# OBSERVATIONS REGARDING THE ENTOMOFAUNA OF BEETLES ORGANIC POTATO CROPS BELONGING THE SCDA SUCEAVA

**George RACU[1], Mihai TĂLMACIU[1], Nela TĂLMACIU[1]**

e-mail: georgeraku@yahoo.com

**Abstract**

The observations regarding the epigenous coleopteran from the potato cultures at the Agriculture Research and Development Station of Suceava were made in the year 2011 in the period of may-august with the Barber type traps. In this period it were made 6 hief sampling at the following dates: 18.05, 15.06, 22.06, 12.07, 27.07, 23.08. At the each harvesting date, the coleoptera species were separated from the rest of the material. In all the observation period it were collected a number of 1435 of coleoptera species. The identified coleoptera species were: Harpalus distinguendus Duft. (920 species), Pterostichus cupreus L. (335 species) and Anisodactylus signatus Panz. (180 species).

**Keywords:** entomofauna, potato, ecological technology

Potato is one of the plants brought from America to Europe, where far more is grown on small surfaces (Muntean SL, 1997). Being a native plant of the "new world", and due to its food value, industrial and agricultural potato was considered one of the most valuable acquisitions to mankind. It is estimated that in the mountains of northern coastal Peru, the potato is grown IV-VI through centuries AD, and the highland plateaus of central, around the year 1000 AD (Catelly T., 1988).

In Europe, the potato was first introduced in Spain (1565) using material from Peru. In new conditions spread quite quickly in culture, but only in 1573 represent trade item (Velican V., 1965).

## MATERIAL AND METHOD

The research was conducted in 2011 in potato crops in the Agricultural Research and Development Station of Suceava. To collect insects were used Barber traps (*figure 1*) method is used to collect epigeal fauna harmful and useful in potato crops. Each trap was used with added water dishwashing liquid for retaining insects and prevent water evaporation. Traps were operated from May until August. Trapping material was harvested every two weeks, was brought to the laboratory, sorted and determined. Determination of the material was done with Panin's Identification Manual (1951), a German Identification Manual "Fauna Germany" (Reitter, Vol I, 1908), the French Identification Manual "Guide des coleopteres d' Europe" (Goetan du Chatenent, 1990) and the work" beetles determinants of Romania" (Bobarnac, Stănoiu, Nastase, 1994).

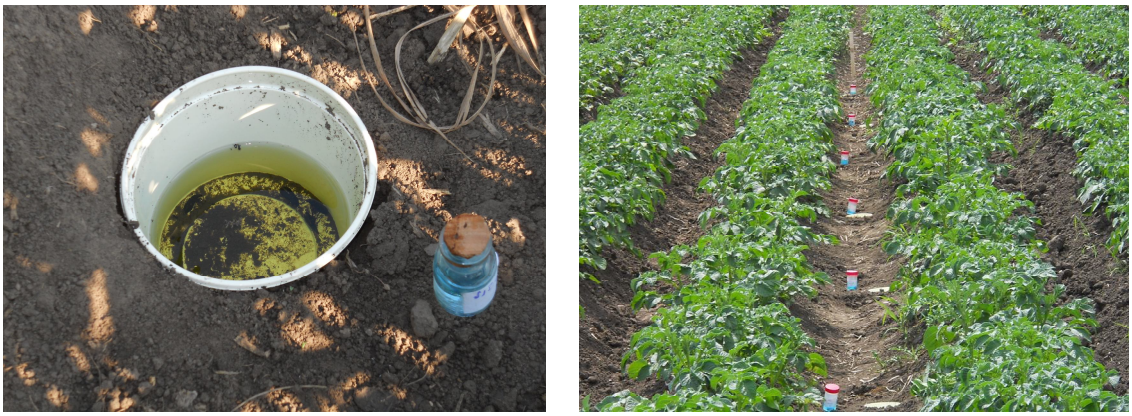

Figure 1 **Collection of entomological material with soil traps Barber**

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

Table 1

**Species collected from control variant of the the SCDA Suceava in 2011**

| Nr. crt. | Data collections | Order | Species\ family | No. samples | Total |
|---|---|---|---|---|---|
| 1 | 18.05.2011 | *Coleoptera* | *Anisodactylus signatus* | 30 | 85 |
| | | | *Pterostichus cupreus* | 25 | |
| | | *Diptera* | *Anthomyidae* | 19 | |
| | | *Arachnida* | *Arachnidae* | 11 | |
| 2 | 15.06.2011 | *Coleoptera* | *Anisodactylus signatus* | 27 | 112 |
| | | | *Pterostichus cupreus* | 30 | |
| | | | *Aphtona euphorbiae* | 23 | |
| | | *Hymenoptera* | *Formicidae* | 12 | |
| | | *Diptera* | *Anthomyidae* | 11 | |
| | | *Arachnida* | *Arachnidae* | 9 | |
| 3 | 22.06.2011 | *Coleoptera* | *Anisodactylus signatus* | 25 | 46 |
| | | | *Pterostichus cupreus* | 12 | |
| | | | *Aphtona euphorbiae* | 9 | |
| 4 | 12.07.2011 | *Coleoptera* | *Harpalus distinguendus* | 18 | 58 |
| | | | *Anisodactylus signatus* | 22 | |
| | | | *Pterostichus cupreus* | 8 | |
| | | *Hymenoptera* | *Formicidae* | 6 | |
| | | *Diptera* | *Anthomyidae* | 4 | |
| 5 | 27.07.2011 | *Coleoptera* | *Anisodactylus signatus* | 16 | 19 |
| | | *Hymenoptera* | *Formicidae* | 3 | |
| 6 | 23.08.2011 | *Coleoptera* | *Anisodactylus signatus* | 7 | 7 |

Table 2

**Species collected in the variant treated in the the SCDA Suceava in 2011**

| Nr. crt. | Data collections | Order | Species\ family | No. samples | Total |
|---|---|---|---|---|---|
| 1 | 18.05.2011 | *Coleoptera* | *Anisodactylus signatus* | 10 | 17 |
| | | | *Pterostichus cupreus* | 5 | |
| | | *Diptera* | *Anthomyidae* | 2 | |
| 2 | 15.06.2011 | *Coleoptera* | *Anisodactylus signatus* | 6 | 25 |
| | | | *Pterostichus cupreus* | 4 | |
| | | | *Aphtona euphorbiae* | 9 | |
| | | *Hymenoptera* | *Formicidae* | 2 | |
| | | *Diptera* | *Anthomyidae* | 4 | |
| 3 | 22.06.2011 | *Coleoptera* | *Anisodactylus signatus* | 5 | 11 |
| | | | *Pterostichus cupreus* | 4 | |
| | | | *Aphtona euphorbiae* | 2 | |
| 4 | 12.07.2011 | *Coleoptera* | *Harpalus distinguendus* | 5 | 23 |
| | | | *Anisodactylus signatus* | 6 | |
| | | | *Pterostichus cupreus* | 8 | |
| | | *Diptera* | *Anthomyidae* | 4 | |
| 5 | 27.07.2011 | *Coleoptera* | *Anisodactylus signatus* | 3 | 3 |
| 6 | 23.08.2011 | *Coleoptera* | *Anisodactylus signatus* | 2 | 2 |

Table 3

**Dynamics and abundance of species collected in the control variant potato crops in the the SCDA Suceava in 2011**

| Order | Species\ family | No. samples | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| *Coleoptera* | *Anisodactylus signatus* | 54 | 50 | 44 | 23 | 28 | 20 | 12 | 227 |
| | *Pterostichus cupreus* | 32 | 24 | 13 | 11 | 12 | 7 | 16 | 115 |
| | *Aphtona euphorbiae* | - | 1 | 7 | - | 1 | - | - | 9 |
| | *Harpalus distinguendus* | - | 24 | 31 | 34 | 19 | 21 | - | 129 |
| | *Amphynolon solstitialis* | - | - | 1 | - | 1 | - | - | 2 |
| | *Bembidion properans* | 2 | 1 | - | - | 4 | - | - | 7 |
| *Hymenoptera* | *Formicidae* | - | - | - | 1 | - | - | 2 | 3 |
| *Diptera* | *Anthomyidae* | - | - | - | 1 | - | - | - | 1 |
| *Arachnida* | *Arachnidae* | - | - | - | 1 | - | - | - | 1 |
| Total | | 88 | 100 | 96 | 71 | 65 | 48 | 30 | 494 |

Table 4

**Dynamics and abundance of species collected in the variant treated potato crops in the the SCDA Suceava in 2011**

| Order | Species\ family | No. samples | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| *Coleoptera* | *Anisodactylus signatus* | 12 | 50 | 2 | 11 | 16 | 25 | 22 | 138 |
| | *Pterostichus cupreus* | 2 | 6 | 2 | 11 | 2 | - | - | 23 |
| | *Aphtona euphorbiae* | - | 1 | 7 | - | 1 | - | - | 9 |
| | *Harpalus distinguendus* | - | 1 | - | - | - | - | - | 1 |
| *Hymenoptera* | *Formicidae* | - | - | - | 1 | - | - | 2 | 3 |
| *Diptera* | *Anthomyidae* | - | - | - | 1 | - | - | - | 1 |
| *Arachnida* | *Arachnidae* | - | - | - | 1 | - | - | - | 1 |
| Total | | 14 | 58 | 11 | 25 | 19 | 25 | 24 | 176 |

## RESULTS AND DISCUSSION

Regarding the species with the highest number of specimens collected from untreated control variant is as follows (*Table 1*):

The first harvest on 18.05 were collected 85 specimens belonging to the orders Coleoptera species *Pterostichus cupreus Anisodactylus signatus* 30 copies and 25 species of the order Diptera were harvested 19 species and 11 species of the order Arachnida.

At the second harvest 15.06 were collected 112 specimens belonging to the orders Coleoptera species *Anisodactylus signatus* 27 species, *Pterostichus cupreus* 30 species *Pterostichus cupreus* 23 species, *Aphtona euphorbiae*, 12 species of the order Hymenoptera, Diptera 11 species Arachnida 9 species.

At the third harvest of 22.06 were collected a total of 46 specimens belonging to the order Coleoptera species *Anisodactylus signatus* 25 species, *Pterostichus cupreus* 12 species, *Aphton euphorbiae* 9 species.

Fourth harvest on 12.07 were collected a total of 58 specimens belonging to the order Coleoptera species *Harpalus distinguendus* 18 species, 22 species *Anisodactylus signatus*, *Pterostichus cupreus* 8 species 6 species order Hymenoptera and Diptera order 4 species.

Fifth on the 27.07 harvest were collected a total of 19 specimens belonging to the orders Coleoptera species *Anisodactylus signatus* with 16 species and 3 species of the order Hymenoptera.

In the sixth harvest was collected a total of seven specimens of the species belonging to the order Coleoptera *Anisodactylus signatus*.

Regarding the species with the highest number of specimens collected in the variant treated is as follows ( Table 2):

The first harvest on 18.05 were collected 17 specimens belonging to the orders Coleoptera species *Pterostichus cupreus, Anisodactylus signatus* 10 species and 5 species of the order Diptera were harvested 2 species.

At the second harvest 15.06 samples were collected 25 species belonging to the orders Coleoptera *Anisodactylus signatus* 6 species, *Pterostichus cupreus* 4 species, *Aphton euphorbiae* 9 species, 2 species of the order Hymenoptera, Diptera 4 species.

At the third harvest of 22.06 were collected a number of 11 specimens belonging to the order Coleoptera species *Anisodactylus signatus* 5 species, *Pterostichus cupreus* 4 species, 2 species *Aphtona euphorbiae*.

Fourth harvest on 12.07 were collected a total of 23 specimens belonging to the order Coleoptera species *Harpalus distinguendus* 5 species, *Anisodactylus signatus* 6 species *Pterostichus cupreus* 8 species 4 species of the order Diptera.

In the fifth 27.07 harvesting time were collected by a number of three copies of the species belonging to the order Coleoptera *Anisodactylus signatus* 3 species.

In the sixth harvest was collected a total of two copies of the species belonging to the order Coleoptera *Anisodactylus signatus*.

In 2011 the potato crops in the Agricultural Development Research Station Suceava, the untreated control variant were collected 494 specimens belonging to the five orders: Coleoptera, Hymenoptera, Diptera and Arachnida. The species with the highest number of copies were *Anisodactylus signatus* 227 species, 115 species *Pterostichus cupreus*, *Harpalus distynguendus* 129 species. Other species have a smaller number of samples (*table 3*).

Variant treated were collected 176 specimens belonging to the orders Coleoptera, Hymenoptera, Diptera and Arachnida. The species with the highest number of species were *Anisodactylus signatus* 138 species, 23 species *Pterostichus cupreus* and *Aphtona euphorbiae* with a total of nine species. Other species were collected with a small number of species is between 1-3 (*table 4*).

## CONCLUSIONS

In 2011 the potato crop in the the SCDA Suceava untreated control variant were performed a total of six harvests where they collected 494 specimens belonging to four orders: Coleoptera, Hymenoptera, Diptera and Arachnida.

Variant treated were performed a total of six harvests where they collected a total of 176 specimens belonging to four orders: Coleoptera, Hymenoptera, Diptera and Arachnida.

The most common species collected belong to the order Coleoptera. The species with the highest number of specimens collected were *Anisodactylus signatus* 180 species, 335 species *Pterostichus cupreus* and *Harpalus distynguendus* 920 species.

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