



# Rainfall simulation in education

Piet Peters<sup>1</sup>, Jantiene Baartman<sup>1</sup>, Harm Gooren<sup>1</sup>, Saskia Keesstra<sup>1</sup>

## Introduction

- Rainfall simulation has become an important method for the assessment of soil erosion and soil hydrological processes.
- For students, rainfall simulation offers:
  - A year-round, attractive and active way of experiencing water erosion, while
  - Not being dependent on (outdoors) weather conditions.
  - They can play around with different conditions, including rainfall duration, intensity, soil type, soil cover, soil and water conservation measures, etc. and evaluate their effect on erosion and sediment transport.

## Rainfall simulation at Wageningen University:

- Rainfall simulators differ in design and scale. At Wageningen University, both BSc and MSc student of the curriculum '**International Land and Water Management**' work with different types of rainfall simulation devices in three courses:

### 1. Mini Rainfall Simulator (BSc course)

- Course: 2<sup>nd</sup> years BSc level '**Introduction to Land Degradation and Remediation**'
- Mini rainfall simulator (see poster EGU2016-6389; poster board X1.129)
- Surface area: 0.0625 m<sup>2</sup>; intensity: 360 mm h<sup>-1</sup>
- Nearby field location (Kwintelooijen)
- Test different soil types, slope angles and vegetation or litter cover
- Groups decide themselves what they want to test and discuss and compare the results



### 2. Medium sized rainfall simulator (MSc field course)

- Course: 1<sup>st</sup> years MSc level '**Sustainable Land and Water Management**'
- Field practical Eastern Spain
- Portable, medium sized rainfall simulator
- Surface area: 0.238 m<sup>2</sup>; Intensity: 35- 42 mm h<sup>-1</sup>
- Group of students develop and execute their own research project and field measurement campaign
- Discussion and presentation of results to experts and other students



### 3. Large rainfall simulation laboratory (Wageningen)

- 15 m<sup>2</sup> rainfall simulation laboratory
- Max slope: 15%
- Intensity: 30 -100 mm h<sup>-1</sup>
- Usually different 0.5 m<sup>2</sup> containers used
- Used in various courses:



- 2<sup>nd</sup> years BSc level '**Land and Water Engineering**'
  - Hands-on practical
  - Experience the effect of slope steepness or soil type
- 1<sup>st</sup> years MSc level '**Fundamentals of Land Management**'
  - Hands-on practical
  - Design and evaluate soil and water conservation measures
- **MSc thesis research projects**
  - For example: Glyphosate distribution as a result of dynamic sediment transport processes (see poster EGU2016-6550; poster board A.289, Thursday 21 April)

