

Monitoring the species *Melolontha melolontha* L. in the Nursery of Gurghiu Forestry High School

Mircea Ioan VARGA^{1*)}, Ion OLTEAN¹⁾, Valentin MUNTEAN²⁾, Teodora FLORIAN¹⁾, Marcel MÂNDRU²⁾

¹⁾ Department of Environment and Plant Protection. University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania. ²⁾ Gurghiu Forestry High School, Romania.
varga_mrc@yahoo.com

Bulletin UASVM Horticulture 71(1) / 2014
Print ISSN 1843-5254, Electronic ISSN 1843-5394

Abstract

Melolontha melolontha L. polyphagous pest specie prejudicially both in the larval stage and in the adult stage, it is found in Romania everywhere, especially near mixed forests of oak and beech. We monitored this specie in the lands of Gurghiu Forestry High School nursery and in outside lands, by detecting the presence of grubs, pupae or adults using 10 control points inside and outside the nursery. In 2012, the value of the infestation analysis parameter is 1.94 larvae / m², which means that it is maintained a strong level of infestation. The level of infestation of the forestry nursery field with *Melolontha melolontha* larvae is strong in both years of observations, the average number of larvae transformed into the third instar larvae, on one m² in 2011 being 0.54 larvae/m² and in 2012 0.75 larvae/m².

Keywords: *Melolontha melolontha*, monitoring, larvae, nursery.

Introduction. In the last 20 years cockchafer larvae caused considerable losses in the forestry sector at European level (Głowacka and Sierpińska, 2012). In the field of nursery Gurghiu we have faced with the common European cockchafer *Melolontha melolontha* L. his presence has been detected by the existence of larvae, pupae and adults, during tillage, also were identified dried tree seedlings with eaten roots. The economic damage caused by these pests is very high, because the value of planting material is very high. (Oltean, 2005).

Aims and objectives. The purpose of the research paper was the monitoring of the specie *Melolontha mellolontha* L. in Gurghiu Forestry High School located in Gurghiu town (eastern part of Mureş county). These pests are absolutely necessary to monitor because they heavily depreciate the didactic material in the nursery of Gurghiu Forestry high.

Materials and methods. Monitoring of this pest is possible using light traps (Švestka, 2010; Puskás and Nowinszky, 2011). The detection of the pest was made by surveys (in august) that consisted in digging 10 survey pits in both locations in order

to identify the presence of grubs, pupae or adult beetles. The hols had 1 x 1 x 1 m dimensions. The medium number for each age of larva and the density of population was established on m². The number of first and second instar larvae was transformed in third instar larvae using the scale 5: 3: 1. All the third instar larvae = $L_1 \times 1/5 + L_2 \times 1/3 + L_3$.

Results and Discussions. In tables 1 and 2 are presented the results regarding the number of *Melolontha melolontha* larvae in all the surveys made in each experimental year in the nursery and the land near her. From table 1 it can be seen, that in the nursery, the third instar larvae total number on one m² of soil in year 2011 was 0.54 larvae/m², which shows a strong level of infestation. In year 2012 the value of infestation was 0.75 larvae/m², which means that the high level of infestation is maintained the following year. In table 2 it can be observed that outside the nursery, the total number in year 2011 was third times higher (1.66 larvae/m²) the level of infestation being very high. Švestka in 2006 shows that this specie *Melolontha melolontha* L. in the conditions of Central Europe prefer locations with light soils and sunny exposures, often these areas

Tab. 1 Infestation degree of the forest nursery with *Melolontha melolontha* larvae

Survey no.	Year 2011				Year 2012			
	Instar			Total no. of larvae transf. in III age	Instar			Total no. of larvae transf. in III age
	I	II	III		I	II	III	
1	-	-	-	-	1	-	-	0.20
2	2	-	-	0.40	-	1	-	0.33
3	-	1	-	0.33	-	-	-	-
4	1	-	1	1.20	2	1	1	1.73
5	-	1	-	0.33	1	-	-	0.20
6	1	-	1	1.20	-	2	-	0.66
7	-	2	-	0.67	-	-	1	1.00
8	1	-	-	0.20	2	2	-	1.06
9	2	1	-	0.53	-	1	1	1.33
10	-	1	-	0.33	3	1	-	0.96
Total	7	6	2	0.54 larvae/m ²	9	8	3	0.75 larvae/m ²

Tab. 2 Infestation degree of the land surrounding the nursery with *Melolontha melolontha* larvae

Survey no.	Year 2011				Year 2012			
	Instar			Total no. of larvae transf. in III age	Instar			Total no. of larvae transf. in III age
	I	II	III		I	II	III	
1	-	1	1	1.33	1	1	1	1.53
2	2	3	1	2.40	3	-	1	1.60
3	3	1	-	0.93	2	2	1	2.10
4	2	-	1	1.40	3	2	-	1.26
5	-	2	-	0.67	4	-	2	2.80
6	1	-	1	1.20	1	2	-	0.87
7	3	4	2	3.93	-	3	2	2.00
8	4	2	-	1.45	2	1	2	2.73
9	1	1	-	0.53	3	2	-	1.26
10	2	1	2	2.73	3	2	1	2.27
Total	18	15	8	1.66 larvae/ m ²	22	15	10	1.94 larvae/m ²

are designated for nursery and these soils attract the females inside the nurseries and not the soils with high degree of vegetation cover.

Conclusion. The level of infestation with *Melolontha melolontha* larvae in the forestry nursery and in the land surrounding the nursery was strong respectively very strong in the experimental years. The land surrounding the educational nursery is a continuous source of infestation of the nursery with different pest species.

REFERENCES

- Głowacka B. and A. Sierpińska (2012). Control of adult cockchafer *Melolontha* spp. with Mospilan 20 SP. Folia Forestalia Polonica. 54 (2): 109–115.
- Oltean, I. (2005). Specific Entomology. AcademicPres Publishing House, 266 p.
- Puskás, J. and L. Nowinszky (2011). Light-trap Catch of the Common Cockchafer (*Melolontha melolontha* L.) Depending on the Atmospheric Ozone Concentration Acta Silv. Lign. Hung. 7: 147–150.
- Švestka, M. (2006). Distribution of tribes of cockchafer of the genus *Melolontha* in forests of the Czech Republic and the dependence of their swarming on temperature. Journal of Forest Science. 52 (11): 520–530.
- Švestka, M. (2010). Changes in the abundance of *Melolontha hippocastani* Fabr. and *Melolontha melolontha* (L.) (*Coleoptera: Scarabeidae*) in the Czech Republic in the period 2003–2009. Journal of Forest Science. 56 (9): 417–428.