

Monitoring the Edible Chestnut Bark Cancer (*Cryphonectria Parasitica*) and its Prevention and Combat Measures in the Pedoclimatic Conditions of the Baia Mare Basin

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Abstract

Our research aims to assess the chestnut tree health status in three various locations: Baia Mare, Tauti Magheraus, Baia Sprie, in order to find the most efficient methods to prevent and to combat the bark cancer which develops in the climate conditions of Baia Mare basin. The primary assessment was performed through the determination of the attack degree (AD %), of its frequency (F%) and its intensity (I%). We took in observation 10 chestnut trees from each location. We determined the number and size of both trunk and branches lesions for each chestnut tree. The intensity of the attack in the three studied areas ranked from the highest intensity 47.5% for Baia Sprie location followed by the intensity of 33.0 % for Tautii Magheraus, to the intensity of 26.5% for Baia Mare. Our analysis performed after the administration of the combat chemical method, we found that this measure was not efficient because the infection did not diminish; thus we recommend the dry chestnut tree elimination, its hygiene cuts, using the biologic combat.

Keywords: *attack, fungi, intensity, infection*

INTRODUCTION

The chestnut tree fruit are among the first aliments consumed by human beings since prehistoric times, Japanese used to name it as “the tree of life” (Cociu, 2013). Certain authors believe that the chestnut tree was brought to our country either by the Roman colonists or by the Turks (Oltean, 2011). In Maramures, in the suburb Tautii de Sus there grows the “veteran” of this species: a chestnut tree aged around 500 years, declared a nature monument. (Nadisan, 2005). The most aggressive disease affecting the chestnut tree is the bark cancer. It was combat chemically with very unsatisfactory results. This method was combined with the cultivation hygiene and with the biological

method through which the hyper virulent stems bring about the cicatrization (Maris, 2004). The aim of this research was to monitor the edible chestnut bark cancer (*Cryphonectria parasitica*) through the tree health state assessment in three various locations, situated in Baia Mare basin, our assessment shows the results obtained after the administration of the biological combat treatments during the previous years. Our fungi monitoring started with a primary assessment of the chestnut phytosanitary status, by watching the attack various degrees of the infection. Samples were collected from the infected areas to be studied in the laboratory, the collected samples

Table 1. The intensity of the bark cancer attack (%) in the studied areas during the year 2016

Samples	I % bark cancer attack		
	Baia Mare	Tautii Magheraus	Baia Sprie
Mean	26.5	33.0	47.5

isolation helped us find the measures which are to be taken for the fungi integrated combat.

MATERIALS AND METHODS

Our experimental research were performed during the period of 2015- 2016, in the chestnut tree forests, managed by the Baia Mare Forestry Direction, in three various locations: Baia Mare, Tautii Magheraus and Baia Sprie. Our research methods were: phytosanitary sampling, visual observation concerning the identification and the determination of the fungi spreading area. The climate conditions monitoring was performed through the system AgroExpert. We determined the infected trees by the fungi *Cryphonectria parasitica* from the three experimental area and afterwards, we examined 10 items from each location. We determined the attack degree (AD%), the attack frequency (F%) and the attack intensity (I%).

RESULTS AND DISCUSSION

The determinations regarding the phytosanitary status of the chestnut tree from Baia Mare, Tautii Magheraus and Baia Sprie presented the following situation: in 2015, out of the total 999,95 hectares covered by chestnut forests, 104.40 hectares were without the fungi attack, 895.55 hectares were attacked from which 112.90 hectares had a moderate attack, 238.70 had a middle attack, 134.20 hectares had a strong attack, 102.25 hectare with a very strong attack, 136.70 hectares with an extremely strong attack, finally we found that 170.80 hectares were totally attacked by *Cryphonectria parasitica*. The results concerning the attack intensity over the 10 chestnut tree obtained from the three locations during the year 2016 are presented in the Tab. 1.

We observed that the highest intensity of the bark cancer attack was in Baia Sprie. In Baia Mare 8 chestnuts trees out of the 10 one monitored,

were infected, the frequency being of F =80%, the attack intensity I= 26.5, and AD=21.2%. In Tautii Magheraus 9 trees were infected the frequency F=90%, intensity = 33% and AD = 29.7%. In Baia Sprie out of ten chestnuts trees examined, all of them were affected, the frequency F= 100%, I= 47.5% and AD = 47.5%. Also, studies on bark cancer were conducted by Rigling and Prospero (2017), which founds that the biological method to control this fungus proved to be most effective.

CONCLUSION

Our research reached the conclusion that all the studied chestnut tree forest are infected by *Cryphonectria parasitica* the trees health state is considered as unstable, with the attack degree ranking from 20 to 50 %. The highest attack intensity was found in Baia Sprie while the lowest attack degree was in Baia Mare. This study recommends the elimination of the infection outbreaks by integrated combat measures dry chestnut trees elimination, hygiene cuts and biological combat procedures.

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