

Research Findings on Raising Smallholder Fertilizer Use: Lessons from Kenya

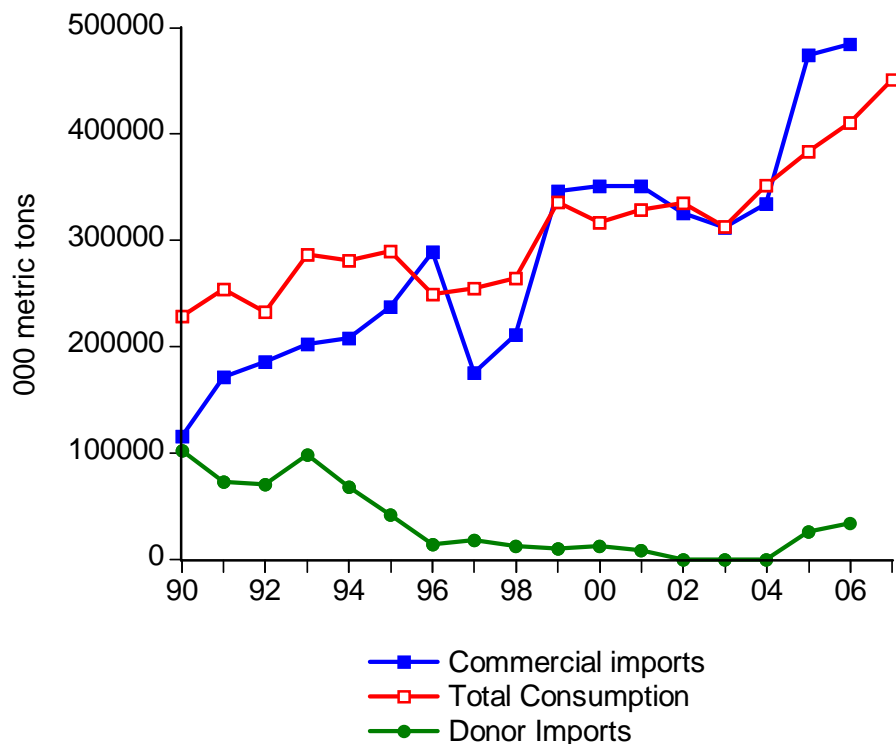


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with colleagues from MSU

Africa Bureau/USAID seminar on
"Expanding Fertilizer Markets in Africa"
Washington, D.C. 4 June 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%
National total	43%	51%	64%	69%	76%

Reasons for the Upsurge in Fertilizer Use in Kenya

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

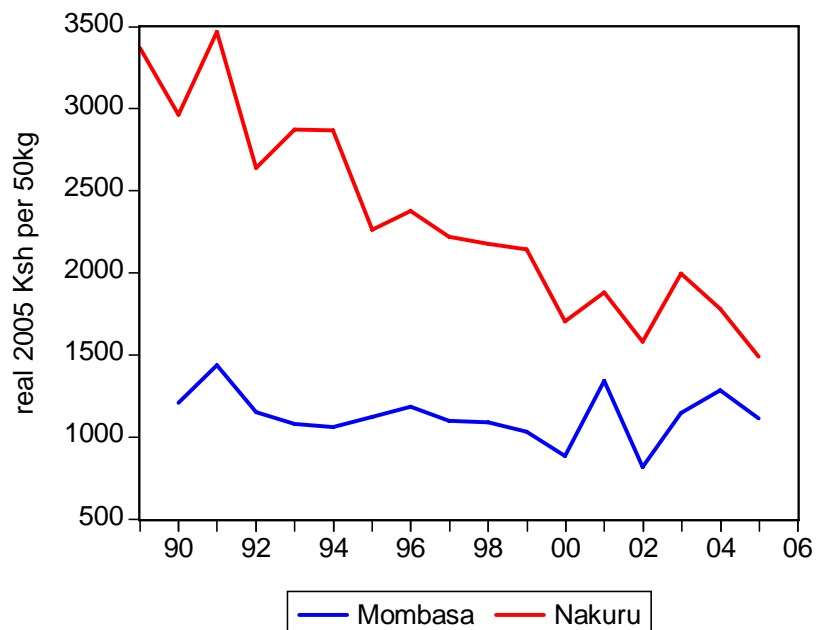
Reasons for the Upsurge in Fertilizer Use in Kenya

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

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

4. Large decline in fertilizer (DAP) marketing margins



How to maintain fertilizer use incentives in current environment?

- In short run, a targeted subsidy may be important to reduce dependence on imports at this precarious time

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

1. Targeted voucher program
2. Target relatively poor farming households
 - will minimize crowding out of private sector and contribute better to poverty reduction
3. Target relatively productive areas
4. Reduce recommended application levels. 200kg DComp + 200kg Urea is excessive
5. Prioritize R&D to generate improved fertilizer- responsive seeds
6. Open regional trade will stabilize maize prices → improve profitability of using fertilizer on maize

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- ❑ While a well-designed and well-implemented fertilizer voucher program could improve the food security prospects this year, this depends on adequate rainfall
 - ❑ In a drought year, a fertilizer subsidy will do very little
 - ❑ Sachs argument – “fertilizer subsidy or food aid.”
 - But in a poor rainfall year, fertilizer subsidy will not avert the need for food aid

Summary of research evidence about fertilizer subsidies in Africa:

- ❑ can help to raise production, but little sustained benefit after subsidies are withdrawn
 - Examples of snuffed-out maize revolutions (Zimbabwe, Zambia, Kenya, Malawi)
- ❑ Benefits tend to be disproportionately captured by better-off farmers, unless near universal coverage
- ❑ often captured by first-beneficiaries, not farmers → questionable effect on total input use
- ❑ Costly – foregone payoffs from alternative public investments
- ❑ Inhibits development of private sector capacity



Thank you

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

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

Source: Govereh et al, 2006

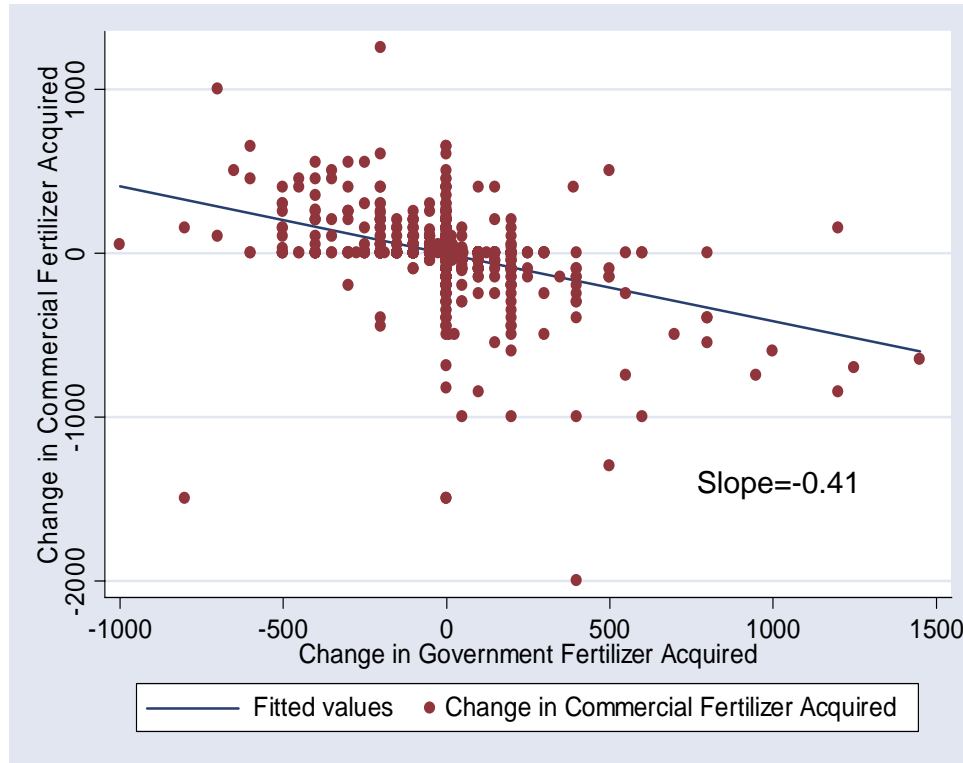
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<i>Cash purchases from private retailers:</i>	774	342	.20
<i>Government Fertilizer Support Program (50% subsidy)</i>	804	425	.23

Source: Govereh et al, 2006

Change in smallholder fertilizer use, 2000 vs 2004, Zambia

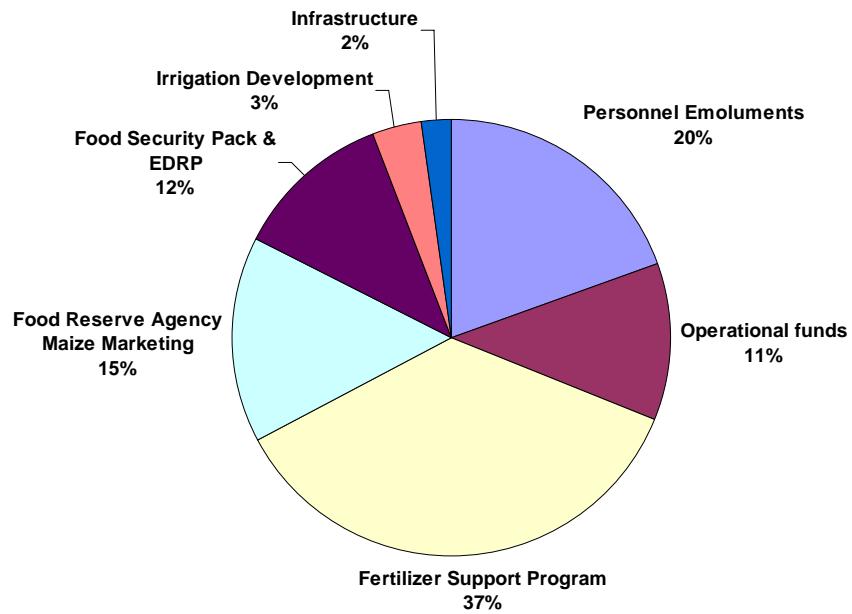


IFPRI review of rate of return studies:

	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%

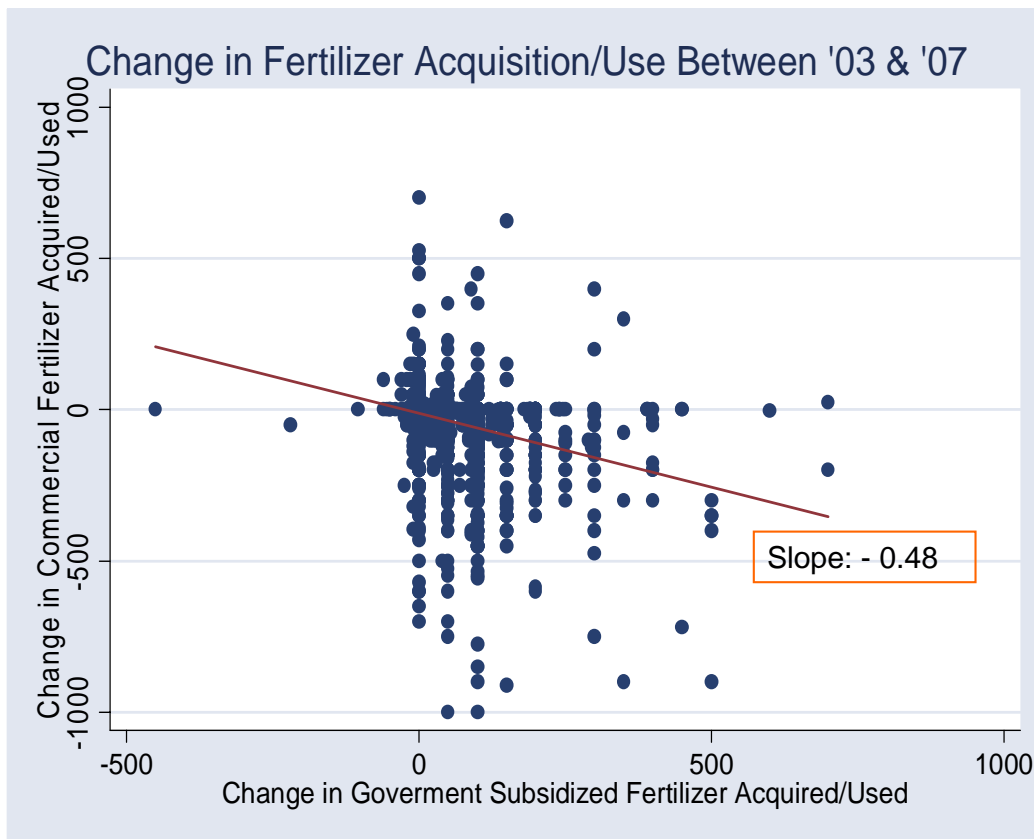
If we believe these findings, they have major implications

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

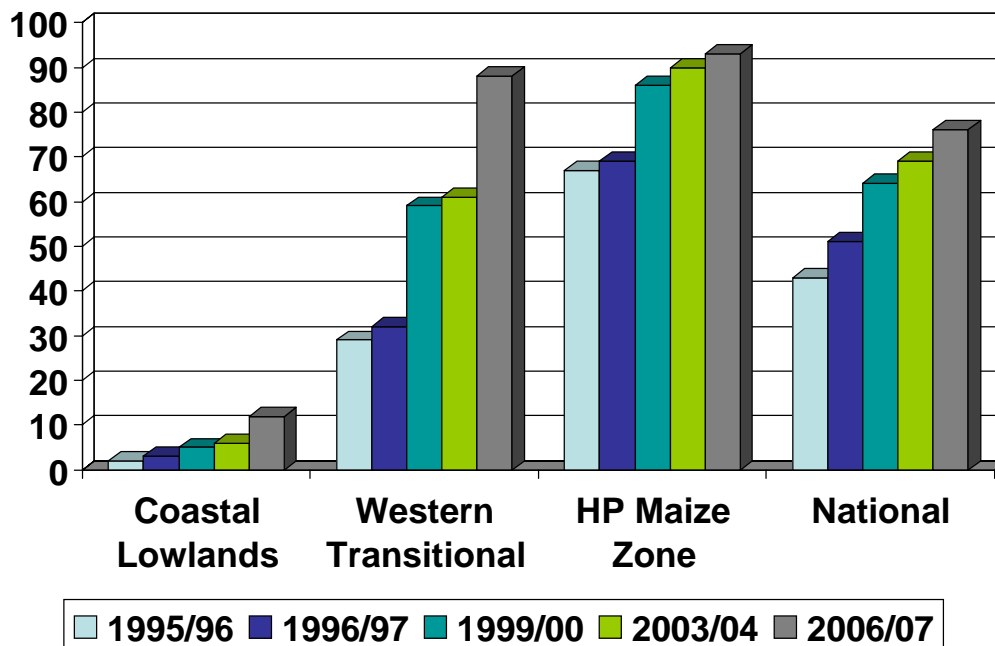


- Supplementary slides

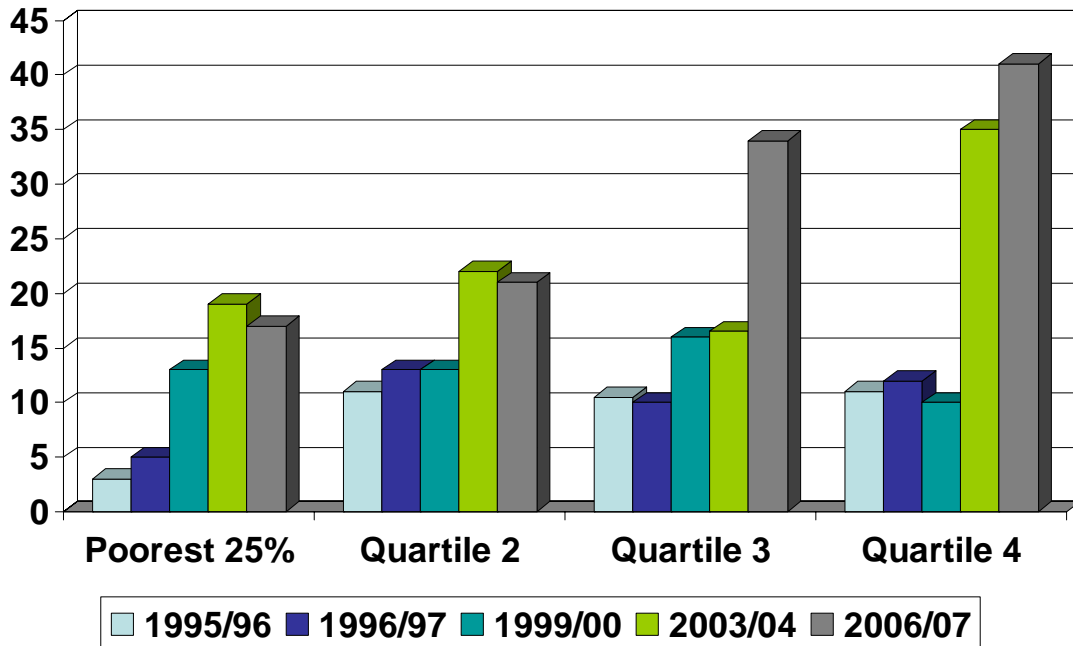
Malawi



Percentage of Kenyan smallholders using fertilizer



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

