

OBSERVATIONS REGARDING THE ENTOMOFAUNA OF COLEOPTERAS WITHIN SOME AGRICULTURAL CROPS FROM THE NORTH-EAST PART OF PORTUGAL

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Abstract

The aim of this research was that to identify the entomofauna of *Carabidae* existing within the agricultural crop taken into the study: vineyard groove by the mean of soil traps. Each 5 traps were mounted inside 3 subplots, namely: leguminosae+graminias, leguminosae and natural. The area of work was about 1.30 ha, each subplot having a surface of 4.000 m². The researches were carried out within Quinta da Granja farm which is located very close to Alijo city, at two dates: May 18th and May 22nd of 2017. To prevent the maceration of insects, a solution consisting of water and formalin was added inside each trap. After carrying out the experiments within the field, the insects were brought in the Laboratory of Entomology in order to be counted and identified. From the *Coleoptera* order, species with the biggest number of samples were: -within the leguminosae+graminias subplot: *Carabidae* family (92), *Scarabaeidae* (45), *Staphylinidae* (25) and *Dermestidae* (12). From the *Carabidae* family, species with the biggest number of samples were: *Harpalus tardus*-33 and *Carabus violaceus*-12 (for the date of May 18th); *Carabus violaceus*-24 (for May 22nd); - within the leguminosae subplot: *Carabidae* (154), *Staphylinidae* (101) and *Scarabaeidae* (71) and *Cerambycidae* (32) and *Chrysomelidae* (27) and *Dermestidae* (19). From the *Carabidae* family, species with the biggest number of samples were: *Pterostichus vernalis*-63 and *Poecilus versicolor*-32 (for May 18th); *Pterostichus cupreus*-26 (for May 22nd); - within the natural subplot: *Carabidae* (128), *Chrysomelidae* (72) and *Scarabaeidae* (54) and *Dermestidae* (22). From the *Carabidae* family, species with the biggest number of samples were: *Brachimus crepitans*-24 (for May 18th); *Anisodactylus binotatus*- 48 (for May 22nd).

Key words: soil traps, *Carabidae*, *Scarabaeidae*, *Dermestidae*

Ground beetles (*Carabidae*) are a large, cosmopolitan family of beetles, with more than 40,000 species around the world, approximately 2,000 being found in North America and about 2,700 in Europe. Although their body shapes and coloring vary somewhat, most are shiny black or metallic and have ridged wing covers (elytra). The elytra are fused in some species, particularly the large Carabinae, rendering the beetles unable to fly.

Dermestidae are a family of Coleoptera that are commonly referred to as skin beetles. There are about 500-700 species worldwide. They can range in size from 1 to 12 mm. Key characteristics for adults are round oval shaped bodies covered in scales or setae. The usually clubbed antennae feet into deep grooves. The hind femora also fit into recesses of the coxa. Larvae are scarabaeiform and also have setae.

Scarabaeidae consists of more than 30,000 species of beetles worldwide, they are often called scarab beetles. They are stout bodied beetles, many with bright metallic colours, measuring between

1.5 and 160 mm. They have distinctive clubbed antennae composed of plates called lamellae which can be compressed into a ball or fanned out like leaves to sense odours. The front legs of many species are broad and adapted for digging.

MATERIAL AND METHOD

In order to carry out the researches, the insects were sampled from one station: Quinta da Granja, belonging to University of Trás os Montes e Alto Douro, by using the method of soil traps.

The experiments were carried out at May 18th and May 22nd of 2017. Each 5 traps were placed within 3 subplots: leguminosae+graminias, leguminosae and natural. In order for insects to be well conserved, a liquid of water+formalina was added.

After finishing the experiments, the insects were brought into the Laboratory of Entomology to be counted and identified.

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RESULTS AND DISCUSSIONS

The samples of the biological material were carried out at May 18th and May 22nd of May of 2017. Within the leguminosae+graminias subplot, the situation looks as follows:

- At the date of May 18th of 2017: there were 103 samples identified from Coleoptera order, belonging to *Carabidae* family (55), *Scarabaeidae* (21), *Staphylinidae* (19) and *Dermestidae* (8).

- From the *Carabidae* family, 33 samples belong to *Harpalus tardus* species, 12 samples belong to *Carabus violaceus* species, 6 samples belong to *Loricera pilicornis* species and 4 samples belong to *Anisodactylus binotatus* species;

At the date of May 22nd of 2017: there were 71 samples identified from *Coleoptera* order, belonging to *Carabidae* family (37), *Scarabaeidae* (24), *Staphylinidae* (6) and *Dermestidae* (4).

- From the *Carabidae* family, 24 samples belong to *Carabus violaceus* species, 7 samples belong to *Harpalus tardus* species, 5 samples belong to *Loricera pilicornis* species and 1 sample belongs to *Brachinus crepitans* species.

Within the leguminosae subplot, the situation looks as follows:

- At the date of May 18th of 2017: there were 204 samples identified from *Coleoptera* order, belonging to *Carabidae* family (104), *Staphylinidae* (80), *Scarabaeidae* (51), *Cerambycidae* (18) and *Chrysomelidae* (17) and *Dermestidae* (14);

- From the *Carabidae* family, 63 samples belong to *Pterostichus vernalis* species, 32 samples belong to *Poecilus versicolor* species and 9 samples belong to *Amara aenea* species.

At the date of May 22nd of 2017: there were 120 samples identified from *Coleoptera* order, belonging to: *Carabidae* family (50), *Staphylinidae* (21), *Scarabaeidae* (20), *Cerambycidae* (14), *Chrysomelidae* (10) and *Dermestidae* (5).

- From the *Carabidae* family, 26 samples belong to *Pterostichus cupreus*, 11 samples belong to *Anisodactylus binotatus*, 8 samples belong to *Brachinus crepitans*, 3 samples belong to *Bembidion properans*, and 2 samples belong to *Bembidion lampros*.

Table 1

Entomofauna of Coleopteras (Coleoptera) sampled within leguminosae-graminias at 18th of May of 2017

CURRENT NUMBER	FAMILY	SPECIES	NUMBER OF SAMPLES	TOTAL SAMPLES
1.	CARABIDAE	HARPALUS TARDUS	33	55
		CARABUS VIOLACEUS	12	
		LORICELA PILICORNIS	6	
		ANISODACTYLUS BINOTATUS	4	
2.	SCARABAEIDAE	-	21	21
3.	STAPHYLINIDAE	-	19	19
4.	DERMESTIDAE	-	8	8
TOTAL ENTOMOFAUNA OF COLEOPTERAS				103

Within the natural subplot, the situation looks as follows:

- At the date of May 18th of 2017: there were 151 samples identified from *Coleoptera* order, belonging to *Carabidae* family (60), *Chrysomelidae* (38), *Scarabaeidae* (35) and *Dermestidae* (18).

- From the *Carabidae* family, 24 samples belong to *Brachinus crepitans*, 16 samples belong to *Amara aenea* and 12 samples belong to *Amara ovata* and 8 samples to *Harpalus tardus* species.

- At the date of May 22nd of 2017: there were 125 samples identified from *Coleoptera* order, belonging to *Carabidae* family (68), *Chrysomelidae* (34), *Scarabaeidae* (19) and *Dermestidae* (4).

- From the *Carabidae* family, 48 samples belong to *Anisodactylus binotatus*, 12 samples belong to *Brachinus crepitans*, 6 samples belong to *Harpalus latus* and 2 samples belong to *Anisodactylus signatus*.

Table 2

Entomofauna of Coleopteras (Coleoptera) sampled within leguminosae-graminias at 22nd of May of 2017

CURRENT NUMBER	FAMILY	SPECIES	NUMBER OF SAMPLES	TOTAL SAMPLES
1.	CARABIDAE	CARABUS VIOLACEUS	24	37
		HARPALUS TARDUS	7	
		LORICERA PILICORNIS	5	
		BRACHINUS CREPITANS	1	
2.	SCARABAEIDAE	-	24	24
3.	STAPHYLINIDAE	-	6	6
4.	DERMESTIDAE	-	4	4
TOTAL ENTOMOFAUNA OF COLEOPTERAS				71

Table 3

Entomofauna of Coleopteras (Coleoptera) sampled within leguminosae subplot at 18th of May of 2017

CURRENT NUMBER	FAMILY	SPECIES	NUMBER OF SAMPLES	TOTAL SAMPLES
1.	CARABIDAE	PTEROSTICHUS VERNALIS	63	104
		POECILUS VERSICOLOR	32	
		AMARA AENEA	9	
2.	STAPHYLINIDAE	-	80	80
3.	SCARABAEIDAE	-	51	51
4.	CERAMBYCIDAE	-	18	18
5.	CHRYSOMELIDAE	-	17	17
6.	DERMESTIDAE	-	14	14
TOTAL ENTOMOFAUNA OF COLEOPTERAS				204

Table 4

Entomofauna of Coleopteras (Coleoptera) sampled within leguminosae subplot at 22ND of May of 2017

CURRENT NUMBER	FAMILY	SPECIES	NUMBER OF SAMPLES	TOTAL SAMPLES
1.	CARABIDAE	PTEROSTICHUS CUPREUS	26	50
		ANISODACTYLUS BINOTATUS	11	
		BRACHINUS CREPITANS	8	
		BEMBIDION PROPERANS	8	
		BEMBIDION LAMPROS	2	
2.	STAPHYLINIDAE	-	21	21
3.	SCARABAEIDAE	-	20	20
4.	CERAMBYCIDAE	-	14	14
5.	CHRYSOMELIDAE	-	10	10
6.	DERMESTIDAE	-	5	5
TOTAL ENTOMOFAUNA OF COLEOPTERAS				120

Table 5

Entomofauna of Coleopteras (Coleoptera) sampled within natural subplot at 18th of May of 2017

CURRENT NUMBER	FAMILY	SPECIES	NUMBER OF SAMPLES	TOTAL SAMPLES
1.	CARABIDAE	BRACHINUS CREPITANS	24	60
		AMARA AENEA	16	
		AMARA OVATA	12	
		HARPALUS TARDUS	8	
2.	CHRYSOMELIDAE	-	38	38
3.	SCARABAEIDAE	-	35	35
4.	DERMESTIDAE	-	18	18
TOTAL ENTOMOFAUNA OF COLEOPTERAS				151

Entomofauna of Coleopteras (Coleoptera) sampled within natural subplot at 22ND of May of 2017

CURRENT NUMBER	FAMILY	SPECIES	NUMBER OF SAMPLES	TOTAL SAMPLES
1.	CARABIDAE	ANISODACTYLUS BINOTATUS	48	68
		BRACHINUS CREPITANS	12	
		ANISODACTYLUS BINOTATUS	6	
		HARPALUS LATUS	6	
2.	CHRYSOMELIDAE	-	34	34
3.	SCARABAEIDAE	-	19	19
4.	DERMESTIDAE	-	4	4
TOTAL ENTOMOFAUNA OF COLEOPTERAS				125

CONCLUSIONS

As well as conclusions, within the leguminosae+graminias subplot, during the day of May 18th of 2017, from a total of 103 samples of *Coleopteras*, the most significant number belongs to *Carabidae* family (55), followed by *Scarabaeidae* family (21) and *Staphylinidae* family (19), while the leastest number of samples belongs to *Dermestidae* family (8). From the *Carabidae* family, the biggest number of samples belongs to *Harpalus tardus* species (33).

During the day of May 22nd of 2017, within the same subplot, from a total of 71 samples of *Coleopteras*, the most significant number belongs to *Carabidae* family (37), followed by *Scarabaeidae* family (24), From the *Carabidae* family, the biggest number of samples belongs to *Carabus violaceus* species (24).

Within the leguminosae subplot, during the day of May 18th of 2017, from a total of 204 samples of *Coleopteras*, the most significant number belongs to *Carabidae* family (104), followed by *Staphylinidae* family (80). From the *Carabidae* family, the biggest number of samples belongs to *Pterostichus vernalis* species (63).

During the day of May 22nd of 2017, within the same subplot, from a total of 120 samples of *Coleopteras*, the most significant number of samples belongs also to *Carabidae* family (50), followed by *Staphylinidae* family (21). From the *Carabidae* family, the biggest number of samples belongs to *Pterostichus cupreus* species (26).

Within the natural subplot, at the date of May 18th of 2017, from a total of 151 samples of *Coleopteras*, the most significant number of samples belongs to *Carabidae* family (60), followed by *Chrysomelidae* family (38). From the *Carabidae* family, the biggest number of samples belongs to *Brachinus crepitans* species (24).

Within the same subplot, at the date of May 22nd of 2017, from a total of 125 samples of *Coleopteras*, the most significant number of samples belongs to *Carabidae* family (68),

followed by *Chrysomelidae* family (34). From the *Carabidae* family, the biggest number of samples belongs to *Anisodactylus binotatus* species (48)

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