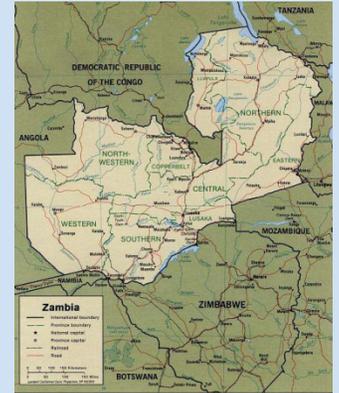


Conservation Farming and Yields Response to Spatial and Temporal effects in Zambia

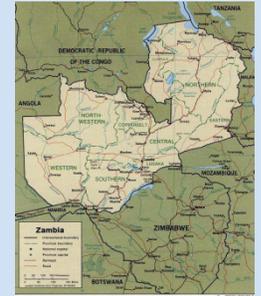
Lydia Gatere

Outline

1. Introduction
2. Background
3. Research questions
 - Methods
 - Preliminary results
 - Plans ahead



Background- Zambia



- Climatic conditions
 - Unimodal rainfall from November to March (erratic and unreliable)
 - Mean Annual Temperature 24⁰ C
- Soils
 - Alfisols, Ultisols, Vertisols
- Declining soil fertility and low nutrient levels
- Crop performance varies across different bio-physical conditions
- Majority are small holder farmers (<2ha) on communal land tenure system

Traditional Farming (*Chitemene system*)



Traditional Farming



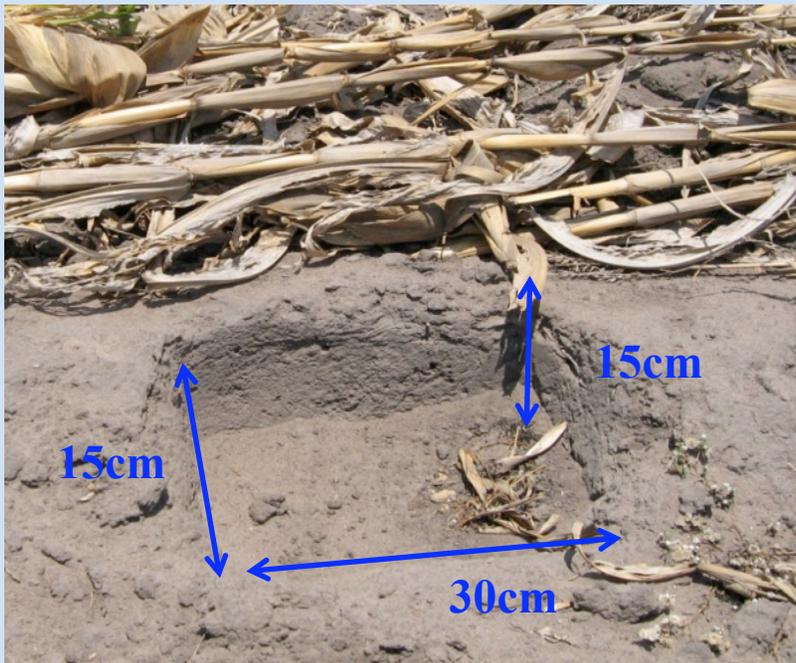
Conservation Agriculture/Farming



- Global principles:- minimum tillage, permanent land cover and crop rotation with legume



Hand Hoe CF as Proposed in Zambia



-Dry season/early land preparation using minimum tillage methods (hand-hoe) laid out in precise grid of **15,850 pot holes** per hectare

-**Reduced tillage** (basins or pot holes)

-Retention of crop residues **no burning**

-**Crop rotation** with 30% nitrogen-fixing crops

-Addition of compost, manure

Seasonal Calendar and Critical Events



Motivation



Goal

Four wooden hoes with metal heads are arranged in a row on a dry, sandy surface. The hoes vary in design, with some having single blades and others having double blades. The wooden handles are light-colored and show signs of use. The metal heads are dark and appear to be made of cast iron or steel.

To examine environmental variables affecting crop yield under conservation farming

Overarching Questions of the Study



Specific Research Questions

Materials and Methods: Study Site

Zambia

Experimental Design



Sampling and Analysis

0 100 200 Miles

A horizontal scale bar with three major tick marks. The first tick mark is at the left end and is labeled '0'. The second tick mark is at the midpoint and is labeled '100'. The third tick mark is at the right end and is labeled '200 Miles'. There are four equal segments between the tick marks.



Landscape Position Calculations

Specific Research Questions

Research Question 2

Improved Conservation Farming Practices

Hypotheses

Materials and methods





Analysis

Crop yield (grain yield, total biomass)

Specific Research Questions

Method: Study site

Field Sampling



Analysis

Comparison of 2 Digital Elevation Models

Rainfall data- farmers, and CRU

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Thank You
Questions

Land Use

COMACO



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