RESULTS AND LIMITS OF THE MEASUREMENTS OF A LOCAL LOW-COST RAIN GAUGE NETWORK

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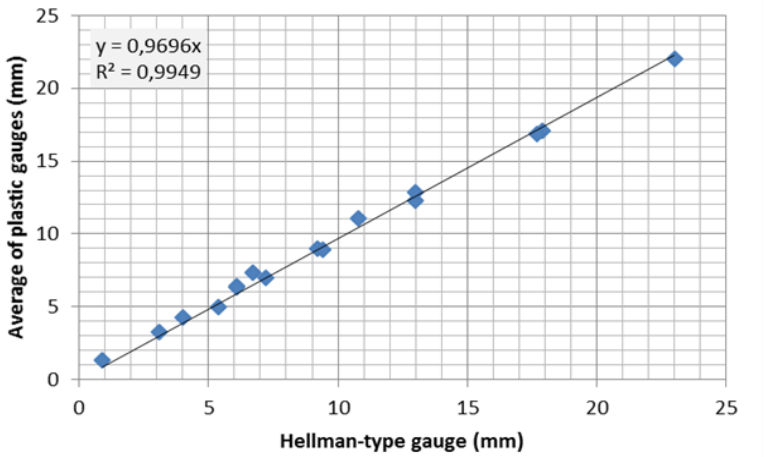
Goal: find a simple solution to get appropriate precipitation information for agricultural use.

Material and methods

- A dense rain gauge network was established with 18 measuring points covering an area of 1.2 km^2 to study the distribution of the precipitation on local scale.
- The accuracy and the evaporative loss of a plastic gauge type (PG) widely used in practice was studied in growing season of 2018 and 2019.
- Hellmann-type gauge (HG) was used as a reference instrument.

Date	Distance of stations	Difference in precipitation	Gradient of precipitation
2018.07.11	370 m	8.2 mm	2.2 mm/100m
	225 m	5.2 mm	2.3 mm/100m
2018.08.15	150 m	5.4 mm	3.6 mm/100m
	240 m	4.9 mm	2.0 mm/100m
2018.08.23	170 m	4.2 mm	2.5 mm/100m
	230 m	4.9 mm	2.1 mm/100m
	360 m	7.8 mm	2.2 mm/100m

The largest values of precipitation gradients



Comparison of daily precipitation values

Results and conclusion

- Large areal differences (> 10 mm) within 1 km in case of convective precipitation are possible
- On-site measurements are needed
- PG is accurate enough for practical use in agriculture
- Evaporative loss of PGs is 3-4 times higher than one of a HG
- Use of PGs can improve precipitation information
- Proper installation and optimal siting is important
- Out of the growing season: data of the nearest official weather station

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