

OBITUARY

Shoshana Yathom (1925 - 1994)



IN MEMORIAM

Dr. Shoshana Yathom died on November 28, 1994, after a long illness. She was born at Rużany (near Slonim), Poland (today Byelorussia), on March 25, 1925, and came to Israel as a child, in 1934. Shoshana spent her early formative years at the Miqwe Yisrael Agricultural School, where her father served as the school physician. This environment had a major effect on her future. Thus, even though she majored in the humanities at the Herzlia High School in Tel Aviv (1942), she chose agricultural entomology as her academic profession.

After some agricultural wartime service (WW II) in 1943, she commenced studies at The Hebrew University of Jerusalem, obtaining her M.Sc. degree in 1947 with a thesis on 'Conservation properties of cut flowers' (supervisor, Prof. M. Plaut). In 1948–49 she served her country on military service during the Israel War of Independence. During 1949–50 she taught zoology and botany at the Ayanot Agricultural High School and in 1950 she conducted research on wood borers for the Ministry of Defense. In 1951, she became established as a researcher in the Division of Entomology of what is today The Volcani Center, ARO. In 1960 she received her Ph.D. degree from the Faculty of Agriculture of The Hebrew University for a thesis on 'Life history of *Hylemyia antiqua*' (supervisor, Prof. H.Z. Avidov). She remained at The Volcani Center until her retirement in 1990.

During 40 years of being involved in research on agricultural entomology, she concentrated on the noble goal of helping the farmers of Israel to minimize damage caused and losses incurred by insect pests. The production and marketing boards of cotton, vegetables and other crops always looked for help from her in finding immediate, ad hoc solutions to their entomological problems. In this she was often successful, spending a considerable amount of time in the field, observing the insects under natural conditions, studying their phenology, manipulating the management of the crops and introducing various control agents.

Shoshana believed in educating the farmers and maintaining close contacts with the instructors of the Extension Service who supervise pest control in the field. She published over 50 papers in *Hassadeh* (in Hebrew) and, in addition, some 30 mimeographed research reports, describing the current pest control problems and how to handle them. Most of her 40 papers in English were also published in Israel, earlier in *Ktavim* and later in the *Israel Journal of Entomology*. Shoshana catered to the Israeli entomologists and farmers – most unselfishly disregarding her own academic career, which could have been advanced by more publications in international journals.

Shoshana was among the founders of the Entomological Society of Israel and one of its most active members. In this capacity, she again kept in mind the farmers and the instructors of the Extension Service and often organized symposia in which they were brought up-to-date on developments in pest management.

Shoshana started her entomological research work on a severe cotton pest, the spiny bollworm, *Earias insulana*. She was fortunate enough to work from 1951 with Prof. E. Rivnay, who was an inspired entomologist and who influenced her approach to entomology. They published several papers together on the spiny bollworm. This pest, in the 1950s unknown in Israel, suddenly infested cotton heavily in 1956. The two researchers studied the bionomics and phenology of the pest and conducted an extensive screening program that resulted in a reduction in, and elimination of unnecessary insecticide applications. The introduction of irrigation into many crops and the application of new cultivation practices to vegetable crops resulted in the enhanced importance of various Anthomyiid pests; several injurious species were studied by Shoshana:

(i) The onion maggot, *Delia (Hylemyia) antiqua*. Shoshana's biological and phenological studies established the seasons of activity and diapause of this pest. As a result, correct timing of preventive control measures could be established more effectively, and thus unnecessary treatments could be avoided.

(ii) The seed maggot, *Delia platura*. This polyphagous insect became a very destructive pest in the late 1950s and its bionomics and the causes of the increase in populations were studied intensively. Shoshana proposed to sow after irrigation, thereby reducing damage by preventing oviposition. Insecticides were screened and various application methods were tested and recommended.

(iii) The phenology of an occasional pest, the cereal root maggot, *Delia flavibasis*, was studied in wheat fields and when damage was incurred by it in corn seedlings; it was established, however, that the latter did not endanger development and yield and thus control measures were not necessary.

(iv) Expansion of the late-sown sorghum area was accompanied by total infestation by *Atherigona soccata*. A study undertaken by Dr. Yathom revealed that the absence of diapause, a very short developmental period and thereby overlapping of generations, resulted in a very rapid buildup of large populations. These were attracted to oviposit on the young sorghum seedlings. Control measures based on contact insecticide cover sprays against the adults were ineffective, due to the rapid growth of the plants. Only soil treatments with systemic insecticides provided protection during the susceptible stage of plant development.

In the 1960s, the potato tuber moth, *Phthorimaea (Gnорimoschema) operculella*, became a major pest in potato fields in Israel, causing heavy yield losses. It became imperative to improve control methods during the growing season. Shoshana conducted a toxicological study that established the efficacy of various insecticides against larvae and adults. This was followed by large-scale field trials and as a result, recommendations for control were issued, which are still effective today. Simultaneously, an ecological survey was conducted by her in potato fields all over the country. This study proved that normal conditions of sanitation and a sound cultural regime, especially proper irrigation, could eliminate infestations during the growing season; thus picking time was reached with low pest populations and loss in yield. In the mid 1970s, however, a new aspect of damage by this pest became evident. Tomatoes grown for processing were infested by *P. operculella* larvae, rendering the products unmarketable. An extensive field study, based on the use of pheromone-baited traps, was initiated. Thus, the distribution and phenology of the pest were established in various parts of the country. Dr. Yathom showed that pheromone-baited traps, placed around tomato fields, proved reliable for monitoring the appearance of moths in the field and its correlation with ecological conditions within the crop.

In the early 1970s an unknown damaging factor causing heavy losses, appeared in onion crops. This was caused by a soil mite and was found in various soils all over the country, but mainly in

onion and garlic crops. A thorough study was undertaken, in cooperation with Prof. U. Gerson. It was found that only one species, *Rhizoglyphus robine*, was involved. A cooperative BARD project was carried out in 1980–83. The bionomics of the mite, and possible causes for its outbreaks, were studied, and the ecology of the pest was established. For monitoring field populations a special soil trap was designed and was extensively used to monitor the presence of mites in the soil. Finally, cultural and chemical management methods were studied and recommended.

A serpentine leafminer, *Liriomyza trifolii*, was introduced into Israel in 1978 and became established as a major polyphagous pest of flower and vegetable crops. Immediate control measures undertaken were all based on trial and error with high insecticide doses and yielded unreliable results. In 1983 work on this pest began, and in 1984 Dr. Yathom received a grant for a BARD project. Bionomics of the pest were studied in gypsophila and cotton plants, and a method for monitoring adult populations was established. Various control methods were studied and, as crops affected included export items, use of gamma radiation as a quarantine method was considered. After preliminary promising tests, the use of gamma radiation on various immature stages was studied, and the minimum dose for radiation disinfestation was established for each stage.

During the course of many years Shoshana operated light traps for noctuid moths in various parts of Israel, and a large mass of data was accumulated. About 400 species of insects caught were recorded, 80% of which were lepidopterous species; the rest represented other orders. The analysis of the data yielded reliable information on the noctuid species present in this country. Aspects studied included the population density of each species in different years; dispersion in various parts of the country; status as a permanent resident or as a migrant species; the source of migrations and its trend; and diapause and season of termination. The information emerging clearly pointed to a seasonal migration of several noctuid species occurring simultaneously; this suggested a common factor responsible for the phenomenon, most likely meteorological. The publications based on the light trap catches, as well as unpublished information stored on tapes, are constantly used by many colleagues working on various aspects of some of the species that appear in the light traps.

Dr. Yathom had close scientific affiliations abroad. From 1967 to 1969 she conducted research work at the Research Council of British Columbia, Canada. In both 1973 and 1974 she spent prolonged periods of research with the Centre of Overseas Pest Research (COPR), London, UK. She participated actively in many national and international congresses and other meetings.

Shoshana, besides being attentive to the farmers' needs, was devoted to everyone in her environment, always trying to assist colleagues both professionally and with their daily personal worries, irrespective of status or rank. She understood the problems of recently immigrated scientists and did everything in her power to assist and advise them. She also helped them in preparing their papers, in both Hebrew and English. She coached them in administrative difficulties and taught them to pursue problems to their solution. She took upon herself the task of sorting out any injustice done either to her colleagues or junior staff, going as far as to recruit other colleagues to the battle, and was always available in time of need.

Shoshana is survived by her sister Shulamith.

Shoshana Yathom will be sorely missed by her family, friends, and the entire agricultural community of Israel.

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