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Methodology of C factor verification in conditions of the Czech Republic

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Universal Soil Loss Equation (USLE) is a widely used tool for the assessment of soil erosion in the Czech Republic as well as in many other countries. C factor is one of the six factors composing USLE. This factor represents vegetation cover and management on agricultural land. Its values were derived based on a comparison of the soil loss from a plot with given crops and management and the soil loss which is tilled as continuously fallow. The influence of vegetation cover on the soil loss varies during the vegetation season and it is important to determine the representative value of C factor for each vegetative stage. The year is, according to the original methodology, divided into 5 or 6 periods. Expected protective effect for each of these periods is calculated separately.
The value of C factor was first published in the Czech Republic in 1984 and since then has never been revised. The values were taken from a USA catalog and it is uncertain how our conditions were verified. But in fact the C factor is very dependent on the technologies or climates in that particular country. The agriculture crops are cultivated [bred] and their protective effect may be different. For some crops there is no C factor value at all.
The Department of Irrigation, Drainage and Landscape Engineering, Faculty of Civil Engineering CTU in Prague has dealt with the protection of soil and water for many years. For several years it has operated an experimental basin in which there are three erosion plots identical to those where the USLE was derived. On these plots the value of C factor can be measured very easily, but it would take a very long time to compile the new catalog of these values.

The Department acquired a mobile rainfall simulator to quickly obtain a larger set of data. Parameters of the instrument and methodology of determination of individual C factor values using the mobile rainfall simulator are subject to contribution. The water erosion affects most the rainfall event, its intensity, its duration, size of drops, height of fall of drops, soil characteristics, leaf area density or initial humidity. The paper focuses on the analysis of vegetation characteristics affecting the value of C factor. Then the methodology of the experiments, their documentation and input values of precipitation are presented.
For the period 2012-2016 a total of 300 experiments are planned covering the most important crops and their vegetative stage in collaboration with the Research Institute for Soil and Water Conservation. Based on the measured volumes a database will be created, which will serve to review of the value of C factor in the Czech Republic.
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