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## Construction and Calibration of Dripping Rainfall Simulator with a Single Dripper for Soil Research

Vukašin Rončević<sup>1</sup>, Nikola Živanović<sup>2</sup>, John H. van Boxel<sup>3</sup>, Thomas Iserloh<sup>4</sup>, Nevena Antić<sup>1</sup>, Carla Ferreira<sup>5,6</sup>, and Marko Spasić<sup>7</sup>

<sup>1</sup>University of Belgrade Institute of Chemistry, Technology and Metallurgy National Institute of the Republic of Serbia, Department of Chemistry, Serbia (vukasin.roncavic@ihtm.bg.ac.rs)

<sup>2</sup>Faculty of Forestry, University of Belgrade

<sup>3</sup>Institute for Biodiversity and Ecosystem Dynamics (IBED), University of Amsterdam

<sup>4</sup>Department of Physical Geography, Trier University

<sup>5</sup>Department of Physical Geography and Bolin Centre for Climate Research, Stockholm University,

<sup>6</sup>Research Centre of Natural Resources, Environment and Society (CERNAS), Polytechnic Institute of Coimbra, Coimbra Agrarian Technical School

<sup>7</sup>Department of Soil Science and Soil Protection, Faculty of Agrobiolgy, Food and Natural

Dripping rainfall simulators for soil research generate water drops with different types of drippers, such as plastic and glass tubes, drippers in a form of holes, irrigation drippers and hanging yarn, among which metal tubes are the most commonly used. Metal tubes appear in the form of capillaries with a flat tip or in the form of hypodermic needles. Hypodermic needles are suitable for this purpose because their diameter size is standardized with relatively small deviations from the standardized dimensions, they are available on the market, relatively cheap, made of stainless material and have a threaded connector (Luer taper). However, very often the descriptions of the rainfall simulators were not complete, nor was the calibration of the needles. In order to conduct calibration and define water drops diameter for different hypodermic needles size and dripping speed, it was constructed rainfall simulator with one dripper in a form of hypodermic needle. Simulator was designed in accordance to research of Rončević et al., (2022), needle calibration research and future soil research requirements. Simulator was intended primarily for laboratory use. It consists of structural support, water tank, water pump, mechanism of water flow regulation and simulator operation, water tank with dripper and dripper. Calibration was conducted for 11 different needles, ranging in size from 16 G to 32 G (G – gauge number), at different dripping speed, using drop counting sensor. Water drops are measured using weight measuring method. Obtained water drops size ranging from 3.70 to 1.48 mm. Based on research data, two nomograms were made for determination of interconnected parameters of potentially simulated rainfall: water drops size under different dripping speed, drippers discharge, number of drippers, and kinetic energy of water drops for the given falling height. The results of research provide the data necessary for the design of future dripping rainfall simulators for soil research and use of hypodermic needles as drippers.