

DISTRIBUTION OF SPOTTINESS OF GRAIN CROPS` LEAVES IN THE CONDITIONS OF NORTHERN KAZAKHSTAN

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Abstract. Results of research of biological features and specific structure of activators of spottiness of grain crops` leaves are given in the article. It is established that the most aggressive activator of spottiness of barley leaves are fungi *Cochliobolus sativus*, *Alternaria tenuissima*, *Drechslera graminea*, and *Bipolaris sorokiniana*.

Keywords: phytopathogens, spottiness of leaves, grades of grain crops.

Productivity of grain summer crops depends on potential opportunities of a plant, weather, agrotechnical and biological factors. Among the last the important place is taken by numerous infectious diseases which affect plants at all stages of their organogenesis.

In recent years the most widespread and harmful diseases of grain crops are spottiness of the leaves, caused by a complex of phytopathogenic fungi in the conditions of Northern Kazakhstan. Spottiness of leaves for this region is rather new illness, much progressing in connection with broad introduction of zero technology of cultivation of grain crops.

Spottiness of leaves is one of the most widespread and harmful diseases of grain crops in Northern Kazakhstan and is caused by a complex of fungi of *Drechslera graminea*, *Cochliobolus sativus* Coch., *Bipolaris sorokiniana*, species of fungi of *Alternaria*: *Alternaria arborescens*, *Alternaria tenuissima*, *Alternaria alternate*, *Alternaria triticina*. Four main types are revealed: dark-brown, striped, alternarioous and septorious spottiness of leaves as a result of realized mycologic analysis of specific structure of activators of leaves spottiness on barley. Dominating types are *Drechslera graminea*, *Bipolaris sorokiniana* and *Alternaria*, the frequency of occurrence of noted fungi varies from 51,2% to 71,5%.

Cultural-morphological, physiological-biochemical properties are studied at activators of spottiness of leaves. The active growth of an air and substrat mycelium is observed at the majority of species of the fungi causing spottiness of leaves, in limits 18-30°C.

Temperature range makes at least 6 °C, an optimum – +18-+30 °C, and at most +35°C. Sodium nitrate and urea are the most favorable for growth and development among all studied sources of nitrogen optimum. Starch, maltose and glucose are the best sources of carbon for phytopathogenic fungi.

The most aggressive activator of leaves` spottiness of barley appeared *Cochliobolus sativus*, *Alternaria tenuissima*, *Drechslera graminea*, and *Bipolaris sorokiniana* in the conditions of in vitro among the tested types of phytopathogens. Intensity of defeat of barley leaves varied from 61% to 75%. Toxicity of a cultural filtrate of activators of leaves` spottiness consisted in decrease in viability of seeds. Metabolites of phytopathogenic fungi reduced viability of seeds of Astana 2000 grade to 38 - 78%, and a grade Tselinnyi 30 for 27-67%.

In droughty conditions, infection of barley plants by suspension of a strain of *Alternaria tenuissima* to a phase of full ripeness led to decrease in safety of barley grades to 16,7-39,5%, an empty ears hesitated ranging from 76,0% to 82,8%. On an infectious background infection of plants of barley with the activator of alternarioous spottiness promoted decrease in a crop to 87,8%. Injuriousness of fungi of *Drechslera graminea* was shown on plants of grades of barley Tselinnyi, Tselinnyi 9. Puny, defective grains were created at these grades. Decrease in productivity of these grades by 2,5-3,5 times in comparison with control is noted.

On an infectious background on an intensity of illness development barley grades on stability are differentiated. The grade Solonetzic can be related to steady; this grade was characterized by low defeat of plants for ontogenesis extent. Grades Donetsk 9, Astana 2007, Karaganda 5, Medikum 307, Tselinnyi 30 and Tselinnyi 93 are carried to moderately steady. Illness development on an infectious background fluctuated ranging from 22,1% to 45,3%. The main share of samples is carried to susceptible; this group included zoned grades of barley Complex, Tselinnyi, Tselinnyi 91, Astana 2000 where illness development on an infectious background exceeded 50% and above.