Summary

Development of a technology for the production of nitrogen fertilizer containing biodegradable micronutrient chelates

The intensified plant production is closely related to new trends in agriculture, including the intensification of crops, reduction of soil degradation, precise fertilization aimed at reducing the leaching of nutrients, and the use of biodegradable components in fertilizer production. The aim of the doctoral dissertation was to develop a technology that allows for the production of nitrogen fertilizers containing trace elements chelated by biodegradable chelating agent.

In order to develop and implement the technology for obtaining the above fertilizer, an economically viable biodegradable chelating agent [redacted] was synthesized for use in technological conditions.

The structure of the obtained chelating agent - [redacted] was confirmed by ^{1}H NMR, ^{13}C NMR, IR, XPS, XRD, [redacted]

[redacted]

[redacted]

Finally, after obtaining positive data from field trials on [redacted] the possibility of implementing the production process of the tested fertilizers on a technical scale was evaluated. For this purpose, a scheme of the installation was prepared, appropriate apparatus and reaction conditions were selected. Then the entire process was carried out on a technical scale, starting from the synthesis of the chelating agent to the drying of the final product.