

RESEARCH ON PESTS FOUND IN FOREST NURSERIES IN NORTH-EAST OF MOLDAVIA DURING 2005-2009

CERCETĂRI CU PRIVIRE LA DĂUNĂTORII DEPISTAȚI ÎN PEPINIERELE SILVICE DIN NORD-ESTUL MOLDOVEI ÎN PERIOADA 2005 – 2009

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Abstract. *This work refers to the dynamics of pest species found in forest nurseries of the Forest Directorates Botoșani, Iași and Suceava during 2005-2009 and is the beginning of an extensive research in this area. Research results show that biotic pests represent the largest percentage of unhealthy factors, i.e. 93.81% and 72.60% of them are insects compared with plant parasites (19.81%) and harmful mammals (7.59%). The most dangerous pest for saplings from the forest nurseries are root insects (87.20% of all harmful insects), of which the highest share (70.87%) have *Melolontha melolontha* Larvae, followed by species of Elateridae with 13,20%. For the modern application methods of prevention and control of pests is essential to know and permanently follow these. This leads finally to produce a healthy and vigorous afforestation material to ensure the quality of afforestation works.*

Key words: pest, forest nurseries, root insects, saplings

Rezumat. *Lucrarea de față face referire la dinamica speciilor de dăunători depistați în pepinierele forestiere din cadrul Direcțiilor Silvice Botoșani, Iași și Suceava în perioada 2005–2009 și este începutul unei ample cercetări în acest domeniu. Rezultatele cercetării arată că dăunătorii biotici reprezintă cea mai mare pondere dintre factorii vătămători, adică 93,81%, iar dintre aceștia insectele reprezintă 72,60% față de paraziții vegetali (19,81%) și mamiferele vătămătoare (7,59%). Cei mai periculoși dăunători pentru puieții din pepinierele silvice sunt insectele de rădăcină (87,20% din totalul insectelor dăunătoare), dintre care ponderea cea mai mare (70,87%) o au larvele de *Melolontha melolontha*, urmate de speciile de Elateridae cu 13,20%. Pentru aplicarea unor metode moderne de prevenire și combatere a dăunătorilor este absolut necesar cunoașterea și urmărirea în permanență a acestora. Acest lucru duce în final la producerea unui material de împădurit sănătos și viguros care să asigure efectuarea unor lucrări de împădurire de calitate.*

Cuvinte cheie: dăunători, pepiniere forestiere, insecte de rădăcină, puieți

INTRODUCTION

When you want to realize a sustainable management of the forests it's absolutely necessary to resolve some important problems like assuring high quality wood saplings.

For this reason, it's mandatory that beside the technical works that must be done and that are foreseen by the existing instructions, to apply modern methods of preventing and controlling the pests existing in the forest nurseries and forest cultures.

The present paper is the beginning of a research concerning the pests from the forest nurseries and young plantations from the North-East of Moldavia and refers to the species of pests found in the forest nurseries of the Forest Directorate Botosani, Iasi and Suceava in the period 2005-2009.

MATERIAL AND METHOD

In their essence, the research analyzed the dynamics of the species of pests found in the nurseries in the Forest Directorates of Botosani, Iasi and Suceava in the period 2005-2009 and also the applied methods of preventing and controlling.

Inside the Botosani Forest Directorate was gathered and analyzed some data about the species of the pests found in the nurseries inside 6 forest districts with the annual average surface infested of approx. 26.85 ha.

From Iasi Forest Directorate was gathered and analyzed information about the species of pests from the nurseries inside 8 forest districts.

The annual average surface which was infested was of approx. 47 ha and for the Suceava Forest Directorate was gathered and analyzed information about the species of pests from the nurseries inside 25 forest districts with an annual infested area of approx. 114.30 ha.

These documentations were elaborated based on the tracing and prognosis studies made by the forest districts and county administrations supported by the data offered by IACS laboratories, according the methods specific to the ROMSILVA National Administration of Forests.

The data were analyzed according to the infested area and according to the intensity of the pests attack.

RESULTS AND DISCUSSIONS

In the period of the years 2005-2009 the forestry species planted in the forest nurseries from the North-East of Moldavia suffered a series of harms due to the action of some species of forest pests.

Regarding the nature of harms, the results of the research indicate the majority participation of the biotic pests with 93.81% in relation to the abiotic ones with 6.19%, their action mostly depending on the different composition of the nurseries (coniferous, broadleaf forests) and also the evolution and the intensity of the climatic factors in a different way for each forest directorates.

Among the harmful factors, the insects represent 68%, the vegetal parasites 19%, the harmful mammals 7% and the abiotic factors represent only 6%, according to table 1.

Table 1

Statistical rate (%) of pests inside the forest nurseries of Forest Directorates of Botoșani, Iasi and Suceava calculated in percents according to the infested area during 2005-2009

Forest Directorate	Pests	Statistical rate (%)				
		2005	2006	2007	2008	2009
Botoșani Forest Directorate	Insects	52,30	65,84	58,07	56,55	51,93
	Vegetal parasites	29,17	30,48	31,87	30,77	30,34
	Harmful mammals	7,37	2,71	4,50	4,75	3,66
	Harmful abiotic factors	11,16	0,97	5,56	7,93	14,07
Iași Forest Directorate	Insects	72,00	54,91	63,88	61,59	59,09
	Vegetal parasites	14,95	19,46	21,59	25,13	17,64
	Harmful mammals	5,93	17,12	6,71	10,82	8,75
	Harmful abiotic factors	7,12	8,51	7,82	2,46	14,52
Suceava Forest Directorate	Insects	87,44	90,41	79,28	89,08	79,18
	Vegetal parasites	3,52	4,67	10,39	3,53	5,27
	Harmful mammals	7,46	3,03	8,86	5,55	9,53
	Harmful abiotic factors	1,58	1,89	1,47	1,84	6,02

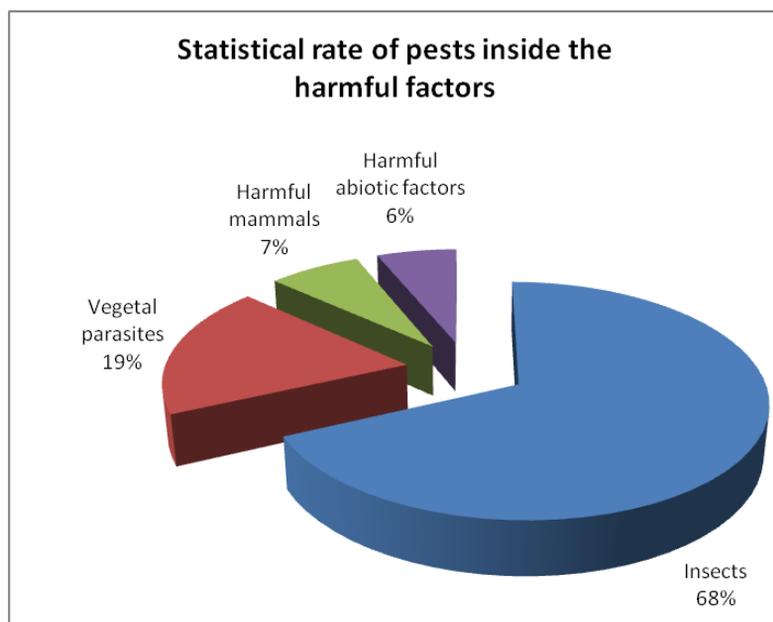


Fig.1. Statistical rate of pests inside the harmful factors

The harmful insects detected in the nurseries inside the 3 forest administrations were classified after the nature of their attack:

1. insects that attack the root: *Melolontha melolontha* – cockchafer larvae; *Agriotes* spp. *Elateridae* family – wireworms; *Gryllotalpa gryllotalpa* – mole cricket;
2. insects that attack the stem: *Cryptorrhynchus lapathi* – poplar and willow’s moth; *Paranthrene tabaniformis*; *Otiorrhynchus* sp.;
3. defoliating insects: *Hyphantria cunea*, *Earias chlorana*, *Melolontha melolontha* – beetles, *Melasoma populi*, mites, *Trips fuscipennis*, *Stereonychus fraxini* –ash leaves weevil;
4. sucking insects: *Aphrophora*, *Caliroa* spp., *Cameraria ohridella*.

Detected vegetal pests (18.59%) are:

1. root vegetal pests: *Fusarium* sp., *Pytium*, *Phytophthora*;
2. stem, sprout and branch vegetal pests: *Botrytis cinerea*;
3. leaves vegetal pests: *Microsphaera abbreviate*, *Rhythysima a.*, *Lophodermium* sp., *Cocomyces hiemalis*, *Guignardia* spp.)

The harmful mammals are mostly represented by *Talpa europaea*- the mole, *Lepus europaeus* – the hare, *Spalax microphthalmus isticus* and *Apodemus* sp. – mice and represent the smallest rate of harm of 7.12% among the harmful factors in the forest nurseries.

The dynamic of the harmful factors in the period 2005-2009 inside each abovementioned forest directorate is presented in the figures 3,4,5 and was calculated in percents according to the infested area by each category of pests.

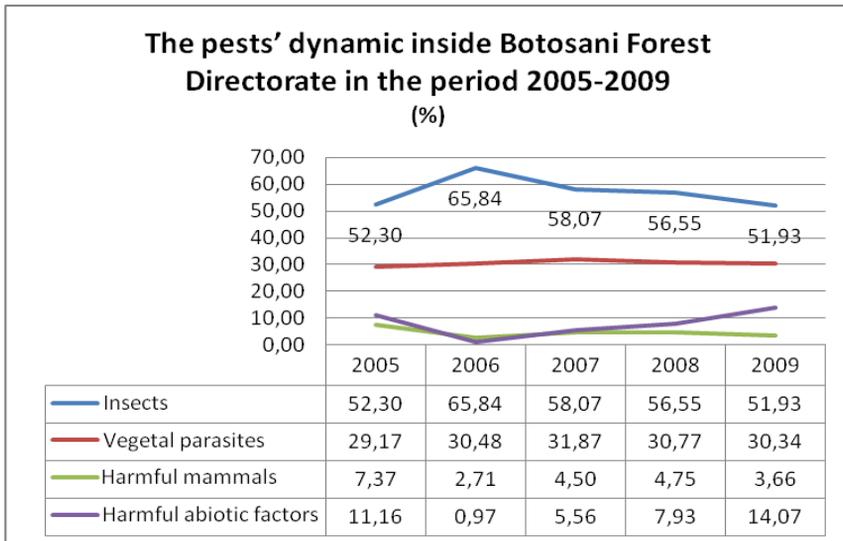


Fig. 3. The pests’ dynamic inside Botosani Forest Directorate in the period 2005-2009

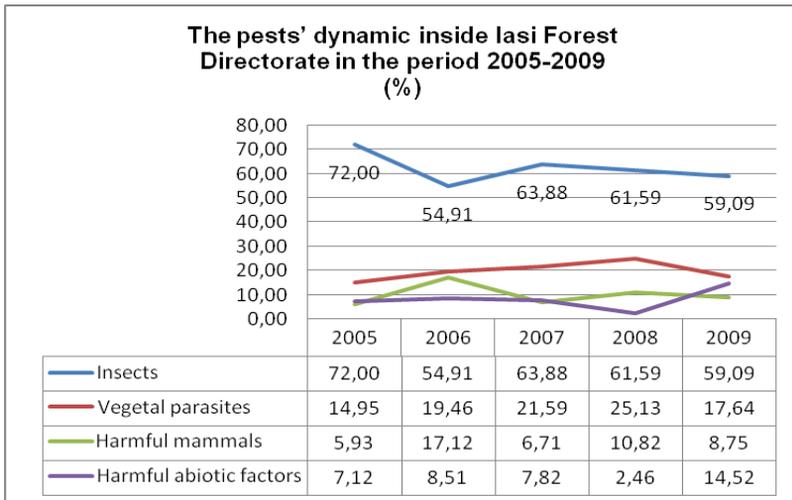


Fig. 4. The pests' dynamic inside Iasi Forest Directorate in the period 2005-2009

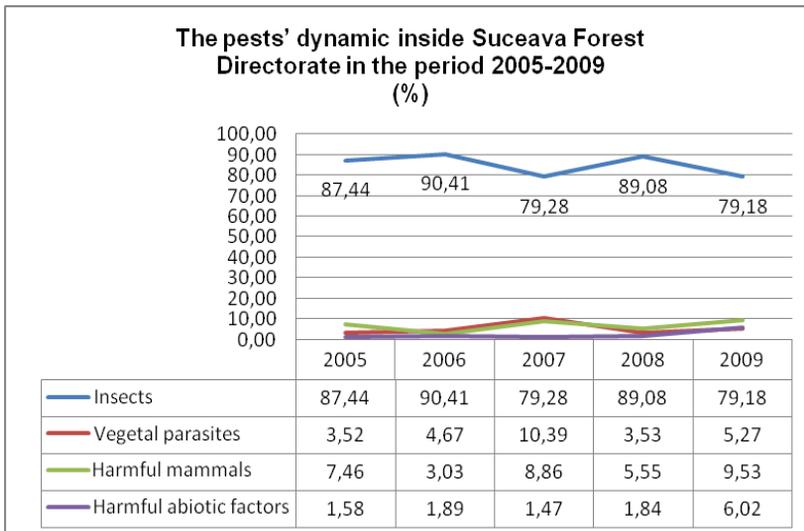


Fig. 5. The pests' dynamic inside Suceava Forest Directorate in the period 2005-2009

The highest rate among the harmful insects as infested area are the root insects which represent 87.20% from the total of the harmful insects, and among these the most popular pests are *Melolontha melolontha* larva with 70.87% followed by the species from *Elateridae* family – wireworms with 13.20% and *Gryllotalpa gryllotalpa* with 3.13%.

As it can be noticed from fig. 3, 4 and 5 the rate of the harmful insects from the total of the harmful pests in the forest nurseries is on the decrease in the last 2-

3 years, in average with 13.19% for Botosani Forest Directorate, with 11.23% for Suceava Forest Directorate and with 12.91% for Iasi Forest Directorate. We can also observe an increase of the harmful abiotic factors which is between 4 and 12% and certain sustainability of the vegetal parasites and of the harmful mammals.

CONCLUSIONS

1. The biotic pests represent the highest rate (93.81%) between the harmful factors, and among these, the insects represent 72.60% towards the vegetal parasites (19.81%) and harmful mammals (7.59%).

2. Analyzing the evolution of the harmful insects it can be observed a decrease of their rate in the last 2-3 years with 11 up to 13%.

3. The most dangerous pests for the saplings in the nurseries are the root insects (87.20% from the total of the harmful insects), and among these the most popular pests are *Melolontha melolontha* larva with 70.87% followed by the species from *Elateridae* family – wireworms with 13.20% and *Gryllotalpa gryllotalpa* with 3.13% the latter are met very rarely.

4. The intensity of the attack of the root insects in the period 2005-2009 was from weak to very strong for the *Melolontha melolontha* larva and generally weak for the species from *Elateridae* family, and the intensity of the other categories of harmful insects was registered as being weak and average, very rarely on the small areas has been registered as being powerful or very powerful.

5. The prevention and control measures realized inside the 3 forest districts are mostly chemical and mechanical, the chemical ones having the highest rate. Unfortunately the biological measures are missing the reason could be their higher cost.

6. The obtained results lead to a better knowledge of the present pests in the forest nurseries from the North-East of Moldavia and are the beginning of an ample research that will be made in the next three years on these pests and on the methods of fighting against them.

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