

Vol. 12 (3): 43-50 (2022)

ACCUMULATION PECULIARITIES OF HEAVY METALS IN CEREAL CROPS GRAINS OF DIFFERENT VEGETATION PERIOD IN CONDITIONS OF THE FOREST STEPPE OF THE RIGHT BANK OF UKRAINE

Serhii Razanov^{1*}, Oksana Husak², Mikhaylo Polishchuk³, Oleh Bakhmat⁴,
Olha Koruniak⁵, Lyudmyla Symochko⁶, Ivanna Ovcharuk⁷

^{1*2.3.7}*Vinnitsia National Agrarian University, 3, Soniachna Str., Vinnitsia, Ukraine;*

^{4.5}*Higher Education Institution "Podillia State University", 12, Shevchenko Str.,
Kamianets-Podilskyi, Khmelnytskyi Region, Ukraine;*

⁶*Uzhhorod National University, Voloshyna Str32, Uzhhorod, Ukraine;*

*Corresponding Author Razanov Serhii, email: razanovsergej65@gmail.com;

Received February 2022; Accepted March 2022; Published April 2022;

DOI: <https://doi.org/10.31407/ijeess12.306>

ABSTRACT

Peculiarities of Cd, Zn and Cu accumulation in wheat and barley grain depending on their vegetation period have been studied. A certain influence of the vegetation period of cereals (winter, spring) in the natural and climatic conditions of the right-bank Forest-Steppe of Ukraine on the intensity of accumulation of heavy metals in grain has been established. In particular, it was found that in the grain of winter wheat and barley there is a lower concentration, accumulation coefficient, risk factor Cd, Zn and Cu compared to similar spring cereals. Some exceedances of the admissible norm of Cd according to GOST (National Standard of Ukraine) 26932 in grain of spring wheat and barley are revealed. The concentration of Zn and Cu in the grain of both winter and spring wheat and barley was lower than the norm compared to the maximum allowable norm (GOST 26932). The grain of winter cereals of wheat and barley was characterized by a lower coefficient of accumulation of heavy metals, and a relatively higher coefficient of accumulation of spring cereals. The risk factor Cd exceeded the normative limit of 1.0 only in grain of spring wheat and barley. Exceedances of the normative indicator (hazard coefficient 1.0) of Zn and Cu in wheat and barley grain of both winter and spring crops were not observed.

Keywords: winter wheat, winter barley, spring wheat, spring barley, heavy metals, concentration, accumulation factor, danger factor.