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Thema

Kommission IV: Bodenfruchtbarkeit und Pflanzenernährung

Biogeochemie gekoppelter Stoffkreisläufe (NPK) unter traditioneller Landnutzung

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Titel

Assessment of crop yields in modern agriculture on the basis of GIS-Technologies

Abstract

Information-analytical system of ensuring agricultural technologies was developed on the base of several GIS and models of crop yield. The system included creation of maps of potential yield (function of the natural factors) and possible (function of the real level of the field fertility) yield of various crops. These data were received in the mass field experiments with fertilizers and in available modern bases of agrochemical, landscape, climatic parameters. The uneven distribution of natural properties - for example, soil quality, topography, microclimate - on the territory of any size determined a different degree of their suitability for growing different groups of crops. The methodology for calculating the yield of various crops was based on independent objective assessment of different impact factors by the methods of linear and nonlinear multiple regression. Modeling results were presented in the form of yield maps with using several GIS. Impact yield factors are divided into two big groups - natural (climate, topography, soils, etc.) and agrochemical (application of fertilizers, plant protection agents, intensity of cultivation technologies, etc.).