



Macro- and microelement contents of mineral fertilizers in Austria

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Mineral fertilizers were screened for quasi-total contents by ICP-OES and flame AAS methods for (in alphabetical order) Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Na, Ni, P, Pb, Sr, V, and Zn. Low boron data may be biased by blanks. Investigation period was mainly 2002 – 2005.

This database covers much more parameters than mentioned within the current valid fertilizer act. In some cases, the concentration ranges of this database can be compared with a set of data obtained 1986-1994, the time before Austria joined the European Union.

Typical correlations are outlined, like cadmium with phosphorus. The data are compared with respective soil and atmospheric deposition data in order to predict possible enrichments from fertilizations or atmospheric deposition in arable soils.

With respect to mean crust contents, B, Cd, and Mo are generally enriched in fertilizers, whereas Ba, Be, Co, Li, Ni, and Pb are found at lower levels. K-only and N-only fertilizers are usually very poor in micro-elements. The concentration range of impurities present in naturally occurring phosphates was found to be lower than for technical ammonium phosphates, and nitrate-phosphate mixtures. Basic slags contain significantly more Cd, Cr, Mn and V than usual soils. Super and triple phosphates contain more Cd, and Cr. Compared with the period 1986-94, Cd and Ni tend to be lower in NPK mineral fertilizers, and Cr tends to be much lower in basic slags. To the contrary, in super- and triple phosphates the median of Cd, Cr, and Zn has risen.

Input of Cd via mineral fertilizers is significantly higher than from atmospheric deposition.