Is *Diabrotica Virgifera Virgifera* Still Considered a Dangerous Pest From Crops Of Romania?

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Abstract

Lately, *Diabrotica virgifera virgifera* Le Conte adults (western corn rootworm) (Coleoptera: Chrysomelidae) extended the range of host plants and also the spreading area in Romania. Though, until recently it was associated only with corn plant (it highlighted the research in Europe) today we can say that this invasive insect, in adult stage, became oligophagous. The current state of research in the field, somewhat restrained, outlines the monitoring aspects of morphology, biology, control and less at plant attractiveness. This is the main reason in addressing current topics. Also, if we want to answer the question *is Diabrotica virgifera virgifera still considered a dangerous pest from crops of Romania?* the answer is definitely positive. The research took place over the course of the years of study 2011 and 2012. In our studies we used observation cages type I and II (small cages and high cages). Thus for the evaluation of trophic preferences were achieved through the determination of frequency and intensity of attacks on various plants. In the experimental covered setting is obvious attraction towards other than corn comparative with uncovered setting. By far, the preferred were plants from Cucurbitaceae and Leguminosae. According to the observations made on the leaves with the highest average attack occurred at the plants of melon, soybean and beans. The damage done by insects on flowers have highlighted orientation towards plants of sunflower, cucumber and melon. Between variants down to the various plant species in relation to the total number of leaves, flowers, leaves and flowers attacked. Actually, this species invaded the corn crops in western, southern counties, the Nordic and central Romania and damaged few crops. But we supposed that in follow soon will be present throughout the country and the attractiveness of the new plants will grow.

Keywords: *Diabrotica virgifera virgifera* (Le Conte), host plants, adult, invasive pest.

Introduction. *Diabrotica virgifera virgifera* Le Conte (DvVLC), most often called western corn rootworm, is considered by most researchers specialists, as the most dangerous insect-pest in corn cultures (Krysan and Miller, 1986). Originally from America, insect (Apple *et al.*, 1977) under study, it was gradually expanded and other continents (Kiss *et al.*, 2005). The first damage was recorded in a corn crop of Kansas (Burkhardt and Bryson, 1955). According to a risk analysis, the corn is the main host plant for DvVLC. Adults feed on pollen, silk leaves and young corn grains (Macleod *et al.*, 2007). There are also other plants that ensure the survival of *Diabrotica* pest (Moeser and Vidal, 2004, 2005; O'Neal *et al.*, 2002).

Aims and objectives. The aim of this studies is finding other host plants other than corn. The objectives are axed on identifying new host plants in terms of frequency of attack.

Materials and methods. The experimental field research studies, conducted in 2011-2012, were made in the Experimental and Didactic Station of BUASVM Timisoara. The experimental field was divided in 7 variants (plots) with different plant species. In each pots was installed one emergence cage. Small plants established as host plants or potential host plants were surveyed inside of low individual cages (I) while for the tall plants were used high cages (II). In each cage, respectively, individual experimental variant, were introduced

Tab. 1. Comparative data regarding the extent of damage at level of leaves and flowers; numerical quatitically of total plants, under study, in relation with percent of attacked plants

Type of host plant	Total number of leaves /plant	Total number of flower/ plant	The average frequency of leaf attack	The average frequency of flower attack
bean	39	7	35,31 ⁰⁰⁰	42,85 ⁻
cucumber	90	21	0,16 ^{xxx}	42,85 ⁻
sunflower	20	38	1,71 ^{xxx}	92,1 ⁰⁰⁰
melon	57	8	3,4 ^{xxx}	37,5 ^{xxx}
zucchini	32	2	0,14 ^{xxx}	50 ⁰⁰⁰
watermelon	94	15	0,22 ^{xxx}	6,66 ^{xxx}
soybean	93	30	22,59 ⁰⁰⁰	20 ^{xxx}
Average	60,714	17,285	9,07	41,70
⁰⁰⁰ _very significant negative			LD5% =1,248	LD5% =1,486
^{xxx} _very significant positive			LD1% = 1,730	LD1% = 2,060
- no diferences			LD0.1%=2,403	LD0.1%=2,862

about 50 adults. The beetles were collected from corn crops located near experimental plots. When the plants were blooming, these were introduced in cages. Have been traced their behaviour and also the orientation to plants. Damaged plants were analyzed and quantified.

Results and Discussion. Comparative observation between plants showed that beetles of *DvvlC* species have differentiated preferences. The plants under observation were: sunflower, zucchini, soybean (ONeal *et al.*, 2002), bean, cucumber, melon and watermelon. The data in the table 1, show that not all plants under study are evident damaged, with repercussions on the development of plants. Plants not affected by insect are zucchini and watermelon; the mean values of number of leaves/flowers were situated between 0,00 and 1,00. Plants affected by attack of adult-insects recorded values from 1 to 21/leaves and 3-35/flowers. Of all the studied plant, a percent of 8.94% was affected to leaves and 13.65% was affected to flowers.

So, according to the observations made on the leaves with the highest average attack occurred at the plants of melon, soybean and bean. The damage on flowers have highlighted orientation towards plants of sunflower, cucumber and melon.

Conclusion. The preferred were plants from Cucurbitaceae and Leguminosae. So, if we want to answer the question *is Diabrotica virgifera*

virgifera still considered a dangerous pest from crops of Romania? the answer is definitely positive.

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