

Phytopsanitary safety. 2024. Issue 70.

UDC 595.76 + 632.93

DOI: <https://doi.org/10.36495/PHSS.2024.70.367-380>

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TO THE 75TH ANNIVERSARY OF THE UKRAINIAN ENTOMOLOGICAL SOCIETY. DEVELOPMENT OF ENTOMOLOGICAL RESEARCH IN THE INSTITUTE OF PLANT PROTECTION OF NAAS

Goal. Study of the stages of development of scientific research on the agricultural crop protection from pests at the Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine. **Methods.** Analysis of archival data on the establishment of the modern Institute of Plant Protection of NAAS, articles devoted to the activities of the institution and the Ukrainian Entomological Society, scientific works of entomologists. **Results.** At all stages of its history, the Institute of Plant Protection of NAAS carried out numerous entomological studies, which made it possible to successfully solve important problems related to the development of effective measures to protect agricultural crops from pests. An important role in this regard was played by Problematic Laboratories for the Study of the Sugar-Beet Weevil, the Eurygaster Bug, the Colorado Potato Beetle. The system of measures against wireworms (larvae of Elateridae) has been improved. Much has been done in terms of the development of protective measures against pests of forest and garden plantations from pests. The problems of the toxicology of insecticides and acaricides and the resistance of plants to pests have been studied and are currently being studied. The achievements of the institution's entomologists in the following areas are also enormous: biological plant protection, forecasting the development of pests, plant protection in the zone of the Chernobyl AES, scientific support for plant quarantine. Scientific entomological schools were formed. Significant achievements of entomological scientists of the Institute of Plant Protection of NAAS were recognized with state awards of Ukraine. **Conclusions.** Wide implementation of the scientific achievements of entomologists of the Institute of Plant Protection of the NAAS of Ukraine will make it possible to successfully solve a wide range of issues related to the pro-

tection of agricultural crops, forest and ornamental plantations from pests. This will contribute to the stable development of the country's agro-industrial complex, keeping the environment clean and, at the same time, improving the well-being of the population.

entomology; Ukrainian Entomological Society; Institute of Plant Protection of NAAS; agricultural crop; pests; forecast; resistance; plant protection; protect measures; entomological schools

For a long time, Ukraine has been among the five world leaders in the export of such agricultural products as sunflower oil, wheat, corn, and barley. Thus, in the pre-war year 2021, a record harvest of grain and leguminous crops was collected during the time of independence — 86 million tons. Thanks to agricultural products, the total volume of the country's commodity exports amounted to 40.7%, or 27.7 billion dollars USA.

As a result of the full-scale war of the Russian Federation against Ukraine, the agricultural sector suffered significant losses. But, despite the difficulties, in 2022—2023 he showed a fairly high level of stability, which is evidenced by some indicators. So, if in 2022 the harvest of grain and oil crops amounted to 73.8, then in 2023 it reached 78.7 million tons. Thus, Ukraine remains one of the guarantors of ensuring food security in the world [1, 2, 3].

Much still needs to be done for the stable development of the agricultural sector of our country's economy in today's difficult war conditions. To a large extent, this concerns the increase in the gross collection of agricultural products and the improvement of their quality. At the same time, the improvement of the scientific support of agro-industrial production acquires inestimable importance.

Plant protection was and remains a mandatory element of the technology for obtaining large volumes of high-quality agricultural products and the stability of agrocenoses. Agricultural crops are damaged by more than 400 types of pests, 200 pathogens, and about 300 types of weeds. If protective measures are insufficiently carried out or they are completely ignored, crop failures from harmful organisms in Ukraine can be almost a third, and sometimes even half of the potentially possible [4, 5]. The Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine plays a huge role in solving problems related to plant protection and, at the same time, improving the phytosanitary condition of agrocenoses. With this in mind, large-scale entomological studies have always been and are being conducted at this institution in order to develop effective measures to protect agricultural crops from pests. The Public Organization «Ukrainian Entomological Society» has played an invaluable role in the coordination of research work in this field for 75 years.

At the same time, the preservation of knowledge about significant cre-

ative discoveries and achievements of scientists of the above-mentioned institution, about the stages of development of certain directions of scientific research could enrich domestic and world science and education and thus contribute to the stable and highly efficient development of the country's agro-industrial complex.

The goal of the work was to study the stages of the development of scientific research on agricultural crop protection from pests at the Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine.

Research methodology. The materials for the research were archival data on the founding of the modern Institute of Plant Protection of NAAS, articles on the activities of the institution and Ukrainian Entomological Society, scientific works of entomologists.

Research results. In 1946, according to the decision of the Council of Ministers of the USSR and decrees of Presidium of the Academy of Sciences of the Ukrainian SSR (record No. 9 dated June 7, 1946), on the basis of three laboratories of the Institute of Zoology of AS Ukrainian SSR the Institute of Entomology and Phytopathology was founded. Its task was to improve methods of plant protection and development of protective measures against the most dangerous pests and diseases of agricultural crops. In 1956, this institution was reorganized into the Ukrainian Scientific-Research Institute of Plant Protection, subordinated first to the Ukrainian Academy of Agricultural Sciences, and later to the Ministry of Agriculture of the Ukrainian SSR. Since then, the institute has acquired the status of the Republican Scientific and Methodological Centre for Plant Protection. Since January 1970 the Institute became part of the Southern Department of All-Union Academy of Agricultural Sciences (VASKhNIL), and since 1992 — Ukrainian Academy of Agrarian Sciences, which in 2010 acquired the status of National. Nowadays Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine remains main institution of Scientific and Methodical Center in our country for the implementation of the research program «Plant Protection» and coordinates the work of more than 20 institutions [6, 7].

In addition, in the first years after the end of the Second World War, Ukrainian entomologists faced the task of restoring an effective system of plant protection in the agriculture of Ukraine. The situation required concentration of efforts on the practical tasks of pest control, creation of theoretical bases for forecasts of the dynamics of the number of pests, development of reliable methods of identification of practically important groups of insects, clarification of the composition of the fauna and training of qualified entomologists. With this in mind, in 1949, the Ukrainian branch of the All-Union Entomological Society was established at the Academy of Sciences of the USSR for the coordination of entomological research in the Ukrainian SSR, and on June 3, 1949, the Presidium of the Academy

of Sciences of the Ukrainian SSR approved its charter (Protocol No. 15, § 7). In 1975, the First Congress of the Ukrainian branch of the All-Union Entomological Society was convened in Kyiv, which gave it autonomous status and renamed it the Ukrainian Entomological Society (UES). And in 1992, UES became an independent organization. Leaders and people from the Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine headed it almost all the time — they are Ye.V. Zvezomb-Zubovs'ky, V.P. Vasyliyev, V.G. Dolin, V.P. Fedorenko. Among the vice-presidents of the Society at one time were also employees of the above-mentioned institution — A.M. Cherniy, O.V. Puchkov.

In October 2023, at the 10th Congress of Ukrainian Entomological Society, a scientist of the I.I. Shmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine, Member-correspondent of the NASU V.O. Korneyev was elected as a president of this Public Organization. Academician of the National Academy of Agrarian Sciences of Ukraine V.P. Fedorenko became a honorary president of UES. One of the newly elected vice-presidents of the Society is also a representative of the Institute of Plant Protection of NAAS O.O. Strygun. Both before and now, the Public Organization «Ukrainian Entomological Society» contributes to the development of science in the field of entomology and related disciplines, and at the same time — solving problems related to plant protection, environmental protection, and improving the welfare of the population [7, 8].

At all stages of its history, the Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine carried out numerous entomological studies. The obtained results made it possible to successfully solve important problems related to the development of effective measures to protect agricultural crops from pests.

In the first post-war decades (1946—1966), the most pressing problem in the field of agriculture in Ukraine was the problem of combating the sugar-beet weevil *Bothynoderes punctiventris* Germ. The entire team of the Institute of Entomology and Phytopathology of the Academy of Sciences of the Ukrainian SSR worked on the development of effective measures to protect sugar beet from this dangerous pest, which included qualified scientists — V.P. Vasyliyev, Ye.M. Kititsyn, D.F. Rudnev, A.J. Zrazhevs'ky, A.S. Degtyarova, I.V. Paliokha, K.A. Orlochova, N.P. Zybul's'ka, G.N. Zhyghaev, V.A. Sanin et al. In addition, during 1956—1963, the Ukrainian Scientific-Research Institute of Plant Protection had a Problematic Laboratory for the Study of the Sugar-Beet Weevil, which was managed by V.P. Vasyliyev. The result of the huge work was the substantiation of an effective system of measures to protect sugar beet crops from pests [9, 10, 11].

Along with the beet weevil, the problem of combating the eurygaster bug *Eurygaster integriceps* Put. was also important. In the early days at the Institute of Plant Protection, M.D. Taranukha dealt with this pest. Later, he was

joined by B.A. Areshnikov. In connection with the aggravation of the problem with this pest in 1969, a Laboratory for Combating the Eurygaster Bug was organized at the institute, the head of which was appointed B.A. Areshnikov. Subsequently, this scientific unit was transformed into a Laboratory for Combating Pests of Grain Crops, which in 1986 became a component of the Department for the Development of Systems for the Protection of Grain Crops Grown Using Intensive Technologies. Both the newly created Laboratory and the Department continued to be headed by Doctor of Biological Sciences B.A. Areshnikov. Thanks to the efforts of a team of scientists (D.M. Feshchyn, O.P. Znamens'ky, M.G. Kostyukovs'ky, S.M. Vygera, I.M. Plastun, M.P. Sekun, S.M. Babych, V.O. Krut', M.V. Krut') theoretically substantiated and developed a more advanced system of protection of grain crops against the eurygaster bug, cereal aphids, cereal flies, *Cnephasia pasiuana* Hb., ground beetle *Zabrus tenebrioides* Goeze., cereal leaf beetles *Oulema* sp. and their entire complex [12, 13, 14]. In the second half of the 1970^s and the beginning of the 80^s, it was implemented on an area of more than 10 million hectares with an effect of 67.7 million rubles.

The penetration of the Colorado potato beetle *Leptinotarsa decemlineata* Say. into Ukraine has put the study of measures to combat it into a number of priority issues of plant protection. Taking into account the positive experience of organizing research on the fight against the sugar-beet weevil, in 1960 a Problem Laboratory for the Study of the Colorado Potato Beetle was created at the Ukrainian Scientific-Research Institute of Plant Protection. This scientific unit was headed by M.P. Dyadechko. Chemical and biological means of pest control were tested. The activities of the Laboratory ended in 1967 with the substantiation of full-scale recommendations for the control of the Colorado potato beetle, including a forecast of his development [15]. After M.P. Dyadechko further research on this pest was directed by V.A. Sanin.

In the late 1950^s, the work plan of the Ukrainian Scientific-Research Institute of Plant Protection included the issue of improving the fight against wireworms, larvae of Elateridae. Research on this problem was carried out by V.G. Dolin. Given the focal nature of the spread of click beetles, recommendations for protective measures included preliminary surveys of fields, determination of the number of larvae and local application of chemicals [16].

From 1951 to 1967, one of the components of the institute was the Laboratory of Forest and Garden Entomology, headed by D.F. Rudnev. Tests of chemical means were conducted in the fight against many pests of the forest, garden and field protection plantations. Developed by D.F. Rudnev and other scientists (I.K. Zagaykevych, V.I. Grymals'ky) methods of protecting the roots of forest species from cockchafers (Scarabaeidae), using toxic belts against *Dendrolimus pini* L., protecting forest crops from

peat-nesting plantings on the Lower Dnieper sands, protection of forests from leaf-gnawing pests were widely used in the practice of forestry.

The Institute of Plant Protection also worked and is still working on the development of measures to protect garden plantings from pests. In the 1960^s, a temporary scientific team headed by A.S. Degtyarivova was created to carry out experimental work. In this team worked A.M. Voytenko, V.A. Grods'ky, V.S. Shelestova, V.M. Varchenko. Experiments on the control of *Zeuzera pyrina* L. were directed by D.F. Rudnev. For the first time in Ukraine, the biology of *Grapholitha funebrana* Tr. and *Laspeyresia pyrivora* Danil. was studied in detail, a large number of insecticides and acaricides were tested, differentiated rates of consumption and frequency of spraying against *Laspeyresia pomonella* L. were determined depending on the number of pests, tested and introduced low-volume spraying of garden plantations with insecticides. Scientific work on the protection of orchards from pests during the last decades was managed by A.M. Cherniy. The directions of this work were and still are the theoretical justification of the formation of acaro- and entomocomplexes in fruit plantations, the study of the features of the manifestation of fruit mites' resistance to insectoacaricides, and the development of ecologically safe protection systems [16, 17]. The introduction into production of the developed ecologically safe systems for protecting the apple orchard from pests makes it possible to reduce the pesticide load on the agrocenosis by 1.6 times, the consumption of insecticides by 25–30%, and reduce the ecotoxicological danger from 6.5 to 3.5 conventional units, get a net income of about 12–15 thousands UAH per 1 ha, production profitability — 168–285%.

For the effective implementation of chemical protection of plants from pests, scientists of the institute conducted and are currently conducting many studies on the problems of toxicology of pesticides. Thanks to the work of such scientists as V.P. Vasyliyev, M.D. Taranukha, K.A. Orlachova, V.L. Tsiopkalo, V.A. Sanin, K.A. Kudel', M.P. Sekun, O.G. Vlasova and many others, improved systems of chemical protection of cereal grain crops, potatoes, rape, revealed the formation of resistance in populations of the Colorado potato beetle, the eurygaster bug, the cereal aphids to insecticides, the mites — to insectoacaricides, proposed measures to overcome it.

In the late 1950^s, Doctor of Biological Sciences, Professor D.F. Rudnev set a task for the employees of the Laboratory of Forest and Garden Entomology that he managed — to develop a method, an alternative to the chemical one, which would be based on increasing the resistance of plants to harmful insects. His program for the development of measures aimed at self-protection of plants developed in two directions — the study of factors of plant resistance to pests and the development of techniques for increasing plant resistance. Thus, in 1967, the above-mentioned unit was transformed into a Laboratory of Agricultural Crop Resistance to Insect

Pests (since 2012 — a Laboratory of Entomology and Agricultural Crop Resistance to Insect Pests). The case of D.F. Rudnev was continued by his student V.P. Smilyanets and V.P. Vasyliyev's student S.O. Trybel'. Currently, research on sustainability issues is managed by Doctor of Agricultural Sciences O.O. Strygun — the student of S.O. Trybel'. In different years, other scientists also worked fruitfully — G.I. Vasechko, O.G. Shelikhov, O.A. Grykun, T.S. Korol'. Today, the main directions of the laboratory's work are related to the development of ecological foundations for the protection of grain crops and ornamental plants in the urbanized urban environment from pests. The most important scientific achievements of this unit should be considered the following: discovered sources of resistance against pests in winter wheat, corn, soybeans, potatoes and clover; developed systems for protecting wheat, corn, potato plantings, clover seeds from pests, and chestnut ordinary from the chestnut mining moth *Cameraria ohridella* Deschka & Dimič.

Against the backdrop of the high efficiency of chemical agents against pests, the biological method of protection was for a long time in the background. But, despite everything, research on biological protection of plants from pests at the Institute of Plant Protection not only continued, but also developed. During the first two decades, this work was supervised by the outstanding entomologist Doctor of Biological Sciences, Professor M.A. Telenga. The technology of trichogram's (*Trichogramma* sp.) using was improved, experiments were conducted on the use of this parasite against the European corn borer *Ostrinia (Pyrausta) nubilalis* Hb. and pests of vegetable crops. M.A. Telenga also hoped to use the entomopathogenic fungus *Beauveria*. Together with M.P. Dyadechko he substantiated the possibility of using the latter in combination with chemical pesticides in small doses against the Colorado potato beetle, the *Laspeyresia pomonella* L. and other harmful insects.

According to the resolution of the Council of Ministers of the Ukrainian SSR (1965) on measures for the development of research and the use of the biological method in the practice of pest control, funds were allocated to the Ukrainian Scientific-Research Institute of Plant Protection for the construction of additional laboratory buildings and the purchase of the necessary equipment. At the expense of additional appropriations, three structural laboratories were organized in the institute: entomophages (head G.M. Zybuls'ka), microbiomethods (head A.Yo. Sikura) and biophysical methods (head V.P. Prystavko). Research on trichogram *Trichogramma* sp. and other entomophages continued, in particular, related to the development and improvement of technology and technical means of their mass breeding, as well as the use in systems of integrated agricultural crop protection from pests. Developed the search for entomopathogens and production of microbiological preparations based on them. Among them the bacterial preparation

Entobakteryn proved to be effective against pests of vegetable crops, and the fungal preparation Boveryn (developers N.V. Lappa, V.M. Goral') against the Colorado potato beetle. Experimental work was also carried out on the assessment of sexual sterilization and control of insect behaviour using synthetic pheromones (supervisor V.P. Prystavko). At the same time, interesting materials were obtained on the ecology and dynamics of populations, methods of mass breeding of insects on artificial feed media [16, 18]. It is worth noting the achievements in branch of the biological method of plant protection and other entomological scientists of the institute — G.N. Zhyghaev, A.M. Cherniy, B.G. Degtyariov, M.M. Tron', V.F. Drozda, M.G. Garnaga, A.O. Ustymenko, R.S. Krasnyts'ka, T.O. Prymak, L.V. Yanishevs'ka, T.V. Kryzhanivs'ka, R.I. Chyzyk, V.P. Konvers'ka.

Today, at the Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine, the Laboratory of Microbiological Methods of Plant Protection is headed by Doctor of Agricultural Sciences G.M. Tkalenko. The main tasks of this unit are as follows: the search for useful organisms that control the number of harmful arthropods and the development of pathogens of agricultural crops; development of technological regulations for the production of new preparative forms of microbiological means of plant protection; development of methods of effective use of entomopathogenic microorganisms in modern crop protection systems; improvement of breeding technologies and application of promising species of entomophages.

Forecasting is the basis for planning and carrying out work on plant protection, determining the need for chemical agents, as well as material and labour costs. The Institute of Plant Protection has always attached great importance to issues related to the forecast of the development of pests of cultivated crops. In the Laboratory of Forecasts created in 1972, scientific research was managed for a long time by well-known entomologists V.G. Dolin, V.P. Omeluta, V.M. Chaika. Other scientists also made an invaluable contribution — O.V. Khukhriy, O.M. Kravchenko, O.V. Baklanova. Research continues to this day. The following developments should be considered important achievements of laboratory's scientists: methods of forecasting the development of the meadow moth *Margaritia sticticalis* L., Colorado potato beetle *Leptinotarsa decemlineata* Say., sugar-beet weevil *Bothynoderes punctiventris* Germ.; method of using pheromone traps for monitoring moths Noctuidae, European corn borer *Ostrinia (Pyrausta) nubilalis* Hb., potato tuber moth *Phthorimaea operculella* Zell.; monitoring system of the complex of locusts (Acrididae); a computer program for forecasting possible harvest shortages of winter wheat, sugar beet, corn, sunflower, rape from both individual pests and their complexes.

In connection with the accident at the Chernobyl nuclear power plant in 1987 was organized by the Laboratory of Agricultural Radiology in the

Ukrainian Scientific-Research Institute of Plant Protection. This scientific unit operated for 15 years. It was headed by entomologist M.G. Garnaga. Employees of this unit conducted numerous scientific studies in the exclusion zone. As a result, the «Chernobyl» population of the Colorado potato beetle was discovered, which, unlike the «Kyiv» population, is oriented towards creating more favorable conditions for the survival of individuals with lower weight and increased feeding intensity. Regarding other types of phytophagous insects (eurygaster bug, *Anisoplia austriaca* beetle, cereal leaf beetles, click beetles, cicadas, legume weevils), the effect of chronic irradiation on mutagenic factors in the microevolutionary processes of pest populations has not been determined [19, 20]. There are some deviations in the development of the genitals of murine rodents — this is the underdevelopment of the gonads in males and tumors on them and partial or complete atrophy of the ovaries in females [21]. It was pointed out the need to improve existing and develop new plant protection measures aimed at obtaining products free from radionuclides and pesticide residues.

With the determination of Ukraine's independence, in 1992, the Department of Plant Quarantine was established at the Institute of Plant Protection of National Academy of Agrarian Sciences of Ukraine for the scientific support of plant quarantine research. In addition, the Experimental Station of Grape and Fruit Crops Quarantine, the Trans-Carpathian Territorial Center of Plant Quarantine, and the Ukrainian Scientific-Research Plant Quarantine Station became subordinate to the institute. For 12 years, the Department of Plant Quarantine at the institute was headed by V.P. Omeluta. Zh.D. Kudina, N.K. Filatova played an invaluable role in conducting entomological research at a certain stage. Nowadays, in this regard, it is worth noting such scientists as N.V. Skrypnyk, Yu.E. Klechkovs'ky, Ye.F. Nyamtsu, V.P. Kluchko, V.M. Gunchak, M.P. Solomiychuk, R.O. Kordulan, O.A. Sikura. As a result of the Institute of Plant Protection and its network of entomological studies, methodological recommendations and instructions were developed for the diagnosis and control of the development of quarantine pests (*Hyphantria cunea* Dr., *Diabrotica virgifera virgifera* Le Conte, beetles Bruchidae, *Bemisia tabaci* Gen, *Tuta absoluta* Meyr., *Tecia solanivora* (Povolný, 1973), moths *Spodoptera*, *Drosophila suzukii* (Matsumura, 1931), miners *Liriomyza*, *Frankliniella occidentalis* Perg.), testing of corn varieties for resistance to the Western Corn Rootworm. Information and analytical databases were also created: «There are no quarantine organisms of fruit crops and grapes in Ukraine. Possibility of acclimatization» [22], «Quarantine species of Corn Rootworms. The possibility of acclimatization in the southwestern region of Ukraine», a database of new harmful organisms — a web-service, an automated cartographic and information system «Interactive atlas. Quarantine status of plants of Odesa region». New and harmonized existing national standards from the «Plant

Quarantine» series have been developed, national phytosanitary risk analysis schemes have been developed in compliance with the requirements of the International Plant Protection Convention and Euro-Mediterranean Plant Protection Organization, and this meets the requirements of the World Trade Organization and the European Union. Thus, huge opportunities for solving the most important issues regarding the protection of plant resources of the country from foreign pests are revealed.

At the Institute of Plant Protection, Academician of the National Academy of Agrarian Sciences of Ukraine V.P. Fedorenko founded a school of biocenotic entomologists. Its scientific direction is the development and implementation of ecologically oriented methods of managing the dynamics of pest populations of important agricultural crops (grain spike crops, corn, groat cereal crops, legumes, sugar beet, fiber and vegetable crops) and stock pests, taking into account environmental protection requirements.

Entomological schools were also headed by other famous scientists — Academicians of the National Academy of Sciences of Ukraine V.P. Pospelov, V.P. Vasyliyev, Doctors of Biological (Agricultural) Sciences, Professors M.A. Telenga, Z.S. Golovyanko, D.F. Rudnev, M.P. Dyadechko, V.G. Dolin, B.A. Areshnikov, V.A. Sanin, V.P. Prystavko, V.P. Smilyanets, M.P. Sekun, S.O. Trybel', V.M. Chaika.

Significant achievements of entomologists of the Institute of Plant Protection in the development of the theory and practice of plant protection could not be ignored by the highest state bodies of our country. Thus, the editor-in-chief of the three-volume monograph «Vrediteli sel'skoho zjajstvennyh kul'tur i lesnyh nasazhdenij» («Pests of agricultural crops and planted forests») Academician of the National Academy of Sciences of Ukraine V.P. Vasyliyev was awarded the State Prize of Ukraine in the sphere of science and technology. Moreover, this scientific work was republished. The State Prize of Ukraine also recognized the scientific work of entomologists N.V. Lappa and V.M. Goral' «Stvorennia hrybnykh mikrobiolohichnykh zasobiv zakhystu roslyn vid shkidnykiv i khvorob. Rozrobka tekhnolohii yikh vyrobnytstva i zastosuvannia» («Creation of fungal microbiological means of protecting plants from pests and diseases. Development of the technology of their production and application»). V.P. Vasyliyev and V.P. Fedorenko have the honorary title «Honored Worker of Science and Technology of Ukraine».

V.P. Fedorenko awarded the Prize named after I.I. Shmalgauzen of NASU. The main center of bibliographic information about outstanding figures of science and culture of the whole world was assigned by V.P. Vasyliyev received the honorary title of Man of the Year 1997. As outstanding figures in the sphere of science V.P. Vasyliyev, S.O. Trybel', M.P. Sekun were awarded the State Scholarships. On the occasion of the 100th anniversary of the National Academy of Sciences of Ukraine S.O. Trybel' was awarded the medal «People's Honor to Ukrainian Scientists 1918—2018».

CONCLUSIONS

The results of entomological research by scientists of the Institute of Plant Protection of the National Academy of Agrarian Sciences of Ukraine are a significant contribution to the development of agricultural science. Their implementation makes it possible to successfully solve a wide range of theoretical and practical issues regarding the protection of agricultural crops, forest and ornamental plantations from pests. This will contribute to the stable development of the country's agro-industrial complex, forestry, keeping the environment clean and, at the same time, improving the well-being of the population.

Conflict of interest: authors declare no conflict of interest.

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Розвиток ентомологічних досліджень в Інституті захисту рослин НААН

Мета роботи. Дослідження етапів розвитку наукових досліджень із захисту сільськогосподарських культур від шкідників в Інституті захисту рослин Національної академії аграрних наук України. **Методи.** Аналіз архівних даних про заснування сучасного Інституту захисту рослин НААН, статей, присвячених діяльності установи та Українського ентомологічного товариства, наукових праць вчених-ентомологів. **Результати.** На всіх етапах своєї історії Інститут захисту рослин НААН України здійснював численні ентомологічні дослідження, що давало можливість успішно вирішувати важливі проблеми, пов'язані з розробкою ефективних заходів щодо захисту сільськогосподарських культур від шкідників. Важливу роль відіграли проблемні лабораторії з вивчення бурякового довгоносика, клопа-черепашки, колорадського жука. Вдосконалено систему заходів захисту від дротяників. Багато зроблено в плані розробки захисних заходів проти шкідників лісових та садових насаджень від шкідників. Досліджувалися й нині досліджуються проблеми токсикології інсектицидів і акарицидів та стійкості рослин проти шкідників. Величезними є також досягнення вчених-ентомологів установи за напрямками: біологічний захист рослин, прогнозування розвитку шкідників, захист рослин у зоні Чорнобильської АЕС, наукове забезпечення карантину рослин. Сформувалися наукові школи ентомологів. Визначні досягнення вчених-ентомологів Інституту захисту

рослин НААН відзначено державними нагородами України. **Висновки.** Широке впровадження наукових досягнень вчених-ентомологів Інституту захисту рослин НААН України дасть змогу успішно вирішувати широке коло питань щодо захисту сільськогосподарських культур, лісових та декоративних насаджень від шкідників. Це буде сприяти стабільному розвитку агропромислового комплексу країни, утриманню в чистоті навколишнього середовища і разом із тим підвищенню добробуту населення.

ентомологія; Українське ентомологічне товариство; Інститут захисту рослин НААН; сільськогосподарська культура; шкідники; прогноз; стійкість; захист рослин; заходи захисту; школа ентомологів

Надійшла до редакції: 19.03.2024

Прийнята до друку: 22.08.2024

Надруковано: грудень, 2024

Опубліковано онлайн: лютий, 2025