

Agricultural Consultative Forum & Food Security Research Project

Sharing Evidence-Based Research Results with the
Parliamentary Committee on Agriculture and Lands

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ACF/FSRP/MSU

Ibis Gardens, Chisamba - 20/21 Feb, 2009

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Overview Of Presentation

- MACO Minister Chituwo suggests adding “Agriculture” to the suggested name change for FSP: *“Agriculture Input Subsidy Programme”*
- As background for the presentations this morning, Dr. Chapoto & I will review selected empirical evidence to help inform crop productivity issues.
- The information we will present supports the need to add an additional FSP name change: *“Agriculture Input Training Support Programme”*
- Overview - this empirical information demonstrates the importance of enhanced training support for raising productivity three key groups:
 - Small & medium scale farmers,
 - agricultural camp extension officers, and
 - agricultural input agro-dealers/stockists

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What Does the Empirical Data Say? Prior Performance & Challenges Facing Programmes to Raise Farmer Productivity on Maize and Other Crops:

- Empirical Data Sources
 - CSO/MACO Annual Crop Forecast Data
 - CSO/MACO/ Post Harvest Survey Data
 - CSO/MACO/FSRP PHS Supplemental Survey Data
 - CSO Living Standards Measurement Data

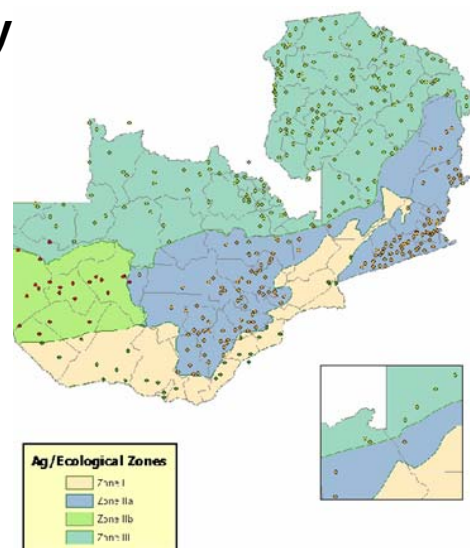
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CFS/PHS & Supplemental Surveys: Empirical Data on Smallholders in Zambia

– Nation Wide Random Survey

99/00, 02/03 & 07/08= 364 SEAs)

(CFS 06/07 and onwards = 640 SEAs



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

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Table 1. PHS & Supplemental Survey 2000 Maize Yield

Quintiles of HH maize yield	Zambia, 2000	
	Median HH maize yield (kg/ha)	Median difference between HH maize yield and district yield (kg/ha)
1 – low	422	-807
2	858	-446
3 – mid	1,373	0
4	2,060	534
5 – high	3,605	2,015
Total	1,373	0

Table 2. Mean Maize Yields on Hectares Planted – CSO/MACO CFS 07/08 Data

Basically Little Change in Mean National Yield on Maize Since 2000 Zambia
(2000 was 1,373 kg/ha compared to 1,266 kg/ha in 2007/2008)

Lots of low yield

Quintiles of maize yield	Category of Household (based mainly on total cropped area over 13 crops)						National Level Yield Mean	National Level Number of Households
	Category A (> 0 – 2.5 ha)		Category B (> 2.5 - < 5 ha)		Category C (> 5 – 20 ha)			
	Yield mt/ha	Number of Hhs	Yield mt/ha	Number of Hhs	Yield mt/ha	Number of Hhs		
1- low	56.21	129,464	80.32	40,530	77.87	9,309	62.79	179,303
2	417.15	146,695	413.04	44,517	405.88	8,483	415.76	199,696
3- mid	898.01	153,900	899.92	40,706	895.60	7,128	898.31	201,734
4	1,624.89	139,195	1,648.41	35,741	1,648.90	7,312	1,630.46	182,248
5- high	3,364.54	136,700	3,423.86	37,650	3,569.55	10,375	3,388.15	184,725
Total	1,264.65	705,955	1,235.79	199,146	1,399.82	42,606	1,264.66	947,707

CFS 07/08 – weighted data. All yields are "mean" estimates from smallholder declarations per plot planted/harvested.

2/5 of hhs with well above average yield

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Table 3. Mean Maize Yields on Hectares Planted by Use or Non-Use of Fertilizer

Low yield even with fertilizer use?

Fertilizer Use Category	Quintiles of maize yield	Category of Household (Based on total cropped area over 14 crops)						National Level Yield Mean	National Level Number of Households
		Category A (> 0 – 2.5 ha)		Category B (> 2.5 - < 5 ha)		Category C (> 5 – 20 ha)			
		Yield Kg/ha	Number of Hhs	Yield kg/ha	Number of Hhs	Yield Kg/ha	Number of Hhs		
Use Fertilizer YES	1- low	45.16	23,850	74.69	9,928	69.93	3,308	55.27	37,086
	2	422.88	28,470	437.41	13,328	417.46	3,678	426.70	45,475
	3- mid	936.62	33,920	915.77	17,552	922.73	3,597	920.07	55,069
	4	1,642.22	52,277	1,656.24	21,842	1,688.67	4,849	1,648.95	78,968
	5- high	3,537.01	86,263	3,549.52	30,189	3,665.60	8,716	3,548.98	125,169
Total	1,939.00	224,780	1,787.81	92,839	1,872.81	24,149	1,893.25	341,767	
Use Fertilizer NO	1- low	58.71	105,614	82.15	30,602	82.25	6,001	64.74	142,217
	2	415.77	118,225	402.63	31,189	397.01	4,806	412.53	154,220
	3- mid	887.10	119,980	887.91	23,155	867.96	3,531	886.77	146,685
	4	1,614.46	86,919	1,636.10	13,899	1,570.58	2,463	1,616.33	103,280
	5- high	3,069.58	50,437	2,915.40	7,461	3,064.64	1,658	3,050.13	59,557
Total	949.63	481,175	753.70	106,307	781.00	18,458	910.12	605,939	

CFS 07/08 – weighted data. All yields are "mean" estimates from smallholder declarations per plot planted/harvested.

Very good yields with fertilizer use for all categories

High yield without fertilizer use!

Table 4. Small & Medium Farmer Fertiliser Commercial/Private Purchases

Province	2007-2008 Agricultural Season		2006-2007 Agricultural Season	
	# HHs Purchasing	Kgs Purchased	# HHs Purchasing	Kgs Purchased
Central	70,619	27,637,336	78,356	28,630,569
Copperbelt	22,833	6,057,747	23,994	6,042,641
Eastern	64,931	14,145,682	60,373	14,490,123
Luapula	9,081	1,592,022	9,683	1,546,519
Lusaka	20,404	5,207,647	22,692	6,632,856
Northern	35,000	8,782,130	42,491	10,077,900
N western	11,327	2,909,187	10,247	2,797,628
Southern	49,270	22,772,477	52,029	23,628,493
Western	3,050	846,379	3,832	1,322,398
National	286,514	89,950,610	303,697	95,169,128 ⁹

Source 2008 Supplemental Survey Looking Back on 07/08 & 06/07 Seasons

Indicators Of Density of Commercial Seed/Fertiliser Stockists

Table 5.

Prov	HHs Growing Maize	HHs Using Commercial / Traded Seed	Percent HHs Using Commercial /Traded Seed	Distance to Fertilizer Retailer (kms) *	
				Mean	Median
Central	116,472	75,568	64.9%	36.5	15.0
Copperbelt	59952	33,226	54.8%	19.6	15.0
Eastern	214,866	39,179	18.1%	32.8	25.0
Luapula	62,026	11,909	20.8%	32.0	20.0
Lusaka	28,922	19,567	62.5%	26.9	22.0
N.Western	64,572	12,927	19.2%	51.6	35.0
Northern	129,707	51,863	42.0%	43.0	30.0
Southern	144,154	105,726	66.9%	38.5	35.0
Western	123,324	39,036	28.7%	33.0	20.0
National	943,995	389,002	42.4%	37.4	22.0 ¹⁰

Source: CFS 2007/08 * CSO/FSRP 3rd SS Survey

Table 6. By Province, Distance (Kms) to Nearest:

Province (Average Over SEAs Sampled In)	Boma	Place to Board Public Transport	Point to Receive Mobile Cell Network Services	Market to Sell Locally Produced Agric Products	Agri. Camp Officer
Central	50.2	7.0	4.4	12.0	10.9
Copperbelt	26.4	11.1	5.3	14.8	20.2
Eastern	36.3	8.2	6.1	15.0	6.4
Luapula	38.8	7.6	4.3	8.7	6.2
Lusaka	42.3	1.7	6.9	26.6	23.0
N. Western	68.9	26.3	15.4	27.6	18.5
Northern	63.8	12.6	26.3	27.3	8.3
Southern	44.0	20.5	4.8	20.4	11.4
Western	44.4	18.1	16.8	27.2	12.6
National Av.	46.1	12.6	10	20.0	13.1 ₁

Source: CSO/FSRP 3rd SS Survey

Table 7. HH Categorisation/Targeting Findings – 2004 SS

Indicators/Attributes	Means for Household Quintile Categories Ranked by Household Per Capita Farm Size (Cultivated + Fallow)					Overall Small-holders
	1 Low	2.	3. Mid	4.	5. High	
HH PC Land Hold Size ha/hh	.09	.19	.29	.46	1.11	.41 ha/hh
Number of smallholders	263,430	262,862	262,038	250,437	228,378	1,267,145
% smallholders	20.79	20.74	20.68	19.76	18.02	100 %
Average HH Assets ZMK	1,106 k	1,065 k	1,130 k	1,266 k	2,139 k	1,320,334 ZMK
Land size per HH ha/hh	.64	1.24	1.75	2.42	4.11	1.97
FSP As Source of Fertiliser	2,183	3,396	4,406	7,610	11,361	28,956 mt
FSP HHs Value of HH Assets	678 k	2,198 k	2,458 k	2,490 k	8,784 k	2,886,006 ZMK
Commercial Purchase Source	5,344	5,129	11,239	10,315	18,719	50,746 mt
Pur. HHs Value of HH Assets	4,271 k	3,784 k	5,226 k	4,299 k	6,287 k	1,964,370 ZMK
PAM Food Security Pk Source	398	782	1,177	913	1,037	4,307 mt
PAM HH Value of HH Assets	147 k	1,345 k	1,384 k	483 k	3,401 k	1,277,880 ZMK
Non-Fertiliser Users Assets	1,205 k	1,008 k	927 k	955 k	1,038 k	1,030,192 ZMK
Zambia Total Fert. Used mt	9,087	9,506	17,593	18,272	31,948	86,405 mt ₁₂

Table 8. Comparison of Small & Medium Farm Source of Acquisition of Fertiliser - Mostly for Maize

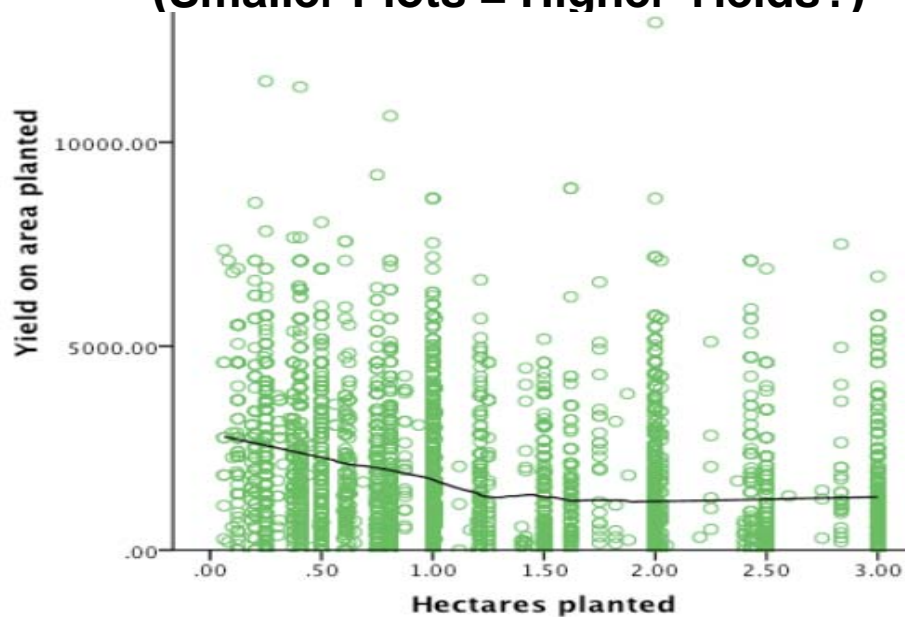
Year	Crop Forecast Survey/SS – Main Source of Fertilizer Identified as FSP		FSP Data on Program Accomplishments		CFS/SS Main Source –of Fertilizer Identified as Private/Commercial Purchase	
	# Small-holders	Metric Tons Fertilizer	# Small-holders	Metric Tons Fertilizer	# Small-holders	Metric Tons fertilizer
02/03 SS	102,450	28,956	120,000	48,000	207,080	50,476
03/04 SS	101,139	33,034	150,000	60,000	171,274	41,507
03/04 CFS	49,824	13,461	150,000	60,000	131,598	24,937
06/07 SS	164,229	61,248	210,000	84,000	303,697	95,169
07/08 SS	140,612	43,596	125,000	50,000	286,514	89,951
07/08 CFS	56,271	14,706	125,000	50,000	259,717	59,366
08/09 CFS			200,000	80,000		

Farmers' declarations FSP fertilizer received

FSP Records of fertilizer distributed to farmers

Farmers' declarations of open mkt purchases

CFS 07/08 Maize Yield With Fertiliser by Plot Size (Smaller Plots = Higher Yields?)



CFS 07/08 Fertiliser Dose Rate & Maize Yield

