



Seasonal variability of soil aggregate stability

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Seasonal variability of soil properties measured in surface horizons of three soil types (Haplic Luvisol, Greyic Phaeozem, Haplic Cambisol) was studied in years 2007 and 2008. Undisturbed and disturbed soil samples were taken every month to evaluate field water content, bulk density, porosity, ration of gravitational and capillary pores, pHKCl and pHH₂O, organic matter content and its quality, aggregate stability using WSA index. In addition, micromorphological features of soil aggregates were studied in thin soil sections that were made from undisturbed large soil aggregates. Results showed that soil aggregate stability depended on stage of the root zone development, soil management and climatic conditions. Larger aggregate stabilities and also larger ranges of measure values were obtained in the year 2007 then those measured in 2008. This was probably caused by lower precipitations and consequently lower soil water contents observed in 2007 than those measured in 2008. The highest aggregate stability was measured at the end of April in the years 2007 and 2008 in Haplic Luvisol and Greyic Phaeozem, and at the end of June in the year 2007 and at the beginning of June in 2008 in Haplic Cambisol. In all cases aggregate stability increased during the root growth and then gradually decreased due to summer rainfall events. Aggregate stability reflected aggregate structure and soil pore system development, which was documented on micromorphological images and evaluated using the ration of gravitational and capillary pores measured on the undisturbed sol samples.

Acknowledgement: Authors acknowledge the financial support of the Grant Agency of the Czech Republic grant No. 526/08/0434, and the Ministry of Education, Youth and Sports grant No. MSM 6046070901.