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## Introduction

Conservation Agriculture Practice Systems (CAPS) is a holistic system approach that necessitates the understanding of several soil properties and components. A soil profile is a vertical section of the soil exposing all of its horizons. Determination of soil profile will characterize the unique individual properties (physical, chemical and biological) of each horizon- a vital ingredient for a truly sustainable conservation farming.

Meanwhile, the efficiency of individual CAPS in conserving moisture will help determine the most appropriate cropping system to be adapted under local condition through time-domain reflectometry.

## Objectives

- ✓ Describe the soil profile of the study site under different Conservation Agriculture Practice Systems (CAPS)
- ✓ Evaluate the soil moisture of the different CAPS measured through Time Domain Reflectometer (TDR)

## Description of the Study Area

The study area is classified under Jasaan series, fine mixed isohyperthermic, Ultic Haplorthox (Mercado, 2007). The soil is classified as acid upland (< 5.0 pH), located in a sloping physiography (> 40% ) slope. Parent materials are derived from residual andesite, basalts and pyroclastic materials (volcanic).

Drainage is good to excessive (external) and internal is fair. Vegetation in the area consists of cereals, legumes, native grasses, root crops and sparse number of fruit and timber trees.

## Profile Description

Horizon	Depth (cm)	Descriptions
Ap	0-12	Dark brown (7.5 YR 3/3) silty clay; weak, fine sub-angular blocky structure; firm, friable, sticky and plastic; many fine roots; few fine pores; strongly acid; clear, smooth boundary
Bt <sub>1</sub>	12-39	Brown (7.5 YR 4/4) clay; moderate, fine, sub angular blocky structure; sticky, plastic; no mottles; very few medium roots; strongly acid; diffuse irregular boundary.
Bt <sub>2</sub>	39-69	Reddish brown (5 YR 4/4) clay; moderate, medium, angular to sub-angular blocky structure; hard, firm, sticky and plastic; very few coarse roots; strongly acid; diffuse irregular boundary.
Bt <sub>3</sub>	69-150	Dark reddish brown (5YR 3/4) clay; angular to sub-angular blocky structure; strong, firm, sticky and plastic; few roots; common fine tubular pores; no mottles; strongly acid; smooth boundary.

## Materials and Methods

- ✓ A standard pit was dugged (1 m x 1.5 m) and specific horizon was characterized according to standard classifications (USDA System)
- ✓ Other related parameters were also observed and collated
- ✓ A TDR readings across the different CAPS was done at 1, 3, 6 and 12 days after a rain was observed.
- ✓ Average volumetric soil moisture at the top, middle and bottom of each treatment plot across replications was determined
- ✓ Each data point is a mean of 12 replications (3 readings in each experimental unit replicated 4 times)

## Results

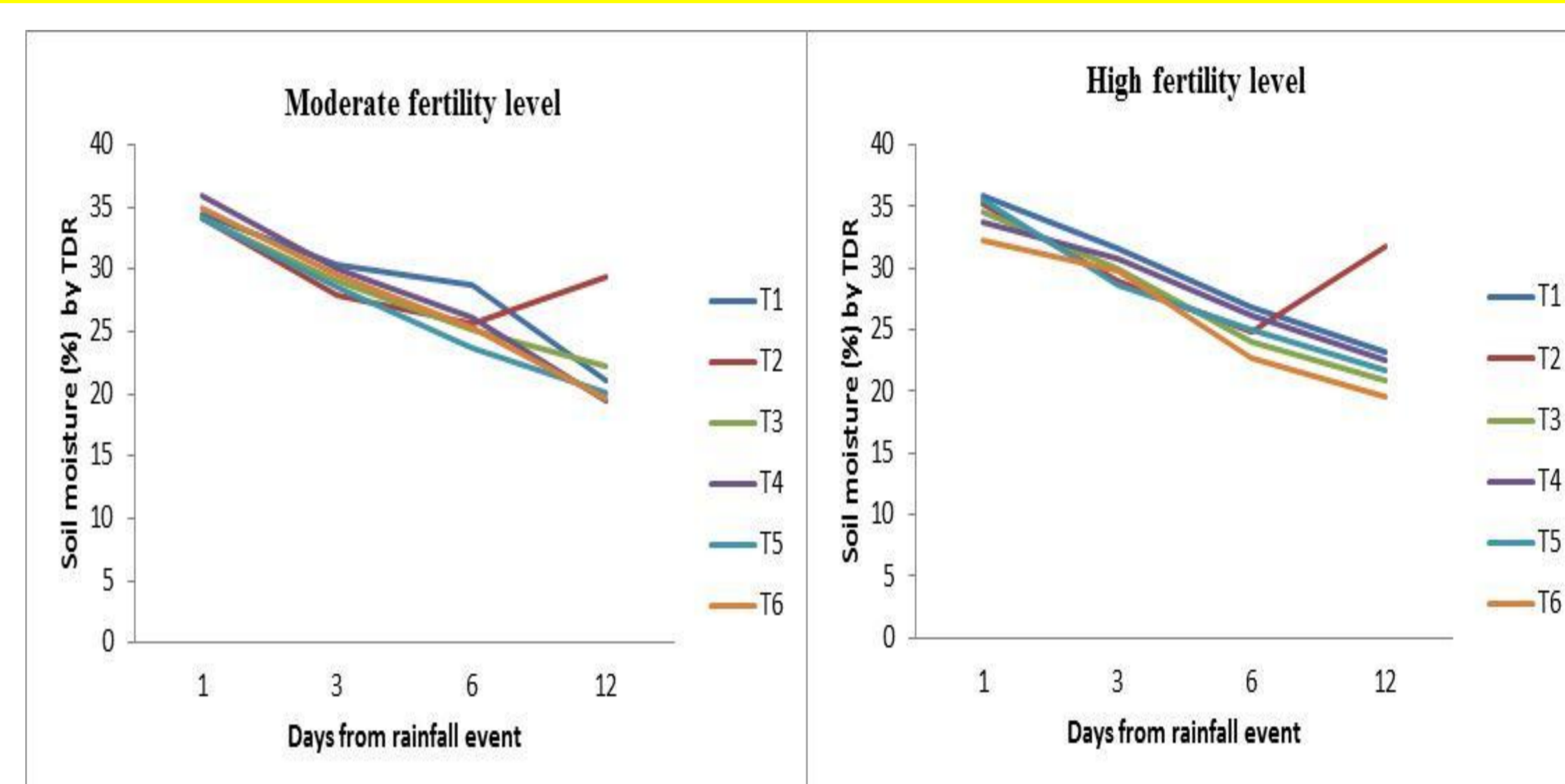


Figure 1. Volumetric soil moisture content (%) measured by TDR at different days after rainfall event

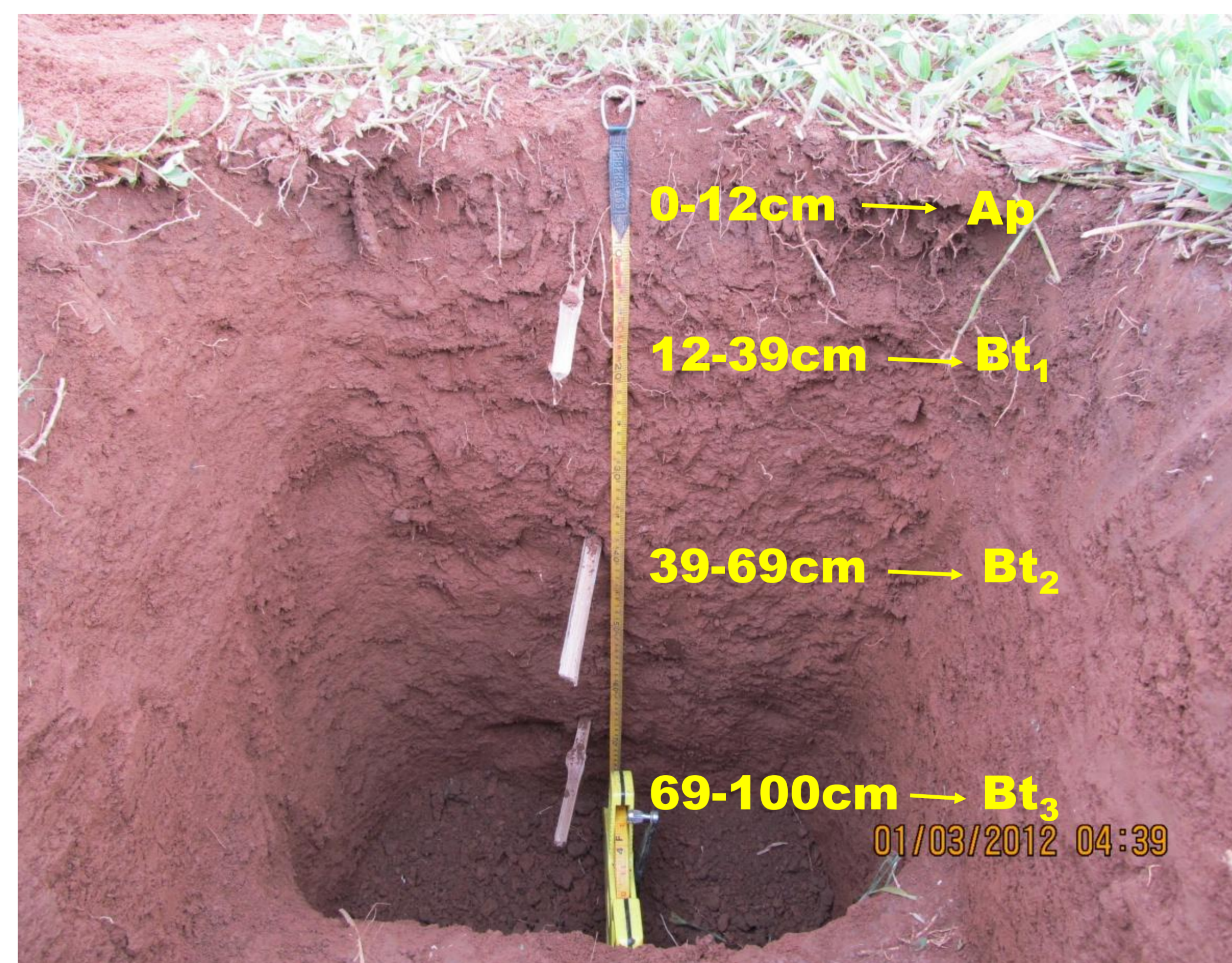


Figure 2. Soil profile of the study site showing its respective horizon

## Conclusion

Soil profile characterization in the study site revealed the dominance of clay (argillic) texture, sub-angular to blocky structure, strongly acid and with smooth to diffuse to irregular boundaries.

Initial results of volumetric soil moisture as measured through TDR revealed varying soil moisture conservation efficiencies by the different treatments as CAPS. Similarly, it was observed that more soil cover generally conserved more soil moisture as compared to the conventional plow based method.