

Evaluation of Polish soils abundance in microelements

Ocena zasobności gleb Polski w mikroelementy

Wojciech Lipiński

National Agrochemical Station, Warszawa, Poland

e-mail: wlipinski@schr.gov.pl

The study objective was to assess the occurrence of assimilable forms of microelements in soils in Poland.

The abundance of these elements in the soil was identified during investigations conducted by district chemical-agricultural stations. Soil samples for the determination of microelements as well as identification of pH and abundance of P, K and Mg were obtained pursuant to the PN-R-04031 1997 standard. Copper, zinc, manganese, iron and boron were identified after the extraction of the soil in 1 mol HCl · dm⁻³ according to Polish Norms (PN). In the years 2010–2015, 174 038 determinations of assimilable forms of microelements were carried out in samples collected from agricultural soils. The results obtained were the basis for assessing abundance, based on the boundary numbers specified in the norms and IUNG fertilization recommendations.

According to the currently applied criteria for assessing the abundance of microelements, nearly three quarters of Polish soils are characterised by an insufficient amount of assimilable boron. Copper is in second place as its levels are low in 30% of the soils studied. This trend has continued for many years both in the case of copper and boron. Manganese, iron and zinc content is usually at a medium or high level.

The highest abundance of zinc and copper was found in 20% and 10.5% of soils respectively. The abundance of microelements in the soils of the particular provinces clearly varies. The smallest area of soils poor in boron occurred in the Śląskie and Dolnośląskie provinces, copper – in Lubuskie and Świętokrzyskie, zinc – in Wielkopolskie and Świętokrzyskie, iron – in Warmińsko-Mazurskie and Pomorskie. The smallest regional variation of the abundance of microelements in soils occurred in the case of manganese.