

FOOD SECURITY RESEARCH PROJECT - Zambia

Empirical Information on Smallholder Maize Production and Fertilizer Use In Zambia

Presentation at Fertilizer Support Programme Evaluation Kick-Off Workshop
Protea Safari Lodge, June 25-26, 2008

By Michael T. Weber

Research and Outreach Supported By:



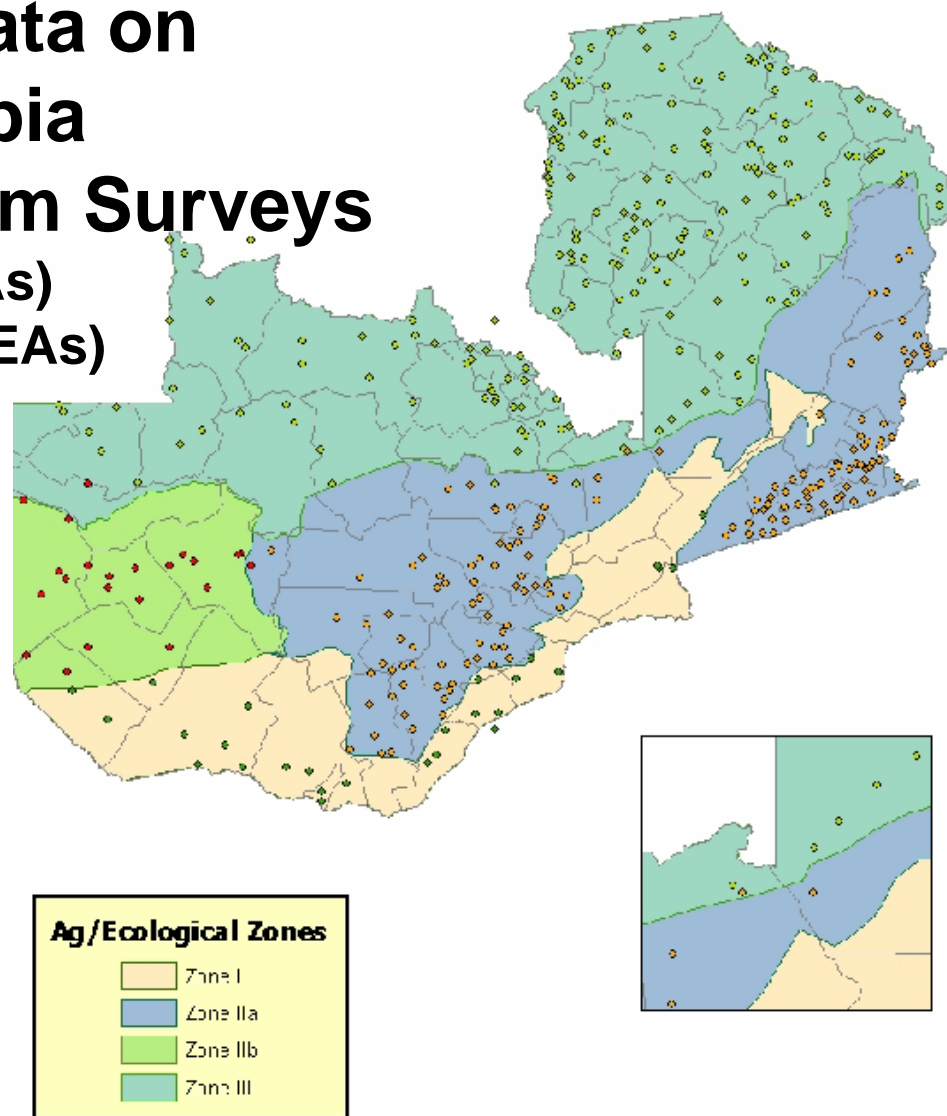
With Funding Support From USAID and Swedish SIDA

FSRP Selected Research/Outreach Targets for 2008

- With CSO/MACO. Improve CFS/PHS data utilization
- 3rd round PHS/Supplemental Rural Livelihood Survey (May-June 2008 field work)
- Utilize CFS and PHS/SS Data & Analysis to Inform Discussions of Options To Respond to the Food & Input Price Challenges in 2008, 2009 and Beyond.
 - Statistical Report: Patterns of Maize Farming Behavior and Performance Among Small- and Medium-Scale Holding in Zambia. 2000/2001 - 2007/2008 “Working Draft for Comments, June 20, 2008”

Source: Empirical Data on Smallholders in Zambia – Nation Wide Random Surveys

(CFS/PHS/SS 99/00 = 364 SEAs)
(CFS 2006/07 onward = 660 SEAs)



Map of Central Statistical Office Statistical Enumeration Areas (SEAs) Sampled in the CSO/MACO/FSRP Post Harvest and Supplemental Surveys in 2001 and 2004 (and to be completed in 2008) by Zambia's Agro-Ecological Zones

2008 Supplemental Survey With Smallholders





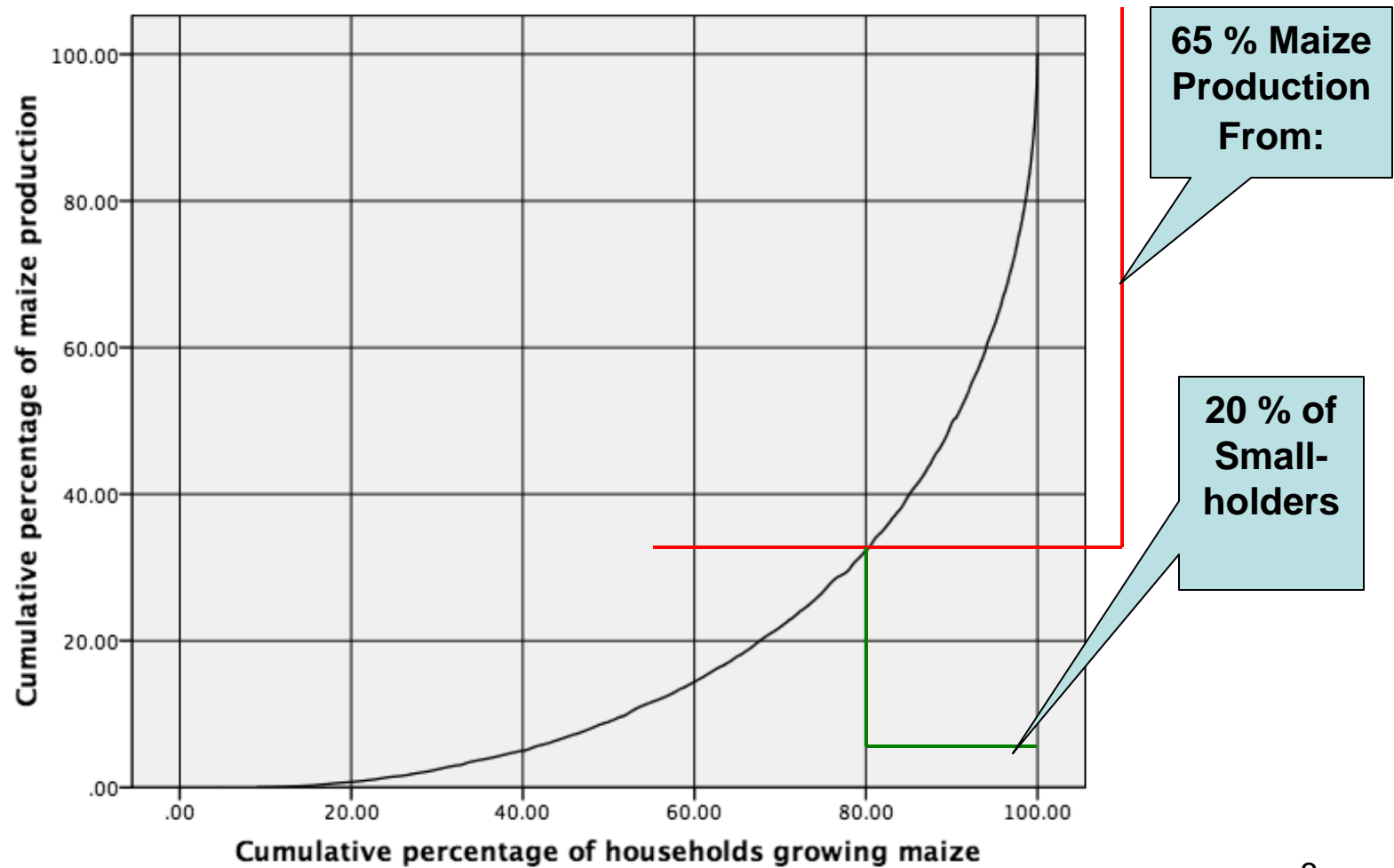
Zambia - CFS TIME-SERIES FINDINGS FOR MAIZE

Smallholder Farmers in Zambia (.1 - 20 ha cultivated and customary tenure)						
Crop Year	Area Planted	Area Harvested	Production	Yield (Area Planted / Production)	Planned Sales	Fertilizer Used
02/03	627,529	476,493	823,209	1.22	218,204	47,950
03/04	589,036	490,939	993,930	n/a	246,910	47,850
04/05	750,351	379,959	598,411	.79	114,957	55,637
05/06	731,900	576,097	1,106,751	1.52	358,221	63,081
06/07	824,247	541,362	1,103,679	n/a	398,024	79,443
07/08	887,300	504,568	988,169	1.13	357,112	79,150
Commercial Farmers in Zambia (greater than 20 ha cultivated and lease hold)						
02/03	90,004	88,017	412,381	4.58	381,957	42,884
03/04	42,043	46,683	219,670	n/a	234,273	n/a
04/05	93,630	85,873	267,776	4.29	234,777	n/a
05/06	52,624	42,858	317,688	6.07	n/a	n/a
06/07	48,565	45,141	262,479	n/a	224,446	25,755
07/08	48,534	44,948	218,728	4.51	174,164	18,530

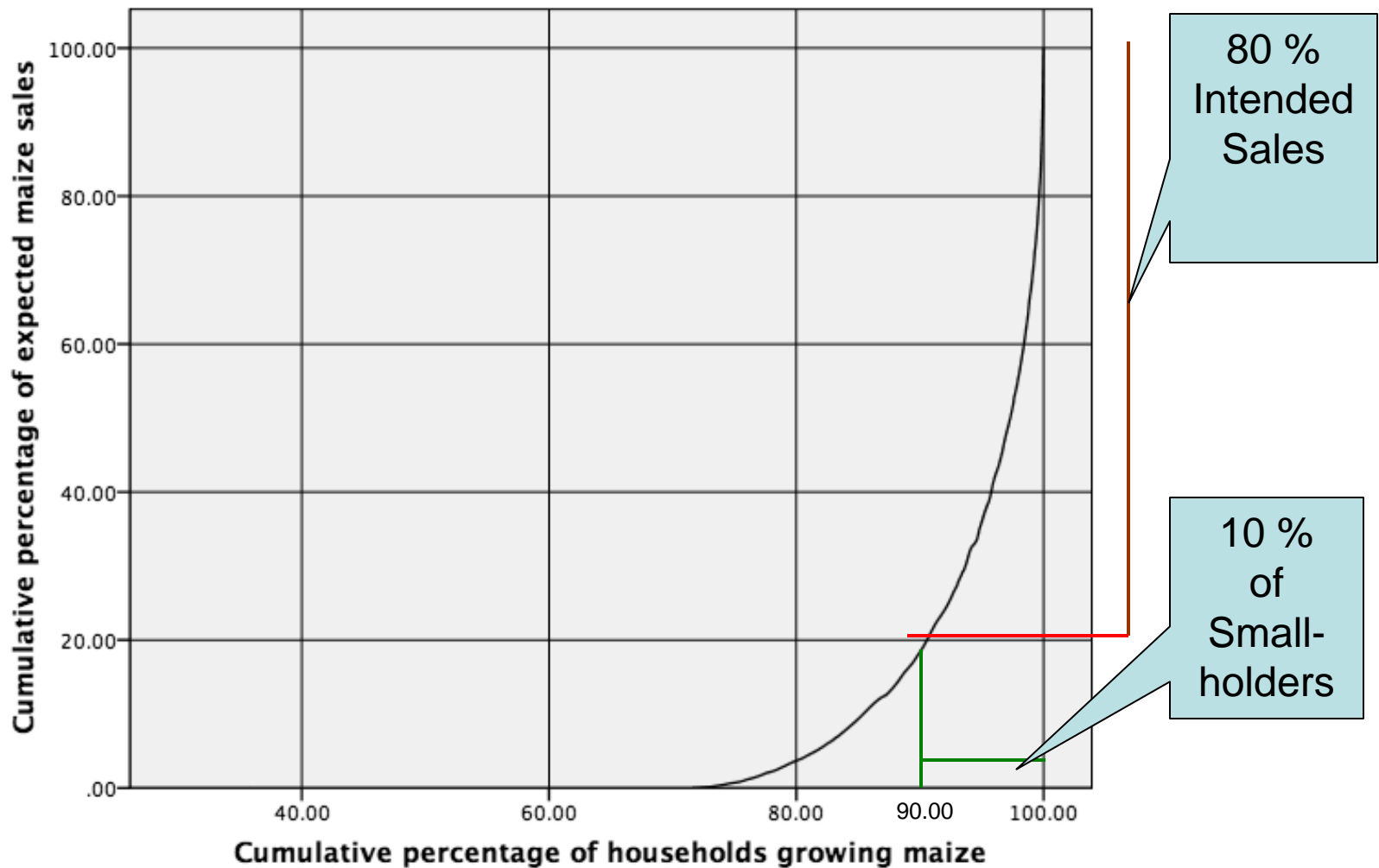
1. Smallholder Household-Level Findings - 2007/2008 CFS

	Small-Scale Holdings <i>2 unequal subgroups</i>		Medium-Scale Holdings	All Smallholders
Area cult. ha/hh -13crops	.03 - 1.7 ha	1.71 – 4.99 ha	5.0 – 19.7 ha	.01 – 20 ha
Number of smallholders	812,349	270,783	44,610	1,127,456
% smallholders	72 %	24 %	4 %	100 %
% Female headed HHs	27 %	14 %	10.5 %	21 %
% HHs not growing maize	26 %	7 %	3 %	20 %
Maize A. Planted ha/hh	.53	1.46	4.6	-
Maize A. Harvested ha/hh	.31	.83	2.5	-
% of Planted Area Harv.	53 %	57 %	54 %	57.5 %
Yield with fertilizer- mt/ha	2.8	2.6	2.7	-
Yield without fertilizer	1.7	1.5	2.0	-
National Production – mt	408,113	408,113	171,941	988,169
% National Production –mt	41.3 %	41 .3 %	17.4 %	100 %
% HHs Grow/Sell Maize	22 % (16% all hh)	39 % (36 % all hh)	51 % (49 % all hh)	27 % (22 % all hh)
National Sales - mt	103,562	153,559	99,991	357,112
% National Sales	29 %	43 %	28 %	100 %

Concentration of Maize Production by Small- & Medium-Scale Households in Zambia 2007/08



Concentration of Intended Maize Sales by Small- & Medium-Scale Households in Zambia 2007/08 - CFS Data



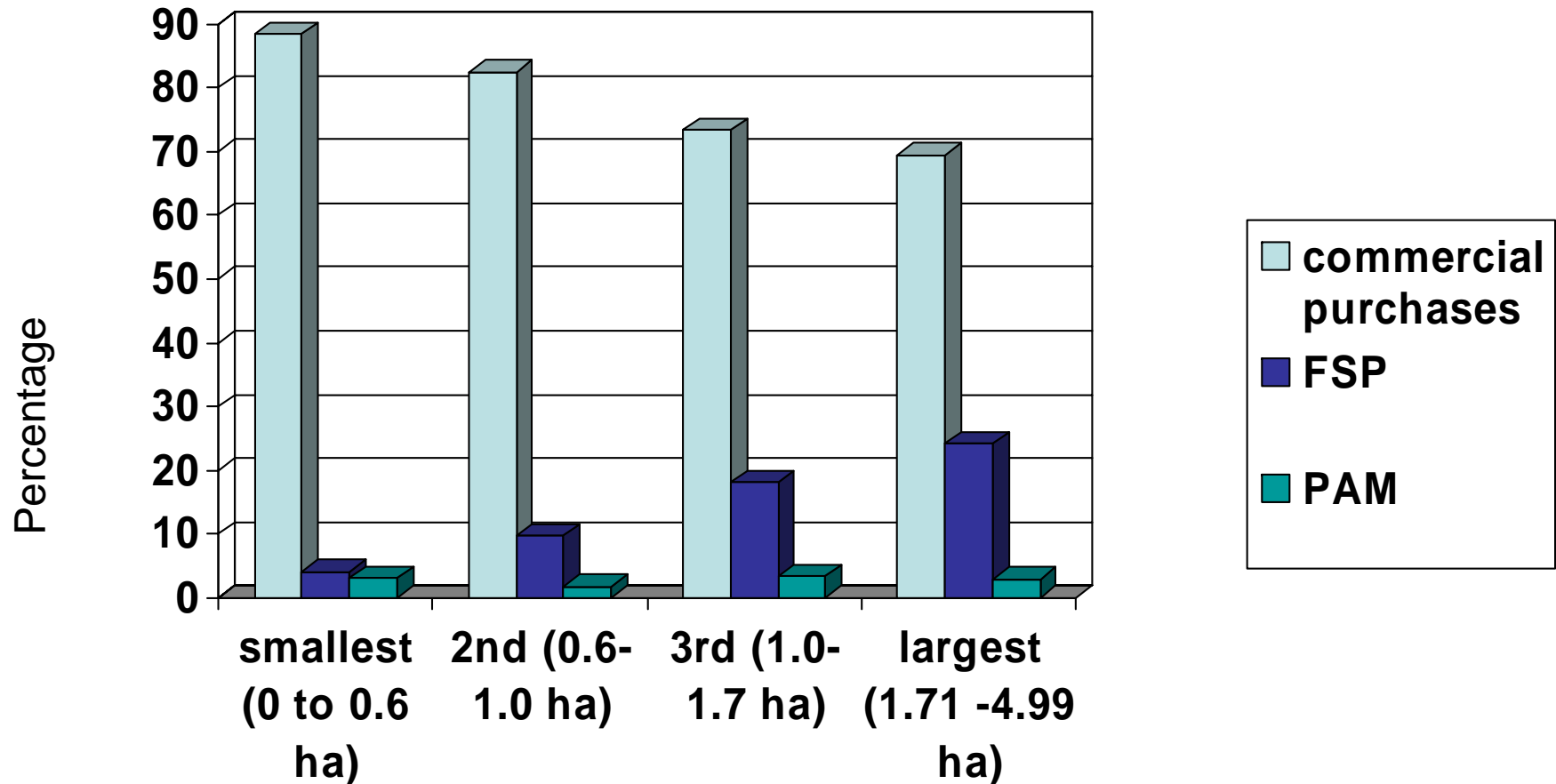
2. Smallholder Household-Level Findings - 2007/2008 CFS

	Small-Scale Holdings		Medium-Scale Holdings	All Smallholders
	<i>2 unequal subgroups</i>			
Area cult. ha/hh -13crops	.03 - 1.7 ha	1.71 – 4.99 ha	5.0 – 19.7 ha	.01 – 20 ha
Number of smallholders	812,349	270,783	44,610	1,127,456
% smallholders	72 %	24 %	4 %	100 %
% HHs Maize Growing HHs Using Fertilizer on Maize	24 % (18% all hh)	44 % (41% all hh)	59 % (57% all hh)	36 % (29% all hh)
Tot. Quant. Fertilizer Used	29,365 mt	33,639 mt	16,305 mt	79,151 mt
Acquisition of Fert by mt From Principal Source Used (-others)				
Quant. Commercial Fert mt	22,632 mt	23,525 mt	13,341 mt	59,559 mt
Quant. FSP Fertilizer	4,559 mt	8,000 mt	3000 mt	14,706 mt
Quantity of PAM Fert.	730 mt	968 mt	413 mt	2,110 mt
Acquisition of Fert % HH	100 %	100 %	100 %	
Commercial/Private	81 %	69 %	73 %	
FSP	11 %	24 %	19 %	
PAM	3 %	3 %	3 %	
Other Source	5 %	4 %	5 %	

Findings: Comparative Data On Source of Acquisition of Fertilizer for Maize

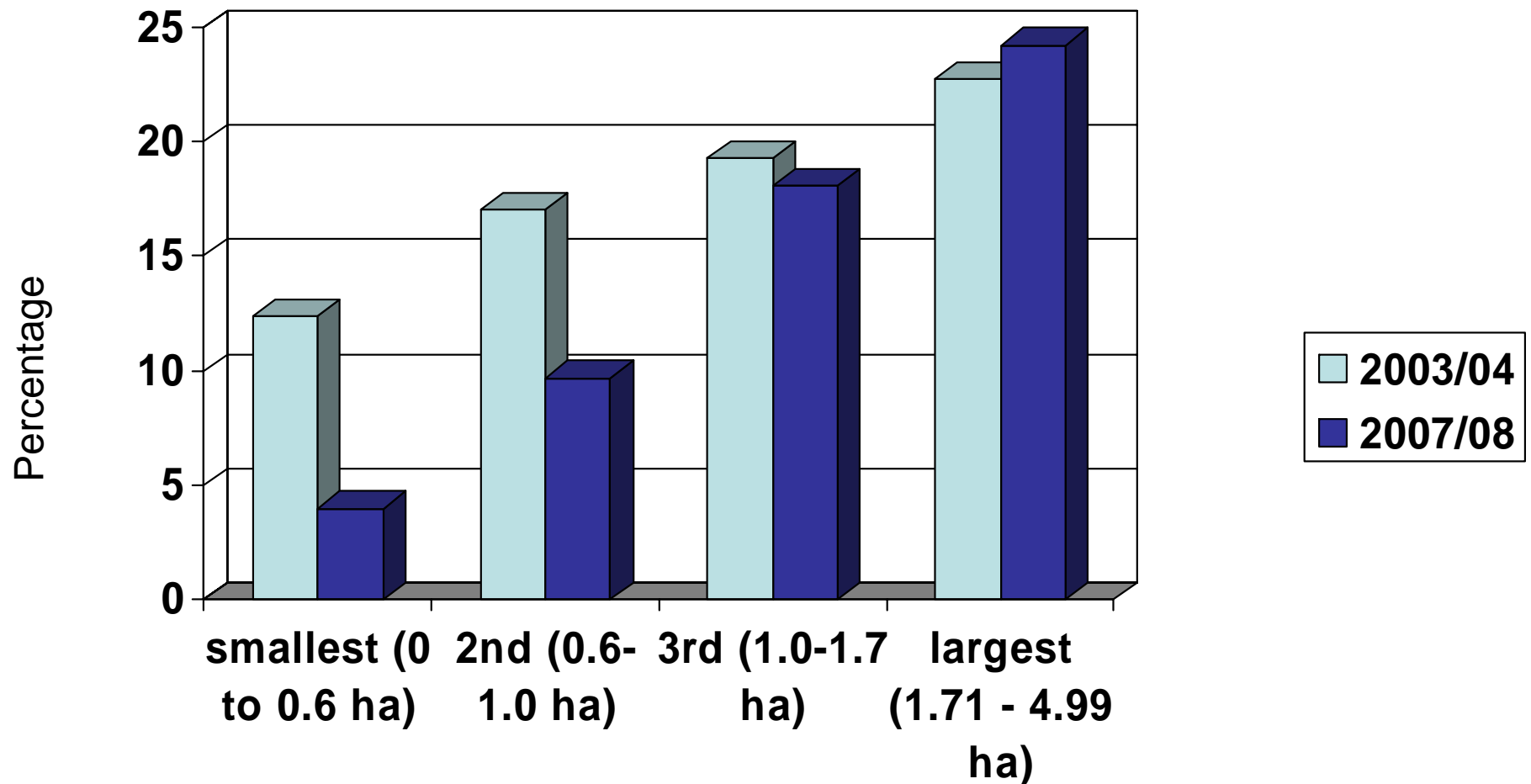
Crop Forecast Survey – Main Source of Fertilizer Identified as FSP		FSP Data on Program Accomplishments		CFS Main Source –of Fertilizer Identified as Private /Commercial	
# Small-holders	mt fertilizer	# small-holders	mt fertilizer	# small-holders	mt fertilizer
2003/2004 Production Season					
49,824	13,461	150,000	60,000	131,598	24,937
2007/2008 Production Season					
56,271	14,706	125,000	50,000	259,717	59,366

Fertilizer acquisition sources among small-scale farmers using fertilizer on maize, 2003/04 and 2007/08**



** note: NGOs and other farmers account for less than 6% of primary fertilizer acquisition source by small-scale famers

Percentage of small-scale holding using fertilizer that received from FSP, according to farm size



Some Options for Discussion – Focusing on Current Price & Supply Situation in Zambia

- Inform uncertainties about current supply & stocks
 - Commercial farmers stocks & intentions early maize and rain-fed maize for 2008/09
 - Industry stocks
 - FRA stocks
 - Smallholder production
 - Could there be shifting to eat cassava & sell maize in North
- Options to consider to deal with risky situation for next 1-2 production seasons (08/09 & 09/10)
 - Option contracts to import maize grain from South Africa in 08/09
 - Contracts with commercial farmers for early maize
 - Contracts with commercial traders & SH farmers for rain-fed production
 - Expand & target PAM to smallest smallholders
 - Explore options for contracting for additional maize seed
 - Expand programs on sweet potato and cassava improvements
 - Implement FSP adjustments to target better fertilizer assistance & strengthen private distribution networks
 - Try to increase % smallholder area harvested that was planted