

Gannouka Nadjire<sup>1,2</sup>, Alimata Arzouma Bandaogo<sup>1</sup>, Oumarou Ouédraogo<sup>2</sup> & Joseph Issaka Boussim<sup>2</sup>

<sup>1</sup> Institut National de l'Environnement et de la Recherche Agricole, 04 P.O BOX 8645 Ouagadougou, Burkina Faso

<sup>2</sup> Laboratory of plants biology and ecology, University Joseph KI-ZERBO, 03 BP 7021 Ouagadougou 03, Burkina Faso

Email: [felinad9160@gmail.com](mailto:felinad9160@gmail.com), Tel: (00226) 56963609

## Introduction

Land use change, forest management and associated agricultural activities could accelerate the risk of soils degradation and their main properties, thus reducing their capacity to provide ecosystem services. According to REDD+ (2019), more than **243450 ha.yr<sup>-1</sup>** of forest are converted into cropland in Burkina Faso. Furthermore, demographic and land pressure have reduced fallow practice in agricultural system. This study aims to determine the impact of different land use types on soil texture and acidity status.

## Methods

### Experimental design for soil sampling

Climate zone	Sudanian-Sahelian & Sudanian					
Sites	Bissiga & Gonsé			Boni & Denderesso		
Land use type	Forest	Fallow	Cropland	Forest	Fallow	Cropland
Topography	Highland	Lowland		Highland	Lowland	
Plots	10/Site	10/Site	10/Site	10/Site	10/Site	10/Site

### Soil sampling methods

240 samples were collected in the two climate zones to 0-10 cm of depth. Sampling was done in each plot around a quadrat of 1m x 1m to make a composite sample.

### Soil samples analysis methods

Parameters	Analysis methods
pH water	electrometry
Texture	Hydrometry



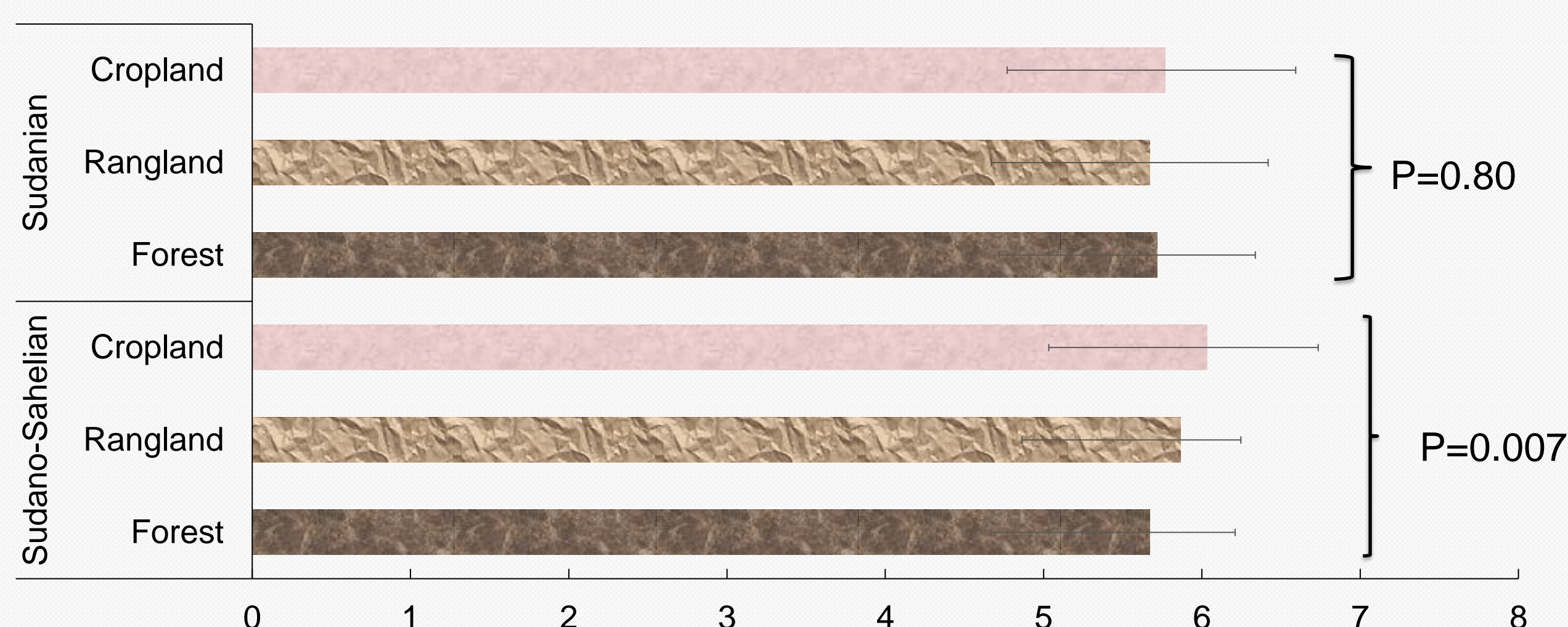
Soil sampling on the field



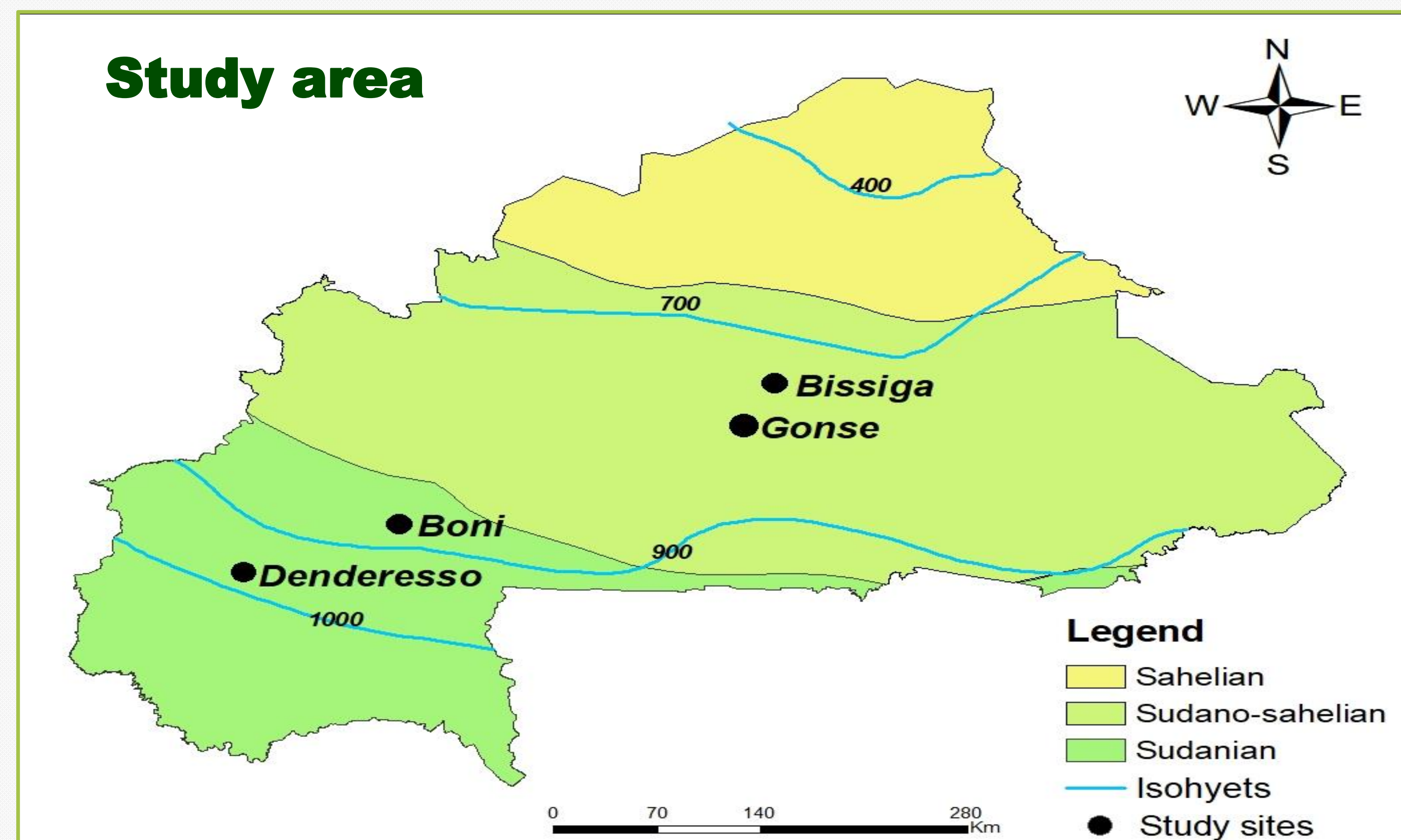
pH determination in laboratory

## Results

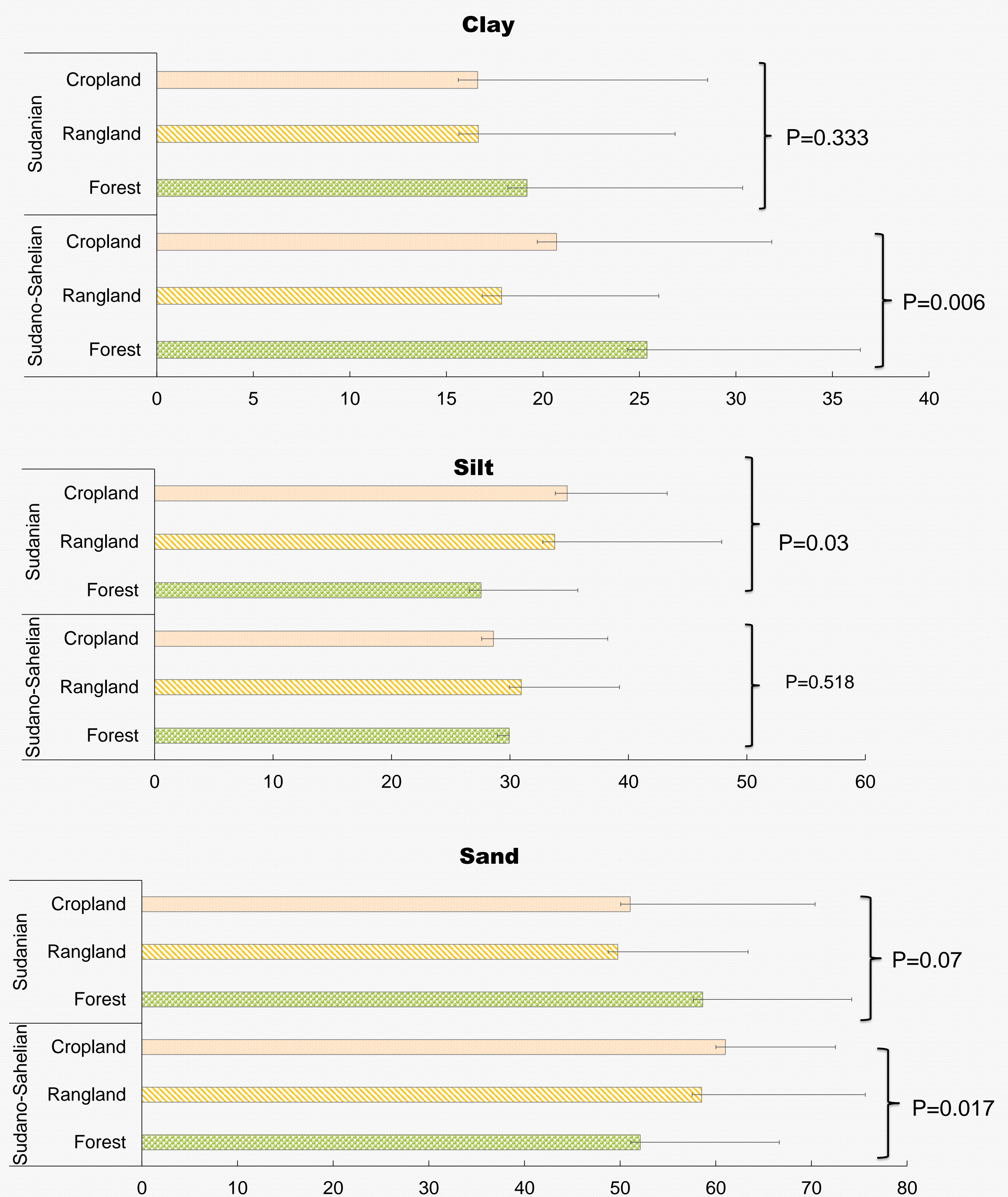
### Soil pH according to the Land use type in the 2 climate zones



## Study area



### Soil texture in the 3 land use type and the 2 climate zones



## Conclusion & recommendation

- In terms of texture, soils are in general balanced (50-70 % sand & 15-20 % clay) regardless of LUT and climate.
- However, it is noted that soils are acidic regardless of LUT and climate zones (pH < 7). Just in Sudano-Sahelian zone, Croplands are less acidic than fallow and forest land.
- Soil texture and acidity are more dependent on bedrock than on land use and climate. Good soil fertility management can be used to improve soil acidity in the Cropland.