

AN OUTBREAK OF *DOLYCORIS BACCARUM* L. (HETEROPTERA:
PENTATOMIDAE) ON SUNFLOWER IN ISRAEL*

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ABSTRACT

In June 1977 a mass population of *Dolycoris baccarum* L. (Pentatomidae) was observed in a sunflower field in Israel. Each sunflower head carried tens of bugs which sucked the developing seeds. The infested plants yielded degenerate, empty seeds. In the following spring, first instar nymphs of the bug were found on leaves of *Plilomis viscosa* (Poir) but no mass aggregation, as in the previous summer, was found.

Dolycoris baccarum L. is a pentatomid of western Mediterranean origin (Poli-vanova, 1957). It occurs throughout the Palearctic region and is a known pest in the USSR and Scandinavian countries, where its bionomics and ecology have been studied (Kamenkova, 1958; Viktorov, 1964; Conradi-Larsen & Somme, 1973). Investigations on other aspects of *D. baccarum* were also carried out (Nourteva, 1954, 1956). In other parts of Europe, too, outbreaks of *D. baccarum* occasionally occur, as in Germany in the mid 1930s (Tischler, 1937).

D. Baccarum is known mainly as a cereal pest, attacking the grains in the milky stage. Unlike other cereal pentatomids it is also polyphagous (Tanskii, 1971). It is considered one of the most important pests of tobacco in the northern Caucasus (Romanova, 1930) as well as in other parts of the USSR and Poland (Kamenkova, 1958). In Bulgaria it was most injurious and widespread on various medicinal plants (Popov, 1973). It is a pest of sunflower in the Ukraine and in Bessarabia, sometimes appearing in large numbers (Dekhtiarev, 1929); at harvest time, the bugs migrate from winter wheat to sunflower as well as to tobacco and other plants (Kamenkova, 1958).

*Contribution from the Agricultural Research Organization, The Volcani Center, Bet Dagan, Israel. No. 244-E, 1980 series.

In the Mediterranean region *D. baccarum* causes damage when present in large numbers in Italy, Greece, Turkey and Cyprus (Genduso & di Martino, 1978; Vassiliou, 1960; Lodos *et al.*, 1978; Georghieu, 1977). In Israel no previous damage by *D. baccarum* was recorded, although the insect was known to occur (Bodenheimer, 1937). Since 1960 it has occasionally been caught in light traps operated at various sites, and in May-June 1971 and 1972 by sweeping in alfalfa fields left for seeds (Melamed-Madjar, Venezia – unpublished data).

In early June 1977 an outbreak of *Dolycoris baccarum* adults was observed in a single sunflower (*Helianthus annuus* L.) field at the foothills of the Judean mountains. By that time the heads of the plants were already drooping, with each head harboring about 40-50 bugs, which sheltered during the day underneath the bracts. The stems also suffered from the sucking, which was concentrated over limited areas. The stems reacted by ample extrusion of sap and in some cases the stems broke at the affected sites.

In the field, the outbreak area was limited, about 0.2 ha of an 11-ha field. This field was close to extensive sunflower and cotton fields, but no bugs were found on cotton or in any of the other sunflower fields.

By the end of July the population had decreased greatly and most heads were dry and did not harbor any bugs. A few bugs were present on plants still green and succulent, which were not numerous.

The field at large yielded the expected crop, except for the outbreak focus, where the heads carried pale seeds, empty or with a small degenerate kernel, as shown in Fig. 1.

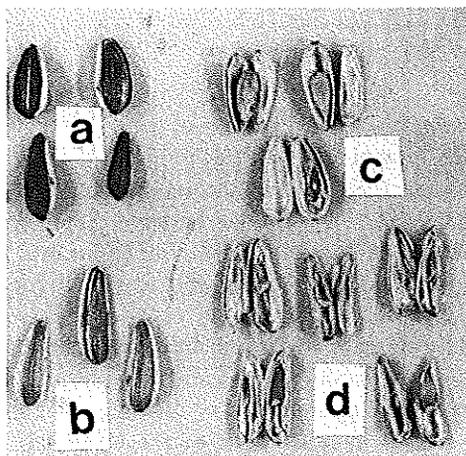


Fig. 1. Damage by *Dolycoris baccarum* to sunflower seeds. a, normal dark seeds; b, pale seeds from injured heads; c, open seed covers from healthy heads, normal seeds; d, open seed covers from infested, injured heads, with remnants of seeds.

Seed samples from the infested area were compared with healthy seeds from two neighboring fields. The tests and measurements carried out on them included: 1000-seed weight (five replicates of 100 seeds); condition of seeds (100 seeds were checked

per sample) and germination (six replicates of 50 seeds, to which no chemical treatment was applied). The results are presented in Table 1.

TABLE 1. THOUSAND-SEED WEIGHT AND CONDITION OF NORMAL AND DEGENERATE SUNFLOWER SEEDS AND SEEDLINGS FROM UNINFESTED FIELDS AND FROM A FIELD INFESTED BY *DOLYCORIS BACCARUM*†

Field	1000-seed weight (g)	Seeds (%)				Germinating seedlings (%)		
		empty	degenerate	slight, injury*	whole	dead	abnormal	normal
Uninfested 1	131	6	4	7	83	25	9	66
2	139	1	9	5	85	26	10	64
Infested	54	27	33	36	4	62	10	28**

* Small part of seed missing.

** Edges of cotyledons injured.

† The tests were carried out by Dr. Ahuva Sharir, at the Official Seed Testing Laboratory of The Volcani Center, Agricultural Research Organization, Bet Dagan.

The infestation area was at the corner of the field, with cotton on one side and a highway on another. The source of the outbreak was sought in the uncultivated nearby foothills and roadsides, but no clue was found until the following spring. At the end of March 1978, first instar nymphs of *D. baccarum* were found on leaves of *Phlomis viscosa* Poir, not far from the infestation focus of the previous summer. They were not found on any other plant. By April 11 the nymph population had dwindled to only a few. In June, no stage of the insect was found at that spot, and in a nearby sunflower field a few *D. baccarum* imagoes were found on rundown plants. No outbreak occurred as in the previous summer.

The annual cycle of *D. baccarum* in Israel is unknown. The present observations suggest that adults become active in the spring, ovipositing in March on dicotyledonous weeds. The new generation matures in May, and is ready to take off from breeding sites. This coincides with the time the sunflower plants are at the milky stage.

We have no explanation for the very dense population aggregating in a very limited area, nor for the fact that no mass aggregation of this bug was previously observed in Israel.

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