

# Research Findings on Alternative Approaches for Raising Smallholder Agricultural Productivity

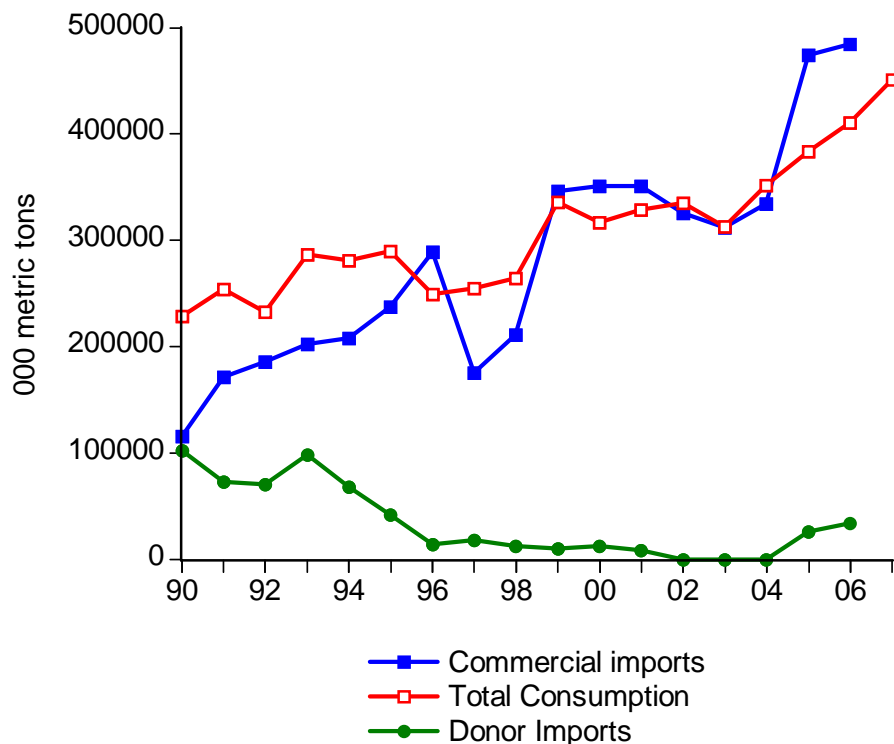


T.S Jayne  
with colleagues from MSU

Informal BMGF Fertilizer Subsidies Convening  
Salzburg, Austria  
29 April 2008

Intensity of fertilizer use (1996-2002)	% growth in fertilizer use intensity (kg/ha cultivated) (mean 1996-2002 / mean 1990-95)	
	< +30%	> +30%
< 25 kg/ha	DRC (0.5, -47%)	Uganda (0.6, +237%)
	Angola (0.7, -69%)	Rwanda (1.8, +89%)
	Niger (0.9, +5%)	Mozambique (3.2, +142%)
	Guinea (2.0, -4%)	Ghana (3.6, +68%)
	Burundi (2.3, -6%)	Chad (4.3, +93%)
	Madagascar (2.9, -8%)	Cameroon (5.9, +77%)
	Mauritania (4.0, -64%)	Togo (7.0, +30%)
	Tanzania (4.8, -47%)	Cote d'Ivoire (11.8, +53%)
	Gambia (5.2, +15%)	Botswana (11.8, +294%)
	Nigeria (5.6, -73%)	Senegal (13.2, +67%)
	Burkina Faso (5.9, -28%)	Ethiopia (14.4, +71%)
	Zambia (8.4, -34%)	Benin (17.6, +76%)
	Mali (9.0, +7%)	Lesotho (23.2, +35%)
	> 25 kg/ha	Swaziland (30.5, -40%)
Malawi (30.8, +9%)		
Zimbabwe (48.3, +9%)		

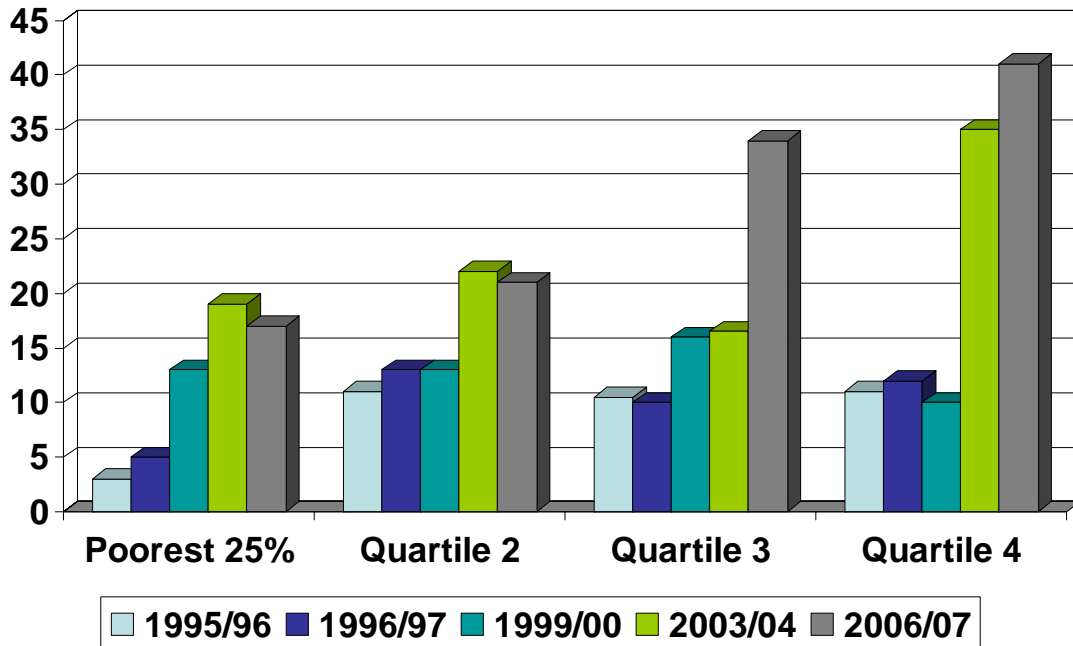
## Fertilizer use trends in Kenya, 1990-2006



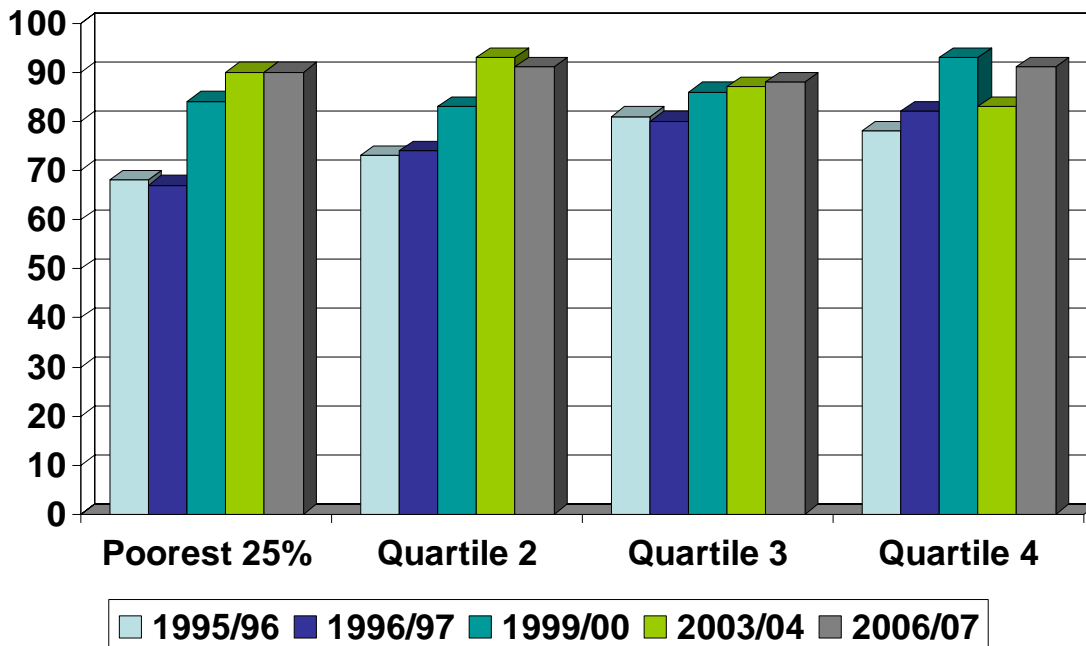
### Percent of Households using Fertilizer (all crops)

<i>Agro-ecological zone</i>	1995/96	1996/97	1999/00	2003/04	2006/07
Coastal Lowlands	2%	3%	5%	6%	12%
Eastern Lowlands	19%	30%	37%	46%	57%
Western Lowlands	2%	3%	4%	8%	30%
Western Transitional	29%	32%	59%	61%	88%
High-Potential Mz Zone	67%	69%	86%	90%	93%
Western Highlands	52%	57%	73%	74%	95%
Central Highlands	63%	78%	90%	93%	98%
Marginal Rain Shadow	12%	20%	22%	27%	54%
<b>National total</b>	<b>43%</b>	<b>51%</b>	<b>64%</b>	<b>69%</b>	<b>76%</b>

### Percentage of maize fields that are fertilized, lowland zones, by wealth quartiles



### Percentage of maize fields that are fertilized, relatively productive zones, by wealth quartiles



## Reasons for the Upsurge in Fertilizer Use in Kenya

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1. GoK has maintained a stable fertilizer policy stance since 1990
  - Eliminated import licensing quotas
  - Foreign exchange controls
  - Retail price controls
  - No large subsidy programs to undercut private investment in fertilizer distribution system

## Reasons for the Upsurge in Fertilizer Use in Kenya

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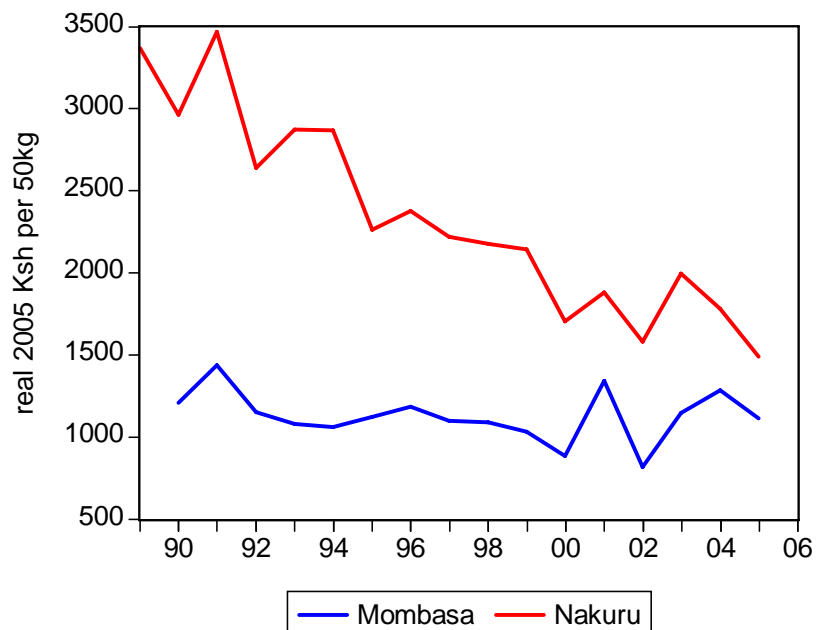
2. Private sector investment in fertilizer distribution has expanded rapidly
  - 10-11 importers
  - 500 wholesalers
  - 8,000 retailers

# Reasons for the Upsurge in Fertilizer Use in Kenya

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3. Small farmers' are now much closer to fertilizer retailers
  - 1997: 8.4kms
  - 2004: 4.3kms

## 4. Large decline in fertilizer (DAP) marketing margins



Zambia	Total Income	Assets	Landholding size
	'000 kwacha per capita		ha per capita
<b>Fertilizer source:</b>			
<i>Households not acquiring fertilizer:</i>	266	173	.15

Source: Govereh et al, 2006

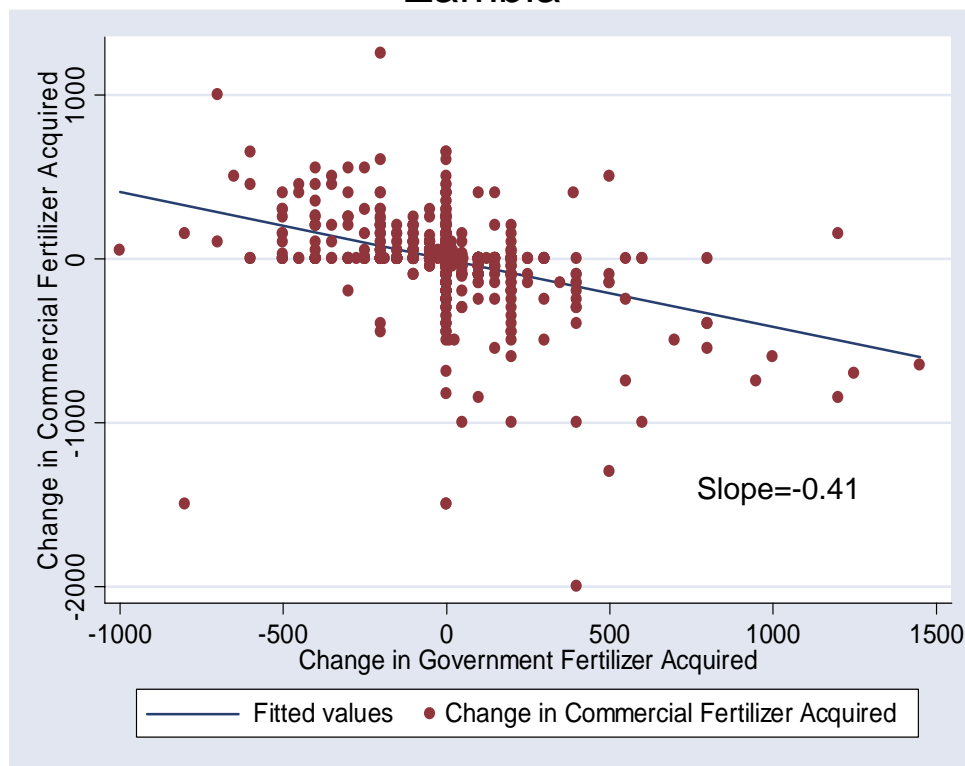
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<b>Fertilizer source:</b>			
<i>Households not acquiring fertilizer:</i>	266	173	.15
<i>Cash purchases from private retailers:</i>	774	342	.20
<i>Government Fertilizer Support Program (50% subsidy)</i>	804	425	.23

Source: Govereh et al, 2006

Change in smallholder fertilizer use, 2000 vs 2004, Zambia

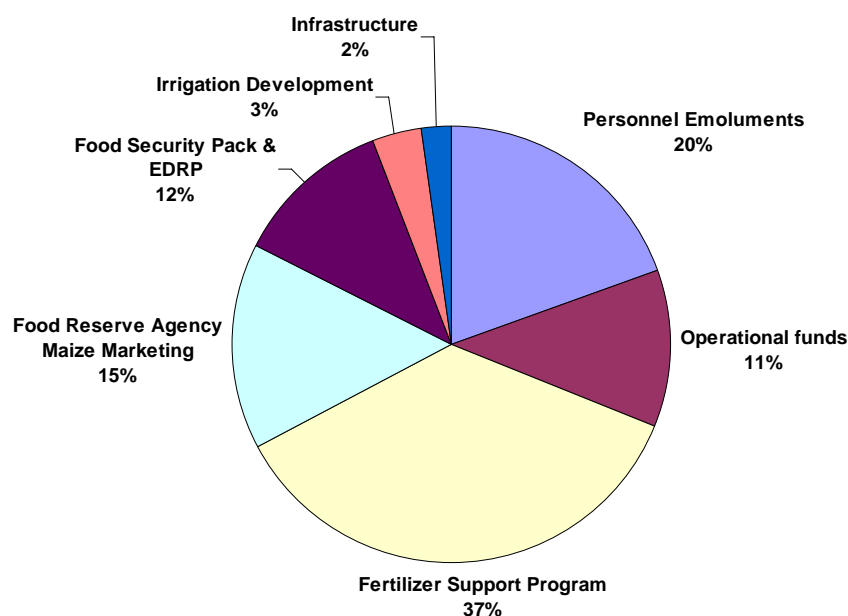


## IFPRI review of rate of return studies:

	Returns
Subsidies	Negative – 12%
Investments	
- research & extension	35% to 70%
- roads	20% to 30%
- education	15% to 25%
- communications	10% to 15%
- irrigation	10% to 15%

**If we believe these findings, they have major implications**

## Budget allocation to Agricultural Sector in Zambia: ZMK465 million in 2005





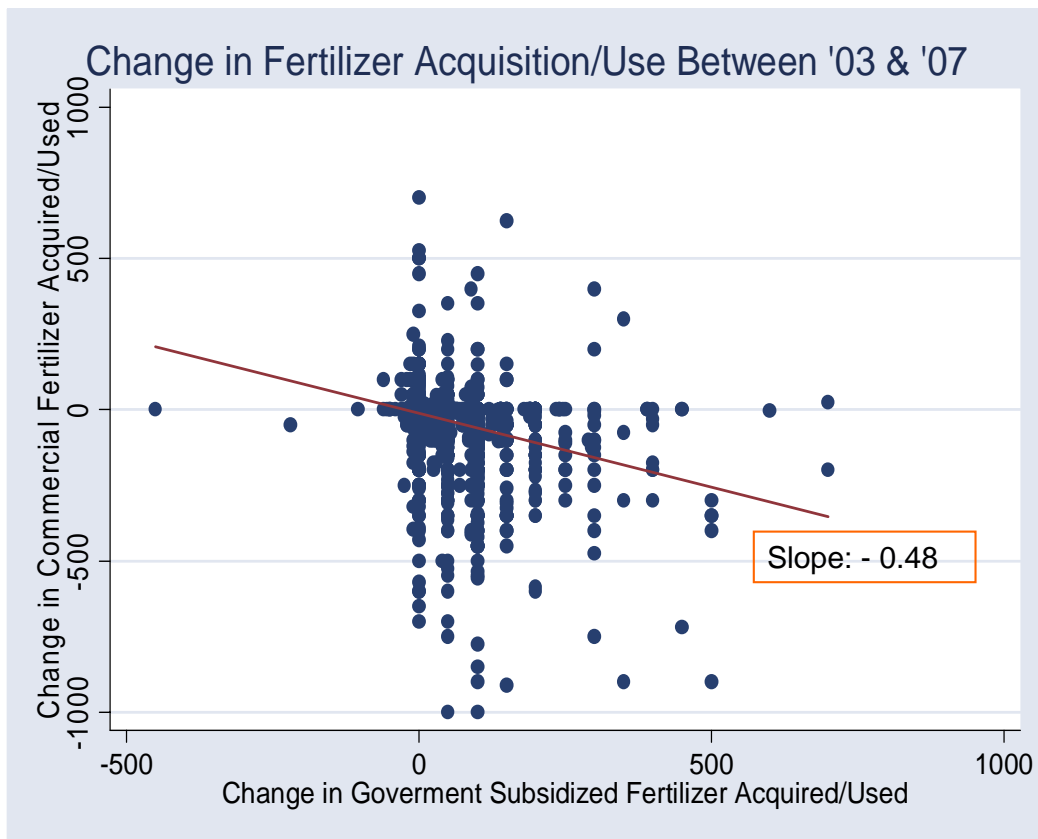


Thank you

<http://www.aec.msu.edu/fs2/>

- Supplementary slides

## Malawi



### Factors that could improve B/C ratio of fertilizer subsidies (and smallholder productivity)

1. Target relatively poor farming households
  - This will minimize displacement and have the most direct effect on poverty reduction
2. Target FSP to areas where private traders are not already active (use PHS data to determine areas)
3. Reduce recommended fertilizer application levels – 200kg Compound D + 200kg Urea appears to be in stage 3 of production function
4. Prioritize R&D to generate improved fertilizer-responsive seeds
5. Open regional trade (especially in good harvest years) will raise and stabilize the price of maize → improve profitability of using fertilizer on maize

# Percentage of Kenyan smallholders using fertilizer

