

Standardization of splash device

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The erosion is a complex process that has been studied extensively by numerous researchers, requiring a prolonged time effort and a large economic investment.

To be effective, the measurements of erosion should be precise, controlled and replicable, and to assure effectiveness, measurement devices of erosion should be properly designed, constructed, well calibrated and also they should be operated by a trained person (Stroosnijder, 2005).

Because researchers try to improve old devices, the equipment is constantly being redesigned, making the measurements not comparable and furthermore, producing a lack of available standardized device. The lack of standardization of erosion equipment is more obvious in the case of the local splash erosion, where the nature of the process makes very difficult to isolate its effects.

In this article we compare the results obtained from five of the most common splash erosion devices (selected from more than 16 different currently types), under the same rain conditions, with the objective of facilitate the standardization of the method that will be more easy to build, minimizing the error.

A set of six splash devices were setted in well known positions under simulated rain, to measured the differences, among devices and the accuracy of the data recovered after 10 minutes of rainfall simulation under different intensities (from 60 to 130 mm/h). The rainfall simulator of Wageningen was used, using sand as splash erosion source. Differences in the infiltration were also measured, and a calibration of sizes and speeds of the raindrops was done using the photography method (Hamidreza-Sadeghi et al., 2013).

The splash devices selected for this study were unbounded splash devices (like the funnel, the cup (Fernandez-Raga et al., 2010) and the splash flume (Jomaa et al., 2010)), and bounded devices that allow the calculation of splash rate, (like the new cup (Scholten et al., 2011) and the Morgan tray).

The behaviour of different splash devices with the changes of intensity will be explained and discussed, with a recommendation of use.

References

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