

IDENTIFYING CURRENT RESEARCH/KNOWLEDGE  
PRIORITIES AND GAPS/NEEDS RELATED TO  
SUSTAINABLE AGRICULTURAL INTENSIFICATION

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# Agricultural Intensification

- Definition
  - A process whereby inputs and/or labour are increased to raise the productivity or yield (output) of a fixed land area

# Sustainable agricultural intensification

## Agricultural intensification

- Improvement in yield

## Sustainable agricultural intensification

- Protect and enhance resource base of the farmer
- Meet farmers production goals (food and/or cash)
- Profitable to the farmer

# Sustainable agricultural intensification

## Agricultural intensification



- Improvement in yield

## Sustainable agricultural intensification

- Protect and enhance resource base of the farmer
  - **Environmental stewardship**
- Meet farmers production goals (food and/or cash)
  - **Provision of human needs**
- Profitable to the farmer
  - **Profitability**

# Food Security Dilemma in SSA

## Human population

- Increasing human population
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- Increasing demand for food
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- Increasing pressure on sustainable food security

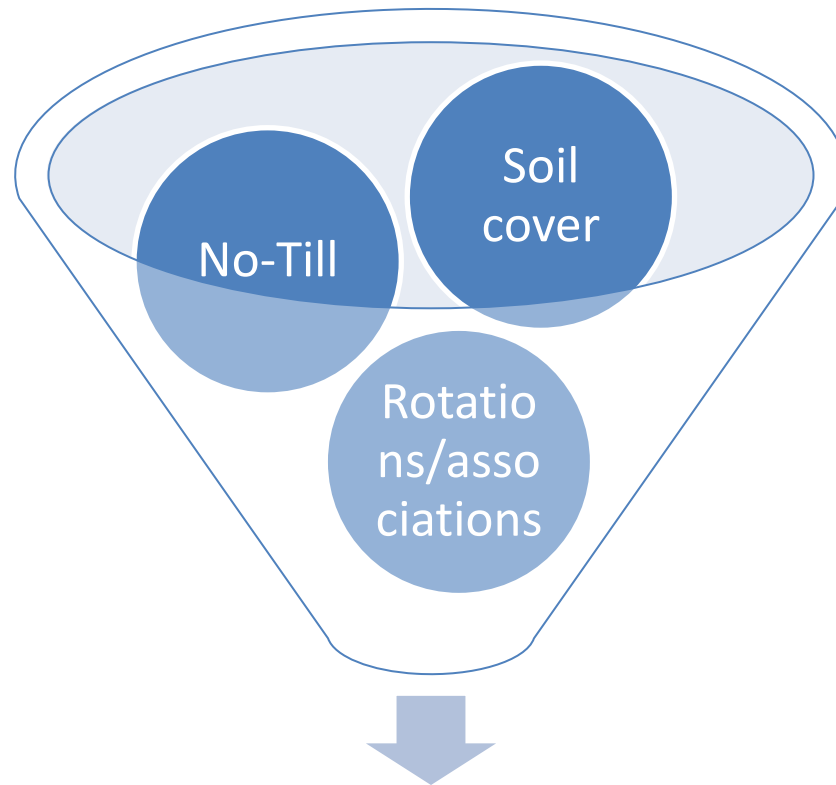
## Arable land area

- Declining arable land area due to;
  - Desertification
  - Flooding
  - Surface mining
  - Accelerated urbanization
  - Unfavourable farming methods

# Current priority

- Agric approaches best judge according to a balance of
  - Yield
  - Costs
  - Environmental & economic sustainability
- Priority area of focus today
  - Ability to farm continuously & intensively on any given piece of land in an environmentally friendly & profitable manner
- The CA paradigm

# CA



## Soil health

# What do we know about CA

	Conservation agriculture	Rationale
Tillage	Direct planting Planting on the rip line Making holes for planting with dibbler, hoe, cutlass etc.	Long term ploughing destroys soil structure and contributes to loss of fertility and organic matter levels
Soil cover	Crop residue left on the field Planting of cover crops Tree prunings & recycling of available organic waste	Crop residue improves organic matter Cover crops protect soil from erosion and limit weed growth
Mix and rotate crops	Crop rotation or intercropping is a permanent feature of the cropping system	Helps maintain fertility Breaks disease cycles



# Limitations to the application of CA

- Mindset
  - No alternative to residue removal and ploughing
  - Adherence to tradition
  - Clean field – mark of a good farmer
- Land preparation and planting
  - Traditional tools & available equipment not appropriate for CA conditions
- Soil Cover
  - Inadequate quantities of residue (competing uses)
  - Cover crop system not yet attractive to farmers

# The way forward

Limitation	What to do
Mindset	Creation of an expert group of change agents <ul style="list-style-type: none"><li>- CA in school curriculum</li><li>- CA graduate programme</li></ul>
Land preparation and planting	Evaluation of the feasibility & economics of the use of CA equipment <ul style="list-style-type: none"><li>- Jab planter</li><li>- Roller crimper</li><li>- No-till planter</li></ul>
Soil cover	Evaluation of CC for <ul style="list-style-type: none"><li>- Short &amp; long fallow systems</li><li>- Intercropping with food crops</li><li>- Unattractiveness to livestock</li><li>- Fodder &amp; fire wood</li></ul>