

Agricultural Productivity in Zambia: Has there been any Progress?



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1

What is ACF/FSRP?

- A collaboration between ACF and FSRP/MSU with other stakeholders in Agriculture – MACO, ZNFU, Millers, Traders etc.
- Main Objectives
 - Empirical research to inform agricultural policy
 - Capacity Building (Data collection, management and analytical capacity)
 - Outreach
- Thanks to funding from USAID and SIDA

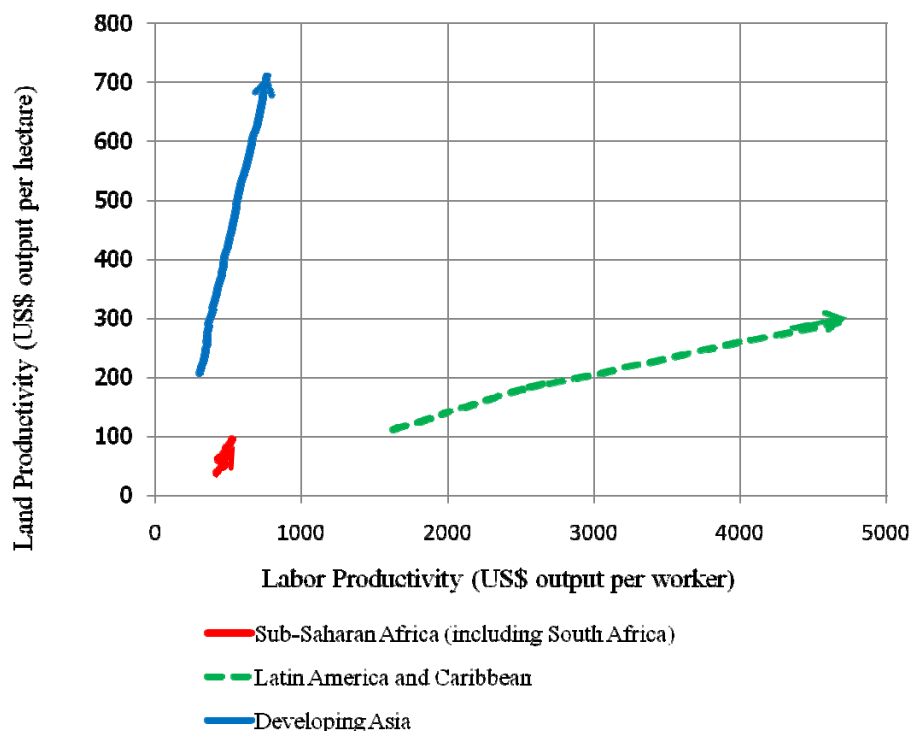
2

Agricultural Productivity?

- A major indicator of crop productivity is cost of production, i.e., costs per hectare / bags produced per hectare,
 - reduces the cost per unit area
- Focus for this presentation:
Yield= output/land harvested - A measure of land productivity

3

Africa's agricultural productivity: lowest in the world



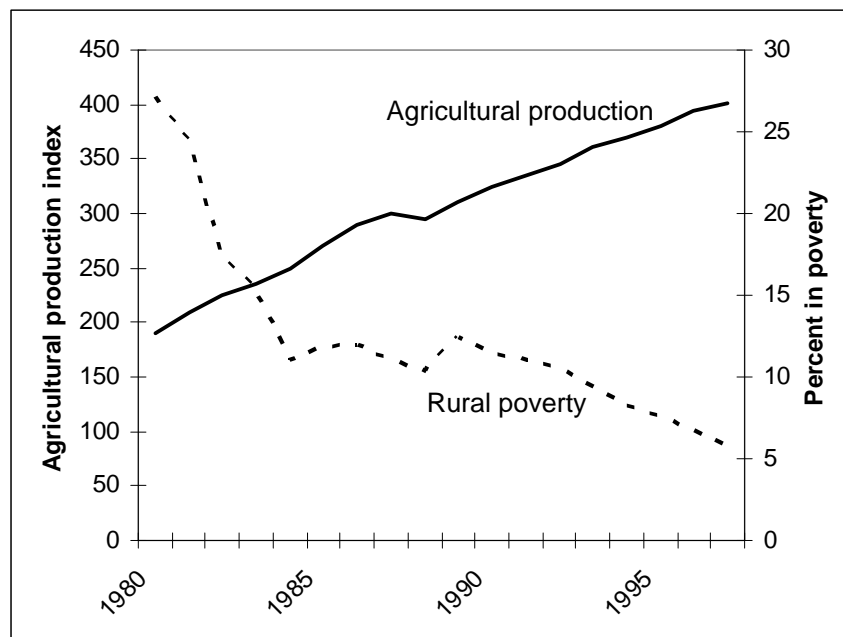
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Why invest in Agriculture?

- Agriculture is a powerful poverty fighter
 - No country has ever achieved mass poverty reduction without a prior substantial boost in broad based agricultural productivity (Timmer, 2005)
 - Latin American experience shows that it is possible to achieve agricultural productivity growth on large farms without having much impact on poverty rates.
 - Need to raise broad based productivity of smallholder farmers in order to fight poverty.

5

Agricultural growth and poverty reduction in China



6

LOW PRODUCTIVITY

Crop yields (Mt/ha) year, Zambia vs Global Averages

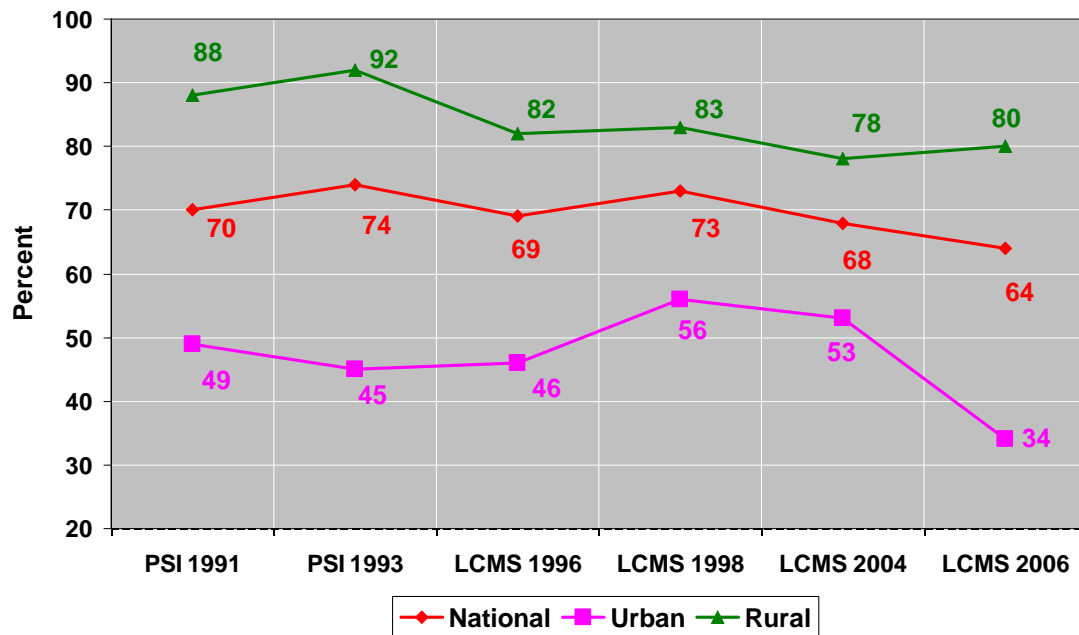
Crop	2001/02	2003/04	2005/06	2007/08	2009/10	Global*
Maize	1.0	1.7	1.5	1.3	2.1	4.47
Sorghum	0.7	0.7	0.5	0.5	0.9	2.66
Rice	1.0	1.0	1.3	1.2	1.7	3.84
Millet	0.7	1.0	0.7	1.0	1.1	0.82
Sunflower	0.4	0.5	0.4	0.5	0.6	-
Groundnuts	0.4	0.7	0.5	0.6	0.7	1.35
Soybean	0.7	0.6	0.7	0.7	1.0	-
Cotton	0.8	1.1	0.9	0.8	1.0	-

*COMESA

Zambia National Production per Agricultural household (Metric Tonnes)

Crop	2001/02	2003/04	2005/06	2007/08	2009/10	Trend
Maize	0.58	1.07	0.98	0.93	1.66	Upward
Sorghum	0.03	0.03	0.01	0.01	0.02	Constant
Rice	0.02	0.01	0.01	0.02	0.03	Constant
Millet	0.05	0.04	0.03	0.03	0.03	Constant
Sunflower	0.01	0.01	0.01	0.01	0.02	Constant
Groundnuts	0.05	0.06	0.05	0.07	0.11	Upward
Soybeans	0.00	0.01	0.02	0.01	0.02	Constant
Cotton	0.07	0.12	0.13	0.06	0.05	Up and down
Beans	0.04	0.03	0.04	0.05	0.06	Constant
Sweet Potatoes	0.08	0.07	0.08	0.09	0.17	upward

Poverty Incidence in Zambia (%) (1991-2006)



9

Productivity Challenge

- The challenge of improving farm productivity appears to have a straightforward solution:
 - use the power of crop science to generate improved farm technologies,
 - put these technologies into the hands of small farmers, and
 - provide them with the knowledge to get the most out of these technologies.
- The big question: why has this not happened in Sub Saharan Africa?

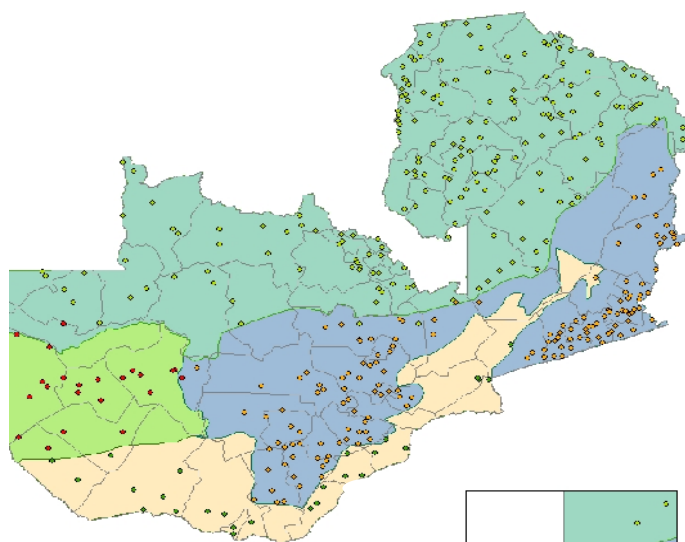
10

Smallholder Farm Maize Sector Performance and Trends

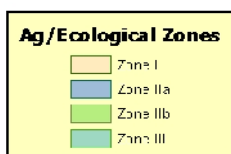


11

Data on Smallholder Farmers in Zambia



Nation Wide Random Surveys
CFS/PHS/SS 99/00 = 364 SEAs)
CFS 2006/07 onward = 660 SEAs)

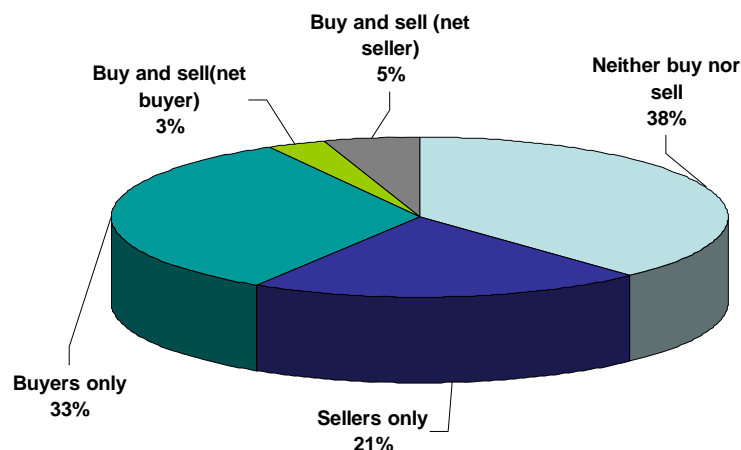


Characteristics of Smallholder Maize Farming Sector

- The majority of Zambian smallholder farmers grow maize (>80%)
- Yields remain low, despite massive state interventions in input distribution.
- 33% of rural households are buyers of maize only (plus 3% net buyers)
- 21% of rural household are net sellers
 - Highly concentrated patterns of surplus generation - 2% of farm households account for 50% of marketed maize surplus

13

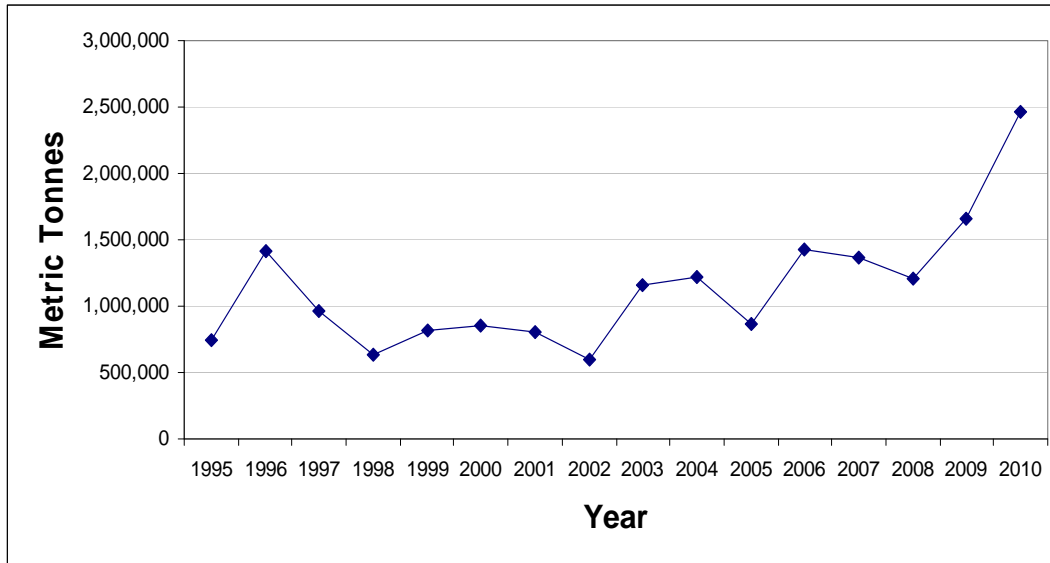
Maize Market Position of Smallholder Farmers in Zambia



Source: CSO/FSRP- National Supplemental Survey 2008

14

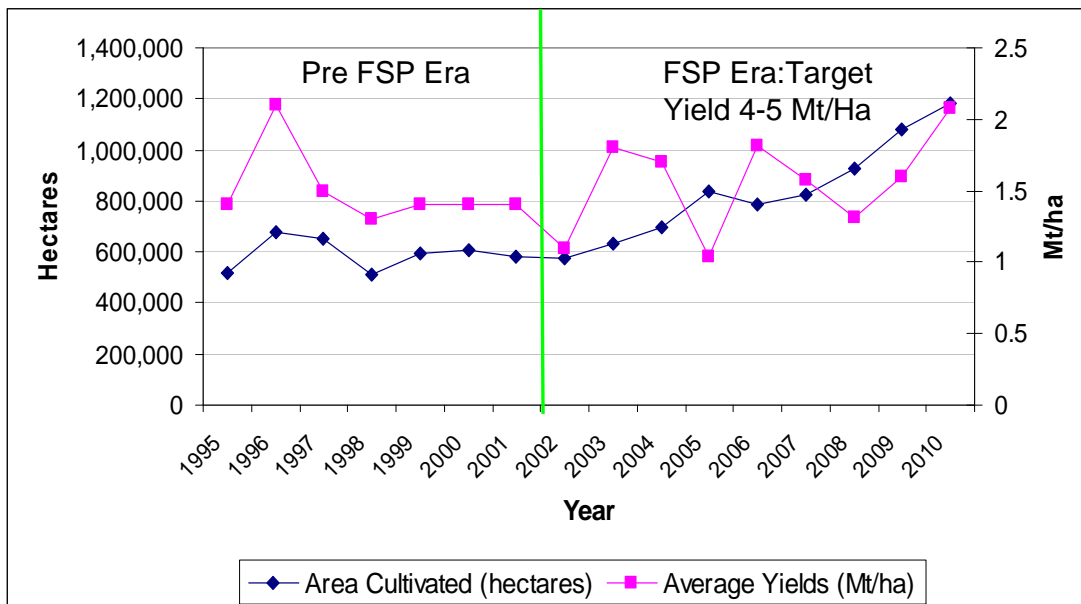
Maize Production: Metric Tonnes



Source: FAOSTATS, CFS Survey Data (2009 and 2010)

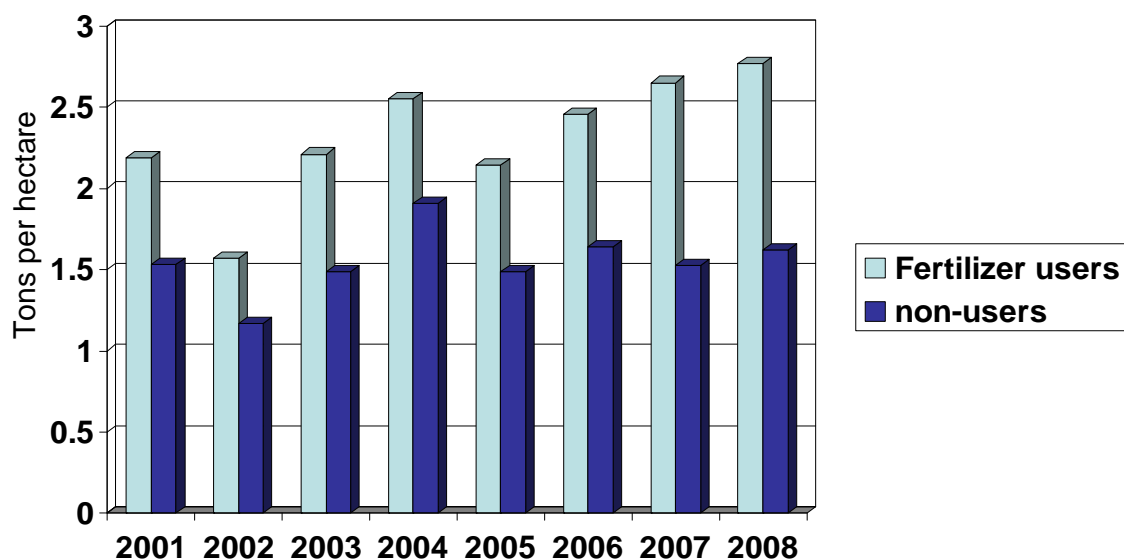
15

Maize production: Area cultivated and Average yields



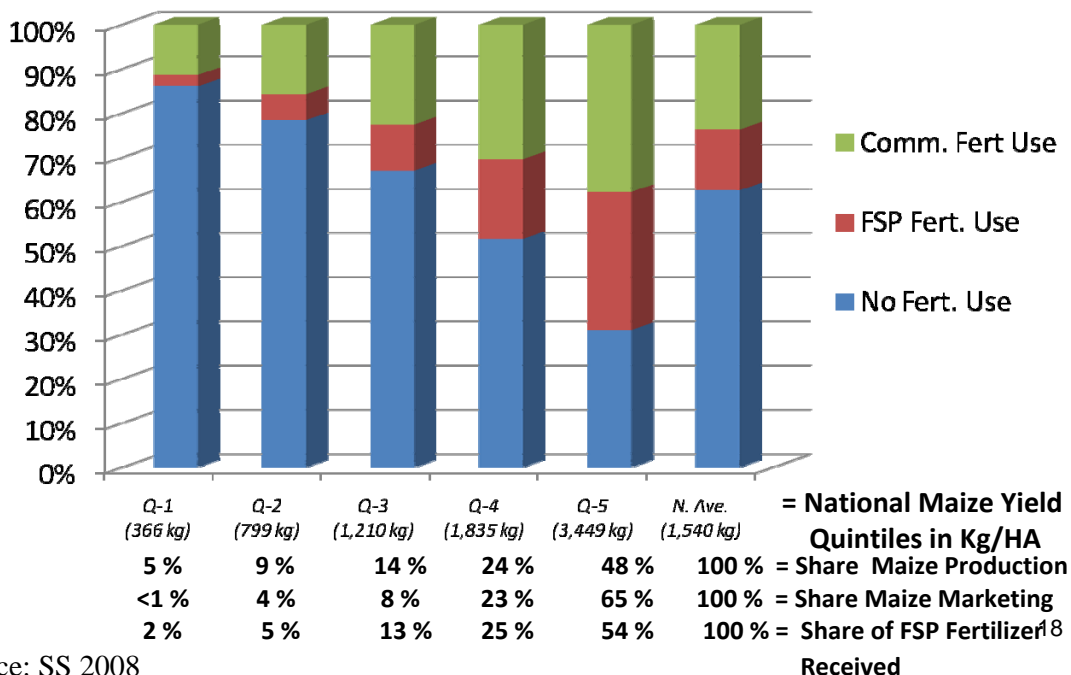
16

Maize Yields (mt per hectare of area harvested), Fertilizer Users vs. Non-users



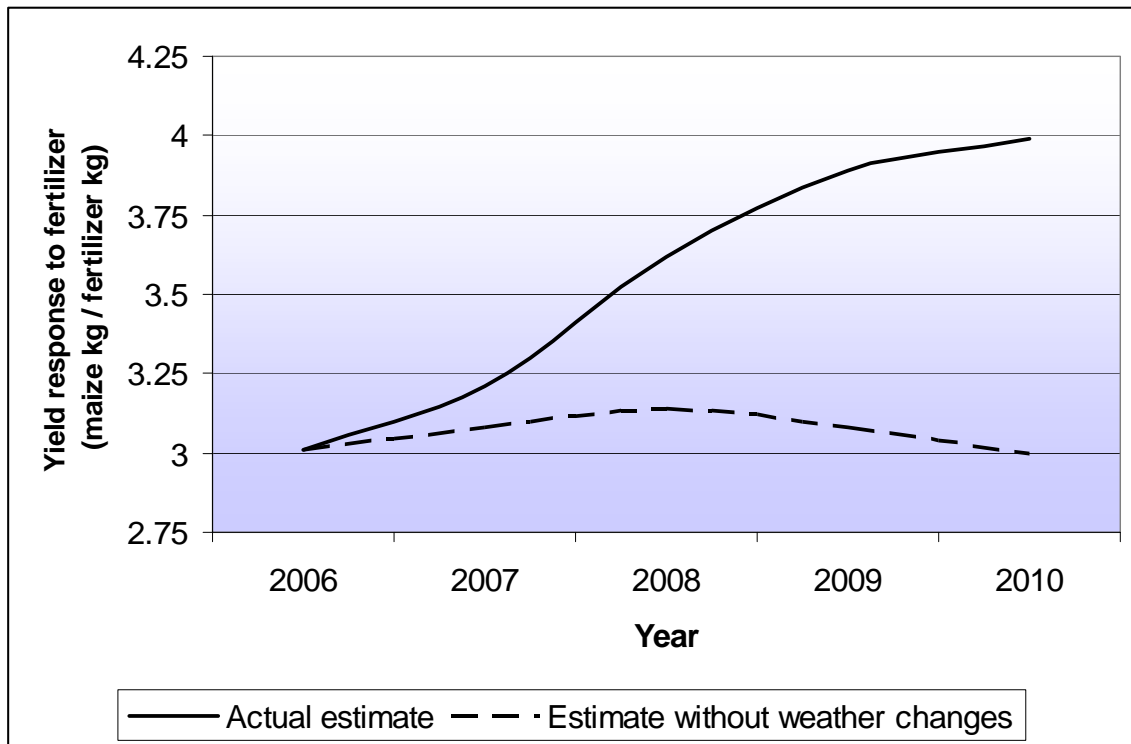
17

Maize Yield Quintile, and Percent of Smallholders Using/Not Using Fertilizer by Source in Zambia



Source: SS 2008

Yield Response to Fertilizer use over time



Why has productivity remained stagnant in Zambia?



Key Investments to Drive Productivity Growth in Agriculture

- Technology (research on crops/livestock, management practices, extension, processing improvements)
- Markets (property rights, standards, contract law, adjudication, market facilities, market price and supply information, marketing extension)
- Infrastructure (roads, irrigation, rural electrical power, ports, communications)

21

IFPRI review of rate of return studies

	Returns
Subsidies	Negative to 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

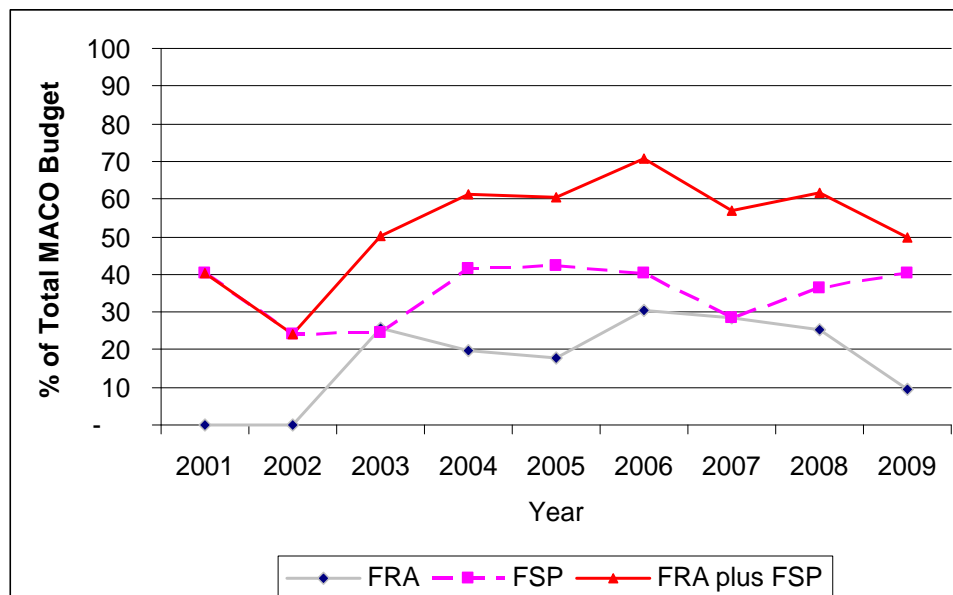
22

Why Frequent Negative Returns for Subsidies Programs?

- Subsidized inputs crowd out the private sector deliveries & discourage investments in new private fertilizer sales networks
- Misallocation and inefficiencies in usage does not encourage sustainable fertilizer use
- Diversion and rent seeking raises incomes of some but does little to raise crop productivity
- Late delivery of inputs does not improve productivity

23

Proportion of MACO Budget Devoted to FRA and FSP (2001-2009), Zambia



24

Budgetary implications for Zambia

- Should Government spend greater share of its budget to
 - Agricultural productivity R&D
 - Extension
 - Rural infrastructure development
 - Irrigation
- Instead of subsidies on fertilizer and maize purchase program, which provide the least profitable forms of agricultural spending?

25

What is the way Forward?

- For both smallholders and commercial farmers growing maize and other crops, fundamental productivity growth is needed to lead to higher output, farm income and food security.
- Zambia needs to create opportunities to be competitive in capturing regional and international markets.

26

What is the Way Forward?

- The current approach of high output, high incomes and high prices for farmers is **NOT** sustainable over the longer-run as it is for the most part only possible with costly subsidies to both input and output markets?

27

What is the way Forward?

- Generation and transmission of managerial and technical information skills to farmers
 - Extension needed to increase farmer's ability to manage input use
 - Extension to emphasize input efficiency instead of use levels e.g., precise timing of input application
 - Adequate research and extension linkages

28

What is the way Forward?

- Public/private investment in breeding research for replacement of old varieties
 - Need to capture genetic gains in productivity in order to manage drought stress and disease susceptibility
- Public/private investment in resource augmenting practices
 - Conservation farming may reduce risks and enhance intertemporal productivity

29

What is the way Forward?

- Scarce public funds always have an opportunity cost. If used for subsidies for private goods, who pays for needed public goods to complement private goods?
 - Increasing the amount of resources deployed in agriculture
 - Prioritize investment spending in drivers of productivity across sub-sectors, functions, economic uses, regions and administrative boundaries

30

What is the way Forward?

- Improving markets for rural farmers and consumers
 - Is FISP the answer to low agricultural productivity?
 - Maybe a flexible subsidy program may assist farmers.
 - Is FRA or quasi government institution the answer?
 - Can Zambia afford it?
- How can private sector play a role in a meaningful and sustainable way?

31



32