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Effects of different applications of sewage sludge on crops of a cultivated site located in the East part of Romania

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Investigations were carried out in order to determine the effects of sewage sludge application on soil and plants. In the course, plots with an area of 100 sq.m were treated with different fertilization systems (mineral fertilization, organic fertilization, and mineral and organic fertilization). The organic component consisted of sewage sludge in different amounts with a maximum of 30 tons dry substance per ha. Furthermore three tillage systems were installed (conventional tillage system, minimal tillage system and no-tillage system).
The content in heavy metals was affect by both fertilization and tillage systems. Winter wheat and rape where sewage sludge was applied, showed a clear increase of Zn and Cd compared to the untreated plots, both in plants and seeds. The increases of applied sewage sludge increased also the contents in both Zn and Cd in plants and seeds of these crops. The effect of the tillage systems on the contents of these heavy metals, shows different results. A higher content of Cd in crops occurred in the no-tillage system and a higher content in Zn was found in crops of the minimal tillage system. A lesser content of Cd and Zn occurred generally in crops of the conventional tillage system. The results of this one-year experiment up to now show no significant negative effects for the food chain according to the present laws and regulations in Romania.