

Environmentally friendly technology wheat cultivation in areas with soils contaminated with heavy metals

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ABSTRACT

The aim of this study was to identify wheat germplasm is resistant to heavy metals (lead, copper, zinc and cadmium) that are priority pollutants in eastern Kazakhstan region and identification of donors for breeding and promising forms destined for agricultural production. Different genotypes of winter wheat the world's collection (Kazakh, Russian, and a collection of CIMMYT varieties and lines of winter wheat, wild species of wheat) as well as specific to East Kazakhstan were studied. Field studies carried out for the determination of physiological parameters. Heavy metals in soil and in plant samples were determined by atomic absorption spectrophotometry. Genotypic differences in the accumulation were established. The smallest number of studied heavy metals accumulates in the seeds of varieties of winter wheat Ming-2, Mironovskaya-808 and Krasnovodopadskaya-25. These genotypes can be recommended for further study in breeding process. The highest yield from plots has winter wheat Mironovskaya-808, 116/271, Ming-2. A crop yield of plants is connected with their ability to quickly enter to the tillering stage, successfully overwinter, preserve during the summer vegetation. Varieties of winter wheat Ming-2 and Mironovskaya-808 can be recommended for cultivation in the technologically disadvantaged regions, with soil contaminated by heavy metals, as this varieties accumulate not much heavy metals, they have good indicators of development, overwintering, yield.