

## THE BEHAVIOR OF SOME PLANT SPECIES TO SNAILS ATTACK

**Maria Călin, Tina Oana Cristea, Silvica Ambarus, Creola Brezeanu,  
Petre Marian Brezeanu, Maria Prisecaru, George Florin Șova**

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### INTRODUCTION

Some snail species cause severe loss to many garden of flower and vegetable crops (Maria Calin, 2005, Allen and colab., 1988). Snails as: *Helix pomatia* L. and *Cepaea hortensis* Müll. are important pests for many cultivated and wild plant species. They can be easily followed because they leave behind a mark of slime, which actually is the mucus produced by the foot to ease the movement. They usually are active during night time, but they can be out on a rainy day or in early mornings, especially if it is a cloudy day.

Their predators are insects, toads, centipedes, ground beetles, mice and birds, being the eggs the most attacked.

Colour polymorphisms in prey could be maintained if predators concentrate on common morphs and confer a selective advantage on rare morphs. Wild birds prefer the familiar morph when feeding on pastry-filled shells of the landsnail *Cepaea hortensis* (Allen et al., 1988)

Natural enemies will rarely eradicate all eggs or larvae, but may reduce infestations to below economic threshold if predators and parasitoids are not disrupted by broad-spectrum insecticides.

The amount of disruption that insecticides cause to natural enemy activity varies depending on which chemicals are used and which natural enemies are active.

Population of damage snails still increased because were applied large amounts of insecticides which kill their natural enemies, created insecticide resistance in pest populations and affected nutritional and bioclimatic factors in host plants (Calin, 2005).

Our research focused on monitoring the attack of this pest in flowers and vegetables cultivate in people garden.

### MATERIAL AND METHODS

During 2012 – 2013 years, open field experiments were performed in Vegetable Research-Development Station Bacau - Romania, and Calarasi county in order to evaluate the attack of snails species in flower and vegetable crops.

The snails attack was monitorised at the following species:

- flower: *Amaranthus caudatus* L. *Callistephus chinensis* Nees, *Chrysanthemum coronarium* L., *Cosmos bipinatus* Cav., *Dyanthus caryiophyllus* L., *Nicotiana alata* Link et Otto, *Phlox drummondii* Hook., *Zinnia elegans* Jack., *Solidago canadensis* L., *Dahlia variabilis* L., *Lilium candidum* L., *Hosta plantaginea* (Lam.) Asch.

- vegetables: *Phaseolus vulgaris* L., *Lactuca sativa* L., *Pisum sativum* L., *Capsicum annum* L..

The observations were accomplished every 10 days during a first decade of May to first decade of July period.

The attack estimation was determined using the following indicators:

- Frequency of attack (F%),
- Intensity of attack (I%),
- Degree of attack (DA%).

The results obtained will be use in control of pests in order to decrease the number of treatments in the organic and conventional agriculture of gardens.

### RESULTS AND DISCUSSIONS

Our observations revealed the identification of two species of snails: *Helix pomatia* L. and *Cepaea hortensis* (Müll.).

The report between species *H. pomatia* and *C. hortensis* was 10:0,2.

The attack comes after planting in May and continues until the end of culture (Table 1).

Table 1. The attack degree of snails

Specie of plant	Attack		
	F%	I %	DA%
1	2	3	4
<i>Helix pomatia</i>			
<i>Amaranthus caudatus</i>	0	0	0
<i>Callistephus chinensis</i>	0	0	0
<i>Chrysanthemum coronarium</i>	0	0	0
<i>Cosmos bipinatus</i>	0	0	0
<i>Dyanthus caryiophyllus</i>	0	0	0
<i>Nicotiana alata</i>	0	0	0
<i>Phlox drummondii</i>	15,2	7,6	1,2
<i>Zinnia elegans</i>	0	0	0
<i>Solidago canadensis</i>	0	0	0
<i>Dahlia variabilis</i>	96,4	20,2	19,5

1	2	3	4
<i>Lilium candidum</i>	74,3	50,3	37,4
<i>Hosta plantaginea</i>	98,3	6,4	6,3
<i>Phaseolus vulgaris</i>	95,9	84,6	81,1
<i>Lactuca sativa</i>	98,7	29,3	28,9
<i>Pisum sativum</i>	11,4	7,6	0,9
<i>Capsicum annuum</i>	0	0	0
<i>Cepaea hortensis</i>			
<i>Amaranthus caudatus</i>	0	0	0
<i>Callistephus chinensis</i>	0	0	0
<i>Chrysanthemum coronarium</i>	28,3	5,2	1,5
<i>Cosmos bipinatus</i>	0	0	0
<i>Dyanthus caryophyllus</i>	0	0	0
<i>Nicotiana glauca</i>	0	0	0
<i>Phlox drummondii</i>	7,2	4,3	0,3
<i>Zinnia elegans</i>	0	0	0
<i>Solidago canadensis</i>	0	0	0
<i>Dahlia variabilis</i>	0	0	0
<i>Lilium candidum</i>	0	0	0
<i>Hosta plantaginea</i>	0	0	0
<i>Phaseolus vulgaris</i>	0	0	0
<i>Lactuca sativa</i>	0	0	0
<i>Pisum sativum</i>	0	0	0
<i>Capsicum annuum</i>	0	0	0

F% - frequency, I% - intensity, DA% - degree of attack (%)

Climatic conditions were very favorable for pests with a lot of rains and humidity. So that the attack of *H. pomatia* was very high in *Dahlia variabilis* - 19,5 %, *Lilium candidum* - 37,4 %, *Phaseolus vulgaris* - 81,1 %, *Lactuca sativa* - 28,9 %. Other species of plants were also attacked: *Phlox drummondii* 1,2%, *Hosta plantaginea* 6,3%, *Pisum sativum* 0,9%.

The high attack at previous mentioned species (fig. 1) determined the search and removal of snails from crops.

On observe that the number of *Cepaea hortensis* attacked species was very small. Two species has snail attack: *Chrysanthemum coronarium* 1,5 % and *Phlox drummondii* 0,3 %.

This snail specie do not have economic importance.

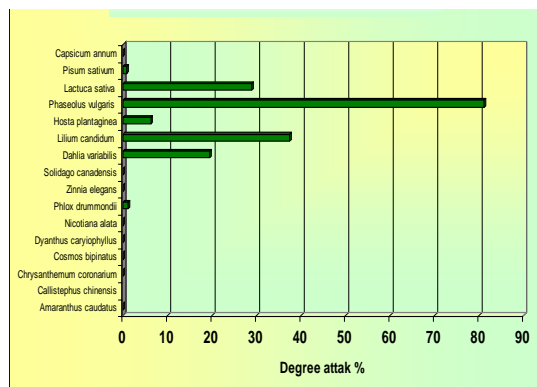


Fig. 1. The degree attack of *Helix pomatia*

## CONCLUSIONS

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## ABSTRACT

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#### AUTHOR'S ADDRESS

CĂLIN MARIA, CRISTEA TINA OANA,  
 AMBARUS SILVICA, BREZEANU CREOLA,  
 BREZEANU PETRE MARIAN, ȘOVA GEORGE  
 FLORIN - Vegetable Research and Development  
 Station Bacau, Calea Barladului, No. 220, Bacau,  
 600388, e-mail: [sclbac@legumebac.ro](mailto:sclbac@legumebac.ro)

PRISECARU MARIA - „Vasile Alecsandri”,  
 University of Bacau, Faculty of Science, Department  
 of Biology, Marasesti Street, no. 157, Bacau,  
 Romania, e-mail: [prisecaru\\_maria@yahoo.com](mailto:prisecaru_maria@yahoo.com)