

What do we know about smallholder input use in Mozambique?

Background information from
MADER's national agricultural surveys

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MSU's capacity building role....

- Areas of emphasis within MADER
 - (1990) National Market Information System (SIMA)
 - (1998) Department of Policy Analysis
 - (2001) Department of Statistics
 - (2004) Socio-economics unit for ag research (IIAM)
- Results
 - reliable and timely market information
 - value of policy analysis in policy decision making increasingly recognized and utilized
 - Mozambicans trained to take over TA roles: 2 PhD and 7 MS (USA), and 20 BS (in-service)
 - 50 policy briefs, 60 research papers, survey methods, training materials, internet research portal
- www.aec.msu.edu/agecon/fs2/index.htm



Presentation objective and road map..

- Provide background information on current levels of input use from nationally representative surveys

- Outline of the presentation
 - Data sources
 - Use of labor, animal traction, pesticide, fertilizer
 - Fertilizer costs and profitability for maize in Malawi



National agricultural sample survey data sources..

- National agricultural sample surveys:
 - TIA 96 (ag production, MSE's in 4 provinces)
 - CAP 2000 (ag resource base and production)
 - TIA 02 and 03 (rural household income)

- Sample characteristics
 - 5000 small/medium households, in 557 communities, in 80 districts
 - Representing 3.2 million households
 - Potential for comparison at provincial level, and for major agro-ecological zones

CASH CROP IMPACT ON SMALLHOLDER INCOMES 2001/2002

Cultura	Sinal esperado	Frequência	Renda	Pobreza (‘+’ mais pobre)	Percepção (‘+’ melhor ou ‘-’ pior)
Não cultiva Algodão	--	93%	--	--	--
Cultiva Algodão	+	7%	5%	-0.01	+0.02
Não cultiva Tabaco	--	96%	--	--	--
Cultiva Tabaco	+	4%	29%**	-0.12**	+0.20**

Mean Household Shares of Total Gross Household Income by Given Income Source, by Income Quintile, Mozambique 1996-2002 (IM)

Quintiles of Net HH Income/AE	Gross Crop Income		Livestock Sales Value		Wage Income		Net MSE Income	
	1996	2002	1996	2002	1996	2002	1996	2002
1 - low	93%	86%	2%	3%	3%	1%	3%	8%
2	88%	84%	2%	3%	1%	2%	8%	10%
3 - mid	81%	80%	1%	3%	2%	5%	16%	13%
4	79%	73%	1%	3%	3%	10%	17%	14%
5 - high	76%	49%	1%	2%	2%	23%	21%	26%
Total	84%	74%	1%	3%	2%	8%	13%	14%

Percent of Households Using Given Agricultural Inputs, Mozambique 1996-2002

Quintiles of Net HH Income/AE	Uses Chemical Fertilizer		Uses Manure Fertilizer		Uses Irrigation		Hires Ag Labor	
	1996	2002	1996	2002	1996	2002	1996	2002
1 - low	0%	1%	2%	5%	3%	8%	12%	8%
2	1%	2%	3%	4%	3%	9%	12%	10%
3 - mid	1%	3%	5%	5%	4%	10%	18%	14%
4	1%	4%	3%	6%	4%	11%	25%	17%
5 - high	4%	8%	3%	10%	6%	17%	28%	34%
Total	1%	4%	3%	6%	4%	11%	19%	16%

Use of hired labor

Province	TIA 2002 (2001/2002)	TIA 2003 (2002/2003)
Niassa	21	24
Cabo Delgado	22	15
Nampula	5	8
Zambezia	13	15
Tete	31	29
Manica	28	18
Sofala	18	29
Inhambane	19	12
Gaza	14	17
Maputo	21	21
Total	16	16

■ Highest districts:

- Tete-Macanga 81%
- Tete-Maravia 46%
- Tete-Tsangano 38%
- CD-Montepuez 38%
- Tete-Angonia 37%



Use of animal traction

Province	TIA 2002 (2001/2002)	TIA 2003 (2002/2003)
Niassa	0	0
Cabo Delgado	0	0
Nampula	0	0
Zambezia	0	0
Tete	35	31
Manica	11	13
Sofala	2	2
Inhambane	47	46
Gaza	44	49
Maputo	12	14
Total	11	11

■ Highest Districts

- Gaza-Mabalane 91%
- Inhambane-Morrumbene 74%
- Inhambane-Jangamo 65%
- Tete-Maravia 64%
- Gaza-Guija 62%



Use of pesticides

Province	TIA 2002 (2001/2002)	TIA 2003 (2002/2003)
Niassa	5	7
Cabo Delgado	10	9
Nampula	14	10
Zambezia	1	1
Tete	9	5
Manica	3	2
Sofala	3	8
Inhambane	4	2
Gaza	6	2
Maputo	4	2
Total	7	5

■ Highest districts

- Nampula-Mecuburi 41%
- Nampula-Monapo 36%
- CD-Namuno 33%
- Nampula-Meconta 23%
- Sofala-Maringue 23%

Use of inorganic fertilizer

Province	TIA 2002 (2001/2002)	TIA 2003 (2002/2003)
Niassa	7	12
Cabo Delgado	3	0
Nampula	3	0
Zambezia	1	1
Tete	15	12
Manica	3	3
Sofala	1	1
Inhambane	2	2
Gaza	5	2
Maputo	3	3
Total	4	3

■ Highest districts

- Tete-Angonia 42%
- Tete-Macanga 37%
- Tete-Tsangano 29%
- Gaza-Chokwe 24%
- Nampula-Monapo 15%

Inorganic fertilizer acquisition patterns

- Most common types applied were urea (39%) and NPK (35%)
- Majority obtained on credit (56%), 40% purchased for cash and 4% gift
- 50kg sack the most common unit (71%), but 22% obtained by kilogram
- Median number of sacks acquired = 3
- Median cost of \$0.90/kg of nutrient

Inorganic fertilizer use patterns

- First priority in fertilizer application went to tobacco in about half of all applications, while the other half were allocated to a variety of crops
- Tobacco growers gave second priority to maize while not tobacco growers emphasized a variety of horticultural crops

Profitability of fertilizer use on maize in Malawi in 1991

Parameter	Hybrid maize with fertilizer	Local maize no fertilizer
Yield (kg/ha)	2,774.00	745.00
Producer Price (MK/kg)	0.27	0.27
Harvest and transport cost (MK/kg)	0.04	0.04
Gross Margin (MK/ha)	638.02	171.35
Seed cost (MK/ha)	37.50	6.50
Fertilizer cost (MK/ha)	196.35	0.00
Interest charges (MK/ha)	28.06	0.00
Variable costs (MK/ha)	261.91	6.50
Returns to land (MK/ha)	376.11	164.85
Returns to land (US\$/ha)	137.27	60.16
Returns to labor (MK/day)	6.07	3.23
Returns to labor (US\$/day)	2.21	1.18



Profitability of fertilizer use in Malawi in 1996 *

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Producer Price (MK/kg)	0.24	0.27
Harvest and transport cost (MK/kg)	0.04	0.04
Gross Margin (MK/ha)	561.88	150.90
Seed cost (MK/ha)	77.28	10.53
Fertilizer cost (MK/ha)	358.98	0.00
Interest charges (MK/ha)	174.50	0.00
Variable costs (MK/ha)	610.75	10.53
Returns to land (MK/ha)	-48.88	140.37
Returns to land (US\$/ha)	-17.84	51.23
Returns to labor (MK/day)	-0.79	2.75
Returns to labor (US\$/day)	-0.29	1.00

* constant 1991 prices