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Adaptability and stability mechanisms of *Triticeae* tribe to epiphytoparasites in anthropical ecosystem

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The most numerous and malicious types of pathogens fungal diseases of plants cultural cereals – *Triticum aestivum L.*, *Secale cereale L.* та *Triticum trispecies Shulind.* in conditions of anthropical ecosystem Central Right-bank Forest-Steppe are *Microdochium nivale (Fr.)*, *Blumeria graminis (DC.) f. sp. tritici Speer*, *Puccinia recondita Rob. ex. Desm f. sp. tritici* та *Tillitia caries (Tul.), Tillitia secalis (Korda, Kuhn)* etc., manifestation of parasitism depends on genotypical, phenotypical, ontogenetical peculiarities plants, growing conditions. According to the results of years of research (2007–2016) highlighted group of plant formsthat are characterized by mono-, two- and polyfacet of resistance epiphytoparasites. That peculiarity owning heterogeneous or multilinearity plant forms (Ariivka, Yuvivata 60, КС 1, Л 3-95, Л 4639/96), formed as a result of hybridization and repeated bekrossing and selected from hybrid populations by means individual and mass selections. The mechanism of plant genetic heterogeneity of the aforementioned forms due to the presence of multivariate phenetical markers – components of the spectra gliadin proteins (6A1, 6A4, 6B1, 6B3 etc.), as well as the phenotypical and ontogenetical their homogeneity, which increases the resistance of plant populations to adverse biotic stress environment. Among the studied assortment varietal plants tribe *Triticeae*, medium higher stability of some of them to the spectrum specified above epiphytoparasites caused by their variety individuals, which, mass and individual selection as a result of the reproduction, give rise to whole families – point populations (manifesting different firmness to one and the same species and races of pathogens, including with progressive race creative process), that is the basis of formed varieties – as megapopulation. Adaptive mechanisms of plant populations cultural crops to adverse biotic stress, particularly damaging pathogens are a number of biological peculiarities (molecular genetics, physiological, biochemical, morphological, ontogenetic, biocenotic), identification of plants which reflects the degree of their adaptive ability, ecological plasticity and sustainability. In general, the mechanisms resistance of plant tribe *Triticeae* to epiphytoparasites can distinguish by the following types: functional stability (sustainability, is caused by peculiarities of functional parameters of the plant), morphological tolerance (the ability of plants to resist damage without reducing productivity), ontogenetic evasion (sustainability, is caused by peculiarities ontogenetic of development of plants), photoperiodic sensitivity (retarded the development in autumn and late spring vegetation) and genetic heterogeneity (the presence of morphologically identical homozygous of lines differing by the spectrum of component proteins gliadin). Plant forms that possess mono- and polyfacet resistance to epiphytoparasites avoid parasite influence of fungi due to the mechanism ontogenetic evasion (Slavetne, Chaian, Vivate Nosivske, Pshenychne, Prydesnyanska n/k, Zoriana Nosivska etc.). The manifestations of mechanisms morphological tolerance of plant populations (Noshpa 100, Л 41/95, Borotba, Slavetne) are medium- and high stem, woolly of eaves, stems, waxy coating, high index leaf, half procumbent and half vertical bush form, awned spike, glossy surface and gray color of leaves, stems.

Key words: mechanisms of adaptability and stability, plants of tribe *Triticeae* L., ecological plasticity, epiphytoparasites, anthropical ecosystem.

Introduction

Evolutionary composed that anthropic ecosystems grouping of plant cultivated species are biotic interconnection with many kinds of consort (Bellard et al., 2012; Moskalets, 2015). In general, these connections are due and ontogenetic trophic features of autotrophs, consort parasites (Al-Khayri et al., 2016). Plants-determinants, through inherent and selective characteristics and properties acquiring properties during adaptogenesing a number of adaptive mechanisms: morphology- physiological, ontogenetic, physiology-biochemical, molecular genetic and others, thereby the first can to resist biotic stress – damage, infection, colonization and so on (Whitford et al., 2013; Moskalets, 2016a; Moskalets, 2016b).

The basis of the fundamental bases adaptation, developing approaches to obtain resistant varieties and plant forms to pathogens, phytophages, especially in the present global warming and arid climate (Polyakov et al., 1984; Keeley, 2012; Parent et al., 2014), underlying of plant response as response to abiotic and biotic prolonged stressors (Field et al., 2014; Tavares et al., 2015). Adaptability as a property of living organisms characterizing adequacy (conformity) plant genotype real conditions of existence for quite a long time to maximum realization of potential opportunities in the environment (Cellular mechanisms of plant adaptation …, 2003; Bita, Gerats, 2013).

The conducted analysis of of literature in recent years demonstrates the significance achievements of problems in the study of adaptability and adaptation of plant populations (Suley, 1989; Kyyak, 2014; Moskalets et al., 2016c) and prompts it to further development of analytical approaches, including the comparison of of vital functions occurring between different organisms in biocenosis not only of rare, relict and endemic plants, but also cultural species (Moskalets, Rybalchenko, 2015).

The sharp aggravation of environmental situation as a result of anthropogenic impact induces to search for new forms of crops and the ways of realization their sustainability (Jones et al., 2012; Deng et al., 2015; Moskalets et al., 2016b). To resist extremal conditions can genotypes highly plastic, tread properties are determined by genetic, morphological, physiological and biochemical and biocoenotical mechanisms (Shpylchyn et al., 2010; Moskalets et al., 2016a).

The success of the spread of new species and forms of plants is determined by the presence of reliable criteria of stability and protective mechanisms for competitive (parasitical, trophical, topical) relations (Voelckel, Jander, 2014; Hancock et al., 2015).

Learning new plant forms of *T. aestivum*, *T. trispecies, S. cereale* in new growth conditions for them, allows to identify the number of promising biotypes, an important advantage which are the most complete implementation of the above conditions biopotential (Deng et al., 2015), with the highest possible manifestations of ecological tolerance to adverse abiotic and biotic factors, including exciters epiphytoties (Hof et al., 2011). Species-consort are migrating geographically constant modification (Minden et al., 2012).

To avoid the dangerous influence of epiphytoties, great importance has the correct spatial and geographical location of plant varieties with different effective resistance genes to one or more types of epiphytoparasites, and expanding varietal diversity and parallel identification of plant pathogens (Hoffmann, 1982; Jones et al., 2012; Minden et al., 2012). To reduce the defeats of plant pathogens and distribution of epiphytopathogens are necessary short and long-term forecasts of development peculiarities of propagation of pathogens, timely testing of varietal resources cereal crops and introducing sustainable plant forms that will allow to decrease pesticide load on the environment and promote biodiversity.

The aim of the research was to find out adaptiveness mechanisms of sustainability that are already produced and that shape the representatives tribe *Triticeae* L. the negative impact of epiphytoparasites for new growth conditions.

Materials and methods

The objects of research were sorts and lines of tribe *Triticeae,* in particular: *Triticum aestivum L.* (common wheat), *Secale cereale L.* (winter rye) and winter triticale (*Triticum trispecies Shulind.)* (Table 1).

Proceeding from the fact that the origin of the weekend parent forms have a wide habitat of geographical origin important for disclosure biological of mechanisms adaptability in different areas of their introduction, identify marker adaptive characteristics and properties. Research carried out during the 2007–2016 in Central part Northern Right Bank Forest-Steppe zone of Ukrainian with periodically erratic humidification (the research field NSRC of Bila Tserkva NAU), soil – chernozem typical deep argillaceous sand.

Morphological studies of plants performed by I. G. Serebryakov (Serebryakov, 1964). Phytopathogenic assessment of crops was carried out by conventional method (Chenkin, 1984; Babayants et al., 1988; Triebel, 1999). The calculations of fungi pathogens were carried out according to phenophase of crops. Statistical data processing conducted by B. A. Dospehov (Dospehov, 1985).

Table 1. Research objects

№	Variety, line of species *Triticeae*	Physical geographic origin	The approximate zone regionalization	Type of plant development	The height of plants
		Triticum aestivum L. (common winter wheat*)*			
1	Noshpa 100	UA	FS	m.in.	ss
2	Zoriana Nosivska	UA, GB	Pl-FS	m.ex.	ms
3	Yuvivata 60	UA	Pl	m.ex.	ms
4	КС 1	RU, CN	FS	in.	Sd
5	КС 5	RU, UA	FS	in.	Sd
6	КС 7-04	RU	FS	in.	Sd
7	КС 14	CN, UA, US	FS	in.	Sd
8	КС 16-04	MD, UA	FS	in.	Sd
9	КС 17	GB, DE, UA	FS	m.in.	ss
10	КС 21	UA	FS	in.	Sd
11	КС 22-04	UA	FS	in.	Sd
12	Л 41-95	UA	Pl-FS	m.in.	ss
13	Л 59-95	RU, US, GB	Pl-FS	in.	Sd
14	Л 3-95	RU, US, GB	FS	in.	Sd
15	Л 4639/96	UA, GB, RU	Pl	m.ex.	ms
16	Daushka	RU	Pl-FS	m.in.	ss
17	Zirka Nosivska	UA, CN	Pl-FS	m.ex.	ms
18	Prydesnianska n/k	RU, US, GB	Pl-FS	in.	Sd
19	Ariivka	UA	FS	in.	sd
		Secale cereale L. (winter rye)			
20	Borotba	EE, RU	Pl-FS-St	m.ex.	hs
21	Olimpiada 80	DE, PL	Pl -FS	m.ex.	hs
		Triticum trispecies Shulind (winter triticale)			
22	Vivate Nosivske	UA	FS	m.in.	ms
23	ПС_1_12	UA	FS	m.ex.	hs
24	ПС_2_12	UA	FS	m.ex.	hs
25	УП_1-12	UA	FS	m.ex.	hs
26	Д-5_2010	UA, CA	Pl-FS	m.ex.	ss
27	Slavetne	UA	Pl, FS, Pl-FS	m.ex.	hs
28	Chaian	UA	Pl-FS	in.	ss
29	Pshenychne	UA, CA	FS	in.	ms

Note: n/k (napivkarlykovyy), Pl – Polissia, FS – Forest-Steppe, St – Steppe; in. – intensive, m.ex. – moderately extensive, m.in. – moderately intensive; sd – semi dwarf (75–84 cm), ss – short stem (85–94 cm), ms – medium stem (95–105 cm), hs – high stem (> 105 cm).

Results and Discussion

Ecotesting of new forms cereal plant species under conditions central part northern Right Bank Forest-Steppe zone of Ukrainian has revealed the the most circulated causative agents of fungal diseases. It: *Microdochium nivale* (Fr.), *Blumeria graminis* (DC.) f. sp. *tritici* Speer, *Puccinia recondita* Rob ex Desm f. sp. *tritici* та *Tillitia caries* (Tul.), *Tillitia secalis*. Genetics of flowering time in bread wheat *Triticum aestivum*: complementary interaction between vernalization-insensitive and photoperiod-insensitive mutations imparts very early flowering habit to spring wheat (Kumar, et al., 2012; Moskalets et al., 2015).

Fungal *Blumeria graminis f.sp. tritici* (DC.) Speer (1975) – is the causative agent of powdery mildew is permanent type of display on plants crops, in some years, acquires epifitotes the scale. Exciter of *B. graminis* characterized by the emergence and development of conidial sporification the early phase the formation of the third leaf to the wax ripeness cereal plants. Exciter *B. graminis* on plant populations susceptible varieties and lines of cereal winter crops (Olimpiada 80, Chaian, УП-1_12) appears and develops the early phase of tillering (Fig. 1).

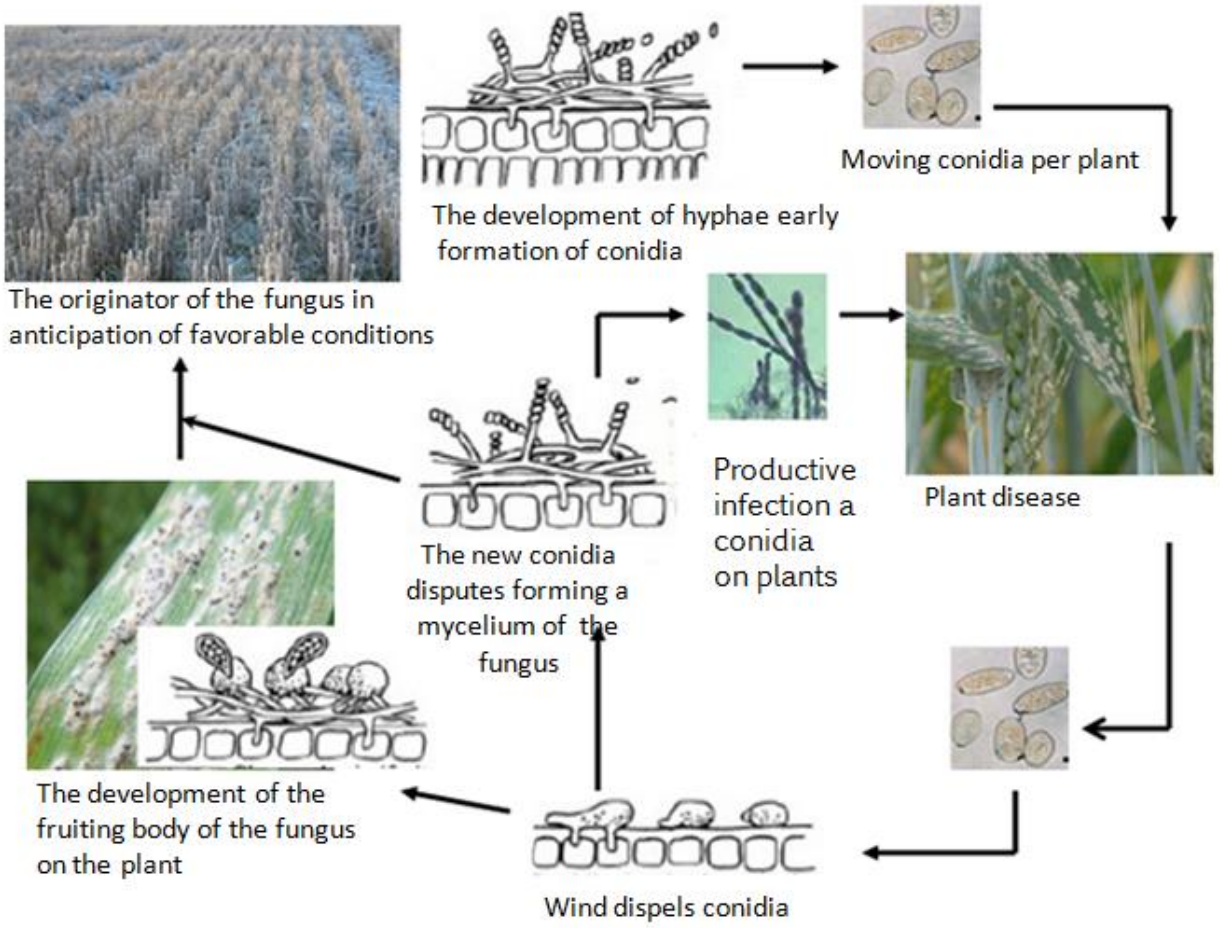

Fig. 1. Life cycle exciter of *B. graminis f. sp. Tritici*

The maximum manifestation the pathogen (about 28–34 %) in plant populations of varieties and lines *T. aestivum* – Noshpa 100, Л 41/95; *S. cereale* – Borotba, Olimpiada 80 occurs a phase of flowering, when the main supply of infection focuses on the lower tier plant leaves. There powdery mildew lesions ear, leaves all tiersparticular the aforementioned plant varieties (lines) *T. aestivum* and *S. cereale*, that are characterized high bushiness (intensive formation of stems) and plactig not erective flag leaf.

Fig. 2. The manifestation of pathogen powdery mildew *B. graminis f.sp. tritici* on plants *S. cereale* variety of Olimpiada 80 (2009)

In the phase seed wax ripeness, signs manifestation of pathogens are infected leaves and stems of plants. For 2008–2016 we established that plant varieties and lines *T. aestivum:* КС 1, КС 5, КС 14, Prydesnianska n/k, КС 17, Yuvivata 60 і *T. trispecies*: ПС-1_12, ПС-2_12, Д-5_2010 are resistant to pathogen of powdery mildew, that plants are able to confront the its development and dissemination, compared with plants *S. cereale* (Borotba, Olimpiada 80).

Most resistant plant forms to the pathogen *B. graminis* (КС 1, КС 5, КС 14, Prydesnianska n/k, Л 3-95, Ariivka) are undersized (85 cm) and early maturing. But for plants *T. aestivum* Yuvivata 60 і Л 4639/96, УП-1_12, medium stem and high stem, characterized by moderately high resistance (8–6 ball), which is due their physiological and ontogenetic development, particularly high photoperiodic sensitivity, resulting it not outgrow in autumn and early spring. During the 2007–2016 on plants neutral and medium sensitive to the photoperiod (varieties: Noshpa 100, Zoriana Nosivska, Ariivka, Zirka Nosivska, Л 41/95 etc.). epiphytoties development was increased in phase the output grew the access to the pipe from 10.3 to the 25.8 %. Most are affected lower and middle leaves during earing-flowering – to the 33.5 %, milky-wax ripeness – to the 37.2 % (5 ball sustainability, a sign of the manifestation: a large infection on the bottom of plant, moderate - in the middle leaves, weak – on the upper leaves), which is typical for medium resistant plants. As a consequence for plants with significant lesions (more than 25 %) marked by a substantial (p<0,05) reducing the productive tillering, area of assimilation surface (leaves and stems dry up, delayed onset earing in the head ear observed empty heading, stage subtle grain etc.) (Moskalets, Moskalets, 2015).

The causative agent of snow mold is a fungus *Microdochium nivale (Fr.) Samuels & Hallett.* Developing in early spring, immediately after melting of snow, on leaves of plant winter crops appears watery spots with white bloom, which leads to bonding leaves, causing infected leaves die off. For strong infected occurs dying off tillering node, leaf sheath, roots and the death of the whole plant. Epiphytoparasite persists in soil on organic residues and autumn begins lesions plant winter crops (Fig. 3).

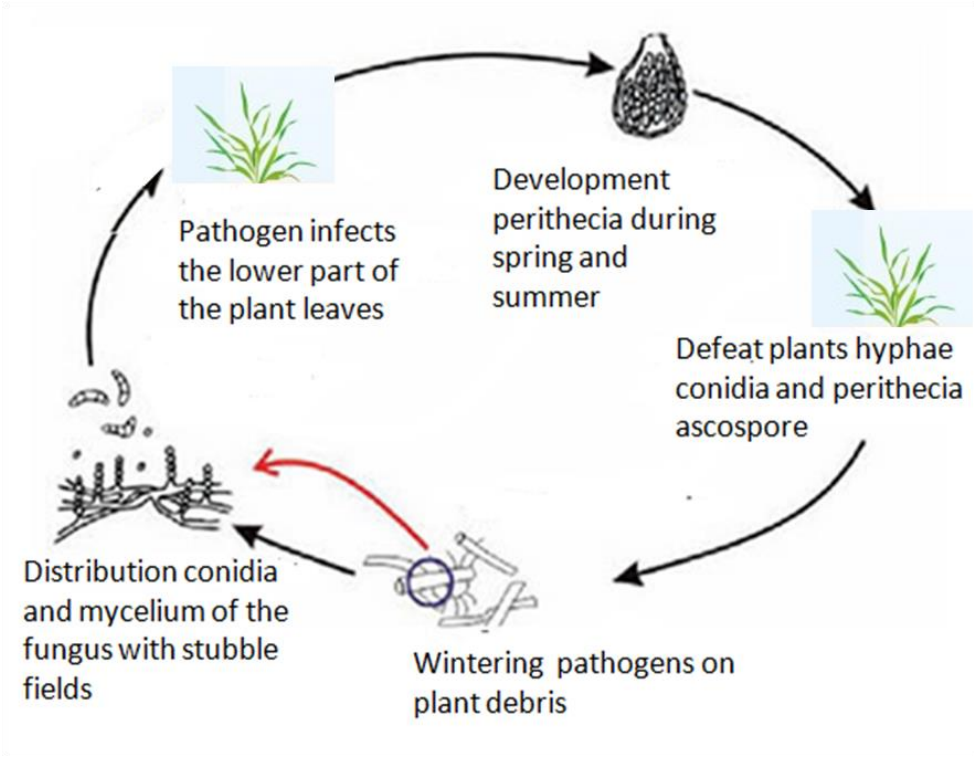

Fig. 3. Life cycle *M. nivale* (Fr.) on plants to winter cereal crops

Start development of mycelium on plants winter crops, observed since autumn, intensifies in early spring, after the snow melts. Pathogens shows high aggressiveness at low temperatures (5 °C), and this explains why preferential resettlement fungus during the cold spring. Plants varieties and lines *T. aestivum* – КС 1, КС 5, КС 14; *T. trispecies* – ПС-1_12, ПС-2_12, Д-5_2010; *S. cereale* – Borotba (the degree of damage – 8 and 10 % or 9 ball of sustainability) is highly resistant to the pathogen *M. nivale*. The highest manifestation of immunity to *M. nivale* characterized by plant populations early and middle-ripening forms (КС 5, КС 7-04, КС 14, КС 16-04, КС 17, КС 21, КС 22-04, Ariivka, Л 3-95, Prydesnianska n/k), most plant populations *T. trispecies* (Moskalets, Moskalets, 2015).

Weather and climatic conditions of Central Right-bank Forest-Steppe contribute significant to the spread of plants winter crops epiphytoparasite that leads to exhaustion and often result in the death of plants asphyxiation that was especially noted during our research during the winter period 2009–2010, 2013–2016. Moreover, by the general susceptibility to the pathogen snow mold, observed that plant varieties *S. cereale* (Borotba, Olimpiada 80), and photoperiodic medium and insensitive *T. trispecies* and *T. aestivum* (ПС-1_12, ПС-2_12, Noshpa 100, Zoriana Nosivska, Daushka, Zirka Nosivska) significantly (p<0,05) exceeding the photoperiodic sensitive plant forms that do not outgrow (Yuvivata 60, Л 4639/96, УП-1_12 etc.).

The causative agent of brown rust leaves (*Puccinia recondita* Dietel & Holw) manifested on plants *T. trispecies* the end of the growing season, compared to *T. aestivum* and not becoming widely spread, but in some years there are exceptions (2013, 2015, 2016 As the G. M. Lisova (Lisova, 2014), the pathogen *P. recondita* is a heterogeneous on the composition races, genes and virulence by the type of manifestation. According to scientist, the populations of the pathogen as 2004–2007 dominated by the race 6, 77, 149, X-4, the overall proportion of the population was 43–69 %. In our research plants medium early varieties Л 3-95, КС 14, КС 7-04, ПС-1_12, КС 5, Vivate Nosivske al., and medium ripest: Zirka Nosivska, Д-5_2010 demonstrate moderately high and high resistance to the above pathogen (9 and 7 balls of sustainability). In Forest-Steppe zone of Ukrainian infectious *P. recondite* plant resistant varieties did not exceed 6 %, while in Polissia - reached more than 10 % of the total lesions. The density of pustules

on the upper leaves of these genotypes was 1,5–3 pcs./cm^2. In 2008–2016 on leaves of plant varieties (Yuvivata 60, KC 5, Zoriana Nosivska, Д-5_2010) detected medium and weak chlorosis and necrosis (Moskalets et al., 2013b).

Plants medium late varieties and lines of *S. cereale*: Borotba, Olimpiada 80 (the growing season – 303–311 days) and *T. trispecies* УП-1_12 manifest themselves as the susceptible (4 ball of sustainability, class damage – medium or 31–50 %) до *P. recondita*. On these plants damaged amounted to more than 52 % (3 ball of sustainability) in 2008–2010, 2011 – 43 % (5 ball of sustainability), 2013 – more than 60 %, density uredopustula exceed 100 pcs./cm^2.

Wheat cereal plants often striking the pathogen of loose smut (*Ustilago tritici (Pers.) Rostr*) and *Fusarium graminearum* Schwabe. Worldwide Fusarium ear is considered one of the most dangerous epiphytoties of cereal. Along with losses the of seed productivity due to decrease field seed germination, decrease in the number of grains in the ear and weight of thousands grain, fusariose can worsen of bakery or breweries of grain quality, in addition, accumulate in the seeds of dangerous mycotoxins. The main source for the infection may also be seed is infected stubbly residues. Another source of infection may also not resistant plants (Moskalets et al., 2013a). As a result infected seed and the subsequent development infection occurs lesions of the lower tier, and then the whole plant. It is noted that the plants by the resistance to *U. tritici* and *F. graminearum* in conditions of Polissiae and Forest-Steppe are susceptible, resistant and moderately resistant.

The most parasite influence *U. tritici* exposed plants *S. cereale* і *T. trispecies*. In favorable to the pathogen 2009, 2012 the lowest level of damage was for resistant plants around 28 % (7 ball of sustainability). Plants most varieties and lines *T. aestivum* are medium and weakly susceptible compared with steady Д-5_2010, damage to plants amounted to only for 5 % (9 ball of sustainability) (Moskalets, Rubalchenko, 2016).

Identification of fusariose plant – a rather difficult task since at present insufficiently studied biological features of epiphytoparasites, there are no immune form to *Fusarium* spp., there is no clear criteria for selection of resistant genotypes, resistance to pathogens controlled by multiple mechanisms, each of which provides resistance of plants at certain stages of generative anlages. The ecological testing of representatives the tribe *Triticeae* in conditions of Forest-Steppe allowed to identify the resistance to the pathogen *Fusarium* ear, with a predominant spread in wet years (longer growing season periods and feno phases, high humidity, including waterlogged ear, which leads to more education they dispute).

In 2009, 2011 and 2014, 2016 marked by cases of latent infection of leaves and leaf axils, since the spring, and then started by the sufficient moistening sporulation. If the period of active sporogonic (conidia or ascospores) coincided with the flowering *T. aestivum*, it was marked a significant lesions ears, including the ear and on the lower nodes as dark striped necrosis with characteristic friable pink mycelium. This negative impacted on plant development of tribe *Triticeae*, predetermined their premature ripening, and the a significant lesions – lodging and death.

In wet years on plants *S. cereale, T. trispecies* – ПС-1_12, ПС-2_12, Vivate Nosivske – penetration of pathogenic fungus *F. graminearum* into the central ear rod results in cessation of nutrients in grains spike, which manifested itself in the form of specific symptoms, known as partial white ear. The ecological testing of representatives the tribe *Triticeae* allowing to differentiate plants by the resistant to pathogens epiphytoparasites and highlight the most stable forms, which have some or other mechanisms of resistance to lesions phytopathogenic causative agents.

Among the studied plants *T. aestivum*, *S. cereale* and *T. trispecies* by immune to pathogens, epiphytoparasites under of Forest-Steppe (Daushka, KC 1, KC 5, KC 14, Noshpa 100, Yuvivata 60, Д-5_2010, Ariivka), are is recommended to use as donors of resistance to pathogens epiphytoties in breeding programs immunity (Synekolohichni aspekty, 2014).

Comparative study of resistance to *F. graminearum*, striking the ear of plants *T. aestivum*, *S. cereale*, *T. trispecies,* confirms a higher susceptibility *T. trispecies* (medium, medium-late ripening periods), as part of the genome them are genes of kind *T. durum*, plants which are genetically less resistant to epiphytoparasite compared with plants species *T. aestivum*.

Shortened stem (85 cm) to zoom to ear infection sources (soil, plant debris) and by the increasing the duration fenophase earing-ripening of grain increases duration susceptibility to lesions pathogen. To a lesser extent are affected plants of early ripening medium stem of plant forms.

System changes of meteorological factors create conditions for amplification process of formation of new aggressive races and pathogenic agents, and bias racial and biotic composition of pathogens populations. The infection migrates geographically with some regions and continent to another. Today great concern the scientific community causes the emergence of new, extremely aggressive races (Hoffmann, 1982; Babayants et al., 1988; Field et al., 2014). Favorable conditions for development *F. graminearum* marked 2009, 2011, 2013–2014. In dry periods (2008, 2010, 2012, 2016) extent of proliferation of of the pathogen populations of species of the tribe *Triticeae* significantly (p <0.05) decreased (Synekolohichni aspekty ..., 2014; Moskalets, 2016b). Among the studied varietal assortment of plants tribe *Triticeae* is necessary to note the relative stability of some plant forms, which they show to the spectrum of pathogenic fungi. There are Ariivka, Yuvivata 60, Л 3-95, Л 4639/96. Such a their relatively high tolerance during the 2007–2016 years of research is due to the heterogeneity, that is a lot of linearity, giving the possibility of plants one variety avoid detrimental manifestations pathogens. Heterogeneity is genetic diversity of individuals, the underlying development point of families and populations which have different manifestations of resistance to the same pathogens. We assume that the above multilinear varieties can have great value protection against pathogens with progressing race forming process (Synekolohichni aspekty ..., 2014; Moskalets, Moskalets, 2015).

Among the studied assortment varietal plants tribe *Triticeae*, medium higher stability of some of them to the spectrum specified above epiphytoparasites caused by their variety individuals, which, mass and individual selection as a result of the reproduction, give rise to whole families – point populations (manifesting different firmness to one and the same species and races of pathogens, including with progressive race creative process) (Borlaug, 1953), that is the basis of formed varieties – as megapopulation (Moskalets et al., 2016a). The mechanism of plant genetic heterogeneity of the aforementioned forms due to the presence of

multivariate phenetical markers – components of the spectra gliadin proteins (*6A1, 6A4, 6B1, 6B3* etc.), as well as the phenotypical and ontogenetical their homogeneity, which increases the resistance of plant populations to adverse biotic stress environment.
Adaptive mechanisms of plant populations cultural crops to adverse biotic stress, particularly damaging pathogens are a number of biological peculiarities (molecular genetic, physiological, biochemical, morphological, ontogenetic, biocenotic), identification of plants which reflects the degree of their adaptive ability, ecological plasticity and sustainability. In general, the mechanisms resistance of plant tribe *Triticeae* to epiphytoparasites can distinguish by the following types: functional stability (sustainability, is caused by peculiarities of functional parameters of the plant), morphological tolerance (the ability of plants to resist damage without reducing productivity), ontogenetic evasion (sustainability, is caused by peculiarities ontogenetic of development of plants), photoperiodic sensitivity (retarded the development in autumn and late spring vegetation) and genetic heterogeneity (the presence of morphologically identical homozygous of lines differing by the spectrum of component proteins gliadin) (Moskalets, 2016b). Heterogeneity is genetic diversity of individuals, the underlying development point of families and populations which have different manifestations of resistance to the same pathogens (Jensen, 1952; Borlaug, 1953; Moskalets, 2016b). We assume that the above multilinear varieties can have great value protection against pathogens with progressing race forming process (Moskalets, 2016b; Moskalets et al., 2016b).
Plant forms that possess mono- and polyfacet resistance to epiphytoparasites avoid parasite influence of fungi due to the mechanism ontogenetic evasion (Slavetne, Chaian, Vivate Nosivske, Pshenychne, Prydesnianska n/k, Zoriana Nosivska etc.). The manifestations of mechanisms morphological tolerance of plant populations (Noshpa 100, Л 41/95, Borotba, Slavetne) are medium- and high stem, woolly of eaves, stems, waxy coating, high index leaf, half procumbent and half vertical bush form, awned spike, glossy surface and gray color of leaves, stems (Manukian et al., 2011; Moskalets et al., 2013a).

Conclusions

The most numerous and malicious types of pathogens fungal diseases of plants cultural cereals – *Triticum aestivum L.*, *Secale cereale L.* та *Triticum trispecies Shulind.* in conditions of anthropical ecosystem Central Right-bank Forest-Steppe are *Microdochium nivale (Fr.)*, *Blumeria graminis (DC.) f. sp. tritici Speer*, *Puccinia recondita Rob. ex. Desm f. sp. tritici* та *Tillitia caries (Tul.), Tillitia secalis (Korda, Kuhn)* etc., manifestation of parasitism depends on genotypical, phenotypical, ontogenetical peculiarities plants, growing conditions.
According to the results of years of research (2007–2016) highlighted group of plant formsthat are characterized by mono-, two- and polyfacet of resistance epiphytoparasites. That peculiarity owning heterogeneous or multilinearity plant forms (Ariivka, Yuvivata 60, КС 1, Л 3-95, Л 4639/96), formed as a result of hybridization and repeated bekrossing and selected from hybrid populations by means individual and mass selections. The mechanism of plant genetic heterogeneity of the aforementioned forms due to the presence of multivariate phenetical markers – components of the spectra gliadin proteins (6A1, 6A4, 6B1, 6B3 etc.), as well as the phenotypical and ontogenetical their homogeneity, which increases the resistance of plant populations to adverse biotic stress environment. Among the studied assortment varietal plants tribe *Triticeae*, medium higher stability of some of them to the spectrum specified above epiphytoparasites caused by their variety individuals, which, mass and individual selection as a result of the reproduction, give rise to whole families – point populations (manifesting different firmness to one and the same species and races of pathogens, including with progressive race creative process), that is the basis of formed varieties – as megapopulation.
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Plant forms that possess mono- and polyfacet resistance to epiphytoparasites avoid parasite influence of fungi due to the mechanism ontogenetic evasion (Slavetne, Chaian, Vivate Nosivske, Pshenychne, Prydesnianska n/k, Zoriana Nosivska etc.). The manifestations of mechanisms morphological tolerance of plant populations (Noshpa 100, Л 41/95, Borotba, Slavetne) are medium- and high stem, woolly of eaves, stems, waxy coating, high index leaf, half procumbent and half vertical bush form, awned spike, glossy surface and gray color of leaves, stems.

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