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## Swiping/pulse portable nozzle rainfall simulator

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Research of surface runoff, retention and infiltration processes consequenced with soil erosion by water is worldwide problem. There are numerous of natural and artificial research methods to study this phenomena. Use of rainfall simulators is one of the most popular artificial method. There are many types of rainfall simulators, we are introducing new type of portable nozzle-type rainfall simulator. This device combines advantages of pulse and swiping nozzle droplet generation. Device criteria were: (i) 2 person operation (ii) low water consumption (iii) wide range of rainfall intensity and kinetic energy. The simulator is supported by 4 metal legs. One fast-replaceable nozzle is placed above the center of a plot in 2 or 2,5 m height. Nozzle is connected to a control unit with stepper motor which allows it to swing, or stay in the vertical position with water flow interruption (solenoid valve). Required rainfall intensity is controlled by the velocity of stepper motor and water flow interruption periods. Metal collector is placed under the nozzle to drain the surplus water back to the reservoir. Standalone electric water pump is used to pump water into the system. 12 V DC and 230 V AC electricity supply is needed to run the device. Experimental plot can be up to 4 m<sup>2</sup> (2x2 m square) in size but usually a 1 m<sup>2</sup> (1x1 m) is used. Rainfall intensity could be used up to 100 mm h<sup>-1</sup>. Kinetic energy for the tested nozzles were 4 – 5,5 J m<sup>-2</sup> mm<sup>-1</sup>. The first testing shows Christiansen Uniformity up to 93% for 1 m<sup>2</sup> plot and 73% for 4 m<sup>2</sup> plot. The research has been carried out within the framework of projects QK1910029, TJ02000234 and TH02030428.[M3]