



Agroecological evaluation of the principal microelements content in Chernozems at the Central Chernozemic Region of Russia

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The ecological evaluation of the principal microelements content in soil cover of the agroecosystems is the important issue of the regional agroecological monitoring which results are actively used for landscape-adaptive land-use design with rational, environmental friendly fertilizing systems.

The virgin forest-steppe plots without anthropogenous impacts are usually used as background data of microelements content in dominated zonal Chernozems. The average background content of zinc, copper, cobalt and manganese mobile forms (extracted with 4,8 buffer) in 10-20 cm layer of virgin Leached Chernozem at the federal reserve «Belogorye» (monitoring site «Jamskaya Steppe») are accordingly 0.75, 0.19, 0.14 and 12.8 mg/kg. According to RF actual evaluation scale for arable soils the background microelements content in the investigated virgin Chernozems have been corresponded to low level for mobile forms of zinc, copper and cobalt, and to middle level – for manganese ones that essentially limits their natural fertility.

The results of carried out in the Belgorod Region in 2010-2014 agroecological monitoring have shown, that most of the arable soils are characterized by low content of the mobile forms of manganese (60 %) zinc (99,2 % of total area), cobalt (94,1 %) and copper (100 %) too that became a serious problem for intensive farming active development in the region.

During active agroecological monitoring period since 1990-1994 to 2010-2014 the average regional contents of the principal microelements mobile forms have been essentially decreased: from 1,44 to 0,53 mg/kg in case of zinc, from 17,5 to 9,2 mg/kg in case of manganese – due to low level of micronutrient fertilizers and manure application. It determined the current priority in the agrochemical service development in the region with new DSS-supported agrotechnologies design and essentially increased level of profitable application of traditional and non-traditional organic and mineral-organic fertilizers.