пероксиду водню та активності антиоксидантних ферментів у листках. Позакоренева обробка озимої пшениці карбамідом розглядається як своєрідний стрес для рослин, з одного боку, а з іншого, як фактор, що стимулює включення захисних механізмів, зокрема й активацію роботи антиоксидантних ферментів. Це сприяє кращій реалізації генетичного потенціалу в сортів озимої пшениці високобілкового спрямування.

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INFLUENCE OF MICROINFECTION ON THE QUALITY OF OIL FLAX SEEDING SEEDS

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Oil flax seeds are affected by pathogens of various diseases. According to Tsvetkov S.G. (1978) data, under conditions of Belarus flax seeds, sprouts and seedlings diseases are caused by 14 fungi and bacteria species. The causative agents of the most noxious flax diseases (anthracnose, fusariosis, bacteriosis, etc.) can infect seeds and penetrate into the embryo until the formation of the pigmental coat layer (internal infection), often causing its death. The sources of infection of septoriosis, fusariosis, various rot species are more often found in the first mucous coat layer or on its surface. For flax seeds, some saprotrophic fungi are also harmful. Their role is dual. They often penetrate through the „open gate” - mechanical damage following pathogens. Often, these fungi are the primary destroyers of the seed coat. As a result, the embryo dies or weakens, the seeds lose their germination ability and viability. One of the reasons for the biological properties of seeds decrease is their high phytopatogens microflora infection. The decrease in the germination of flax seeds is proportional to total percentage of infection by microorganisms. The seeds quality has a primary importance for the successful cultivation of this crop.

The research has been carried out for 4 years (2013-2016) at fodder and technical crop protection laboratory. Oil flax seeds used for sowing on experimental plots under production conditions of the Republic of Belarus served as the research material. The phytopathological oil flax sowing material examination by experts was carried out by seeds incubation in a moist chamber. Seed contamination by diseases was assessed in accordance with the interstate standard STATE STANDARD 12044-93 „Seeds of agricultural crops. Methods for determining the diseases infection”.

The phytopathological oil flax sowing material examination, carried out in the years of study, showed a high level of mottledness, bacterial and saprotrophic fungi infection. The total infection of seeds ranged from 9,5 to 83,5%, with a difference in the studied varieties infestation by mottledness (2,5-60,0 %). Oil flax seeds were also characterized by a high degree of bacterial infection (2,0-32,0 %) and slightly saprotrophic fungi, causing seeds molding (up to 11,0 %). Microinfection had different effects on biological indices - germination energy and laboratory germination. The lowest seeds quality was noted in 2016, the germination energy ranged from 21,0 to 95,0 %, and the laboratory germination rate was only 56,5 to 72,5 %. The greatest force of growth had the seeds with less micro-infection.

Thus, according to 4 years research results, we assume that the presence of micro-infection on oil flax seeds reduces their biological properties.

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LIPID COMPOSITION OF *ZEA MAYS* L. ROOT PLASMALEMMA IS INFLUENCED BY WATER DEFICIT

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Drought leading to water stress in plants is a major problem in reducing agricultural productivity especially in tropical, semi-arid and arid regions of the world. In order to cope with drought, plants have developed different protective mechanisms, in particular, morphological and cell structure changes as well as regulation of membrane permeability. Functioning of membrane proteins are influenced by the lipid bilayer, in which they are either embedded or bound at the surface. For this reason, a knowledge of the lipid composition of membranes in plant cells is important. The aim of the present study was to examine lipid content in plasma membrane fractions isolated from roots of two *Z. mays* varieties: drought-resistant “Dostatok” and non-resistant “Pereyaslavskiy” and to determine lipid changes under dehydration.

Experimental plants were grown in containers on a sand substrate for 21-22 days under 70% relative field capacity for plants (control) and 30% (experimental water deficit). The microsomal fractions enriched by plasmalemma were obtained from maize roots by two-phase aqueous polymer technique. Lipids were extracted from plasmalemma and their composition analyzed by reversed-phase high performance liquid chromatography.

Maize membrane lipids are mainly phosphor-, glycolipids and sterols, the ratio of them is different in two varieties. Water deficit causes the increase of sterol proportion in plasmalemma fractions:for 32.6% of total lipids for “Dostatok” and for 27.5% of total lipids for “Pereyaslavskiy”. This indicates to stabilization of the membrane under water deficit via decreasing its fluidity that is resulted from limitations of ion transport. In both varieties, water deficit led to decrease of total amount of glycolipids. This phenomenon occurs due to the inhibition of cell signaling function. The major phospholipids are presented by phosphatidylcholine (PC), phosphatidylethanolamine (PE), phosphatidylinositol (PI) and phosphatidylglycerol (PG). Dehydration caused a sharp decrease in major phospholipids.

The predominant saturated fatty acid lipids of both varieties were palmitic (C16: 0) acid. In drought-resistant varieties “Dostatok” its amount was higher. One can also note the low content of stearic acid (C18: 0) in two varieties. Unsaturated fatty acids were represented by oleic (C18: 1), linoleic (C18: 2) and linoleic (C18: 3) acids. Linoleic acid content was almost identical in both varietes and did not undergo changes under water deficit. The preferred unsaturated fatty acid was linoleic acid. In both varieties significant changes in composition of unsaturated and fatty acids we were found under water shortage. Under water deficit total proportion of unsaturated fatty acids in “Pereyaslavskiy” variety increases and the variety“Dostatok” is reduces.

Referring to our results, “Dostatok” variety is proved to be more adaptive to water deficit. Changes in the lipid composition are important for plant adaptation the drought. Adaptive mechanisms depended on stress intensity and stabilization of membrane composition is aimed to protect cells against harsh environment.