RESEARCH ON THE EFFICIENCY OF THE METHODS OF COMBATING THE HARMFUL ENTOMOFAUNA THAT ARE CURRENTLY APPLIED IN FOREST NURSERIES IN THE NE OF MOLDOVA

CERCETĂRI PRIVIND EFICIENȚA METODELOR DE COMBATERE A ENTOMOFAUNEI DĂUNĂTOARE APLICATE ÎN PREZENT ÎN PEPINIERELE SILVICE DIN N – E MOLDOVEI

GRĂDINARIU F.[1], TĂLMACIU M. [1], BODESCU C.[1]
e-mail: mtalmaciu@uaiasi.ro

Abstract. *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 research has as a purpose to determine the efficiency of current pest control methods applied in nurseries of the Forest Directorate Botosani and Iasi. ROMSILVA National Administration of Forests records in present a weak point in terms of production of seedlings and pest control, control methods applied are outdated, and substances used are highly toxic and ineffective.*
Key words: pest, forest nurseries, root insects, saplings

Rezumat. *Pentru a realiza un management durabil al pădurilor este absolut necesar rezolvarea unei probleme de mare importanță şi anume asigurarea de puieți forestieri de calitate superioară. Din acest motiv, se impune ca pe lângă lucrările tehnice ce trebuie efectuate în baza instrucțiunilor şi normelor silvice în vigoare, să fie aplicate metode moderne de prevenire şi combatere a dăunătorilor prezenți în pepinierele şi culturile silvice care provoacă cel mai adesea pagube însemnate. Cercetările au avut în vedere stabilirea eficienței metodelor actuale de combatere a dăunătorilor aplicate în pepinierele din cadrul Direcțiilor Silvice Botoşani şi Iaşi. Regia Națională a Pădurilor înregistrează în prezent un punct slab la capitolul producerii de puieți şi combaterii dăunătorilor acestora, metodele de combatere aplicate fiind învechite, iar substanțele folosite au un grad ridicat de toxicitate.*
Cuvinte cheie: dăunători, pepiniere forestiere, insecte de rădăcină, puieți

INTRODUCTION

The research has as a purpose to determine the effectiveness of current pest control methods applied in nurseries of the Forest Directorate Botosani and Iasi. In essence, the research analyzed the dynamics of the species of pests found

[1] University of Agricultural Sciences and Veterinary Medicine of Iasi, Romania

in the nurseries and also the applied methods of preventing and controlling (Brudea V., 2007).

MATERIAL AND METHODS

Were collected and processed statistically data from results of surveys conducted in autumn 2011 in a number of 48 nurseries forests from Botosani and Iasi counties; programs and projects for protection of forests for the years 2007, 2008, 2009, 2010 and 2011 made by specialized staff, on the basis of statistics of forest pest and the dynamics of the active outbreaks in nurseries and solariums and pre-measurement with pre-calculation of the protection works (2007-2011). Data was analyzed according to the area affected by pests and intensity of their attack against the control measures applied by RNP staff.

RESULTS AND DISCUSSIONS

Between the years 2007 – 2011 the harmful insects detected in the nurseries inside Iasi and Botosani forest administrations were classified after the nature of their attack:

1. insects that attack the root: *Melolontha melolontha* – cockchafer larvas; *Agriotes spp. Elateridae* family – wireworms; *Gryllotalpa gryllotalpa* – mole cricket;
2. insects that attack the stem: *Cryptorrhynchus lapathi* – poplar and willow's moth; *Paranthrene tabaniformis; Otirrhynchus sp.;*
3. defoliating insects: *Hyphantria cunea, Earias chlorana, Melolontha melolontha* – beetles, *Melasoma populi,* mites, *Trips fuscipennis, Stereonychus fraxini* – ash leaves weevil; (Brudea, 2007).
4. sucking insects: *Aphrophora, Caliroa spp., Cameraria ohridella.*

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 74.10% followed by the species from *Elateridae* family – wireworms with 7.71%, as shown in fig.1.

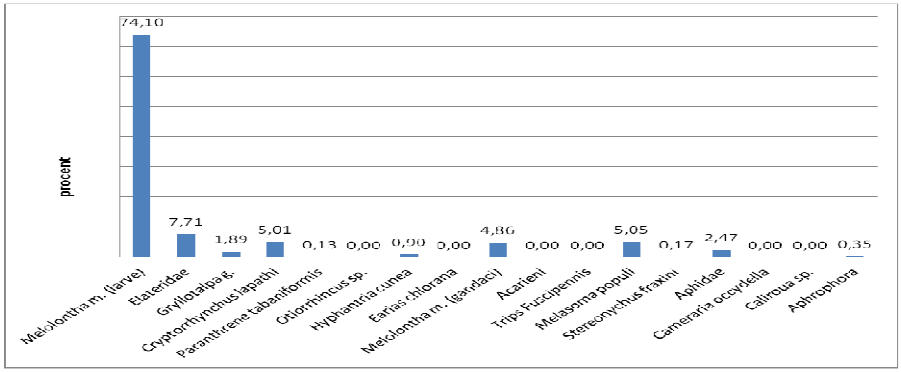


Fig. 1 - Percentage of insect species found in forest nurseries in Botosani and Iasi between the years 2007-2011 (%)

Measures to prevent and combat were made mostly, mechanical and chemical, but biological missing entirely.

Administration of chemical substances granulated and diffused with the Kyoritz device with Vydate (active material: Oxamyl) in 2009, 2010 and 2011 in general in two halves: first work with norm of 50 kg/ha (10 g/50kg/ha before the onset of spring crops), and the second with a norm of 30 kg/ha (treating the soil between rows of trees at the beginning of the vegetation season). During 2007-2008 for combating larvae of beetles and wire worms, were used substances like Sinolintox (Dimetoat – 40%, Gama Hch -35 %), Sinoratox (Dimetil-S, Dimetoat), Reldan (Clorpirifos metil 400 g/l), Fastac 10 C (Alfacipermetrin 100 g/l), Karate Zeon (Lambda cihalotrin 50g/l) (Tălmaciu, 2005).

Works performed for pest for *Melolontha melolontha* root and *Elateride* species were:

- significantly dusting ground all over with insecticides;
- incorporation into the soil of insecticide between the rows of seedlings;
- executing surveys to determine the degree of infestation;
- collecting defoliation beetles from trees (margins of nurseries with the flight of *Melolontha Melolontha*);
- collecting larvae of the bugs where these were observed.

Combating the mole cricket (*Gryllotalpa gryllotalpa*) was achieved by significantly dusting ground all over with insecticides and also by placing toxic baits.

As it can be noticed from fig. 2. the affected surface by root insects in the Botosani Forest Directorate is less in 2011 than the previous year, but compared to 2008 has increased up to 47 %. In Iasi Forest Directorate we can also observe an increase of the infected surface by the *Melolontha melolontha* larva, but this increase is insignificant.

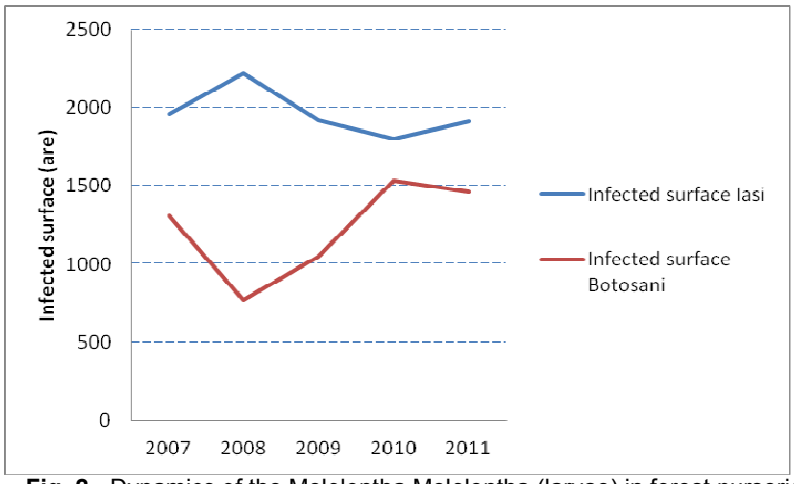
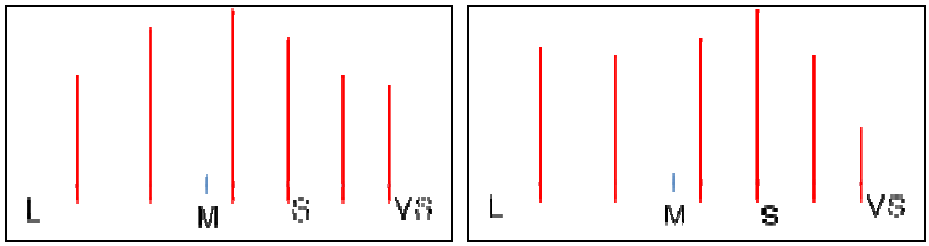


Fig. 2 - Dynamics of the Melolontha Melolontha (larvae) in forest nurseries in Botosani and Iasi during 2007 - 2011

The intensity of the attack of the root insects in the period 2007-2011 illustrated in fig. 3. 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.



(a) (b)

Fig. 3 - Frequency level of the attack of the *Melolontha melolontha* (larvae) in forest nurseries in Botosani (a) and Iasi (b) during 2007 - 2011

CONCLUSIONS

1. ROMSILVA National Administration of Forests records now a weak point in terms of production of seedlings and pest control, control methods applied are outdated, and substances used are highly toxic and ineffective.

2. Worrying is the fact that the degree of attack of larval beetles in forest nurseries records higher values over the medium to very strong then over the low to medium.

3. In most cases, deviation from the technical rules of the consumption of insecticide per hectare or ages of treatment application leads to a very low pest control measure efficiency.

4. Substances which are currently used to combat pests affect directly also the useful entomofauna from the nurseries. Is recommended to use some selective biological products to control larvae of beetles based on entomopathogenic fungi (*Beauveria brongniartii*) that are commercially available - Melocont and biological testing of other new products.

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