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Possibilities of cadmium reducing in animal food by soil, liming and genotype

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The harmful elements monitoring, particularly Cd, have become important for environmental protection. Critical concentrations of Cd in plants are between 5 and 10 and in diet of animals between 0.5 and 1 mg Cd kg⁻¹. The tolerable daily intake of Cd is 1 µg Cd kg⁻¹/body weight, an equivalent to a daily intake of 70 µg Cd for an adult of 70 kg. Concentrations of Cd in the higher plants normally vary between 0.2 and 3.00 ppm Cd. Very low concentrations of Cd in dry matter of plant tissues were found under non-polluted environment of the eastern Croatia. With that regard, differences were found in maize leaves as affected by soil type (averages of ten hybrids) from 0.09 and 0.14 ppm Cd, for acid and neutral soil (pH in 1N KCl 4.10 and 6.81), as well as among genotype from 0.07 to 0.18 ppm Cd. Grain-Cd in maize were considerable lower and below detection limit (<0.02 ppm Cd). Liming is usual recommend management practice for improvement fertility of acid soils. Beside effects on yields of crops, liming is useful management practice for decreasing Cd transfer into food chain. In the liming experiment on Pleternica acid soil, we found in maize leaves (2-year averages) 0.17 and 0.09 mg Cd kg⁻¹, for the control and averages of four rates of liming treatments, respectively. Differences were found also between two growing seasons („year“ effects) of the experiment (0.10 and 0.07 ppm Cd, respectively). Also, considerably impact of liming on decreases of Cd in alfalfa hay was found (0.113 and 0.047 ppm Cd, for 0 and 20 t ha⁻¹ of lime, respectively).

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