## Use of Soil Indigenous Knowledge in Western Ohangwena Region

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## Outline

• How social or political changes influence soil quality?







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 Indigenous knowledge as entry point to knowledge on soils in North-Central Namibia

• Reflections about soil quality management





## Study area



## Methods

- 80 open and semi-directive interviews
  - 46 farms
  - Partly transcribed in Oshikwanyama

- 35 soil profile descriptions
  - Location based on farmers' descriptions
  - Scientific soil description
  - Laboratory analysis of selected samples





## Results

Indigenous knowledge

- Indigenous Knowledge is widely spread in the population
- Fertility/ productivity is the main incentive to differentiate Soil Units
- Two morphological characteristics referring to ploughing layer
  - Color shades (light / dark)
  - Consistence (hard / loose)
- Water-logging susceptibility



## Results

Scientific descriptions

- Color shades (light / dark) and consistence (hard / loose)
- Clay content and pH





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Differences are not exclusive

## Soil quality assessment toolbox



- Aims to standardize soils quality assessment
- The toolbox
  - Mapping fields based on farmers' assessment
    - Map of Oshikwanyama Soil Units
  - 2. Evaluate soil texture and color of the ploughing layer
    - □ Soil quality of specific location
- Focused on agriculture potential
- Potential use for non-soil scientists



- What determines soil quality?
  - Landscape position (Oshikwanyama Soil Units: omutunda, omufitu, ehenge, ehenene, elondo)
  - Land management
    - Ploughing and cultivating
    - Homestead shifting
    - Manure availability



## Small-scale fencing







## Influence of fencing

- Cattle movements from un-fenced to fenced fields
  - Fertility concentration on fenced land (net nutrient import)
  - Degradation of unfenced land (net nutrient export)



## Given its importance for soil fertilization, cattle should be managed at the village level



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Thank tion on fenced Degraa. You for your nutrient export, Questions attention! Given its importance for soil ferture We/come!



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More information about this project:

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https://physiogeo.duw.unibas.ch/



## Soil degradation

Example with omutunda

- Ploughing layer lighter than below
- Low organic carbon (only 30% of potential carbon storage capacity)
- Depletion of clays ploughing layer
  - Wind and water erosion
  - Cultivation



