

# THE SITUATION OF THE ATTACK CAUSED BY THE LARVAE OF *DIABROTICA VIRGIFERA VIRGIFERA*, IN THE MAIZE CROPS OF NEAMȚ COUNTY, UNDER CONDITIONS OF 2019

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## ABSTRACT

The material was collected in the corn crop belonging to the Ghiorghesti stationary, Neamt. In this periode, constant harvest was carried out between May and August 2018, by taking over biological material represented by roots and maize stalks that have been brought into the laboratory for examination and processing the data obtained. From the collected biological material, the *Diabrotica virgifera virgifera* specimens that have been determined and centralized have been retained.

The material was harvested on the three variants represented by untreated seed maize (V1), maize crop to which was applied the granulated soil treatment (V2) and maize crop to which was applied the seed treatment (V3).

During the period of observation, were collected a number of 1951 specimens of larvae of *Diabrotica virgifera virgifera*. Following the centralization at variant 1 we totaled 963 specimens, at variant 2 we totaled 476secimens and at variant 3 we totaled 512 specimens.

## INTRODUCTION

The numerous uses of maize make it the most important product, as a result of agriculture, from a country's economy. This recital made the Americans say that "without corn, life would be very difficult" (national Corn growers Association, US, 1994).

Neamt County, located in the North-East of Romania, registered in 2018 about 39 thousand ha of corn established with certified seed, according to Neamt Agricultural Division. About the same area, even with an increase of 5%, the s-also in 2019, but also two years ago and 2017 respectively. This highlights the fact that monoculture of 1, 2 or even more years is a practice of agrícola on the

territory. All of these considerations have led to the spread of pests in maize ecosystems.

Stopping the use of neonicotinides has also favored the numerical development of *Diabrotica virgifera virgifera*.

The first alert of the adult in Neamt was in 2010 in hybrid fields. The intervention during the insecticide vegetation peyame kept below the economic threshold of harm. After his move made the corn scales, commercial crops, where the specialist control was not made rigorous, led to a frequency and intensity of the attack much above the PED.

## MATERIAL AND METHOD

The observations were made during the vegetation period in 2019, in a maize crop situated in Ghiorghesti locality, Neamt County, and the experience

consisted of three variants with six repetitions. The presented data in the work have been collected and analyzed .

For establishing the experience we used two hybrids of Bayer, DKC3969 and DKC4670, one extratimpurities and one semitimpurities. The preceding plant is maize in the monocultura for two years. Date of sowing 27.04.2019.

Variant 1: Untreated

Hybrid DKC 3969, 89 RM and hybrid DKC 4670, 96 RM.

Monoculture 2 years; The used seed is untreated with insecticide in the conventional soil work system.

Variant 2: Ground treatment with granulated insecticide FORCE G 1.5

Hybrid DKC 3969, 89 RM and hybrid DKC 4670, 96 RM.

We performed with the sowing, ground treatment, with granulated insecticide FORCE G 1.5, active subcticide Tefluthrin 1.5%, (Syngenta) at a dose of 15 kg ha, with Microgranulator and 2 treatments during the vegetation period with CALYPSO 480 SC, the active substance Thiacloprid 480g/L (Bayer) at a dose of 150 ml/ha, every application.

Variant 3: Treatment of Seminum with Seedoprid 600 FS hybrid DKC 3969, 89 RM and hybrid DKC 4670, 96 RM.

The treatment of the seed with Seedoprid 600 FS, active substance 600 g/L Imidacloprid (ADAMA) was performed at this variant, at a dose of 10 L/T of grains and 2 treatments during the vegetation period with CALYPSO 480 SC, the active substance Thiacloprid 480g/L (Bayer) in Dose of 150 ml/ha, every application.

The dawn of plants occurred on 14-15 May. For harvesting of the material was examined the root system in order to determine the frequency and intensity of the attack produced by the larvae, and for adults we used the yellow pheromonal traps (Wita Trap.).

At each rehearsal a number of 10 roots were extracted, with a volume of soil up to a depth of 15 cm. Subsequently, the earth was carefully removed, collecting on gauze, and the process continued by examining with the binocular magnifier and counting the larvae present on the roots. Every

rehearsal has accumulated the number of larvae identified on each root.

Observations and collections were made periodically at intervals ranging between 10 and 25 days .

With each observation noting the:

-the date when the determination was made;

-Number of identified larvae; The result obtained on the 10 roots resulted in a repetition (from R1 to R6)

-experimental variant.

## RESULTS AND DISCUSSIONS

During the experience we collected a total of 1951 larvae of the *Diabrotica virgifera virgifera* pest, on the three experimental variants.

The situation of collection by variants is the following: Variant 1, a number of 936 (table1) variant 2, a number of 476 (table2) variant 3, a number of 512 (table3)

The highest number of larvae was collected from variant 1, where we used seed without insecticide treatment (fig.1), namely 936. Variant 2, where we used ground treatment with granulated insecticide FORCE G 1.5 (fig.3),, the total number of larvae was 467, during the entire vegetation period, and in variant number 3, where the treatment of Semas was performed with Seedoprid 600 FS(fig.4), we registered a number of 512 larvae.

Compared to the untreated witness, variant 2, with granulated ground treatment, has increased efficacy. The number of larvae present on the roots has been reduced by half, maintaining June with the peak of larvae in the soil. With the installation of the larvae mortality drought is a very large, displacement in the and soil greatly hinted. The situation and frequency of the attack of *Diabrotica virgifera virgifera*, in the variant with the treatment of the seed with Seedoprid 600 FS (fig.5).

Monoculture favored the development of a large number of larvae. Also, the spring of 2019 was rainy, having

a temporary excess of moisture, all these considerations leading to a massive spread of the pest in the region.

### CONCLUSIONS

1. Following the observations made on the *Diabrotica virgifera virgifera* species it was found that the larvae produced damage recorded in June in all three variants.

2. The high density of larvae has been registered to first variant represented by untreated maize culture.

### BIBLIOGRAPHY

**1. Păuneț P., Tălmăciu M., Tălmăciu Nela,** 2008 – *Observations concerning the harmful species from the cereals crops from Huși-Vaslui zone, the Vaslui county, in the period 2005-2007.* Anall.Univ. craiova, vol.XXXVIII/B, p.373-378.

**2. Radu V., Grecea Alexandrina, Dan Florica,** 1962 – *Dinamica larvelor de coleoptere în raport cu natura solului și a vegetației.* Studii și cercetări de Biologie animală, 14, 1, p. 65-78.

**3. Roșca I., Popov C.,** 1999 – *Potential of the western corn rootworm (Diabrotica virgifera virgifera) to be included like a key pest of corn in Romania.* Proceeding of the XX Conference of the International Working Group on Ostrinia and Other Maize Pest, Turkey: 182-185.

**4. Săpunaru T., Georgescu T., Tălmăciu M.,** 1995 – *Dinamica structurii speciilor și pagubelor produse de principalii dăunători în culturile de porumb din Moldova (1972-1993).* Cercetări Agronomice din Moldova, vol. 1-2 (103), 1995.

**5. Săpunaru T., Hatman M. și colab.,** 1994-1997 – *Răspândirea bolilor și dăunătorilor culturilor agricole din Moldova în anii 1994 – 1997.* Cercet. Agronomice în Moldova, vol. 1-2, 1994, vol. 1-2, 1996, vol 1, 1997.

**6. Varvara M., Brudea V. ,** 1999 - *The fauna of Chrysomelidae (Coleoptera, Chrysomelidae ) in the maize crops from Moldavia.* Studii și Cercetări (Biologie), Universitatea Bacău. – N. 4, p. 79-84.

Table 1  
Situation and frequency of attack of *Diabrotica virgifera virgifera* larvae in untreated variant

VARIANT 1 - UNTREATED							TOTAL	No. of larvae /PI
Month	R1	R2	R3	R4	R5	R6		
MAY	24	21	16	26	15	16	118	1.97
JUNE	65	68	78	61	73	65	410	6.83
JULY	69	67	57	65	67	70	395	6.58
AUGUST	11	6	0	7	7	9	40	0.67
TOTAL	169	162	151	159	162	160	963	16.05

Table 2  
Situation and frequency of attack larvae of *Diabrotica virgifera virgifera*, in the variant of soil treatment with granulated insecticide

VARIANT 2 - Ground treatment with granulated insecticide FORCE G							TOTAL	No. of larvae /PL
MONTH	R1	R2	R3	R4	R5	R6		
MAY	7	8	14	12	9	10	60	1.00
JUNE	32	34	31	33	35	33	198	3.30
JULY	28	31	33	25	37	37	191	3.18
AUGUST	2	5	5	3	7	5	27	0.45
TOTAL	69	78	83	73	88	85	476	7.93

Table 3  
Situation and frequency of attack larvae of *Diabrotica virgifera virgifera* in the variant of soil treatment with Seedoprid 600 FS

VARIANT 3 - Seed treatment - Seedoprid 600 FS							TOTAL	No. of larvae /PL
MONTH	R1	R2	R3	R4	R5	R6		
MAY	10	12	11	12	10	9	64	1.07
JUNE	40	34	36	37	32	36	215	3.58
JULY	32	34	29	36	38	35	204	3.40
AUGUST	9	7	3	0	4	6	29	0.48
TOTAL	91	87	79	85	84	86	512	8.53

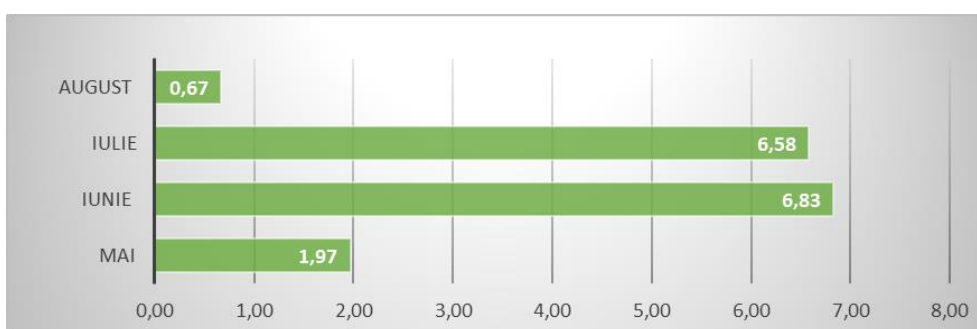


Fig. 1. Situation of collections in variant no.1 untreated maize

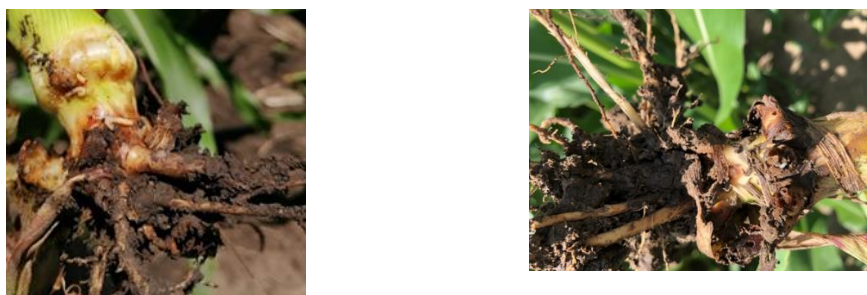


Fig. 2. Aspects with the attack and presence of the larvae of the *Diabrotica virgifera virgifera* species in the experimental stationary

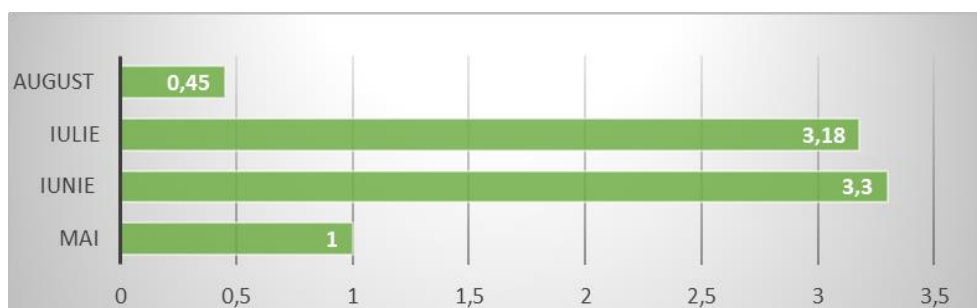


Fig. 3. Situation of collections in variant 2 - Ground treatment with granulated insecticide FORCE G

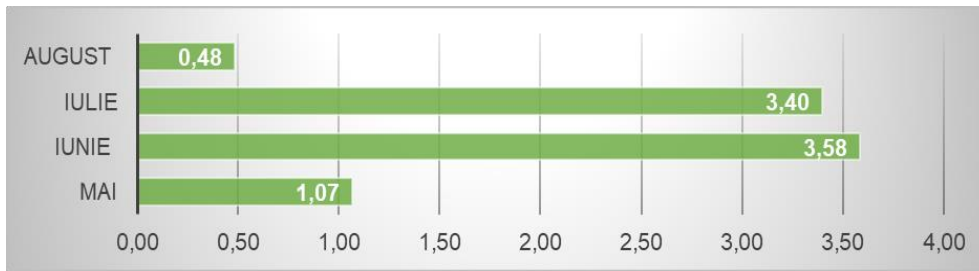


Fig. 4. Situation of collections in variant 3 – Seed treatment with Seedoprid 600 FS

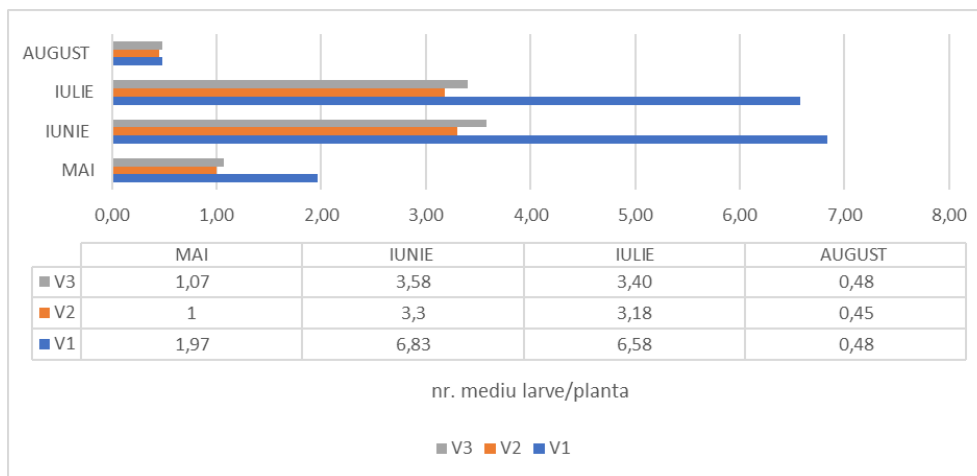


Fig.5. The situation of larvae density on the three experimental variants