RESEARCH ON ENTOMOFAUNA OF THE RUNNER BEAN CULTURE (*PHASEOLUS COCCINEUS* L.) IN POLYTUNNELS

CERCETĂRI CU PRIVIRE LA PRINCIPALII DĂUNĂTORI DIN CULTURA DE FASOLE MARE (*PHASEOLUS COCCINEUS* L.) ÎN SOLAR

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Abstract. *This paper presents a study on the main runner bean crop insects (Phaseolus coccineus L.) cultivated in polytunnels, in order to determine present entomofauna in the conditions of the "V.Adamachi" farm,University of Agricultural Sciences and Veretinary Medicine of Iasi. The collection was performed using Barber insect traps. The results revealed a great diversity of species.*
Key words: *aphids, Barber traps, chemical treatments*

Rezumat. *Lucrarea prezintă un studiu asupra principalelor insecte din cultura de fasole mare (Phaseolus coccineus L.) cultivată în solar, cu scopul de a stabili entomofauna prezentă, în condițiile din ferma "V. Adamachi" a Universității de Științe Agricole și Medicină Veterinară, Iași. Colectarea insectelor a fost realizată folosind capcane de tip Barber. Rezultatele au pus în evidență o diversitate de specii de insecte.*
Cuvinte cheie: *afide, capcane Barber, tratamente chimice*

INTRODUCTION

In Romania, the culture of runner bean (*Phaseolus coccineus* L.) pods in protected areas is not known, although the results from other countries recommend this culture system (Laitenberger, 2013; Popa, 2010, Ruști, 2007).

Research focused on this topic have been conducted worldwide, but in our country there were no concerns in this regard, one of the reasons is probably represented by the confusion between runner bean and common bean (Hamburdă et al., 2014; Munteanu, 1985 , Popa and Munteanu, 2009).

The culture used different varieties being found both climbing as Apollo White, Celebration, Desiree, Polestar, Scarlet Empire, Moonlight Lady Di Firestorm etc. and as well as dwarf varieties, including Jackpot and Hestia.

Our research presents a study on the main runner bean crop insects cultivated in polytunnels, in order to determine present entomofauna in the conditions of the "V.Adamachi" farm, University of Agricultural Sciences and Veretinary Medicine of Iaşi.

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MATERIAL AND METHOD

The experiment was organized in a polytunne, with dimensions of 40 x 10 m, in the experimental farm "V. Adamachi "University of Agricultural Sciences and Veretinary Medicine of Iasi, in 2014. The biological material was represented by four runner bean pods varieties, from the United Kingdom: Lady Di, Desiree, Polestar, White Apollo. The experiment was organized in a device plots with three repetitions, each plot was planted with six nests. Experience is a two-factor type corresponding to the two factors studied:

- Factor A - range used four graduations: a1 = Lady Dy; a2 = Desiree;a3 = Polestar; a4 = White Apollo.

- Factor B - density culture expressed through three graduations:b1 = 33000 plants / ha (100 x 30 cm); b2 = 25000 plants / ha (100 x 40 cm); b3 = 20000 plants / ha (100 x 50 cm).

Culture was established by planting seedlings in nests, on June 3, in rows spaced at 100 cm, two plants in the nest, the distances determined by the experimental protocol. To collect and determine entomofauna from this experimental field, Barber traps were used and were installed on 07/01/2014. Were placed two such traps for each variant. Approximately every three weeks samples were collected on data 19/07/2014, 08/14/2014, 12/09/2014. The main research method used was observation. Determination of species and their systematic classification was carried out in the Laboratory of Entomology of University of Agricultural Sciences and Veretinary Medicine of Iasi,according to the literature (Gaetan du Chatenet, 1990; Panin, 1951; Panin, 1952; Reitter, 1908; Rogojanu and Perju, 1979).

RESULTS AND DISCUSSIONS

Entomofauna collected from runner bean crop grown in polytunne, belongs to nine orders: *Coleoptera, Diptera, Hymenoptera, Homoptera, Isopoda, Lepidoptera, Heteroptera,Pulmonata and Rodentia* and the highest number of insects, 661, was recorded in order *Homoptera* (tab.1; fig. 2).

Order *Homoptera*, *Aphididae* family - In this order will rank aphids or plant lice. Widespread species, almost cosmopolitan, though most are found in temperate zones. Are phytophagous species, which feed with plant juices, reinforced with a pierced mouth conformed to sting and suck. They had a parallel development with gymnosperms and angiosperms, which commonly they attack. Their attack is so diverse that it can say that there are no plants in these groups that are not attacked by aphids. Insects are small, ranging in size from 0.5 to 8 mm. The body is oval, globular or ellipsoidal. Body color is variable: green, brown, black, or bright colors (orange, red), etc. The skin is weak, so that, normally, the body is easy. The skin may have some decorations (pear, spines, scales) or is covered with a waxy secretion. Cerigene glands are grouped and metameric arranged (fig. 1).

Black bean aphid, *Aphis fabae* Scop., attacks the leaves, flowers and pods that sting and they suck sap. They are twisted and dried and appears the honeydew which favors the develop of bacteria and fungi. Wet and cold seasons intensifies attack. Pest overwinters as eggs on various shrubs and spring wings

appearing form which attack plants are visible (had 2 mm long, black legs and short antennae) and they also are vectors for mosaic virus (Tălmaciu, 2003).

Fig. 1 - Aphids attack (original photo)

Table 1

Entomofauna collected, number of individuals belonging to each order

Orders	19.07.2014	14.08.2014	12.09.2014	Total
Coleoptera	3	4	1	8
Diptera	98	54	214	393
Hymenoptera	38	15	12	65
Homoptera	52	215	394	661
Isopoda	6	-	12	18
Lepidoptera	4	-	9	13
Heteroptera	-	-	2	2
Pulmonata	36	13	18	67
Rodentia	-	1	-	1

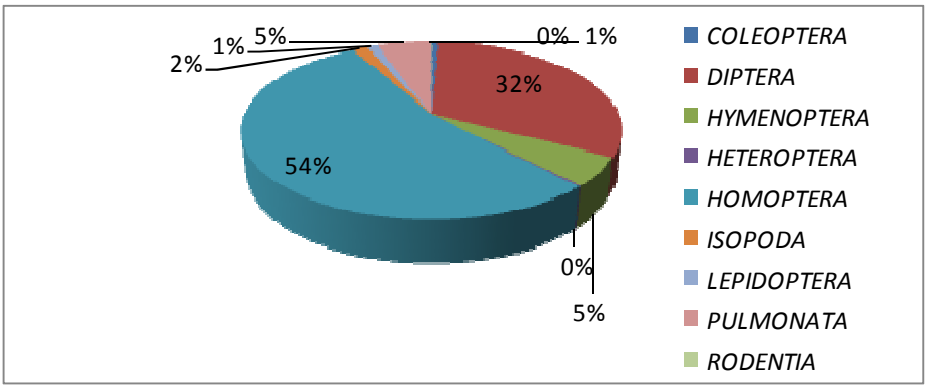

Fig.2 - Graphic representation of data collected

During the growing season following treatments were applied *(tab. 2):*

Table 2

Chemical treatmets applied

NAME OF PRODUCT	CONCENTRATION	APPLICATION DATE
Actara	0.02%	18.06.2014
Vertimec	0.08%	25.06.2014
Calypso	0.02%	18.07.2014
Actara	0.02%	15.09.2014
Faster	0.03%	15.09.2014

CONCLUSIONS

1. Runner bean cultivated in polytunne presented a diverse entomofauna.

2. Runner bean grown in popytunne is prone to attack by a large number of pests.

3. Stage of growth and development of culture is directly proportional to entomofauna collected, the number of insects belonging to each order.

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