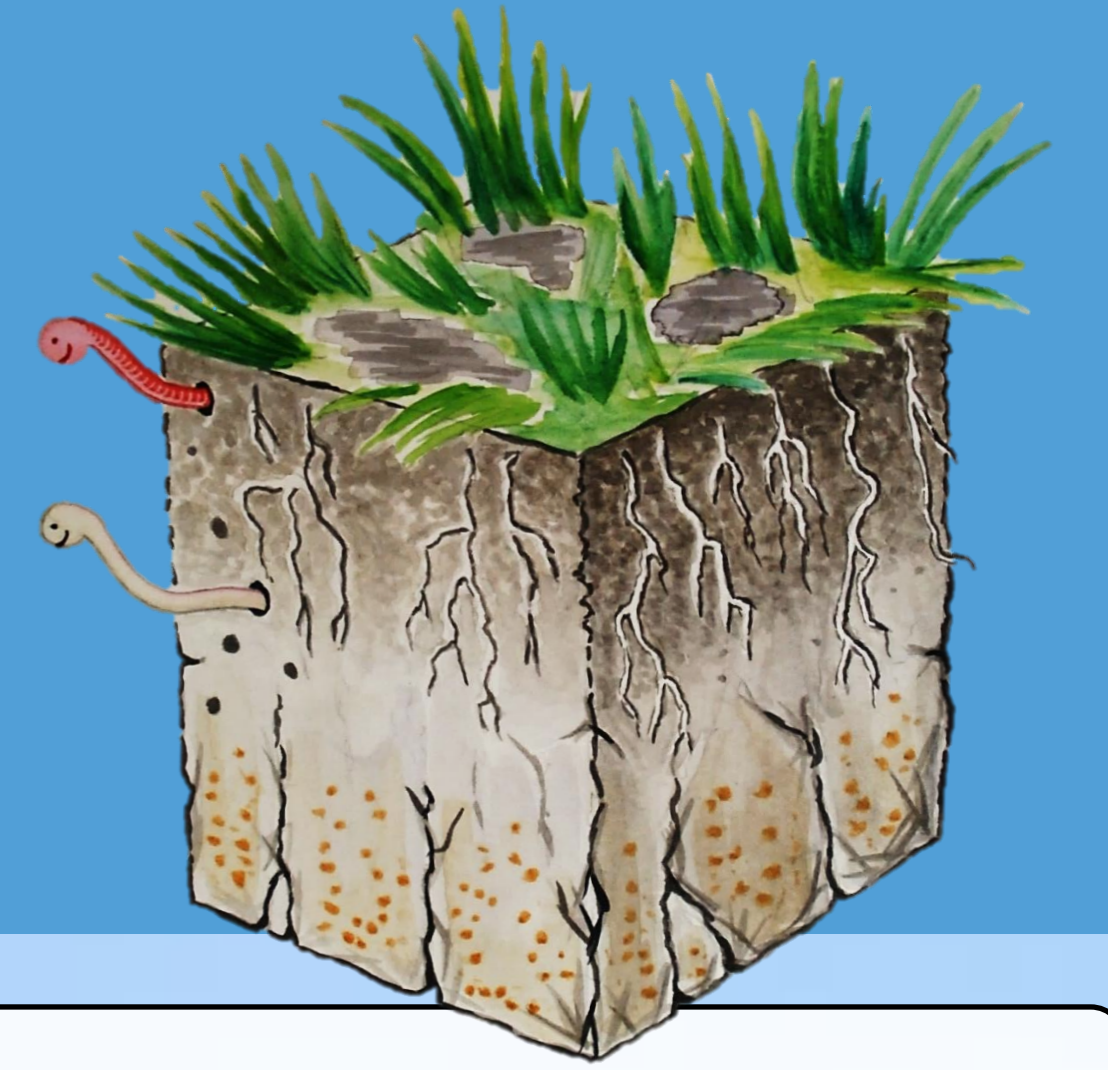




# Quantitative approach on visual soil assessment: validation and reproducibility

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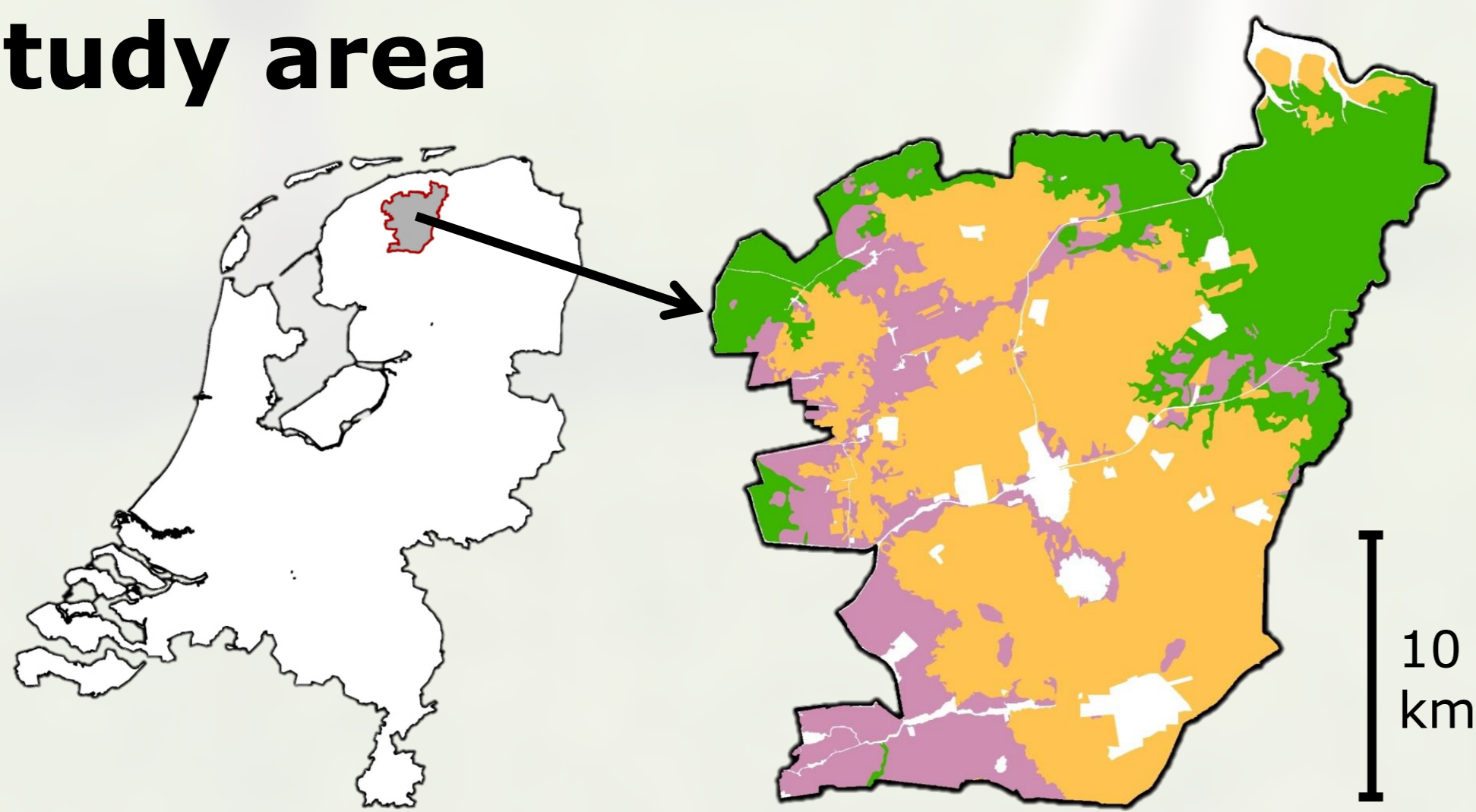
## Objectives

- **Validate** a visual soil assessment, which is based on quantitative visual observations of soil quality
- Assess **reproducibility** of visual soil assessment (VSA)

## Methods

- Visual observations were **validated** with laboratory analyses and field measurements; 26 dairy farms in North Friesian Woodlands, at various soil types
- **Reproducibility** was assessed with 9 soil scientists and 8 farmers, at 5 contrasting sites

## Study area



## Conclusions

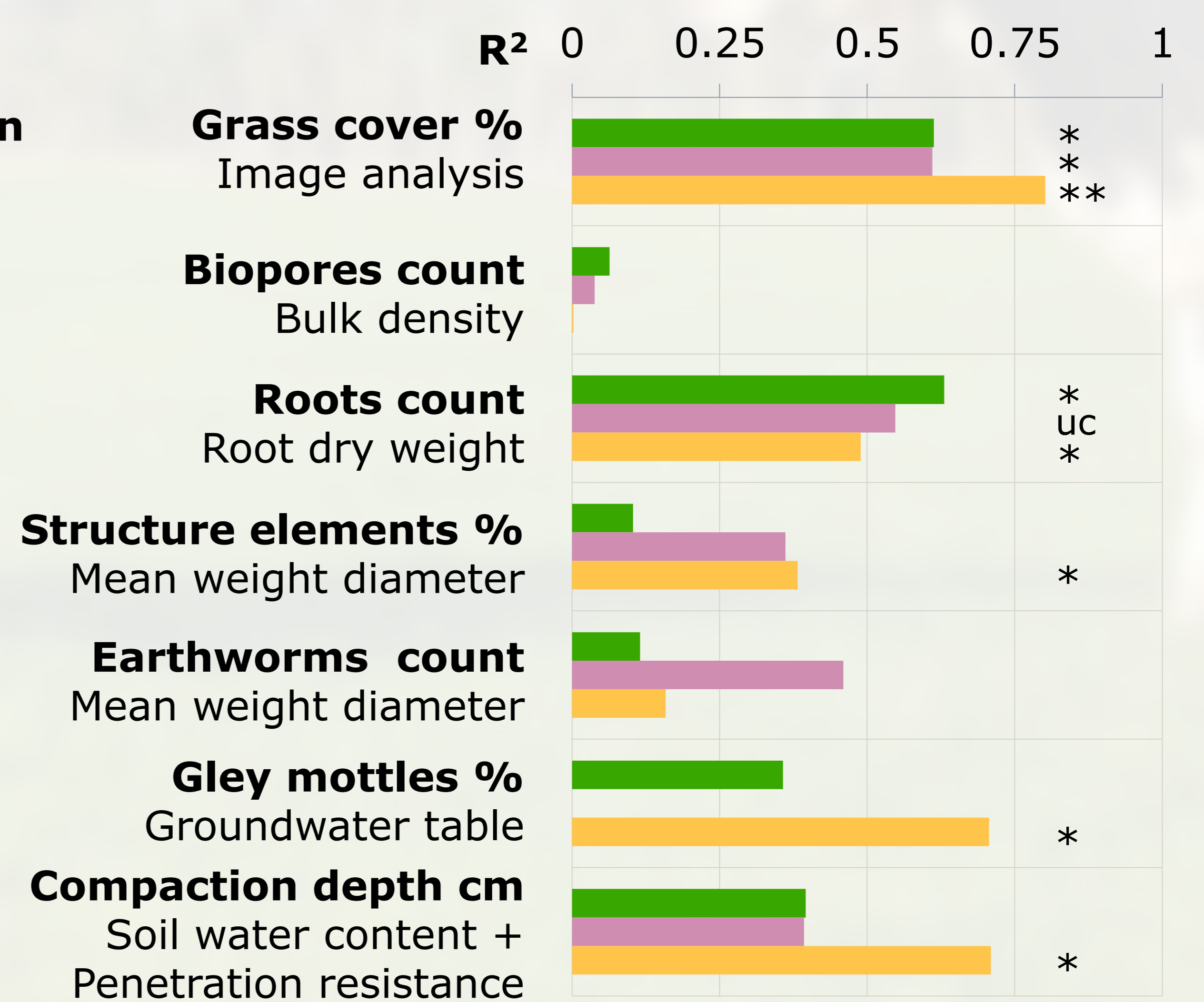
- **Validation:** visual observations correlated with laboratory analyses and field measurements
  - Sand: 5 out of 7 significant parameters;  $R^2$  0.5-0.8
  - Clay and peat: 3 out of 14 significant parameters;  $R^2$  close to 0.6
  - All sites: biopores could not be validated with bulk density; Peat: roots could not be validated with root dry weight
- **Reproducibility** high (coefficient of variation < 0.5), except for biopores, and gley mottles
  - Mean of observed values for soil scientists and farmers were not significantly different, except for soil structure at clay site

## Validation

Visual observation vs. validator

- Clay
- Peat
- Sand

\*\*  $p < 0.01$   
\*  $p < 0.05$   
uc unexpected correlation



## Reproducibility

- Soil scientists
- Farmers

Overall mean

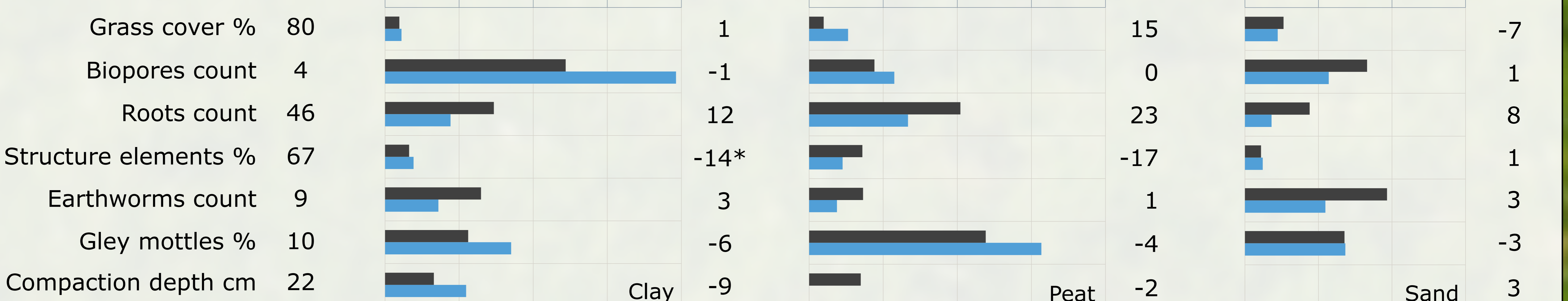
Coefficient of variation

Bias

Coefficient of variation

Bias

Coefficient of variation Bias



Coefficient of variation: close to 0 is high precision

Bias: soil scientists' mean - farmers' mean, close to 0 is agreement

\*: significant difference between means,  $p < 0.05$



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