



## Modern methods in splash erosion research

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Splash erosion is the first step of an unfavorable phenomenon i.e. water erosion of the soils. Soil splash begins by hitting the surface of the soil by a single drop. Good understanding of splash erosion will be possible on the basis of a physical description of different aspects of this phenomenon.

The aim of this work was to develop new measurement methods and to use already existing approaches for quantitative description of phenomena occurring on the surface of soil under the impact of a single drop of precipitation. Changes occurring on the soil surface as a result of a single drop impact are often too small that to measure, hence the search for appropriate measuring methods. The methods that can help to describe the splash phenomenon include:

- optical microscopy to determine the surface of traces of particles detached as a result of splashing, the number of registered traces of splash, and their shape and size,
- image recording using a set of high speed cameras allows determination of the velocity of detached particles and their trajectory,
- dynamic force sensors used to record and analyze the impact force of a drop of water on the soil surface,
- microphones to record the noise generated during the water drop impact,
- computed microtomography to determine the crater depth and diameter after water drop impact.

The presented measurement methods make the measurement of splash independent of the amount of collected material and allow studying the phenomenon of splash in its initial phase of formation under the impact of the first drop of water, which can be used, among others, for elaboration of the energy balance of the splash phenomenon.

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