide tipice oligomezobazice hidric echilibrate,cu Oxalis-Dentaria-Asperula		

In the studied lots, the proportion between the healthy trees and the ones attacked by the lignicolous fungi is presented in the figure 1.

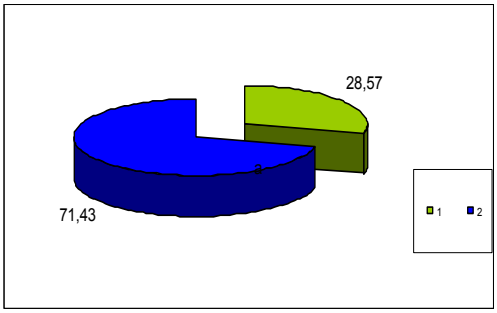

Fig.1. The proportion between the healthy trees and the affected ones 1. healthy trees; 2. attacked trees.

The analysis made evidences the fact that in the arboretum with a very high level of the damaged trees (71,43%) the dote is the result of the attack produced by *Heterobasidin annosum* (Fr.) Bref. (53,85%) of the number of attacked trees. At a percent of 46,15% the discovered dote is due to the attack produced by other species of lignicolous fungi.

The graphic from the figure 2 illustrates for the lots included in the study the proportional levels of these parameters.

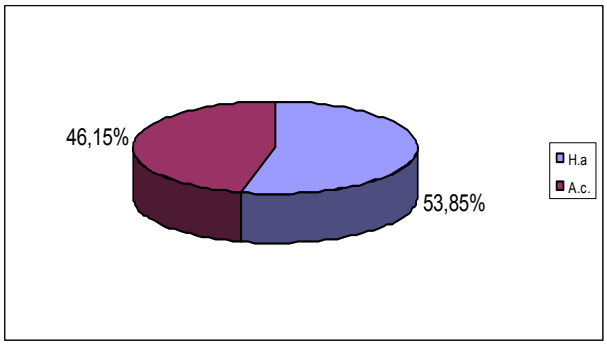

Fig. 2. The proportion of the attack of the *Heterobasidion annosum* (53,85%) fungus in comparison with other lignicolous fungi (46,15%).

The distribution of fungi on species is the following:
Heterobasidion annosum (Fr.) Bref. (53,85%);
Phellinus pini (Th. et. Fr.) Pil. (25,24 %);
Stereum sanguinolentum (A.et S.) Fr. (7,69);
Fomes marginatus (Fr.) Gill. (7,62 %);
Armillaria mellea (Vahl.) Pat. (5,60%) (fig.3).

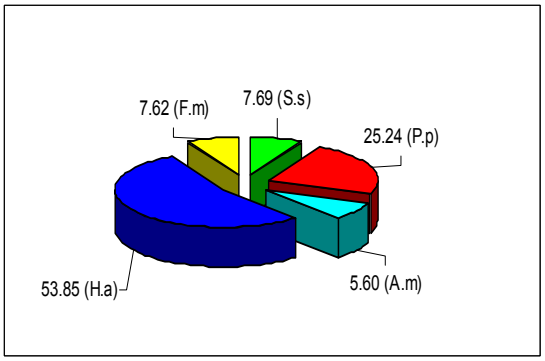

Fig. 3. The distribution of fungi on species:
H.a (*Heterobasidion annosum*); P.p (*Phellinus pini*); S.s (*Stereum sanguinolentum*); F.m (*Fomes marginatus*); A.m (*Armillaria mellea*)

In these conditions the correlative relationship between the medium age and the proportion of healthy trees attracts our attention. The worsening of the health state, simultaneously with the age is obvious. The proportion of healthy trees becomes lower. The increased intensity of the relationship is remarked through the value of r = -0,6599, graphically represented in the figure 4.

In this case, the compensation has been made through a curve of logarithmical type with a correlation coefficient of 0,6541, slightly under the value of the linear correlation.

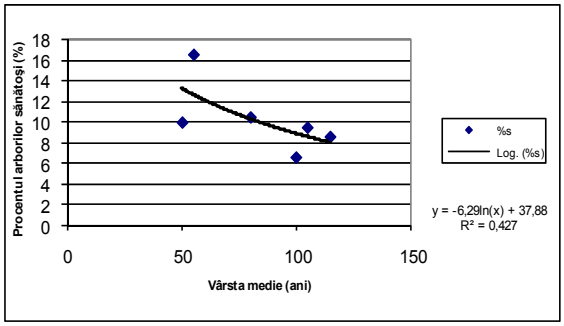

Fig. 4. The relationship between the medium age of the arboretum and the proportion of healthy trees.

By developing the tree population with the age the proportion of attack of the trees increases too. In the figure 5 we present the relationship age – the proportion of the trees affected by *Heterobasidion annosum* (figure 6). The intensity of the relationship is very high (r = 0,7814, R2 = 0,6106), for a curve of logarithmical type, which demonstrates the vulnerability of the old trees at the attack of the fungus.

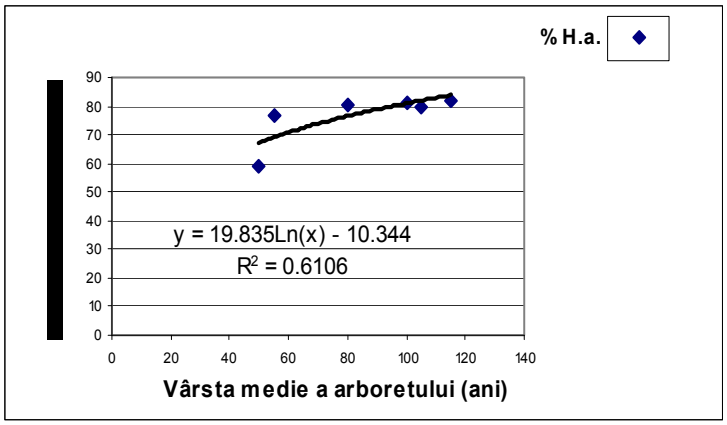

Fig. 5. The relationship between the medium age of the arboretum and the percent of the trees produced by the *Heterobasidion annosum* fungus.

4. Conclusions

From the researches that have been effectuated results the fact that the coniferous forests from the department of Suceava, which present a high degree of affectation, by wounds of different origins, the dote can be produced by different species of lignicolous fungi, the highest percent reverts to the *Heterobasidion annosum* fungus.

The dominance of the *Heterobasidion annosum* fungus in the apparition of dote could be explained by the complexity and the instability of the enzymatic equipment of which this fungus already disposes, which allows it to occupy a healthy substratum and also a substratum already colonized by other fungi, with the condition that this one be modified in its favor.

The results of this analysis cannot be generalized for all types of arboretums, because we proceeded to choose them from the point of view of the damage degree with the aim to evidence the destructive role of the lignicolous fungi installed on the wounded and debilitated trees, from a physiological point of view.

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