

THE GENETIC POTENTIAL OF SUMMER WHEAT RESISTANCE TO HEAVY METALS

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In Kazakhstan, the development of a powerful industry was based on its rich natural resources. However, the industrial centers are the areas of highest contamination by heavy metals. Sound environmental technologies are crucial to address heavy metal pollution problem. Development and use of plant varieties characterized by minimal accumulation of heavy metals can provide such environmental solution. The aim of this study was to identify wheat germplasm resistant to heavy metals (zinc, cadmium), which are priority pollutants in eastern Kazakhstan region, and identification of donors for breeding and promising forms of wheat that are resistance to heavy metals and destined for agricultural production. The objects of research are different genotypes of spring wheat from the collection of the East Kazakhstan Research Institute of Agriculture.

The study of the accumulation of heavy metals in components of different genotypes of winter wheat in conditions of natural pollution has shown the genotypic differences in the accumulation of zinc and cadmium in plant seeds. The study of investigated heavy metals accumulation in the spring wheat seeds of East-Kazakhstan Agricultural Research Institute collection showed, that in terms of cadmium accumulation, the most resistant varieties of spring wheat are three varieties, they can be recommended for further use in breeding for resistance to the accumulation of cadmium in the grain. Upon indicator of accumulation of zinc, the most resistant are two varieties of spring wheat, one of them can be recommended for further use in breeding for resistance to the accumulation of zinc in the grain. The most harvest from plots has spring wheat varieties: Ulbinka-25, Glubochanka, Erythrospermum-616 and Altai. It is connected to a large number of grains per ear, high grain weight per ear, high productive tillering and good survival during the spring-summer growing season. Varieties Ulbinka-25 and Omskaya-18 can be recommended for cultivation on soils contaminated with cadmium, as these varieties of spring wheat accumulate least of cadmium in the seeds and at the same time are characterized by high yields and good survival during the spring-summer growing season in a polymetallic contamination of soil.