



Minimum Tillage Use Rates in Zambia: Evidence from District-Representative Data

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Motivation

1

- Wide differences in MT adoption/use rates reported in existing studies
- Most of the existing studies are based on targeted population, specific regions, small samples, & only provide a snapshot
- Our analysis uses nationally representative agric. dataset, Crop Forecast Survey (CFS) spanning 5 years (2008-2012) to examine trends of MT use at different levels, & determine drivers of use, & identify sources of variation in reported estimates

Data

2

- CFS data, statistically representative at district and national levels; 2008–2012, with a total of 63,000 households over the 5 years
- FGDs in 3 districts with 69 farmers
- Key informant interviews with CFU project staff, MAL extension officers and researchers
- Literature review
- CFS collected data using semi-structured questionnaire on:
 - Demographics, landholding, field size & use
 - **Main tillage method used in each field → basis for our estimates**

Methods

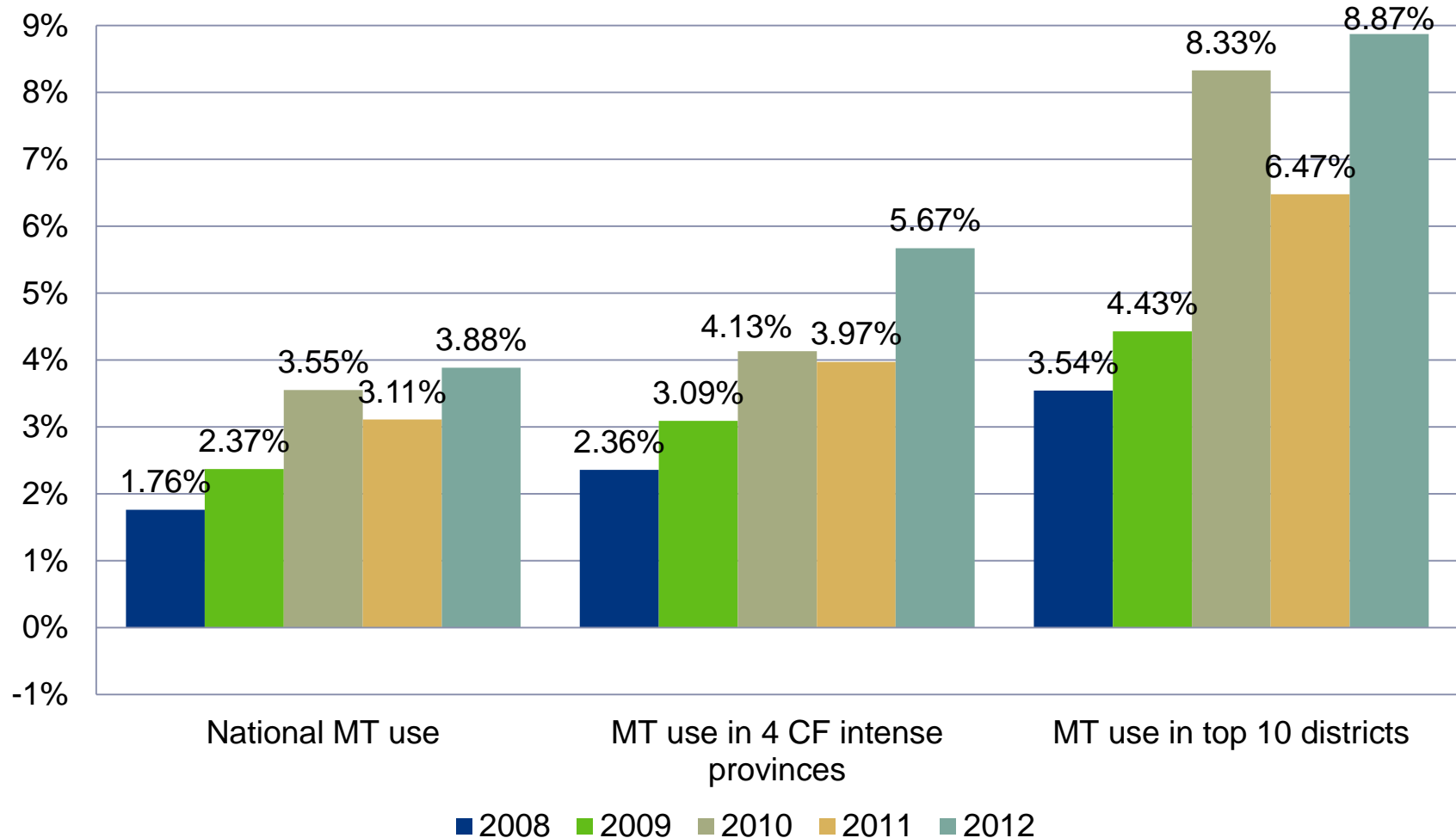
3

- Descriptive analysis used to generate trend tables and graphs
- Used econometric model to determine factors influencing MT use

Results & Discussion

1. MT use rates low (<5%) nationally but rising
2. MT use higher than national averages in areas of intense CF promotion

5



Top 10 MT use districts; 9 of these are in CFU CAPII

6

Province	Top 10 MT use districts 2008-2012	Use rate as at 2012 (%)
Central	Chibombo	2.0
	Mumbwa	7.1
Eastern	Chipata	7.3
	Katete	6.8
	Lundazi	10.6
	Petauke	4.2
Lusaka	Chongwe	7.3
Muchinga	Chama	22.0
Southern	Mazabuka	11.3
Western	Kaoma	1.1

Understanding low use rates

7

FGDs & Key informant interviews:

- Provision of “*material handouts*” to “*lure*” farmers
- High labor demands
- Dry season land preparation conflicts with off-farm activities e.g. marketing, & trading
- Resource constraint
 - → *poor resource farmers may not afford purchased inputs e.g herbicides*
- Scarcity of ripping services

Drivers of MT use after controlling for other factors

8

- 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
 - response to rainfall variability
- Incidences of cattle diseases negatively affect uptake of ripping, and ADP in general
- Presence of CFU in a district positively influences uptake of ripping

What Explains Variations in Adoption/Use Rates

9

- Two plausible explanations:
 1. Sampling design
 2. Variable(s) of interest (question asked)

Main Conclusions

10

- We find low but rising use rates nationally $< 5\%$ as at 2012
- There is potential to increase MT uptake as indicated by areas of longstanding intensive promotion
- Farmers with relatively large landholdings more likely to adopt/use MT
- More support needed to collection and dissemination of weather data
- Cattle diseases control need to be ramped up and promotion of tractor ripping services
- Findings differ mainly due to varying sample frame, & variable of interest
- Joint study by stakeholders is necessary to harmonize the sample frame, & definitions

Triangulating Plausible Adoption/Use Rates

11

1. National

- 2003: 3.3% (Kabwe and Donovan)
- 2008: 1.8 – 5% (Ngoma *et al* and Arslihan *et al*)
- 2012: 4% (Ngoma *et al*)

2. High Promotion/High Potential Districts

- 2012: 8.87 – 18.2% (Ngoma *et al* and Kasanga and Daka)

3. Among Target Populations (i.e proximity to lead farmer or interaction with cotton distributors)

- 2012: 13 - 21.5% (Grabowski *et al* and, Kasanga and Daka)
- 2003: 2.3-7.2% (Haggblade and Tembo 2003, uses PHS)

THANK YOU



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13

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

Or

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

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