THE PARADOX OF MINIMAL USE OF MINIMUM TILLAGE DESPITE POSITIVE YIELD BENEFITS IN ZAMBIA: EVIDENCE FROM DISTRICT - REPRESENTATIVE DATA

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MOTIVATION

- Conservation Agriculture (CA) practices often promoted as effective strategies to address low agricultural productivity & climate change/variability
- Of the 3 CA principles Minimum Tillage (MT) is the cornerstone and most common element of CA
- Despite nearly 3 decades of active MT promotion in Zambia & documented positive yield gains, e.g. with early planting:
  - Ripping improves maize yields by an average of 627-814 kg/ha than conventional plowing
  - Planting basins improve yields by 191 kg/ha
- Question remains about why the adoption rate of MT among smallholder farmers is low
- This research seeks to answer this important question
DATA SOURCES

- Crop Forecast Survey (CFS) data, statistically representative at district and national levels; 2008–2014, with a total of 98,000 households over 7 years
- FGDs in 7 districts with farmers
- Key informant interviews with stakeholders
- CFS collected data using semi-structured questionnaire on:
  - Demographics, landholding, field size & use
  - Main tillage method used in each field → basis for our estimates
RESULTS AND DISCUSSION
1. MT use rates low (<5%) nationally but rising
2. MT use higher than national averages in areas of intense MT promotion
Why Low MT Use Rate?

Macro level

- MT adoption is highly sensitive to promotional activities. Increases in MT use rates are associated with increases in the number of CA/MT projects.

- Question thus arises:
  - Are MT practices and/or promotional strategies sustainable?

- Project support is usually too small in value and over too short a period for the farmers to be able to graduate and self-finance their future MT activities.
Why Low MT Use Rate?

Micro level

- Inter household differences in resource endowments explain why some farm households use MT practices only when they have project support.

- Lack of resources to purchase requisite implements, inputs and herbicides, & high labor requirements are among the main factors impeding MT uptake.
Empirical Results

- Increased land access improves uptake of basins and ripping practices
- Following a drought season, farmers increase MT use
- Following season of floods, farmer use of MT reduces responsive to rainfall variability
- Incidences of cattle diseases negatively affect uptake of ripping, and ADP in general
- Presence of CA promotional program in a district positively influences uptake of ripping
PLAUSIBLE STRATEGIES TO IMPROVE MT UPTAKE

- Ramp up public support for MT programs through increased resource allocation to public extension services
- Design extension programs that provide farmers with incentives to adopt MT practices based on underlying economic viability & not subsidies
- Ramp up gathering and disseminating of weather information to guide farmers’ tillage method decisions
- More support to cattle disease control programs
- Design and implement policies and strategies that promote smallholder farmers’ access to land
PLAUSIBLE STRATEGIES TO IMPROVE MT UPTAKE

- Extension messages to emphasize early land preparation and planting for farmers to realize positive yield benefits from ripping and planting basins

- Considering the larger yield benefits of ripping over conventional ploughing policies and programs need to improve the availability and accessibility of rippers and ripping services
THANK YOU

ADP ripping

Mec. ripping

Hoe basins

ADP zero till

Source CFU http://conservationagriculture.org/gallery; accessed 18.11.14
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IAPRI WEBSITE/ADDRESS

http://www.iapri.org.zm/

Or

http://www.aec.msu.edu/fs2/zambia/index.htm

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