STUDIES ABOUT SOME ASPECTS CONCERNING THE EXTERNAL MORPHOLOGY OF THE *ODONTOTHRIPS LOTI* HAL. ADULT IN THE WEST ROMANIAN CONDITIONS

STUDII PRIVIND UNELE ASPECTE LEGATE DE MORFOLOGIA EXTERNĂ A ADULTULUI DE *ODONTOTHRIPS LOTI* HAL. ÎN CONDIȚIILE DIN VESTUL ȚĂRII

Ana – Maria VIRTEIU, Ioana GROZEA, Ioan PĂLĂGEŞIU

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

Abstract: *The Lotus corniculatus has a great capability of autoinsemination, even in the conditions of a depasturage of a long time. Concurrently, the rusticity assures great qualities to the Lotus corniculatus, comparative with the other leguminouses such as, the lack of meteorisations production during the consumption under green table shape (Zamfirescu, 1965). The entomofauna knowledge of this crop plants represents one of the most important stage in realizing a integrated protection to obtain a production of superior quality and great quantity. Odontothrips loti Hal. is one of the most important pest of this crop, mekeing damage of 80% of the total yield production. The paper propose is to emphasize some experimental data concerning the effected investigations results wich deffine the influence of different parts of the body, upon the development of the adults of Odontothrips loti Hal. In realizing this porpoise the experimental fields was placed at S.D. Timisoara, after the standard method of location of the experiences, every lot had the length of 2 m and a latitude of 1 m. After the biometrical measurements it established that the head lenght is aproximately equal with his latitude, being a few broader (+0,07). The protorax lenght broader then long and the head and prothorax lenght excels the latitude of those two regions. The head and prothorax lenght represent cca 1/3 from the abdomen lenght. The abdomen represents 6/3 from the body lenght, and the prothorax and head lenght reported to the body lenght represents 2/8.*

Rezumat: *Ghizdeiul are o mare capacitate de autoînsămânțare, chiar şi în condițiile unui păşunat de lungă durată. Totodată, rusticitatea conferă ghizdeiului calități deosebite, comparativ cu celelalte leguminoase perene şi anume, lipsa producerii de meteorizații în timpul consumului sub formă de masă verde (Zamfirescu, 1965). Cunoaşterea entomofaunei plantelor de cultură reprezintă una din cele mai importante etape în realizarea unei protecții integrate pentru obținerea unei producții de calitate superioară şi în cantitate sporită. Odontothrips loti Hal. este una dintre cele mai importante insecte dăunătoare ghizdeiului producând pagube de până la 80% din producția totală. Scopul acestei lucrări este de a evidenția câteva aspecte privind influența dimensiunilor diferitelor părți ale corpului insectei asupra dezvoltării adultului de Odontothrips loti Hal. Pentru efectuarea cercetărilor, câmpul de experiență a fost amplasat la S. D. Timişoara, după metoda standard de amplasare a experiențelor, fiecare parcelă având o lungime de 2 m şi o lățime de 1m. În urma măsurătorilor biometrice s-a stabilit că lungimea capului este aproximativ egală cu lățimea sa, fiind totuşi cu puțin mai lat (+ 0,07). Protoracele este mai lat decât lung, iar lungimea capului şi protoracelui depăşeşte lățimea celor două regiuni. Lungimea capului şi protoracelui reprezintă circa 1/3 din lungimea abdomenului. Abdomenul reprezintă 6/ 3 din lungimea corpului, iar lungimea capului şi protoracelui raportată la lungimea corpului reprezintă un raport de 2/8.*

Key words: *birds – foot trefoil, Odontothrips loti, external morphology*
Cuvinte cheie: *ghizdei, Odontothrips loti, morfologie externă*

INTRODUCTION

The *Lotus corniculatus* importance as a green crop consist in the fact that it could change the lucerne and clover from some of the regions fewer auspicious of the crop. From this

point of view, the opinion of many explorers is unanimous, so that the *Lotus corniculatus* is a leguminous with the greatest adaptability at the distinct weather conditions and soil: drought, high humidity, acid or superficial soils, salts or with a low fertility, stubbed fields etc (DRAGOMIR, 1981; VARGA, 1998).

The *Lotus corniculatus* has a great capability of autoinsemination, even in the conditions of a depasturage of a long time. Concurrently, the rusticity assures great qualities to the *Lotus corniculatus*, comparative with the other leguminouses such as, the lack of meteorisations production during the consumption under green table shape (ZAMFIRESCU, 1965).

MATERIAL AND METHODS:

The experimental fields in realizing the ecological and biological investigations was placed at S.D. Timisoara, after the standard method of location of the experiences, every lot had the length of 2 m and a latitude of 1 m. In identifying all the larvae stages was constructed an ironwork and every lot was secluded with a catch mull. Also it was a distance of 4 m amoung the repetitions (figure 1) (BADEA, 2008).

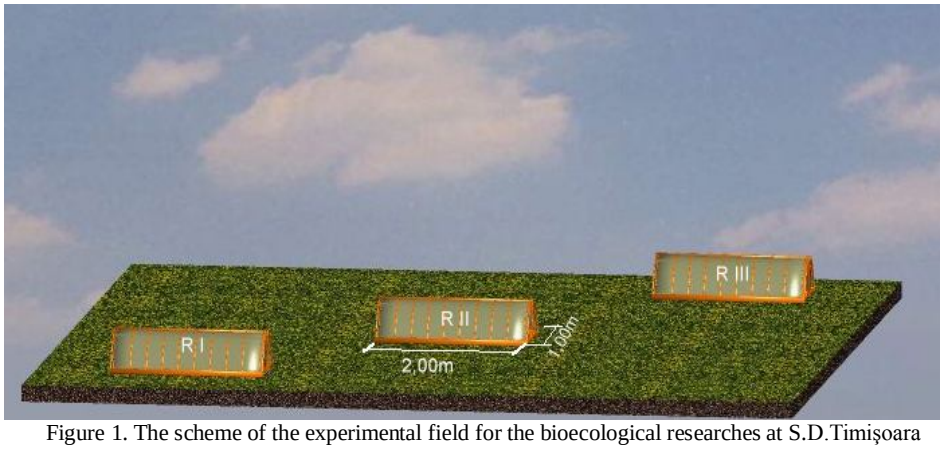

Figure 1. The scheme of the experimental field for the bioecological researches at S.D.Timişoara

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.

RESULTS AND DISCUSSIONS:

After study the speciality literature concerning the morphology, biology and ecology of the *Odontothrips loti* Hal. [KNECHTEL (1951), LEWIS (1973, 1997), PERJU (1993, 1999), MORITZ (2000), LACASA PLASENCIA (1996), BADEA (2005, 2007 a, b)], it concluded that in pedoclimatical conditiones of the West Plain of Romania and at the national level weren't effected complex investigations on the *Lotus corniculatus* main pests.

In this content are presented the effected investigations results wich deffine the influence of different parts of the body, upon the development of the adults of *Odontothrips loti* Hal.

According to the obtained data it results that the species *Odontothrips loti* Hal has a head length almost equal to its width. But the head is a bit wider (+ 0,07). The prothorax is wider than longer. The length of the head and of the prothorax overpasses the width of these

two regions. The head and the prothorax taken together are longer than the width of these regions. The length of the head and of the prothorax taken together represents one third of the abdomen length. The length of the head and of the prothorax as compared with the length of the body shows a ratio of 2/8 in favour of the abdomen. The length of the abdomen represents the largest part of the body the ratio being of 6/3. The body is longer than the abdomen with about 1/3.

Table 1

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

Nr. crt.	Ratio between dimensions	Lenght	Lenght	Width	r
1.	Head lenght / head latitude	0,138	-	0,139	0,9928
2.	Prothorax lenght/ prothorax latitude	0,187	-	0,236	0,7923
3.	Head lenght + prothorax lenght / head latitude+ prothorax latitude	0,325	-	0,375	0,8666
4.	Head lenght + prothorax lenght / abdomen lenght	0,325	0,948	-	0,3428
5.	Head lenght + prothorax lenght / body lenght	0,325	1,532	-	0,2121
6.	abdomen lenght / body lenght	0,948	1,532	-	0,6187
7.	body lenght / abdomen lenght	1,532	0,948	-	1,6160

The original ratios, established among the different parts of the body, can be taken into consideration when describing the *Odontothrips loti* Hal adult (figure 2).

To point out the existence of connections among the different dimensions of the body of the *Odontothrips loti* Hal adult the statistical interpretation of the obtained data was taken into consideration.

After the carrying out the biometrical measurements on the adult insects the obtained data show that the statistical information is homogeneous (table 2, columns 6-8). Therefore the appliance of other statistical analysis methods is permitted.

Table 2.

The relation between the lenght and the other body parts of the *Odontothrips loti* Hal. adults

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
A	1	2	3	4	5	6	7	8	9	10
1	0,997[a]	0,995	0,995	0,014722	0,995	6280,846	3	96	0,000	2,001

a. Predictors: (Constant), Lung.caps.cefal, Lung.protorace, Lung.abdom
b. Dependent Variable: Lung.corp

The value $x^2 = 85.444$ (the Chi-Squar value from table 3) is determined on the basis of the series of data is compared with its table value.

In the case of the adult insects the following relation $x^2_{calculat} > x^2_{tabelar}$ takes place that permits to conclude that the length of the body of the adults depends at length on the registered factors, but it also can be said, that there are also factors of influence of other nature.

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

Table 3.

The testing of normality distribution with unparametric methods

	Lung.corp
Chi-Square	85,444[a]
df	43
Asymp. Sig.	0,000

a. 44 cells (100,0%) have expected frequencies less than 5. The minimum expected cell frequency is 2,3

In order to analyse the connections among the factors proposed to be analyzed such as the length of the body, the length of the abdomen, the length of the prothorax, the length of the cephalic capsule, the Fisher (F) test has been used (see table 4., col.4).

As a result of the comparison of the value $F_{calculata}$ with the value F from the statistical table the following relation has been obtained:

$$F_{calculated} > F_{table\ value} \quad or \quad 6.821E3 > 4.877E3$$

Table 4.

Analiza dispersională (ANOVA)[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4,084	3	1,361	6,281E3	0,000[a]
	Residual	0,021	96	0,000		
	Total	4,105	99			

a. Predictors: (Constant), Lung.caps.cefal, Lung.protorace, Lung.abdom

b. Dependent Variable: Lung.corp

This relation shows that the H_0 hypothesis is rejected. Thus with a probability of 0.01 the length of the adult insect body depends on the other body length parameters such as the length of the abdomen, the length of the prothorax, and the length of the cephalic capsule.

The correlation coefficient (R) for the given model is 0.997 and that of dermination (Rsguare) one is 0,995. These two coefficients permit to affirm that between the length of the adult insect body and the parts of the body there is a direct very strong connection, which is

functional.

This fact has been confirmed by the Durbin Watson coefficient, which has a value of 2.001 (table 2).

Table 5.

The partial corelation matrics

		Body lenght	Abdomen lenght	Protorax lenght	Head lenght
Pearson Correlation	Lung.corp	1,000	0,665	0,022	0,997
	Lung.abdom	0,665	1,000	0,025	0,660
	Lung.protorace	0,022	0,025	1,000	0,022
	Lung.caps.cefal	0,997	0,660	0,022	1,000
Sig. (1-tailed)	Lung.corp	.	0,000	0,415	0,000
	Lung.abdom	0,000	.	0,403	0,000
	Lung.protorace	0,415	0,403	.	0,414
	Lung.caps.cefal	0,000	0,000	0,414	.

On the basis of the data from the matrix of the partial correlations (table 5) the utmost influence has the cephalic capsule as the coefficient of the partial correlation is 0.997, the other factors remaining unchanged. Another factor with a significant influence is the length of the abdomen – the correlation coefficient is 0.665. On the other hand the correlation coefficient for the length of the prothorax 0.022 (table 5) with a probability of 0.415 (the value is higher than 0.05) shows that the connection between the given factor and the resultative factor – the length of the adult insects - is weak.

To characterize the biometrical values of the insect to be studied the both the length of the cephalic capsule and mostly the length of the abdomen are very important.

CONCLUSIONS:

1. The head lenght is aproximately equal with his latitude, being a few broader (+0,07).

2. The protorax lenght broader then long and the head and prothorax lenght excels the latitude of those two regions.

3. The head and prothorax lenght represent cca 1/3 from the abdomen lenght.

4. The abdomen represents 6/3 from the body lenght, and the prothorax and head lenght reported to the body lenght represents 2/8.

5. In data base from the partial correlations matrix obtained to *Odontothrips loti* Hal. adults, the maximum of the influence appertain to the cephalic capsule lenght – the partial correlation ceofficient is of 0,997.

6. Another factor with a meaningful influence is the abdomen lenght – the correlation coefficient is of 0,665.

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