RESEARCHES CONCERNING THE EXTERNAL MORPHOLOGY OF THE BIRD'S – FOOT TREFOIL THRIPS (*ODONTOTHRIPS LOTI* HAL) LARVAE IN THE WEST PLAIN CONDITIONS

CERCETĂRI PRIVIND MORFOLOGIA EXTERNĂ A LARVEI DE *ODONTOTHRIPS LOTI* HAL. ÎN CONDIȚIILE CLIMATICE DIN VESTUL ȚĂRII

Ana – Maria VIRTEIU

University of Agricultural Science and Veterinary Medicine of the Banat Timisioara
Corespoonding author: anamaria.badea@gmail.com

Abstract: *The importance of bird's – foot trefoil consists firstly in the fact that can replace alfalfa and trefoil, on the places where other forage plants can't be cultivated and also because has the biggest resistance at the pests and disease attack. In the production case of the bird's – foot trefoil seed, one of the insects that produces the greatest damages, about 80% from the total production, is the bird's – foot trefoil trips. Even if it was mentioned in the special literature from the country and abroad, that pest was studied a little and that because this paper proposed to emphasize some experimental data concerning of its biology, specially some aspects regarding the biometrical measurements effectuated on the second install larvae of Odontothrips loti Hal. For the investigations accomplishing the experimental field was placed at Didactical Station Timisoara. The experiences location was realized after the standard method of the experiences location, in three repetitions, each parcel with a length of 2m and latitude of 1m. In realizing the biometrical measurements it built an insulator with metallic skeleton and covered with gauze. For studying the second install larvae of bird's – foot trefoil thrips, the samples taking were accomplished during a period of 20 days, with a periodicity of taking at each 48 hours. After the biometrical measurements it established that the length of second install larvae body of Odontothrips loti Hal. was of 1,230 mm ± 0,19 mm.The length of cephalic capsule were of 0,080 mm ± 0,02 mm. The cephalic capsule latitude was of 0,120 mm ±0,02 mm.*

Rezumat: *Importanța ghizdeiului ca plantă furajeră consta în faptul că înlocuieşte lucrena şi trifoiul acolo unde acestea nu pot fi cultivate şi de asemenea prezintă o rezistență ridicată la atacul bolilor şi dăunătorilor. În cazul producerii de sămânță la ghizdei, una dintre insectele care produce cele mai mari pagube, de până la 80% din producția totală, este tripsul ghizdeiului (Odontothrips loti Hal.). Deşi menționat în literatura de specialitate din țară şi străinătate, acest dăunător a fost puțin studiat şi de aceea această lucrare î-şi propune să scoată în evidență unele date experimentale legate de biologia sa, mai exact unele aspecte privind măsurătorile biometrice efectuate asupra larvelor de vârsta a II a. Pentru efectuarea cercetărilor, câmpul de experiență a fost amplasat la Staținea Didactică Timişoara. Amplasarea experiențelor s-a realizat după metoda standard de amplasare a experiențelor, în trei repetiții, fiecare parcelă cu o lungime de 2m şi o lățime de 1m. Pentru realizarea măsurătorilor biometrice s-a construit un schelet metalic şi fiecare parcelă a fost izolată cu pânză de tifon. Pentru studierea dimensiunilor larvelor de vârsta a II a de Odontothrips loti Hal. recoltarea probelor s-au efectuat pe o perioadă de 20 de zile, cu o periodicitate de colectare la fiecare 48 de ore. În urma măsurătorilor biometrice s-a stabilit că lungimea corpului larvelor de vârsta a II a de Odontothrips loti Hal. a fost de1,230 mm ± 0,19 mm1,230 mm ± 0,19 mm 1,230 mm ± 0,19 mm mm. Lungimea capsulei cefalice a fost 0,080 mm ± 0,02 mm. Lățimea capsulei cefalice a fost 0,120 mm ±0,02 mm.*

Key words: *birds – foot trefoil, Odontothrips loti, larvae, biometrical measurements*
Cuvinte cheie: *ghizdei, Odontothrips loti, larve, măsurători biometrice*

INTRODUCTION

The genus Lotus comprises a large diversity of species (aprox. 100) spread all over Asia, Africa, America and Europe especially in the Mediterranean zone.

Although the birds- foot trefoil is well known for over 2 centuries as a fodder plant, its spreading out in the culture on large areas took place only at the beginning of the 20th century (DRAGOMIR, 2005).

In the international specialized literature one can find the description of the *Lotus corniculatus* and the way this leguminous species has been bread: HENSON AND SCHOTH (1962), SMITH (1966), NELSON AND SMITH (1968).

In order to obtain high quality seeds of *Lotus corniculatus* and a large quantity of it, the knowledge of the pests that produce the highest damage and their control measures are compulsory. One of these pests with a damage rate of 80% from the whole quantity of seeds is *Odontothrips loti* Hal.

Some papers from the international specialized literature concerning the *Odontothrips .loti* Hal. are the following: in Germany: PRIESNER in 1928; in Cehoslovacia: OBRTEL in 1963; in the U.S.A.: BAILEY in 1957 and LEWIS TREVOR in 1973; in France: BOURNIER ET KOCHBAV in 1965; in Germany: SCHLIEPHAKE & KARLHEINZ in 1981; in Canada: PEARSALL ISOBEL AND MYERS JUDITH in 2001; in Slovenia: TRDAN STANISLAV in 2002.

The national specialized literature is rather scarce about this pest. Only a few researchers have tackled this subject matter: KNECHTEL, 1951; LILIANA VASILIU - OROMULU, 1971; PERJU, 1993.

After studying the specialized literature on the morphology, biology and ecology of the *Odontothrips loti* Hal. we concluded that in Banat, more precisely on the Western plain of Romania, no studies have been carried out on this insect and therefore the present paper has as goal to diagnose the species by establishing the dimensions of the adult *Odontothrips loti* Hal. collected in this area.

MATERIAL AND METHOD

The experimental fields in realizing the biological investigations was placed at S.D. Timisoara, after the standard method of location of the experiences, in 3 repetitions and in figure 1 is presented the scheme of the experimental field. Every lot had the length of 2 m and latitude of 1 m. In identifying all the larvae stages were constructed an ironwork and every lot was secluded with a catch mull. Also it was a distance of 4 m amoung the repetitions.

In studying the *Lotus corniculatus* thrips biology (*Odontothrips loti* Hal.) the samples collecting was made during a period of 20 days, with o collecting periodicity at every 48 hours.

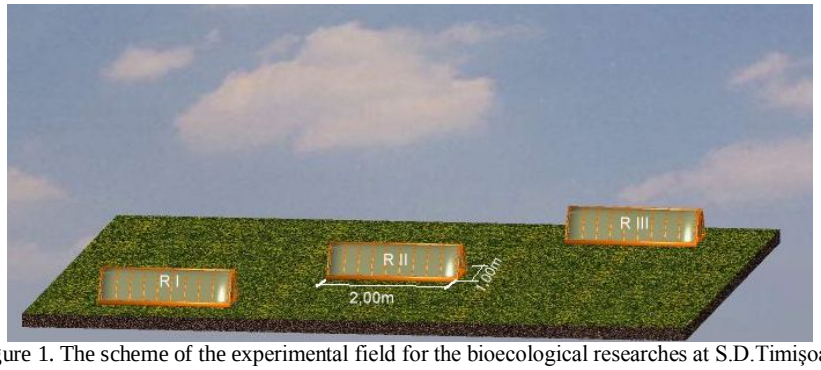

Figure 1. The scheme of the experimental field for the bioecological researches at S.D.Timişoara

The controlled insects from the experimental field were determined in the Entomology Laboratory of Agricultural Sciences and Veterinary Medicine of Banat Timisoara with the help of specialized papers and determinations.

RESULTS AND DISSCUSIONS

After study the speciality literature concerning the morphology, biology and ecology of the *Odontothrips loti* Hal., it concluded that in pedoclimatical conditions of the West Plain of Romania and at the national level weren't effected complex investigations on the *Lotus corniculatus* entomofauna and to the main pests.

In this content are presented the effected investigations results which define the dimensions of the larvae of the second age of *Odontothrips loti* Hal. collected from the *Lotus corniculatus* crop from S.D. Timisoara.

To complete the real knowledge concerning the dimensions of the larvae of the second age of *Odontothrips loti* Hal. were effected biometrical measurements concerning the body length, the cephalic capsule length (tabel 1).

Table 1

Biometrics measures of the *Odontothrips loti* Hal. larvae collected from S.D. Timişoara

Nr. crt.	Body length (mm)	Head (mm)	
		Length	Width
1.	1.05	0.059	0.098
2.	1.1	0.062	0.103
3.	1.0	0.056	0.093
4.	1.1	0.061	0.101
5.	1.2	0.067	0.111
6.	1.0	0.057	0.095
7.	1.2	0.066	0.109
8.	1.25	0.070	0.116
9.	1.1	0.063	0.105
10	1.3	0.073	0.121
11.	1.25	0.071	0.118
12.	1.3	0.074	0.123
13.	1.3	0.073	0.117
14.	1.15	0.065	0.108
15.	1.45	0.082	0.136
16.	1.3	0.073	0.116
17.	1.25	0.072	0.120
18.	1.2	0.067	0.112
19.	1.25	0.070	0.117
20.	1.0	0.056	0.094
21.	1.25	0.069	0.122
22.	1.2	0.068	0.114
23.	1.25	0.071	0.119
24.	2.1	0.118	0.197
25.	1.2	0.068	0.112
26.	1.55	0.087	0.145
27.	1.2	0.067	0.110
28.	1.1	0.062	0.102
29.	1.2	0.067	0.111
30.	1.55	0.088	0.145
31.	1.0	0.056	0.096
32.	1.2	0.068	0.108
33.	1.4	0.079	0.131
34.	0.9	0.051	0.085
35.	1.6	0.090	0.150
36.	1.15	0.064	0.104
37.	1.35	0.076	0.126
38.	1.25	0.071	0.117

Nr. crt.	Body length (mm)	Head (mm)	
		Length	Width
39.	1.1	0.062	0.105
40.	1.4	0.078	0.122
41	1.25	0.070	0.116
42.	1.05	0.059	0.099
43.	1.2	0.064	0.113
44.	1.2	0.070	0.125
45.	1.25	0.069	0.119
46.	1.2	0.073	0.122
47.	1.35	0.075	0.127
48.	1.55	0.086	0.145
49.	1.0	0.059	0.100
50.	1.05	0.060	0.101
51.	1.25	0.069	0.117
52.	1.2	0.067	0.114
53.	0.95	0.053	0.089
54.	1.05	0.062	0.105
55.	1.45	0.082	0.139
56.	1.2	0.065	0.110
57.	1.05	0.059	0.097
58.	1.2	0.066	0.113
59.	1.25	0.069	0.115
60.	1.4	0.079	0.133
Σ	73.8	4.153	6.933
Arithmetic average	1.23	0.08	0.12
Standard deviation	0.19	0.02	0.02

From table 1 it can be observed that the smallest body length of the second age larvae, settled for the larvae collected in the Romanian West Plain conditions, was of 0,90 mm ± 0,19 mm, and the biggest was of 2,1 mm ± 0,19 mm. The average value, of the body length of the larvae of *Odontothrips loti* Hal., was of 1,230 ± 0,19 mm.

The minimum length of the cephalic capsule was of 0,051 mm ±0,02 mm, while the minimum latitude was of 0,085 mm ±0,02 mm; the maximum length of the cephalic capsule was of 0,118 mm ±0,02 mm, while the maximum latitude was of 0,197 mm ±0,02 mm. The average value of the cephalic capsule length was of 0,080 mm, and the latitude of 0,120 mm. The estimation of standard deviation, for the length of the cephalic capsule of the *Odontothrips loti* Hal. Larvae, was of ± 0,02 mm. The estimation of standard deviation for the latitude of the cephalic capsule was of ± 0,02 mm.

The obtained results are the SAME WITH THE ONE ALREDY MENTION IN THE SPECIALTY LITERATURE BY LACASA PLASENCIA ŞI LLORÉNS CLIMENT J.M (1996) wich tell as that the body length is between 1,2 – 1,3 mm, and VASILIU LILIANA, NEACŞU PETRE (1971), specified that the body length of the second age of *Odontothrips loti* Hal. larvae was in average of 1,25 mm. In the case of the biometrical measurements realized on 60 larvae were between 0,90 ± 0,19 mm and 2,10 ± 0,19 mm, being in average of 1,23 ± 0,19 mm. The obtained results demonstrate that the minimum and the maximum measure of the larvae are close, but are

different from the one existent in the specialty literature. The average value of the body lenght is smaller that the one mention in the literature, being of 1,23 mm ± 0,19 mm (figure 2).

For a complete characterisation of the aspects regarding to the external morphology of the second age larvae after the effectuation of the *Odontothrips loti* larvae biometrics measures were obtained a series of reports between different part of the bodies (tabel 2).

Table 2

The ratio between some body dimensions settled after the effectuation of the *Odontothrips loti* Hal. larvae biometrics measures

Nr. crt.	Ratio between dimensions	Length	Length	Width	r
1.	length of the cephalic capsule / latitude of the cephalic capsule	0,080	-	0,120	0,6666
2.	prothorax lenght/ prothorax latitude	0,140	-	0,210	0,6666
3.	length of the cephalic capsule + prothorax length/ latitude of the cephalic capsule + prothorax latitude	0,220	-	0,330	0,6666
5.	length of the cephalic capsule + prothorax length / body length	0,220	1,230	-	0,1788

After the examination of the obtained results (table 2) it can be established that on the second age of *Odontothrips loti* Hal. larvae the head (cephalic capsule) is more width than length. The prothorax is with 1/3 more width than length. The length of the cephalic capsule and the length of the prothorax related to the latitude of these presents a report of approximate 1/3. The length of the cephalic capsule and the length of the prothorax related to the body length presents an report of 3/6 in the advantage of the body.

Figure 2. *Odontothrips loti* Hal. larvae (original)

CONCLUSIONS:

1. The most important pest for birds – foot trefoil was *Odontothrips loti* Hal.
2. The average value of the body length of the second larvae age of *Odontothrips loti* Hal. was of 1,230 mm ± 0,19 mm.
3. The average value of the cephalic capsule length was of 0,080 mm ± 0,02 mm, and the latitude of 0,120 mm ± 0,02 mm.
4. Concerning the reports between the dimensions it was observed that the head length excels the latitude.
5. The prothorax and head length reported to that latitude present a report of approximately 1/3.
6. The prothorax and head reported to the body length indicate a preponderance of the body length of cca 3/6 in the favour of the body.

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