

V. A. Matsjuk; V. V. Kostjukov; T. K. Vereschagina
All-Union Institute of Biological Methods in Plant Protection,
Prospect Mira 58,
Kishinev 277072 U.S.S.R.

An Ecological Approach to Pest Control in Apple Orchards

The complex of pests' natural enemies is an important stabilizing factor in the apple orchard ecosystem. Over 300 parasite species and about 200 predator ones are encountered in apple orchards of Moldova republic. Parasites alone can eliminate over 85 % of leaf-miners and up to 60 % of leafrollers.

However, in up-to-date commercial orchards the importance of entomophages isn't usually big due to regular chemical treatments. The improvement of protection measures, reduction of chemical treatments, change of chemicals for microbiopreparations promote, to a certain extent, beneficial fauna preservation. For better use of natural resources it is necessary to improve ecosystem structure in apple orchards in order to develop favourable conditions for entomophages.

The design of proper orchard protecting forest strips including certain companion crops is important for maintaining beneficial insects. For example, *Euonymus europaeus* is inhabited by *Hyponomeuta coguatellus* Hbn., *Aphis euonyi* F. and *Aphis fabae* Scop. which are not harmful for orchards and serve as alternative hosts and preys for orchard pests' entomophages.

Orchard ecosystem is enriched with entomophages by intercropping of nectariferous plants in order to provide both, adult parasites and wild pollinators with additional food. For apple orchards suitable is the plant conveyor including such nectariferous plants as rape, mustard, coriander, dill, and fennel blossoming over four months (from May to September).

Cover crop consisting of grasses and alfalfa mixture creates conditions favourable for preservation and accumulation of beneficial arthropods such as spiders, carabids and others.

Complication of the orchard ecosystem and increase in entomophage activity result in continuous and reliable protection from a number of dangerous orchard pests including mites, leafminers and leafrollers.

Codling moth entomophages reduced pest number by 80 - 85 % and more, however it was insufficient due to low threshold of harmfulness. Hence, it is necessary to apply chemicals against this pest, though such treatments in orchards with a complicated ecosystem are not so catastrophic for entomophages as in commercial orchards.