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# ECOLOGICAL JUSTIFICATION OF ACTIONS FOR PRESERVATION OF THE BIODIVERSITY OF INSECTS- HORTOBIONTIES IN AGROLANDSCAPES OF THE FOREST-STEPPE OF UKRAINE

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On the level of a biodiversity of insects-hortobionties semi-natural ecosystems *and ecotones prevail agrocoenosis and in the absence of anthropogenic pressure are capable to carry out a role entomological refugiums. For preservation of specific entomology variety of the biogeocoenotic melioration of agrolandscapes - creation is expedient, at the expense of a conclusion from processing of unproductive lands, local networks of semi-natural ecosystems and the anthropogenic of ecotones.*

***Biodiversity, agrolandscapes, harmful insects, harvester losses, phyto sanitary prognosis.***

The role of biodiversity and its natural dynamics in agricultural landscapes Ukraine insufficiently investigated [1]. It is known that insects accounts for 75% of the biota, their total biomass biomass exceeds all other animals, insects because a key role in maintaining environmental sustainability of agricultural landscapes.

Underlying the improvement in productivity of domestic agrocenosis while preserving environmental sustainability is to harmonize environmental chemical protection of crops from pests with the Convention on the protection of biodiversity. This harmonization can be achieved under the conditions of use of pesticides only if environmental and economic feasibility of crop protection, which will reduce the chemical load on agro-ecosystems and agricultural landscapes biogeocenotic reclamation by building shelter for entomofauna in the implementation of agricultural technologies.

Purpose was to investigate the distribution stages hortobiontiv insect biodiversity in agricultural landscapes and components experimental verification

algorithm forecast potential losses from winter wheat crop pest complex under steppes

Research Methodology. Experimental work was carried out on winter wheat crops in a separate subdivision NUBiP Ukraine "Velykosnitynske educational and experimental farm them. O.V.Muzychenka. " Charges insect hortobiontiv conducted entomological net mowing for the season of vegetation by standard methods [3] accounts at sites that were located on a matrix circuit (4 × 10) took environmental gradient → → semi Ecotone ecosystems. Distance in winter wheat crops determined the recommended method [3]. Entomological indicators of species diversity estimated by Shannon-Weaver index, which is calculated by the recommended method [4]. Classification ecotones agricultural landscapes presented in [5].

Experiments on crops of winter wheat were carried out at the farm "Pushcha Voditsa" branches "scoops" Kiev Sviatoshynsky district, Kyiv region, which is located in the steppe zone. Climate - moderate continental soil - dark gray-ashed, some are black.

To forecast potential losses estimated harvest of winter wheat using complex algorithm for determining harm insects V.Vasylyeva [6]. Level probability forecast checked by chemical method of protection from winter wheat pests, diseases and weeds on recommended methods [7]. We used pesticides allowed for use in Ukraine. Spraying was carried knapsack sprayer Matabi, mod. Merk.

It is known that insects are poikilothermic animals, so their numbers and distribution essentially depends on the season of vegetation hydrothermal conditions. This relationship determines the probability of finding a particular type of insect that affects biodiversity. According to Hydrometeocentre Ukraine Fastiv district performance SCC CET during the season and vegetation were in 2012 and 2013, 1.6 and 1.2 (at a rate of 1.4) and 10390 and 13260 (at a rate of 10,370).

Averages hortobiontiv insect diversity in agricultural landscapes of various components shown in Table. 1. As seen from the data in different ecosystems Shannon-Weaver index differed over 4 times and ranged from 0.58 (agrocenosis

winter wheat) to 2.6 (semi ecosystem). It also significantly different at the level of a natural ecosystem. For example, in the fields of winter wheat index ranged from 0.58 to 2.19, semi-segetal Ecotone - from 1.58 to 2.35 in the semi ecosystems - from 1.7 to 2.6. Level entomological diversity semi ecosystems affect the number of insects as adjacent ecotones and agrocenosis. In terms of biodiversity and ecosystem semi Ecotone in most cases agrocenosis prevail in the absence of anthropogenic pressure are able to perform the role of entomological glacial refugia.

Results of the study the average level of entomological biodiversity depending on the area semi suggest that different area semi ecosystems biodiversity level tends to increase with the growth of the area to a certain limit. Thus, an area of 0.1 hectares Shannon index was about 1.75, 2 - 1.8 5 - 2.65 10 hectares - 2.3.

The data on the distribution statsialnoho in agricultural landscapes entomofauna species diversity indices show that the biodiversity of insects increases environmental gradient sowing winter wheat <semi-segetal Ecotone <semi ecosystem. In terms of biodiversity and ecosystem semi Ecotone in most cases dominated agrocenosis and in the absence of anthropogenic pressure are able to perform the role of entomological glacial refugia.

Long-term monitoring of the dynamics of the number and species biodiversity entomofauna was performed on arable land that was taken out of cultivation in 1991 (Northern Forest Steppe, Kyiv region.).

During the period since the withdrawal of arable land from cultivation, fallow phytocoenosis succession passed during the first 3 years Buryanov, then - pyriynu-weed, meadow and meadow pyriynu stage. During the period of observation in fallow areas were identified representatives of more than 40 taxa Structural entomokompleks consisted of constant-dominant taxa (representatives rjada Diptera, flies phytophages) taxa dominance which manifested itself sporadically in some years (series Thysanoptera, Tripidae; Homoptera, Aphididae; Cicadelidae ). In addition, there were constant taxa with relatively low population

density (Hemiptera, Nabidae) and numerically small taxa that were found only in years with favorable agro-climatic conditions for the development of insects.

According to these data, indices of population abundance had depended on secondary succession stages. For example, during the period of observation herbivores number of individuals and entomophagous, which showed on fallow was minimal in 1995 - 1997's. In further observed constant fluctuations in the number that can be caused by the influence of the weather seasons vegetation, long-term population dynamics and more. Indicators maximum number different from the minimum of almost 12 times.

Differences between the number of years of progress indicators and biodiversity can explain mechanisms of environmental regulation grouping insects. The number primarily depends on the ecological capacity of the habitat, while biodiversity indicators - state phytocenotic. Studies indicate that the formation in place agrocenosis semi ecosystem contributes not only preservation, but the reproduction of entomological biodiversity. Semi ecosystems mosaic embedded in agricultural landscapes are places of permanent residence insects and their hiding places during the agricultural technologies that perform ecological functions of biodiversity of insects.

The results of pest monitoring winter wheat crop research show that in 2012, the most numerous pests on crops of winter wheat were bugs slipnyaky, whose numbers after the use of herbicides, fungicides and insecticides was 2.6, herbicides and fungicides - 3.8 and in the control (no pesticide use) - 4.6 copies. in m2; cereals and wheat aphids and thrips.

Chemical protection of winter wheat on the control (40.9 t / ha) allowed in 2012 to receive additional yield for the application topsynu banvelu and 13.6 kg / ha and topsynu, banvelu and bazudynu - 32.6 c / ha, and in 2013 , with the use of a complete system of protection keep winter wheat yield an additional 32.8 c / ha.

Calculated accounting and loss of winter wheat in the version number, where insecticides were not applied compared to the standard, were 13.5 kg / ha, or 18.3%. Comparison of crop losses, shows that given the forecast figure, which at

2.9% below the actual. Thus, the reliability of the calculation method forecast potential losses from winter wheat crop pest complex under steppes for research in 2012 was 97.1%, and 97.75% in 2013. The average index reliability of the forecast harvest of possible losses is 97.4%.

This figure shows a high reliability integrated hazard prediction algorithm insects, allowing the use of its results for the assessment of environmental and economic feasibility of plant protection measures.

Findings. 1. insect biodiversity hortobiontiv semi ecosystems and Ecotone agrocenosis and prevail in the absence of anthropogenic pressure are able to perform the role of entomological glacial refugia. In the semi-species ecosystem level biodiversity hortobiontiv has a long upward trend.

2. For the conservation of species diversity entmolohichnoho appropriate biogeocenotic reclamation of agricultural landscapes - creation, due to the withdrawal from cultivation of unproductive land LAN semi antroprohennyh ecosystems and ecotones. To improve the environmental performance LAN using prylisosmuhovyh ecotones should be combined with elements of the National Ecological Network of Ukraine.

3. As a result of a two-year study found that the reliability of the calculation method forecast potential losses from winter wheat crop pest complex under steppes of 97.4%. This allows prediction algorithm of the potential losses winter wheat crop for the assessment of environmental and economic feasibility of plant protection measures.

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