PRINCIPLES OF FUNCTIONING OF THE CENTER OF UTERINE CULTURES OF INSECTS AT THE ETI "BIOTECHNIKA" OF THE NAAS OF UKRAINE

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Abstract: The principles of functioning of insect uterin cultures, their interaction with scientific and regulatory organizations of Ukraine, ensuring a stable supply of high-quality entomocultures for biological production and their constant control, are analyzed.

Keywords: Center for insect uterine cultures, scientific, regulatory organizations, bio-production.

Introduction

The creation of a center for insect uterine cultures at the ETI "Biotechnika" of the NAAS of Ukraine is caused by the need to provide stable biological production of the southern region of the country with high-quality starting biomaterial, which allows the production of plant protection products in open and closed ground. In essence, such a Center is the final stage in the creation of breeding insect cultures, based on the basic principles of technical entomology. In addition, insect uterine cultures, which are part of pedigree cultures, create the starting basis for the industrial development of commercial products of biological industries, which in turn are based on the principles of industrial entomology. Thus, the Center is a structure that constantly creates (or restores) breeding cultures of popular insects. The general functional structure of the Center is shown in Figure 1.

The general structure of the center includes laboratories:

- for the creation and maintenance of breeding cultures;
- for the creation and maintenance of the uterine cultures;
- quality control of entomocultures [1, 2, 3].

Materials and methods

In its work, the Center is associated with certain organizations, both scientific and managerial. Each of them performs its own tasks. Let's consider some of the main functions of these organizations in creating insect cultures that are in demand by consumers.

Any entomoculture must be identified before obtaining breeding material from it, i.e. to receive the appropriate certificate characterizing it, confirming its biological purity [4, 5 ,6 ,7, 8].

Such a document in Ukraine can be issued only by the Institute of Zoology. I. I. Shmalgauzen NAS of Ukraine. Only in it qualified specialists are concentrated and principles and methods of identification of entomocultures have been developed. An important point in the creation and maintenance of entomocultures is the availability of documentation for their reproduction and scaling (Specifications, state standard of technical conditions, technological regulations for the production of certain insect cultures).

Such work is usually carried out at the Institute of Plant Protection, ETI "Biotechnics" of the NAAS of Ukraine, Kharkiv National Pedagogical University. G.S. Skovoroda and organizations where there are sufficiently qualified specialists.

Control over the work of the Center is carried out by organizations operating under the control of agricultural governing structures. It is they who issue the necessary certificates giving the right to sell the Center's uterine entomocultures to consumers.

The interaction of the Center with consumers is structured in such a way that the crops supplied to producers have a passport, which specifies the number of reproduction cycles of a certain entomoculture [1, 2].

The center is responsible for monitoring the state of the cultures during the production process and replacing the supplied cultures in case of non-compliance with their passport characteristics.

Periodically, after the end of the warranty period of operation of certain entomocultures, the supply of uterine cultures is assigned for additional control to the Center and obtaining a certificate for extending the service life if the culture retains the necessary qualities.

Results and discussion

The creation of a brood culture center at the ETI "Biotechnics" of the NAAS of Ukraine made it possible to provide laboratories in the south of Ukraine with the necessary entomocultures that are in demand today:

- *Trichogramma Westwood*, 1833;
- *Habrobracon hebetor* Say, 1857;
- *Chrysoperla camea* Stephans, 1836;
- *Aphidoletes aphidimyza* Rondani;
- *Sitotroga cerealella* Olivier, 1789;
- *Ephestia kuehniella* Zeller, 1879;
- *Galleria mellonella* Linnaeus, 1758;
- *Schizaphis graminum* Rondani, 1852.

Centers similar to the existing one can be created in all regions of Ukraine with the development of demanded entomocultures.

It is possible in the future to exchange entomocultures between the Centers, if necessary.

Conclusions

The work carried out at the institute gave a positive result and the Center justifies the tasks assigned to it. If necessary, it is possible to expand the nomenclature of produced insect uterine cultures.

Bibliography

1. В.І. Крутякова, Т.Ю. Маркіна, О.Д. Молчанова, Б.М. Шейкін. Концептуальні підходи до створення центру маточних комах. Вісник аграрної науки. № 8. 2018 р.

2. Крутякова В.И. Биотехнологический комплекс разведения маточных культур энтомофагов для биологической защиты растений. Мат. докл. XII сессии Ген. ассамб. ВПРС МОББ "Биологическая защита растений: успехи, проблемы, перспективы" (24-27 апреля 2017 г, Санкт-Петербург). С. 183–186.
3. Шейкин Б.М., Бельченко В.М., Беспалов И.Н., Шейкина Е.Б. Биотехнологические системы в промышленной энтомологии. "Защита растений"/ ИЗР, Белоруссия. 2014. № 38. С. 245-250.
4. Злотин А. З. Техническая энтомология. Наук, думка. Киев. 1989. 182 с.
5. Тамарина Н. А. Основы технической энтомологии. М. 1990. 208 с.
6. Lenteren. J. C. The state of commercial augmentative biological control: plenty of natural enemies, but a frustrating lack of uptake . *BioControl* .2012. Vol. 57, № 1. P.1–20.
7. Eds. Morales-Ramos, R. Shapiro Mass Production of Beneficial Organisms, Invertebrates and Entomopathogens. Ilan. Academic Press, 2013. 764 p.
8. Raubenheimer D., Rothman J. M. Nutritional Ecology of Entomophagy in Humans and Other Primates. *Annu. Rev. Entomol.* 2013. Vol. 58. P. 141–160.