3. Agrocenosis residents (associated with agricultural crops): *Coreus marginatus* (Linnaeus, 1758), *Dolycoris baccarum* (Linnaeus, 1758), *Carpocoris* spp., *Lygus rugulipennis* (Poppius, 1911), *Lygus* spp., *Chaetocnema* spp., *Spermophagus sericeus* (Geoffroy, 1785), *Tanymecus (Tanymecus) palliatus* (Fabricius, 1787), *Tanymecus* spp.

4. Open habitat mesophiles (found in open, dry areas and fields): *Gryllus* spp., *Himacerus (Aptus) mirmicoides* (Costa, 1834), *Oxytherea funesta* (Poda, 1761) (Cetoniidae), *Cordylepherus viridis* (Fabricius, 1787).

5. Pollinators (insects that provide pollination services): bees – *Hylaeus* spp. (Colletidae), *Bombus pascuorum* (Scopoli, 1763) (Apidae), wasps – *Cerceris* spp. (Sphecidae), other pollinators – *Evyleus* spp., *Lasioglossum* spp. (Halictidae), *Anthophora borealis* Morawitz, 1865 (Apidae).

Many of the insects found in the shelterbelts act as natural predators or parasites of crop pests, helping to reduce the need for chemical pesticides. The dominance of this group was 25% among forest shelter residents and 18% among agrocenosis inhabitants. At the research site, we identified six species of pollinators, accounting for 22% of the insect population. Some insects, particularly mesophiles, contribute to the breakdown of organic matter and enhance soil formation, fostering a healthy soil environment essential for sustainable organic farming.

The results indicate that forest shelterbelts are crucial for supporting a diverse range of insects, which in turn contribute significantly to the ecosystem services necessary for maintaining organic farming systems.

UDC [632.768.12Ц:634.11]:632.951

O. V. Dykan', Graduate student, **I. V. Zabrodina,** Candidate of Agricultural Sciences, Associate Professor, **S. V. Stankevych,** Candidate of Agricultural Sciences, Associate Professor, **V. V. Leus,** Candidate of Agricultural Sciences, Associate Professor
State Biotechnological University

MODERN CONCEPT OF INTEGRATED PROTECTION OF FRUIT PLANTATIONS FROM PESTS

An important task of modern systems of plant protection, including fruit crops, is to develop and implement the integrated measures that preserve the crops from harmful organisms while being the safest for the

environment, animals and humans. The transition to such integrated systems involves the application of the biological method of pest control, reducing the number of pesticide treatments, the ability to use the preparations of selective action together with the entomophages, etc. An important reserve in this program is the activation and use of natural resources of the beneficial insects – parasitoids and predators which limit the number of harmful insect-phytophages.

The biological method of pest control is a necessary component of the integrated protection, but the high agricultural technology for growing crops, the use of resistant varieties and other methods must be the preconditions.

Considering the current direction of the plantation protection strategy, that is biologization and ecologically friendly environment, it is important to develop the programs that encompass separate techniques which would take into account the natural regulatory role of useful fauna. The deeper researches are connected with determining the role of plants themselves and their varieties as factors that form the ecological environment for the life of the entomocomplex, especially the entomophages.

Vegetative features of any variety determine not only the feeding regime of the phytophage, but also create the specific conditions for both the host plant and its entomophages. The change in the ecological situation connected with the plant variety may have a positive or negative influence on both partners or on one of them depending on the biological characteristics of the phytophage and entomophage.

Another situation is perennial, different in varietal composition fruit plantations. And if the species compositions of the entomocomplex and its biotic potential have been investigated thoroughly, the researchers paid little attention to the features and nature of the interaction of the entomocomplex with the fruit trees of different varieties. This is especially true for the study of the variety response to the efficiency of the natural entomophages and to the ratio of phytophage – entomophage when seasonal colonization of the entomophages is used.

Developing a modern strategy for the protection of fruit plantations, especially under the conditions of industrial fruit production, has proved to be the most difficult one. Some progress has been made in creating the optimum phytosanitary condition on the private plots and in the collective gardens. The extensive application of viral, bacterial and fungal biopreparations, protection and use of local entomophages, and rational application of chemical measures (taking into account the economic

thresholds of the phytophages harmfulness and the criteria of the parasitoids, predators and pathogens number) became here especially important.

The role of blossoming plants for attracting the beneficial insects, increasing their life expectancy and the efficiency is well known. Extra feeding is especially needed for those entomophages which flight does not always coincide with the populating of a particular pest stage in nature.

In practice it is recommended to create the areas of concentration and extra feeding of the entomophages near the fruit plantations by sowing cultivated and wild nectariferous plants.

Due to the increase of the trophic chain in the cenoses of the old gardens, the number of many species inclined to mass reproduction is smoothing over. The increase in the species diversity causes the stability of the garden cenosis and by most properties brings it nearer to natural forest biocenoses.

One of the major factors that reduce the species diversity and number of natural insect populations is the excessively ungrounded application of pesticides. The decrease in pesticide loading on agrocenoses that took place in the last 10–15 years has led to a significant increase in the species diversity.

Some 20–30 year-old apple gardens are not inferior to natural and semi-natural (shelterbelt forests and parks) plantations in biodiversity. Taking into account the abundance of arable land characteristic for the region and the role of fruit plantations as “islands” of biodiversity, it makes sense to preserve some insufficiently fertile old gardens transferring them into the park plantations.

Various types of the entomophages and pathogens greatly influence the number and harmfulness of many pest species of fruit plantations. They affect the phytophages throughout the vegetation period of the trees. In fact it is possible to detect a particular parasitoid, predator or disease at any stage of the pest development. The share of the infected phytophages depends on the peculiarities of weather conditions, application of pesticides, agro-technical measures under the garden conditions, weed destruction, presence of the nectariferous plants and green-manure plants in the gardens or adjacent agricultural land and a number of other factors.

The methods aimed at the use of the natural enemies play the top priority role in regulating the number of pests of fruit and berry crops.