

Mineral Nitrogen Retention, Nitrogen Availability and Plant Growth in the Soil Influenced by Addition of Organic and Mineral Fertilizers: Lysimetric Experiment

Authors : Lukáš Plošek, Jaroslav Hynšt, Jaroslav Záhora, Jakub Elbl, Antonín Kintl, Ivana Charousová, Silvia Kováčsová

Abstract : Compost can influence soil fertility and plant health. At the same time compost can play an important role in the nitrogen cycle and it can influence leaching of mineral nitrogen from soil to underground water. This paper deals with the influence of compost addition and mineral nitrogen fertilizer on leaching of mineral nitrogen, nitrogen availability in microbial biomass and plant biomass production in the lysimetric experiment. Twenty-one lysimeters were filled with topsoil and subsoil collected in the area of protection zone of underground source of drinking water - Březová nad Svitavou. The highest leaching of mineral nitrogen was detected in the variant fertilized only mineral nitrogen fertilizer (624.58 mg m⁻²), the lowest leaching was recorded in the variant with high addition of compost (315.51 mg m⁻²). On the other hand, losses of mineral nitrogen are not in connection with the losses of available form of nitrogen in microbial biomass. Because loss of mineral nitrogen was detected in variant with the least change in the availability of N in microbial biomass. The leaching of mineral nitrogen, yields as well as the results concerning nitrogen availability from the first year of long term experiment suggest that compost can positive influence the leaching of nitrogen into underground water.

Keywords : nitrogen, compost, biomass production, lysimeter

Conference Title : ICAE 2014 : International Conference on Agricultural Engineering

Conference Location : Kuala Lumpur, Malaysia

Conference Dates : August 25-26, 2014