the fall webworm caterpillars on the 14th day after the use. Insecticide Nurel D, 55 % emulsion concentrate showed 87.6 % effectiveness in the destruction of caterpillars on the 14th day, which is 5.3 % less compared to the previous preparation in 2019. Among biological preparations: Actofit, 0.2 % emulsion concentrate, Lepidocide, water-soluble, titre $1.5*10^9$ spores/ml and Bitoxibacillin-BTU, tetro preparative mixture, titer $100*10^9$ spores/ml, Actofit, 0.2 % emulsion concentrate proved to be the best and contributed to the death of the fall webworm caterpillars 82.7 % in 2019 and in 2020 – 78.5 % on the 14th day of the use, in contrast to Lepidocide, water-soluble, titre $1.5*10^9$ spores/ml and Bitoxibacillin-BTU, tetro preparative mixture, titer $100*10^9$ spores/ml the efficiency of which in 2019 was 82.1 % and 74.8 %, and in 2020 – 77.6 % and 72.4 %, respectively.

In 2019–2020, an effective preparation in the destruction of the second generation caterpillars of older instars (L_6–L_7), among those used was Koragen, 20 % suspension concentrate, which on the 14th day of the use showed 86.1 % and 81.6 % effectiveness. Among biological preparations in 2019 and 2020, Actofit, 0.2 % emulsion concentrate was the most effective and contributed to the death of the fall webworm caterpillars 82.0 % in 2019 and 72.3 % in 2020 which is 9.7 % less compared to 2019.

In the control variant, the death of caterpillars was observed in 2020 beginning from the 3rd day, but in 2019 from the 7th and 14th days, the death of caterpillars of the first and second generation was in the range of 0.3 % – 2.8 %, respectively, which can be caused by various negative factors and natural enemies of the fall webworm.

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THE MONITORING OF PHYTOSANITARY STATUS OF MAIN FIELD CROPS IN THE WESTERN REGION OF UKRAINE

Problem statement. The combination of fertile soils and favorable climate facilitate the growth of agriculture of Ukraine [4]. Analyzing of dynamic of main crops production in Ukraine during 1990–2020, we detected increasing in sown areas under main crops, except sugar beet. Sown area significantly increased under soybean (more than 20 times) and under

oilseed rape – more than 10 times. Cereal, oilseed rape, soybean, corn, and sunflower are the main sowing crops. In comparison 1990-2000 now we have new innovative agrotechnologies that allow obtaining the higher yields of these crops. Thus, in Ukraine in 2018-2020 average yield of wheat was 37.3 c/ha, corn – 55.1 c/ha, soybean – 19.7 c/ha, sugar beet – 474.9 c/ha, sunflower – 20.2 c/ha, and oilseed rape – 27.9 c/ha. However, agroholdings obtained significantly higher yields of these crops. For example, the yield of wheat reached 90 c/ha and more at average indexes – 60-80 c/ha and oilseed rape – above 40 c/ha. Since 2000 till now we are observed increasing in gross harvests of the majority crops, except buckwheat [5].

Modern technologies for growing field crops involve the widespread use of pesticides, the effectiveness of which depends on the phytosanitary condition of the agrocenosis and its changes. Now we carry out monitoring of the phytosanitary status of main field crops in the western region of Ukraine [1–3]. This article presents some results of our researches on harmful organisms' development on main crops.

Results. During the last 5 years on wheat plants, we detected such fungal diseases as powdery mildew, *Septoria* leaf and ear spot, brown and yellow rusts, *Pyrenophora* leaf spot, a complex of *Helminthosporium* leaf spots, *Fusarium* ear blight and complex of root and stem rots and others. The highest parts in the wheat diseases structure have powdery mildew (20%) and *Septoria* leaf spot (18%). Traditionally rusts have a significant part. But during the last 5 years among them, we observed the increase of yellow rust development. Besides this increase of *Pyrenophora* spot ratio was detected among leaf spots and *Fusarium* blight among ear diseases. From pests of winter wheat most spread were cereal flies (*Mayetiola destructor, Leptochylemyia cearctata, Oscinella frit, Oscinella pusilla, Opomyza florum*), flea beetles (*Phyllotreta vittula, Chaetocnema hortensis*) and cereal leaf beetles (*Oulema melanopus, Oulema lichenis*), cereal aphids (*Schizaphis graminum, Sitobion avenae, Schizaphis graminum, Brachycolus noxius, Rhopalosiphum padi*). During the last years, the number of grain beetles (*Anisoplia agricola, Anisoplia austriaca*) and bread bugs (*Eurygaster integriceps, Aelia rostrate*) has increased. We also detected grain sawflies (*Cephus pygmaeus*), thrips (*Haplothrips tritici*), cereal ground beetles (*Zabrus tenebrioides*) (Fig. 1).

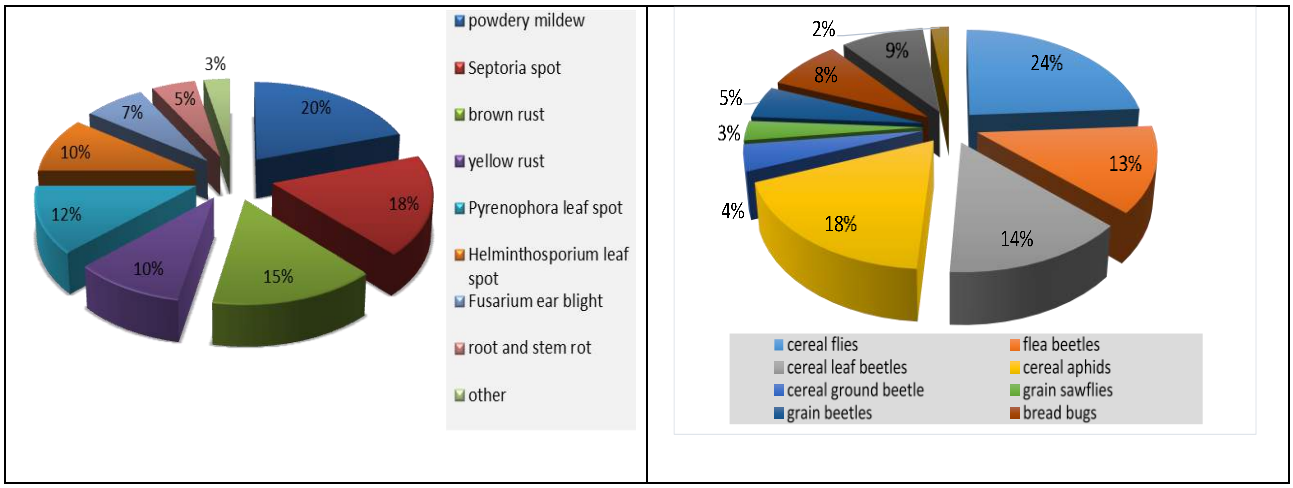

Fig. 1 – Structure of main wheat diseases and pests, 2016–2020

Among soybean diseases, we detected such mycoses as powdery and downy mildew, *Septoria* spot, *Cercospora* spot, white rot causing by *Sclerotinia sclerotiorum*, rust, and others. Bacteria diseases of soybean causing by *Pseudomonas syringae* has significant mean. Thus, downy mildew and *Cercospora* leaf spot have the highest indexes of diseases – 23% and 20%, respectively. It should be noted more spreading of *Sclerotinia* white rot than in previous years. Among pests of soybean the most spreading were pea leaf weevil (*Sitona lineata* and *Sitona crinita*), aphids *(Aphis fabae*), twospotted spider mite (*Tetranichus urticae*), thrips (*Thrips tabaci*). In recent years, we detected cotton bollworm (*Helicoverpa armigera*), silvery moth (*Autographa gamma*), pea pod borer (*Etiella zinckenella*), seedcorn maggot (*Delia platura*) and in 2019 painted lady butterfly (*Vanessa cardui*) on soybean plants (Fig. 2).

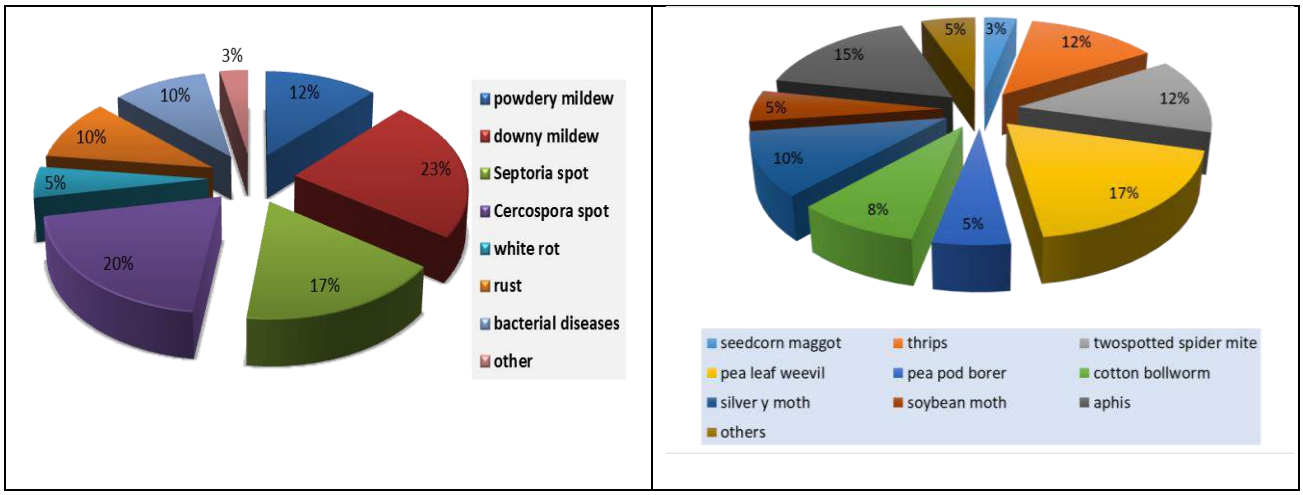

Fig. 2 – Structure of main soybean diseases and pests, 2016–2020

In recent years, we detected on oilseed rape downy and powdery mildews, leaf spot and stem cancer causing by *Leptosphaeria maculans*,

light spot causing by *Cylindrosporium concentricum*, *Alternaria spot*, white rot, and snow mould. The rising of the sown area under oilseed rape has led to the wide spreading of *Leptosphaeria* disease and white rot. In the last three years, we observed an increase in snow mould development. Among pests we observed the most prevailing species, as rape seedpod weevils (*Ceutorrhynhus napi* and *Ceutorrhynhus picitarsis* and *Ceutorhynhus quadridens*) and stem weevil (*Ceutorrhynhus assimilis*), rape blossom weevil (*Meligethes aeneus*), cabbage pod midge (*Dasyneura brassicae*), aphid (*Brevicoryne brassicae*), rape sawfly (*Athalia colibris*), flea (*Phyllotreta atra, Ph. nigripes, Ph. undulata*) and in the last years – bloosom feeder (*Epicometis hirta*) (Fig. 3).

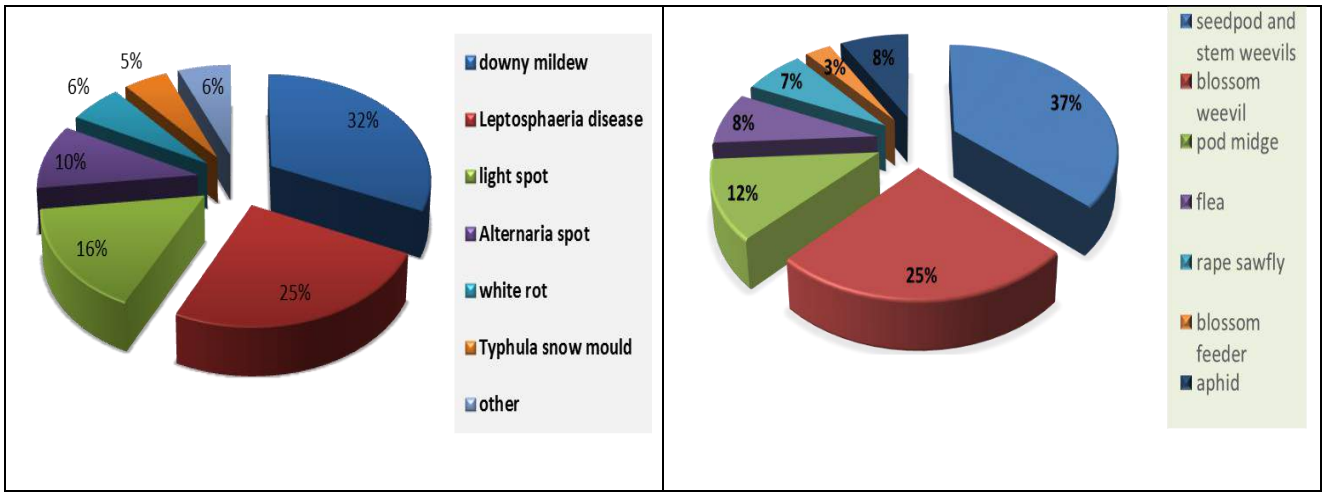

Fig. 3 – Structure of main oilseed rape diseases and pests, 2016–2020

Conclusions. Our scientific interest is concentrated on oilseed rape and soybean diseases because areas under these crops increased significantly in the last years and the ratio of pathogen species is changed. The research shows that the most common diseases of wheat, oilseed rape, and soybeans are mycoses caused by fungi or fungus-like organisms. Pests of crops are represented by a wide range of species, and they damage plants throughout their growing season. Monitoring of the phytosanitary condition of crops is an important task, both for science in the study of biological diversity of agrocenoses, and for modern agricultural production in the development of plant protection systems against diseases and pests, in particular in the selection of effective fungicides and insecticides.

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КОЛЕКЦІЯ МІКРООРГАНІЗМІВ ДЛЯ ЗАСОБІВ ЗАХИСТУ РОСЛИН

Постановка проблеми. Основним призначенням Колекції мікроорганізмів для засобів захисту рослин (Колекція) є забезпечення виробництв біологічних засобів захисту рослин перспективними маточними культурами мікроорганізмів зі стабільними властивостями [1-4]. Відомо, що при масовому виробництві біологічних препаратів можлива втрата основних властивостей мікроорганізмів. Це природно призводить до втрати споживчих властивостей в біологічних засобах. В зв'язку з цим за діяльністю регіональних біолабораторій необхідно здійснювати постійний контроль з боку утримувачів колекцій.

Виклад основного матеріалу. Колекцію мікроорганізмів для засобів захисту рослин сформовано в 1992 р. в Інженерно-технологічному інституті «Біотехніка» з метою забезпечення маточними культурами регіональних біолабораторій, які зайняті виробництвом біологічних засобів захисту рослин (БЗЗР) [5]. В Колекції зібрано і широко застосовуються типові промислові штами мікроорганізмів (бактерій і грибів), які є діючими чинниками в БЗЗР з фунгіцидними, нематоцидними, інсектицидними і родентицидними властивостями [6–13].

В Колекції налічується понад 120 штамів мікроорганізмів, з них – відомі промислові штами, які застосовуються: