EVOLUTION OF THE PEST *DIABROTICA VIRGIFERA VIRGIFERA* LE CONTE IN THE SOME LOCALITIES FROM ROMANIA

EVOLUTIA DĂUNĂTORULUI *DIABROTICA VIRGIFERA VIRGIFERA* LE CONTE ÎN CÂTEVA LOCALITĂȚI DIN ROMÂNIA

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Abstract: *Diabrotica virgifera virgifera* Le Conte called western corn rootworm was signaled for the first time in our country, in 1996, in the Arad District (Nădlac). In 1997 it was detected in the Timis District too, which neighbors with the Arad District and with Yugoslavia and Hungary. This scientifically papers present the results concerning the pest's evolution in some localities (Simand -140 m, Soimi -145 m, Blaja-150m, Nusfalau –214 m, Prisaca -270 m Negreni- 388 m and Budureasa –403 m) from western part of country (South-West–North of Romania), in 2009. Selection of these locations was based on altitude, from plain until mountain. For monitoring of the adults were used hungarian pheromone traps (Csalomon ® Diabrotica v.v. tip panou/2). The traps were installed from June to September. The frequency of *Diabrotica virgifera virgifera* Le Conte adults was manifold, based on location and ecological conditions. The highest number of adults was registered to Simand locality (21323 captures), that is placed in a low altitude, by140 m. The lowest number of adults was captured to beginning of 403 m altitude (2156 captures), in Budureasa locality. It's important to point that number of captures decreased while the altitude increased. It results that *Diabrotica virgifera virgifera* Le Conte is a large disseminated pest in the western part of country and in consequence his control will be necessary.

The results were obtained by financially and material support of ***PN-II-ID-PCE-2007-1/RO (889) project.***

Rezumat: Specia *Diabrotica virgifera virgifera* Le Conte denumită popular şi viermele vestic al rădăcinilor de porumb a fost semnalată pentru prima dată în ţara noastră, în anul 1996, în judeţul Arad (Nădlac). În anul 1997, specia a fost detectată şi în judeţul Timiş. Judeţ care se învecinează cu Yugoslavia şi Ungaria. În prezenta lucrare sunt prezentate rezultate referitoare la evoluţia dăunătorului în câteva localităţi din partea de vest a ţării, Sud-Vest-Nord (Simand -140 m, Soimi -145 m, Blaja-150m, Nusfalau –214 m, Prisaca -270 m Negreni- 388 m and Budureasa –403 m), în anul 2009. Selecţia acestora s-a bazat pe factorul altitudine, de la câmpie până la munte. Pentru monitorizarea adulţilor au fost utilizate capcane feromonale de provenienţă ungară, (Csalomon ® Diabrotica v.v. (pane type /2). Capcanele au fost instalate începând cu luna iunie până în luna septembrie. Frecvenţa adulţilor de *Diabrotica virgifera virgifera* Le Conte a fost variată, în funcţie de locaţie şi şi condiţiile ecologice aferente fiecărei localităţi. Cel mai mare număr de adulţi a fost înregistrat în localitatea Şimand (21323 capturi), care este plasată la o altitudine joasă (140 m). Cel mai scăzut număr de capturi (2156) s-a inregistrat în Budureasa (403 m) la o altitudine ridicată. Este de remarcat că odată cu creşterea altitudinii scade numărul de capturi. Rezultă de aici că *Diabrotica virgifera virgifera* Le Conte este un dăunător cu o vastă diseminare în partea de vest a ţării.

Aceste rezultate s-au obţinut prin sprijinul material şi financiar al Proiectului ***PN-II-ID-PCE-2007-1/RO (889).***

Key words**:** *Diabrotica, monitoring, pheromone, trap, flight dynamic*
Cuvinte cheie: Diabrotica, monitorizare, feromon, capcană, zbor, dinamică.

INTRODUCTION

The maize is one of the most important crops from our country, too. In these crops are live a lot of animal species (1). Western corn rootworm, *Diabrotica virgifera virgifera (Le Conte)*, (Coleoptera: Chrysomelidae) is an important pest for maize fields from Romania, after

corn borer larvae (2). *Diabrotica virgifera virgifera* Le Conte was signaled for the first time in 1996, in Romania in the Arad District. In 1997 it was detected for the first time in the Timis District too, which neighbors with the Arad District and with Yugoslavia and Hungary (5).

The activity of adults is favored by high temperatures, but over 30^0C this is slowly. The optimal temperature is by 26^0C. High temperatures and missing of rainfalls for a long time cause the adults emergence before 3 or 4 weeks. The rainfalls are an important factor in pest spreading. Of course the wind is a limitative factor especially in intensive flight period .The soil has a significantly impact on movement and the surviving of the insects who live there (4, 3).

MATERIAL AND METHODS

The researches were carried, in some localities from western part of country. The presence of *Diabrotica virgifera virgifera Le Conte* adults was followed from June until September period, during 2009 year, in different altitudes, respectively to 140 m, 145 m, 214 m, 270 m, 388 m and 403 m. It was used Csalomon ® Diabrotica v.v. type panou/2, because these were proved an easily manipulation and an adhesive substance of better quality.

It was made daily registrations of captures number and climatically date with its correlation. For each observation field we installed three traps who were changed to each 2 week. The travel to the maize fields was made with the car of Entomology discipline, procured from the project IDEI (889). For establish of altitude we used a GPS.

RESULTS AND DISCUSSIONS

Taking in consideration the observations about the presence of adults in different altitudes (table 1) (140 m, 145 m, 214 m, 270 m, 388 m and 403 m) we founded that them are frequent to all studied altitude. The highest number of adults was registered to Simand locality (21323 captures), that is placed in a low altitude, by115 m. The lowest number of adults was captured to beginning of 403 m altitude (2156 captures) (photos 1,2).

Table 1

The total number of captures to different altitudes (centralized table)

Localitate	Altitudine	Nr. total capturi
Şimand	140	21323
Şoimi	145	6118
Nusfalau	214	2887
Prisaca	270	4867
Negreni	388	2400
Budureasa	403	2156

Photos 1,2 left-the aspects from maize fields in august; right- the reading of trap using GPS (Şimand and Nuşfălau localities)

To 140 m altitude (Simand locality), the greatest number of captures was registered in four times, so, in middle of July, end decade of July, beginning of August and end of August (graphic 1). In all studied period (June-September, 2009), the values were cumulated for all traps (1, 2, 3) = 21323 adults. Regarding the correlation between no of captures and ecological factors we can observe in graphic 1 in July and August the air temperature was preserved to constant values, but high value, so this aspect caused increasing of no. of adults. The presence of rainfalls (25 mm) caused decreasing of temperature and indirectly has decrease the no. of ad./trap. In generally the level of rainfalls was missing.

To altitude of 145 m (Şoimi) the most number of captures was registered in first decade of august (C_1,C_2,C_3 – average 120 adults) (graphic 2). Missing of rainfalls from last period of august caused a decreasing of adult's number.

The highest number of captures in Nuşfalău locality (214 m altitude) was registered to first period of august (average of all traps – 47) (graphic 3). In this case the level of the rainfalls was very high (88.5 mm), caused a evidentially decreasing of adult's number.

To altitude of 270 m (Prisaca) the most adults were observed to beginning of august, too (average of traps1, 2 and 3 – 81.67 adults (graphic 4).

In Negreni (388 m altitude) were observed two peaks of adults number (to middle of July and beginning of August) (graphic 5).

In Budureasa – 392 m, the maxim flight curve was considered in last decade of July (27.33 average/repetitions) (graphic 6). The total number of adults/C1, C2, C3 has concern values of 2156 captures.

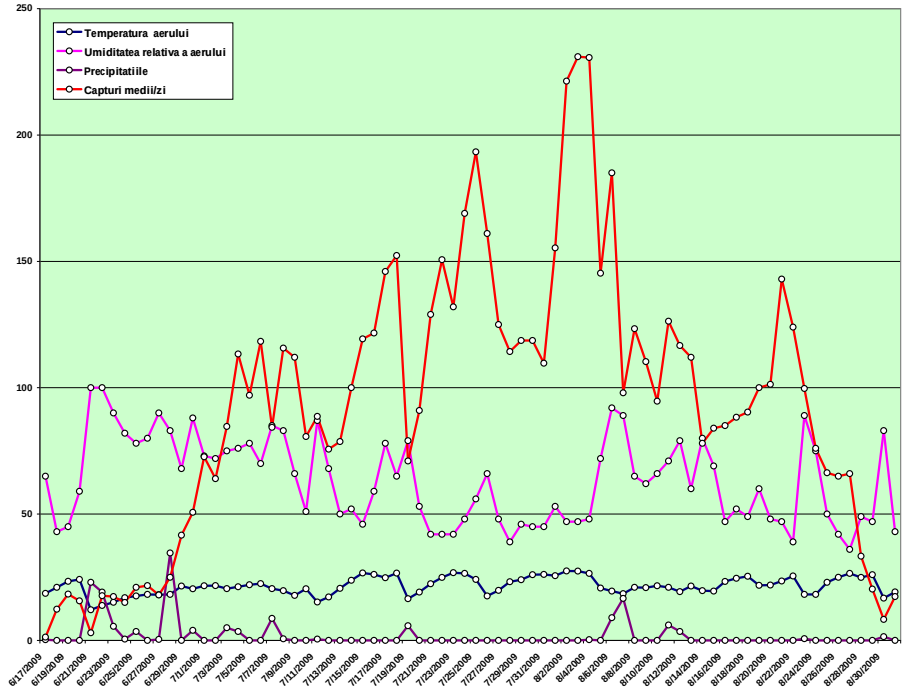

Figure 1: Daily evolution of DVVLC adults in Şimand locality in correlation with temperature, rainfalls and air humidity

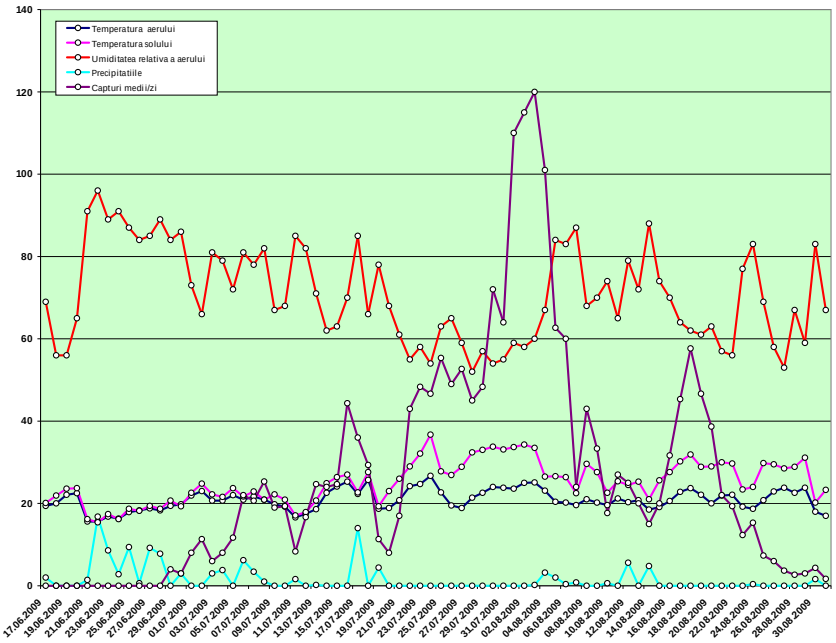

Figure 2: Daily evolution of DVVLC adults in Şoimi locality in correlation with temperature, rainfalls and air humidity

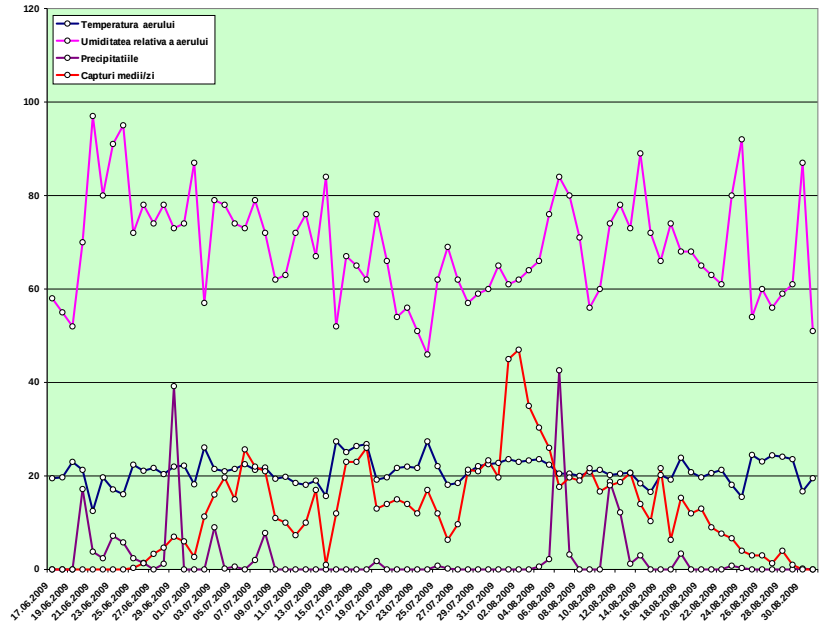

Figure 3: Daily evolution of DVVLC adults in Nuşfalău locality in correlation with temperature, rainfalls and air humidity

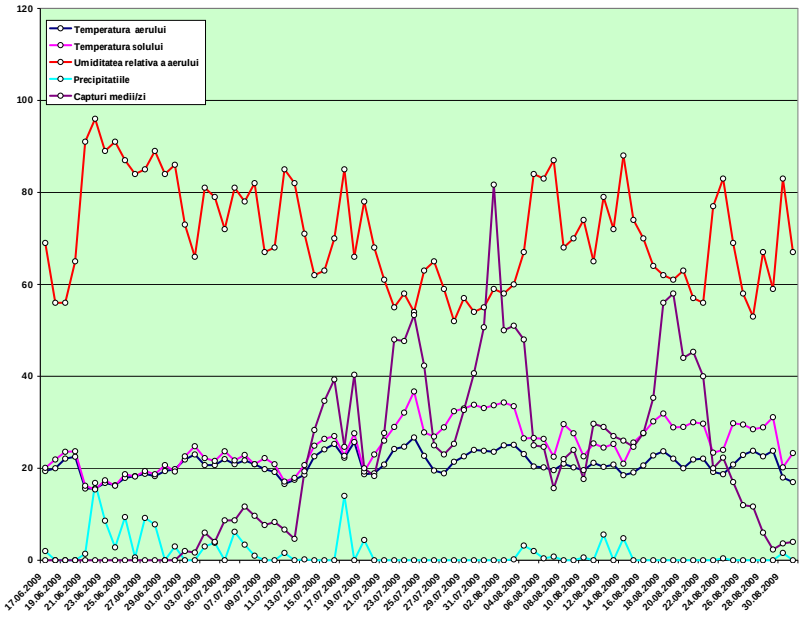

Figure 4: Daily evolution of DVVLC adults in Prisaca locality in correlation with temperature, rainfalls and air humidity

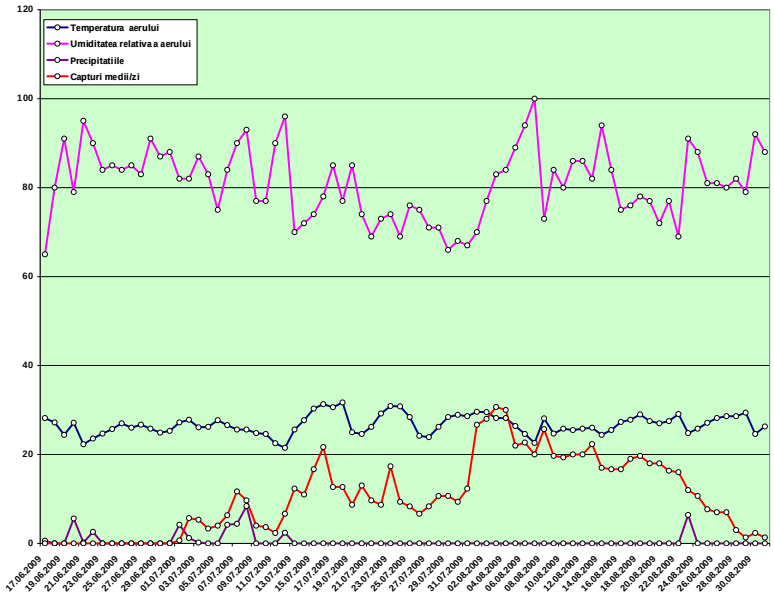

Figure 5: Daily evolution of DVVLC adults in Negreni locality in correlation with temperature, rainfalls and air humidity

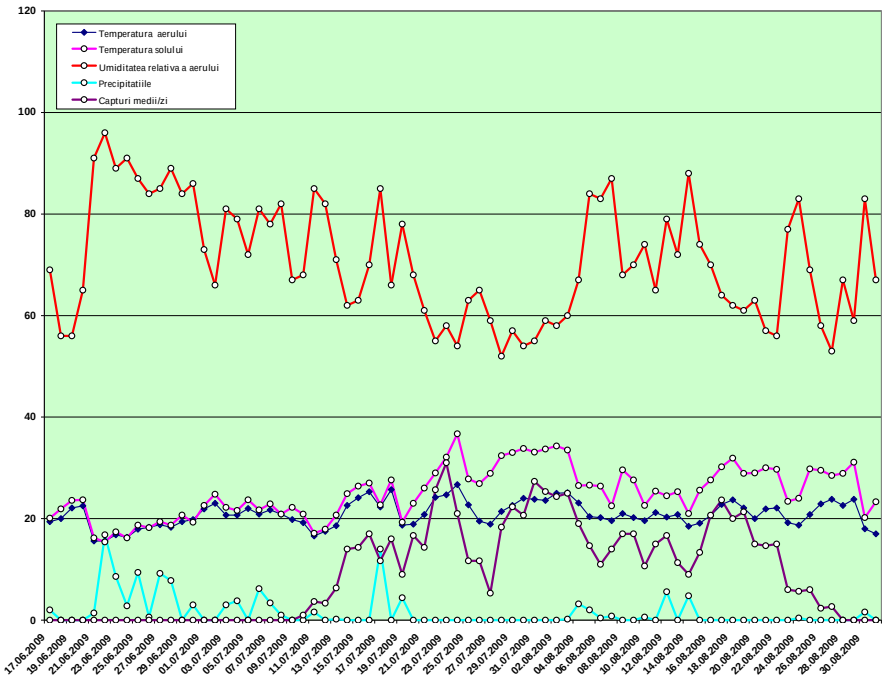

Figure 6: Daily evolution of DVVLC adults in Budureasa locality in correlation with ecological conditions

CONCLUSION

Number of captures decreased while the altitude increased.

The presence of rainfalls caused decreasing of temperature and indirectly has decrease the number of adults/trap. In generally the level of rainfalls was missing.

ACKNOWLEDGEMENTS:

*The results from this paper were obtained by financially and material support of **PN-II-ID-PCE-2007-1/RO (889 code)** project who is financed by CNCSIS- UEFISCSU, manager of project Grozea Ioana.*

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