

**PRELIMINARY STUDY REGARDING IMPORTANCE OF SPECIES
HELICOVERPA ARMIGERA Hb. FOR MAIZE CULTURE IN ROMANIA**

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Abstract

Helicoverpa armigera Hb., is a pest which has the tendency to become one of the most dangerous pest in Romanian maize fields, it is known under different names from which the most common is fruit worm of tomatoes or worm of maize ear etc. Species is polyphagous and a major pest for more than 120 species. At maize, larvae eat initially silk and after that grain in milk stage from top of ear, creating empty places in distal zone of ear, being situations in which larva bored the middle of ear. Characteristic for this pest, in Romania, is attack of maize cultures, especially in warm and dry years when *Helicoverpa armigera* is manifested through attack on leaves, ears, silk and grains. After this attack many of ears were infected with different moulds, increasing possibilities of infestation with mycotoxins. Romania, with 3 millions hectares of maize, is the most important country affected by *Helicoverpa armigera* Hb. in Europe. It was registered percentage of ears attack and the intensity of attack and results shows a different attack depending on area, hybrids and type of hybrids. It wasn't a correlation between *Helicoverpa* attack and production. Frequency of attacked plants attend, at Timisoara 82.3%, and attack note 1.73. It is discussed the importance of pest.

INTRODUCTION

Helicoverpa armigera Hb., is a pest which has the tendency to become one of the most dangerous pest in Romanian maize fields; it is known under different names from which the most common is fruit worm of tomatoes or worm of maize ear etc. Species is polyphagous and major pest for more than 120 species. At maize, larvae eat initially silk and after that grain in milk stage from top of ear, creating empty places in distal zone of ear, being situations in which larva bored the middle of ear. Characteristic for this pest, in Romania, is attack of maize cultures, especially in warm and dry years when *Helicoverpa armigera* (figure 1 a and b) is manifested through attack on leaves, ears, silk and grains (figure 1 c). After this attack many of ears were infected with different moulds (figure 1 d), increasing possibilities of infestation with mycotoxins.

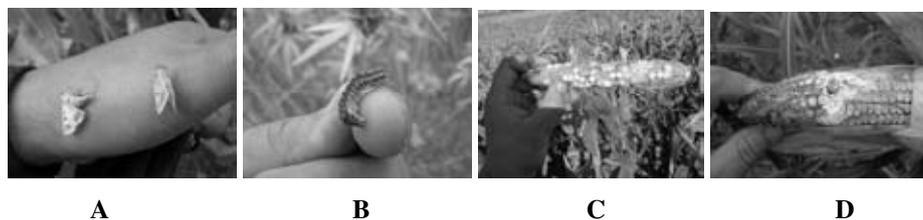


Fig. 1. *Helicoverpa armigera* Hb. A-adult moth; B larvae; C-silk attack with resulting missing of grain; D-mold after attack

The European maize borer (*Ostrinia nubilalis* Hb.) together with *Helicoverpa armigera* Hb., seems to become the most dangerous pests in Romanian maize fields, after panicle apparition, being spread throughout the cropping zones in the country [1], taking into consideration that other two major maize pest in Romania, maize weevil (*Tanymecus dilaticollis* Gyll.) and western maize rootworm (*Diabrotica virgifera virgifera* LeConte) could be maintained under control by culture rotation or in the worst case by chemical treatments.

MATERIAL AND METHODS

Observations and determination regarding *Helicoverpa armigera* were done in 3 areas in different fields during 2008, at Bucharest, Timisoara, and Nadlac. Observations and determination were done during October, taking into consideration percentage of plants (ears) attacked by *Helicoverpa armigera*. Attack intensity of *Helicoverpa armigera* was noted on a scale from 1 to 3, where 1 means larvae attack only on the tip of the ear and on the silk, 2 means *Helicoverpa* spp, attacked ear was destroyed in tip (0.5-1.5 cm), 3 means that *Helicoverpa* spp. larvae have destroyed (by tunneling) till 1/3 from distal area of ear.

RESULTS AND DISCUSSION

At Timisoara in respect of *Helicoverpa* attack, in late maize hybrids, where registered an ear attack between 81.75% and 82.31% in different hybrids and a note attacks from 1.36 to 1.83. At Nadlac *Helicoverpa* percentage of ear attack was less visible, in respect of *Helicoverpa* attack, between 2.75% to 3.0% and with note attacks from 0.5 to 1.0. At Bucharest from 0.75 to 2.25 and with note attacks from 0.25 to 1.0. It wasn't a correlation between *Helicoverpa armigera* attack and grain production. In the future, through the study on the factors which determine the existence of mycotoxins producing fungi in maize crops (conventional or Bt), the economic impact of the study will determine their reduction by applying modern

technologies, followed by the identification of ways to reduce the maximum level of fumonisine, towards the EU proposal of 0.5 mg/kg (FSA, 2003), or of alfatoxins in food of 4 ppb ($\mu\text{g}/\text{kg}$) and B1 alfatoxins of 2 $\mu\text{g}/\text{kg}$.

CONCLUSIONS

1. *Helicoverpa* attack could be a serious problem referring maize cultivation in some years.

REFERENCES

1. Roșca I., 2003. *Entomologie agricolă specială*. Ed. Didactică și Pedagogică, R. A., București (pp. 368).