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SOIL PHYSICAL PROPERTIES UNDER DIFFERENT CROPPING SYSTEMS IN ESTONIA

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A five years crop rotation system (pea, potato, barley, red clover and winter wheat) based on 80 plots was conducted at the experimental station of Estonian University of Life Sciences in Eerika, Tartu (Estonia) since 2008. From those plots, 40 were cultivated under conventional farming system with different concentrations of mineral fertilizers, and 40 under organic farming conditions and winter oil-rape, winter rye, winter wheat, ryegrass and under seeding as rotating crops. From these, 20 of them were under cover crops (organic I), and for the other 20 (organic II), manure were added. A total of 320 samples taken (4 replications per plot), taken in October 2010 and October 2011, respectively. From these samples, penetrability, field water retention capacity, porosity, air filled pores, and water permeability were studied respectively. Results doesn't show any no significant difference between organic and conventional management for penetration resistance and water permeability, but results of 2011 show an increase in the penetration resistance especially in the conventional plots in comparison with the organic ones and comparing the different crops under the four systems from 2011, barley us. and w. wheat presented a higher penetration resistance in comparison with the other cultures. Analysis from 2010 show differences in porosity and air filled pores within the organic plots, where w. wheat + ryegrass and pea + oil rape had higher values. In the case of water permeability the plots under conventional treatment shown higher values in comparison with the organic ones.