

DYNAMICS OF THE APPEARANCE THE PEST *DIABROTICA VIRGIFERA VIRGIFERA*, IN THE MAIZE CROPS OF NEAMȚ COUNTRY, UNDER THE CONDITIONS OF 2019

TALMACIU MIHAI, ENACHE MARIANA, TALMACIU NELA, HEREA MONICA

Keywords: Maize, treatment at seed, adult, insecticide, untreated.

ABSTRACT

Research on the dynamics of the appearance of *Diabrotica virgifera virgifera* was made in the frame of a farmland cultivated with maize in Neamt county. The biological material collected using sticky yellow traps during the year 2019 from June to August.

The variants and repetitions of the experience were organized according to the mode of protection of culture and according to the treatment applied, and thus resulted in three variants as follows:

Variant 1 - untreated maize;

Variant 2 - ground treatment with granulated insecticide FORCE G 1.5;

Variant 3 - treatment of the seed with Seedoprid 600 FS.

During the entire period of observation, a total of 5313 adult specimens of *Diabrotica virgifera virgifera* were collected, where the first alert of the adult was made on 12 June, and its last registration was on 16 August.

INTRODUCTION

Maize (*Zea mays* L.) is considered to be one of the world's most cultivated plants, thanks to its numerous advantages, its products being used both in human nutrition, in industry and in animal nutrition.

As a crop plant, the corn has a relatively long vegetation period of about 200 days, comprising all the warm season. During this period, numerous fitofagous from various systematic groups: mites, miriapods, nematode, insects, mammals and birds find food and shelter in the corn ecosystems. But the biggest losses are caused by insects (Bărbulescu, 1979).

In the climatic conditions of our country, the most dangerous pests of corn culture are: *Tanymecus dilicollis* Gyll. (maize leaf weevil), *Agriotes* spp. (Wire worms) *Ostrinia nubilalis* Hb.

(European corn borer), *Diabrotica virgiiifera virgiiifera* LE Conte (Western worm of the corn roots), *Agrotis* spp. (cutworms).

Stopping the use of neonicotinoids, also favored the numerical development of polulations of *Diabrotica virgifera virgifera*.

First adult alert in Neamt country was in the year 2010, in the fields of hybridizing. Intervention during the vegetation period with insecticides have kept below the economic threshold of damaging this pest. Subsequently its displacement made that in the fields with maize, commercial crops, where the specialized control was not made rigorously, resulted in a frequency and intensity of the attack much over PED.

MATERIAL AND METHOD

The observations were performed during the vegetation period, in the year 2019, in a maize crop located in Ghigoiesti stationary Neamț. The premergatory plant being the corn, in the monoculture for two years. The presented data in the work have been collected .

Experience has consisted of three variants with six repetitions (Adam, 2008), as follows:

Experience has consisted of three variants with six repetitions, as follows: In setting up the experience we used two hybrids of Bayer, DKC3969 and DKC4670, one exatimpurity and one semitimpurity. The preceding plant is maize in the monocultura for two years. The date of sowing 27.04.2019 and the length of the experience was 325 m.

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

Variant 3: Treatment of seeds with Seedoprid 600 FS

Hybrid DKC 3969, 89 RM and hybrid DKC 4670, 96 RM This variant was conducted the treatment of seeds with Seedoprid 600 FS, active substance 600 g/L imidacloprid (ADAMA), 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) at a dose of 150 ml/ha, every application.

The plant emergence place on 14-15 May.

For the determination of the adult emergence dynamics, have been used yellow glue traps, 6 in each variant, respectively 18 traps.

The traps were placed on 12 June, on each repetition, starting from 10 m from the edge of the experience,

continuing at distances of 50 m along the length of the variant. They were collected every 2 weeks and the traps were changed once a month.

Observations and collections were made regularly, at two weeks' interval. With each observation noting:

- the date on which the determination was made,
- the number of adults in each trap;
- the repetition;
- experimental version.

RESULTS AND DISCUSSIONS

The total number of adults collected from the appearance respectively June and until the last collection of 16 August is 5313 specimens, of all three variants (Fig.1) taken into the study.

The appearance of the first adults was observed in mid-June (table1), with the first data collected on 18 June. Migration from the ground has taken place since 12 June. Between June and August it was observed that the highest average number of adults was collected in early July (102 adults in the trap) and the lowest number of adults was recorded in August (16 adults).

The efficacy of treatment with insecticide on the ground (table2) compared to standard untreated winds is noted. The maximum number of adults, as in the case of the standard variant, shall be recorded at the beginning of July. We specify that the maximum number of adults found in the trap is 88, 14 adults less than the standard.

The observations made in the period from June to August, as regards the attack of larvae on maize roots, are most severe at the beginning of June. The attack of adults on leaves and the most intense inflorescence is recorded after mid-June and late July.

The damage of larvae has been the destruction of the root system by the consumption of the absorbent brushes and then their penetration into the adventive roots.

Phenotypic, the larval attack led to plant collapse and the bending of the strains in the form of a “swan neck”, the degree of attack on the untreated variant being very high (60%). The adult attack on the leaves showed through longitudinal striped holes along the ribs, followed by their yellowing. The degree of attack being 45% on the untreated variant, compared with 20% on the variants of the insecticide treatment.

After mid-June and during July, adults fed themselves with silk and pollen, in the untreated version, fed themselves with freshly formed grains.

From Table 3, it is noted that there are no semi-substantial differences between the two insecticide treatment variants. Out of the total number of adults collected in the following range, the treated option has 47 adults more than option 2 with granulated treatment on the ground. In the same way, the highest number of adults was recorded at the collection on 12 July (501 adults).

CONCLUSIONS

1. The first adult alert was made on June 12th. At the first collection, 613 adults were registered in all 3 variants, 317 adults in Variant 1, 146 adults in variant 2 and 150 adults in variant 3.

2. The total number of adults collected from all 3 variants throughout the period of observation from June until August was 5313.

BIBLIOGRAPHY

1. Adam Floarea, Popescu Gh., Grozea Ioana, 2008 - *Stigmatrophic activity a new pest Diabrotica virgifera virgifera Le Conte connected within a “Pioneer” mayze diversity*, Lucrări

științifice -Agricultură, Ed. Agroprint, Timișoara., vol 40, pag.337-342.

2. Bărbulescu Al. și colab. 1979 - *Comportarea unor hibrizi de porumb față de atacul sfredelitorului (Ostrinia nubilalis Hb.)*. Probleme de protecția plantelor, București, nr.7.

3. Popescu Gh., Adam Floarea, Oriol Irina, 2008– *Interacțiunea dintre componentele patosistemelor porumbului și factorii climatici prin analiza de tip ANOVA și corelații Bravais –Pearson*, Lucrări Științifice, Ed. Agroprint, Timișoara vol.40, pag. 470-473

4. Rogoianu V., Perju T., 1979 – *Determinator pentru recunoașterea daunătorilor plantelor cultivate*. Editura Ceres, București.

5. Roșca I., 1997 – *Implicațiile prezentei speciei Diabrotica virgifera virgifera Le Conte asupra tehnologiei culturii porumbului în România*. Lucrări Științifice U.S.A.M.V. Iași, vol. 40, Seria Agronomie, pag. 551-560.

6. Săpunaru T., Mihai Tr., Tifache T., 1992 – *Comportarea hibrizilor de porumb zonați în Moldova și a celor creați la S.C.A. Podu-Iloaiei la atacul sfredelitorului (Ostrinia nubilalis Hb.)*. Cercetări agronomice în Moldova, Iași, .vol.1, pag. 95.

7. 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 , pag. 103.

8. Varvara M., Andriescu I., Moglan I., 1981 - *Unele aspecte ale compoziției și structurii mezofaunei din câmpurile experimentale de porumb*, Comunicări științifice , Inst. de Inv. Sup. Constanța , pag. 39 - 44.

Tablel 1

The dynamics of the adult emergence of the untreated variant

Harvesting data	Variant 1 – untreated						Total
	R1	R2	R3	R4	R5	R6	
18 june	68	56	46	43	51	53	317
28 june	93	88	82	73	80	96	512
12 july	102	97	90	93	87	91	560
31 july	86	81	78	79	76	78	478
16 august	33	28	20	16	21	23	141
TOTAL	382	350	316	304	315	341	2008

Table2

The dynamics of the occurrence of adult in soil treated with granular insecticide Force G

Harvesting data	Variant 2 – soil treated with granular insecticide Force G						total
	R1	R2	R3	R4	R5	R6	
18 june	38	23	21	20	21	23	146
28 june	76	70	71	67	60	72	416
12 july	86	83	88	81	81	87	506
31 july	80	83	72	73	62	70	440
16 august	26	20	21	18	16	20	121
TOTAL	306	279	273	259	240	272	1629

Table 3

The dynamics of the appearance of adult in seed treatment with Seedoprid 600 FS

Data colectarii	Variant 3 -seed treatment with Seedoprid 600 FS						total
	R1	R2	R3	R4	R5	R6	
18 iunie	31	28	24	20	18	29	150
28 iunie	83	88	72	70	73	68	454
12 iulie	83	88	86	82	81	81	501
31 iulie	80	78	71	73	72	73	447
16 august	27	21	21	16	21	18	124
TOTAL	304	303	274	261	265	269	1676

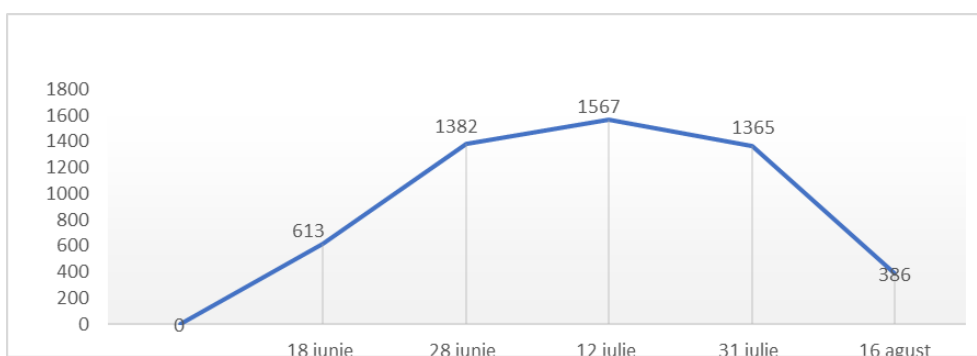


Fig.1. Dynamics of collected adults from the appearance of all three variants