

INTENSITY OF ATTACK OF THE CORN BORER (*Ostrinia nubilalis* Hübner) ON THE TERRITORY OF BARANJA IN THE PERIOD 1971-1990

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From 1971 to 1990, on the territory of Baranja more than 50 hybrids, totalling 1,310, from FAO groups 100 to 700 were examined every year. Climatic conditions and tolerance of some hybrids had the highest influence on the incidence and attack of the corn borer (*Ostrinia nubilalis* Hübner). Average attack was from 2.32 % in 1979 to 51.65 % in 1973. Between FAO groups 100 and 200 in correlation to 700, attack was higher by 6 % in FAO group 700.

Key words: *Insecta*, *Pyralidae*, *Ostrinia nubilalis* Hübner, European corn borer, maize hybrids, Baranja.

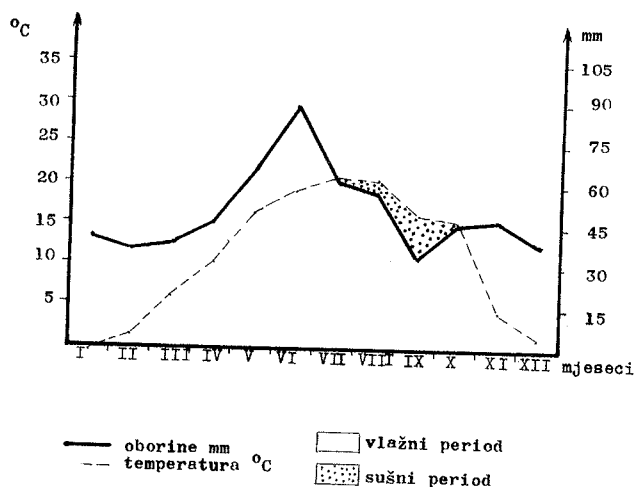
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Od 1971. godine do 1990. godine na području Baranje pregledano je svake godine više od 50 hibrida, odnosno ukupno 1.310, FAO grupa zriobe 100-700. Na pojavu i intenzitet napada kukuruznog moljca najveću ulogu imali su klimatski uvjeti te tolerantnost pojedinih hibrida prema tom štetniku. Prosječan napad kretao se od 2.32 % 1979. do 51.65 % 1973. godine. Između FAO grupa 100 i 200 u odnosu na 700 utvrđene su razlike oko 6 % jačeg napada na kasnijim hibridima.

Ključne riječi : Kukci, *Pyralidae* – plamenci, *Ostrinia nubilalis* Hübner – kukuruzni moljac, hibridi kukuruza, Baranja.

INTRODUCTION

Production of corn in Croatia has long tradition, especially in the Baranja region where it grows on several thousand hectares. Our investigation was carried out from 1971 to 1990. Among the large number of corn pests, there is always a high intensity of the European Corn Borer (*Ostrinia nubilalis* Hübner) which is one of the most economically important pests in Croatia.



Climadiagram by Walter, »Belje« PIK (Brestovac) (1971–1990)

In the USA, the European corn borer and western corn root worm *Diabrotica virgifera virgifera* are very important and they are monitored every year. The corn borer has one to five generations, but in our conditions one to two. The number of ge-

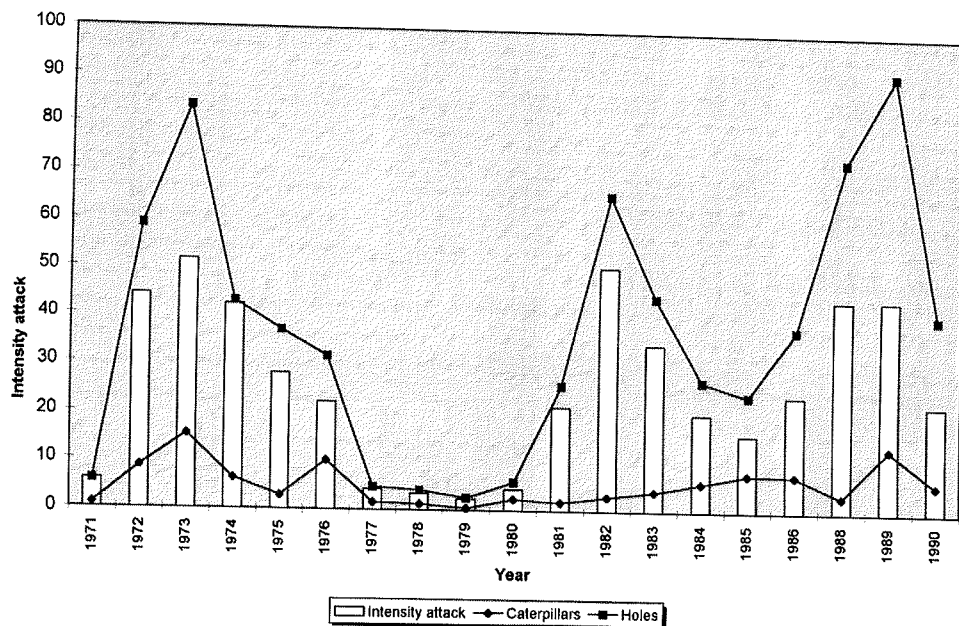


Fig. 1. Intensity attack of corn borer (*Ostrinia nubilalis* Hübner) from 1971 to 1990 year, on the territory of Baranja

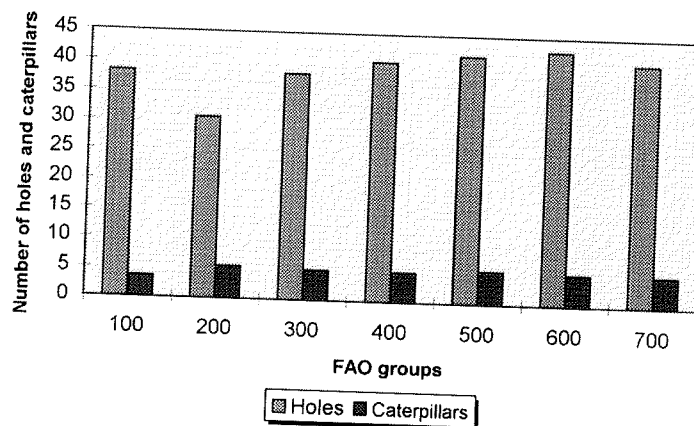


Fig. 2. Number of holes and caterpillars of European corn borer (1971–1990) per 100 plants

nerations depends on climatic factors and on the host plant. Multigenerations after WRESSELL (1952) are highest so the second generations had 71 % in comparison with the first generation. Intensity of attack varied from year to year on the territory of Baranja and Slavonija. During four years according to VALENCIĆ et al (1986) corn borer attack on seed maize production was 32.95 % (18–56 %). Caterpillars and holes were along the whole stalk, but the highest number was under the ear (IVEZIĆ et al 1993, 1994). For our corn region in Croatia according to MACELJSKI (1991) yield losses were from 2 to 22 %. During 1988 scientists investigated the effect of biological preparations on the larva stage of the corn borer (VALENCIĆ et al 1988). Biological preparations on the basis of *Beauveria bassiana* Balsamo, *Bacillus thuringiensis* Berlinier, *Chrisoperla carnea* Stephens, *Trichogramma nubilae*, *Nosema pyrausta* Paillot, that show high efficiency are mostly used in the USA.

The aim of this investigation was to discover the intensity attack of the European corn borer on the different maize hybrids of all FAO groups.

MATERIAL AND METHODS

The investigation was being carried out on corn hybrids on the territory of Baranja from 1971 to 1990 year. Trials were carried out on the fields of »Belje« PIK with hybrids from FAO groups 100 to 700. Every year corn stalks were dissected on 50 plants of every hybrid (totally 1,310 hybrids). Caterpillars and holes, above the ear, on the ear and under the ear were shown according to randomised experiment each plant. Intensity attack was calculated in percentage per hybrid, and number of caterpillars and holes per 100 plants. Four categories were made: 0–10 %, 10–20 %, 20–40 % and over 50 %. Number of years for every category was included.

Climatic conditions are shown in Walter climadiagram, as average for 20 years (Climadiagram)

RESULTS AND DISCUSSION

The European corn borer, as a pest was continuously present from 1971 to 1990 in our field experiment. Fig 1. shows intensity of attack of corn borer, number of caterpillars and holes per year investigated.

Average attack for those years was 25.58 % . The lowest attack was 1979 with 2.32 % and the highest in 1973 with 51.65 % (fig. 1).

Number of caterpillars and holes per FAO groups 100 to 700 is shown in fig. 2. The highest number of holes was in 1989 with 91.81 holes per 100 plants and the lowest in 1979 with 2.53 holes per 100 plants. The number of caterpillars was followed by number of holes. During those 20 years it was found from 0.47 to 15.35 caterpillars per 100 plants. Position (%) of caterpillars and holes per FAO groups it is shown in fig. 3 and fig. 4. The highest number of caterpillars and holes was under the ear, then above the ear and the lowest number in the ear.

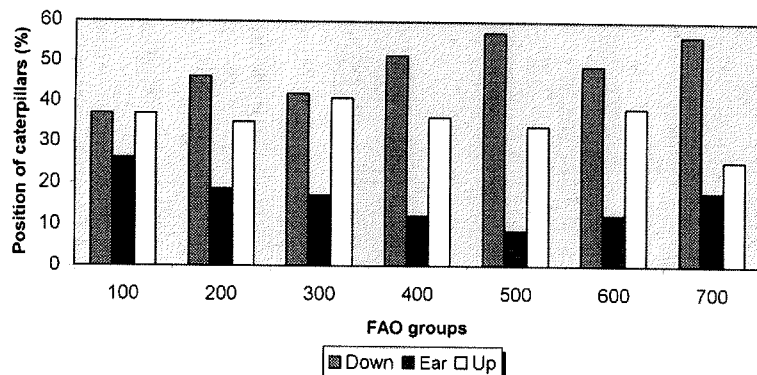


Fig. 3. Position of caterpillars (%) of European corn borer per FAO groups (1971-1990) per 100 plants

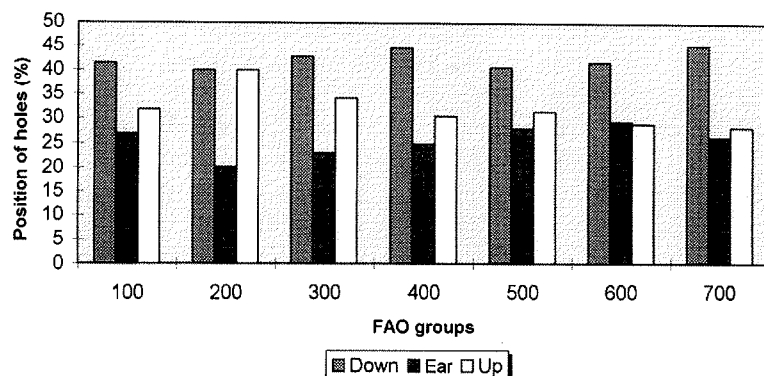


Fig. 4. Position of the holes (%) of European corn borer per FAO groups (1971-1990) per 100 plants

According to the categories of attack, it was found that the five year intensity was below 10 % , in one year 10 to 20 % in seven years, 20–40 % and in six years the intensity attack of the corn borer was over 40 %.

The lasting appearance of the European corn borer which is increasing in intensity annually sets us the problem of controlling this pest through integrated pest management, especially in seed production of better yield and quality.

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SAŽETAK

Intenzitet napada kukuruznog moljca (*Ostrinia nubilalis* Hübner) na području Baranje od 1971.–1990. godine

M. Ivezić i E. Raspudić

Proizvodnja kukuruza u Hrvatskoj ima dugu tradiciju, a Baranja je jedno od područja gdje se uzgaja na više tisuća hektara. Od velikog broja nametnika koji se javljaju za vrijeme vegetacije među ekonomski značajnim štetnicima stalno je prisutan kukuruzni moljac (*Ostrinia nubilalis* Hübner) u jačem ili slabijem intenzitetu. Od 1971. do 1990. godine na području Baranje pregledano je svake godine više od 50 hibrida, odnosno ukupno 1.310, FAO grupa zriobe 100 do 700. Na pojavu i intenzitet napada kukuruznog moljca najveću ulogu odigrali su klimatski uvjeti, te tolerantnost pojedinih hibrida prema tom štetniku. Prosjedan napad kretao se od 2.32 % u 1979.

godini do 51.65 % tijekom 1973. godine. Kroz 10 godina u pokusima su bile zastupljene sve navedene FAO grupe, te se iz tih podataka uočava pojava napada moljca od ranih do kasnijih hibrida. Tako između FAO grupa 100 i 200 u odnosu na 700 utvrđene su razlike oko 6 % većeg napada na kasnijim hibridima. Najmanje razlike uočene su između FAO grupa 300, 400 i 500. Disekcijom stabljike kukuruza kod svih FAO grupa utvrđen je najveći broj rupa ispod klipa, te iznad, a najmanji u klipu kukuruza. Kod kasnijih hibrida također je utvrđen veći broj rupa i gusjenica po stabljici, u odnosu na rane hibride, što je uzrok jače pojave druge generacije kukuruznog moljca na kasnijim hibridima. Rezultati ovih istraživanja ukazuju na potrebu suzbijanja tog štetnika, koji je stalan na našim poljima i gubici su od ekonomskog značaja. Potrebno je provoditi integralnu zaštitu kukuruza od kukuruznog moljca s posebnim značajem primjene bioloških sredstava prihvatljivih za okoliš.