

The Influence of Alternative Farming Systems on Physical Parameters of the Soil

Authors : L. Masionyte, S. Maikstieniene

Abstract : Alternative farming systems are used to cultivate high quality food products and retain the viability and fertility of soil. The field experiments of different farming systems were conducted at Joniškėlis Experimental Station of the Lithuanian Research Centre for Agriculture and Forestry in 2006-2013. The soil of the experimental site was Endocalcari-Endohypogleyic Cambisol (CMg-n-w-can). In different farming systems, farmyard manure, straw and green manure catch crops used for fertilization both in the soil low in humus and in the soil moderate in humus. In the 0-20 cm depth layer, it had a more significant effect on soil moisture than on other physical soil properties. In the agricultural systems, in which catch crops had been grown, soil physical characteristics did not differ significantly before their biomass incorporation, except for the moisture content, which was lower in rainy periods and higher in drier periods than in the soil without catch crops. Soil bulk density and porosity in the topsoil layer were more dependent on soil humus content than on agricultural measures used: in the soil moderate in humus content, compared with the soil low in humus, bulk density was by 1.4 % lower, and porosity by 1.8 % higher. The research findings create a possibility to make improvements in alternative cropping systems by choosing organic fertilizers and catch crops' combinations that have the sustainable effect on soil and that maintain the sustainability of soil productivity parameters. Rational fertilization systems, securing the stability of soil productivity parameters and crop rotation productivity will promote a development of organic agriculture.

Keywords : agro-measures, soil physical parameters, organic farming, sustainable farming

Conference Title : ICAE 2015 : International Conference on Agricultural Engineering

Conference Location : Rome, Italy

Conference Dates : December 03-04, 2015