

The Suni bugs on small grains in Yugoslavia

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ABSTRACT In Yugoslavia the most frequent and the most numerous Suni bug species are *Eurygaster austriaca* Schrk. and *E. maura* L. These insects are widespread in all cereal-growing regions of Yugoslavia. However, they are most numerous in the north-eastern parts of the country where wheat and barley production is concentrated. In some years these crops suffer extensive damage on the territory of Vojvodina Province. Both nymphs and imagoes are harmful. They cause major damage by puncturing the grains in the stages of milk, wax and full maturity. The attacked grains wrinkle and lose weight and quality.

IZVLEČEK Žitne stenice vrst *Eurygaster austriaca* in *E. maura* so v Jugoslaviji najštevilnejše in najpogostejše. Razširjene so v vseh žitorodnih krajih Jugoslavije, najpogostejše pa so v severovzhodnih delih države, kjer je pridelava pšenice in ječmena največja. Ti pridelki so zaradi stenic v Vojvodini v nekaterih letih močno prizadeti. Škodo povzročajo ličinke in odrasle žuželke s sesanjem žitnih zrn od stopnje mlečnosti do polne zrelosti. Napadena zrna se zubajo in izgubijo na teži in kakovosti.

Introduction

There are several common names for these insects: the Suni bugs or the senn (sunn) pests but they could also be named as cereal or wheat bugs, because wheat is their primary host plant. As economically important pests the Suni bugs are spread in many countries of the Near and Middle East, in the European part of the USSR, in Hungary, Rumania, Bulgaria, Yugoslavia, etc. They are also present in some other European countries and in Africa but only as minor pests.

These insects are one of the important entomological problems on small grains in Yugoslavia. Although they have been present in our entomofauna for a long time, the first major attack with heavy damage was not recorded until the mid-Sixties in eastern and north-eastern parts of the country.

Species and distribution

The Suni bugs (*Heteroptera: Pentatomidae*) are present with several species in Yugoslavia (JOVANIĆ 1966). The most representative are *Eurygaster austriaca* Schrk. and *E. maura* L. with about 60-65% and 30-35% of the population, respectively. The other species, as *E. integriceps* Put., *E. testudinaria* Geoffr. and *Aelia* spp. are less frequent. Species *E. integriceps* was found only in eastern parts of Serbia and Macedonia, close to the Bulgarian border, but not in Vojvodina Province where the populations of other species were most numerous (JOVANIĆ, 1972).

The Suni bugs are widely spread insects in all cereal- growing regions of Yugoslavia. However, they are most numerous in the north-eastern parts of the country, especially in Vojvodina Province, the major wheat- and barley-growing region.

Beginning with 1964, when the highest population of these insects was registered, we check in the autumn of each year the number of adults per square meter in overwintering sites (Tab. 1). These data are useful to forecast the frequency of the bugs in the next year. The pests occurred in large numbers in 1964, 1968, 1969, and 1970. They had to be sprayed on large area in those years. More recently, their larger-scale occurrences were recorded in 1973 and 1988, but within the limits of tolerance without the necessity of controlling them. Trends of increase in the number of the pests were registered in 1988 and during the vegetation of 1989.

Life cycle and types of damage

The Suni bugs adults hibernate in mountain areas below dry leaves of different forest trees. In Vojvodina Province these are small wooded regions of the Fruška Gora hills and the Deliblato Sands. About 70% of the Suni bug population overwinter there. The adults remain in the forest from August to March of the next year.

In the spring, by the end of March and the beginning of April, adults fly to the wheat fields and feed on the young wheat plants causing typical damage symptoms (STAMENKOVIĆ, 1976). They stick into the part of the stem immediately above the soil surface and suck up the plant saps. While feeding, the adult injects different enzymes along with the saliva into the plant tissues causing the tops of young plants to wither and dry up. Later, in May, the adult feeds on the wheat stem and cause this part of the plant to necrose and dry up also. If the adult punctures the stem immediately below the spike, it will also dry up. After some time, many barren "white spikes" are observed in wheat fields, which have resulted from being withered.

Nymphs appear in May and imagoes of the new generation in June. Both of them feed on the wheat spikes by puncturing the grains in the

Tab. 1. Number of the Suni bug imagoes per 1 m² on overwintering sites in the autumns of 1964 - 1988.

Years	L o c a l i t i e s		Average
	Fruška Gora	Deliblato Sands	
1964	<u>170.4</u>	269.7	<u>220.1</u>
1965	24.3	11.5	17.9
1966	9.1	6.7	7.9
1967	7.9	7.8	7.8
1968	<u>39.2</u>	<u>32.2</u>	<u>35.7</u>
1969	<u>98.0</u>	<u>73.4</u>	<u>85.7</u>
1970	<u>35.8</u>	<u>37.1</u>	<u>36.5</u>
1971	19.0	17.8	18.4
1972	19.5	20.5	20.0
1973	20.5	31.9	26.2
1974	not done	13.2	13.2
1975		14.0	14.0
1976		16.6	16.6
1977		16.8	16.8
1978		12.5	12.5
1979	7.4	7.5	7.5
1980	8.4	9.0	8.7
1981	not done	8.8	8.8
1982	6.4	12.8	9.6
1983	8.6	9.6	9.1
1984	9.0	13.5	11.2
1985	5.3	8.3	7.2
1986	7.3	11.2	9.2
1987	14.1	14.6	14.4
1988	23.2	<u>33.9</u>	28.5

stage of the milk, wax and full maturity causing major damage. Damaged grains wrinkle and lose weight. Besides that, the quality of wheat flour from damaged grains is diminished, because the enzymes injected into the grains reduce or even destroy the albumins of the gluten.

In Yugoslavia, the pests inflict the largest damage on the territory of Vojvodina Province (JOVANIĆ, 1965). In some years, the wheat crop was

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