



*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

## USING EMPIRICAL INFORMATION IN THE ERA OF HIV/AIDS TO INFORM MITIGATION AND RURAL DEVELOPMENT STRATEGIES: SELECTED RESULTS FROM AFRICAN COUNTRY STUDIES\*

By

David Mather, Cynthia Donovan, Thomas Jayne and Michael Weber\*\*

Food Security III Cooperative Agreement between U.S. Agency for International Development, Global Bureau,  
Economic Growth and Agricultural Development Center, Office of Agriculture and Food Security and  
Department of Agricultural Economics, Michigan State University

**RESEARCH QUESTION:** It is widely believed that the HIV/AIDS epidemic will have substantial socioeconomic impacts in Sub-Saharan Africa, including on the agricultural sector. While the implications of the disease for research in the health fields are well established, there is a growing awareness that the spread of HIV/AIDS is influenced by economic and social conditions, and that the economic consequences of the disease can be influenced by policies and institutions that affect behavior. Agricultural economists along with other social and biological scientists have an important role to play in anticipating these consequences and identifying their implications as part of the work needed to better inform agricultural and rural development policy.

The determination of mitigation policies has lacked an empirical foundation regarding which households are most affected, how those households respond to illness and death, and the interventions that would best fit into their needs. While the few available micro-level and purposive studies have provided valuable information, such insights are limited in their ability to be extrapolated to the national level, due to small, concentrated samples, often without a representative non-affected population to

provide a counterfactual or a context for interpreting the demographic and welfare characteristics of affected individuals and households.

**FINDINGS:** This paper summarizes empirical results from a synthesis of a set of country studies undertaken by agricultural economists at Michigan State University and at partner institutions in five African countries, each of which is based upon large-scale rural household surveys.

The survey findings, in contrast to the general assumption that HIV-related mortality is typically associated with household heads/spouses, show that in four of the five countries studied, a majority of deceased prime-age (PA) adults are not household heads/spouses, and thus not likely to be the primary breadwinners of the household (Table 1.) This suggests that the potential magnitude of rural PA mortality on rural household agricultural and off-farm incomes may be less than those predicted by some of the literature.

We also find that the *ex post* land/labor ratios and total income of rural households directly affected by PA adult mortality are more heterogeneous than implied by some of the literature. Although affected

**Table 1. Gender and Household Position of Deceased and Healthy Prime-age Adults by Country**

Country	Household Position	All Adults		Male Adults		Female Adults	
		Deceased		Deceased		Deceased	
		Non-Afflicted	due to illness	Non-Afflicted	due to illness	Non-Afflicted	due to illness
		---- column % ----		---- column % ----		---- column % ----	
Kenya	Head/Spouse	29	44	24	59	34	27
	Other	<u>71</u>	<u>56</u>	<u>76</u>	<u>41</u>	<u>67</u>	<u>73</u>
		100	100	100	100	100	100
Malawi	Head/Spouse	47	54	38	55	54	54
	Other	<u>53</u>	<u>46</u>	<u>62</u>	<u>45</u>	<u>46</u>	<u>46</u>
		100	100	100	100	100	100
Mozambique	Head/Spouse	65	27	60	40	69	13
	Other	<u>35</u>	<u>73</u>	<u>40</u>	<u>60</u>	<u>31</u>	<u>87</u>
		100	100	100	100	100	100
Rwanda	Head/Spouse	51	49	47	56	53	44
	Other	<u>49</u>	<u>51</u>	<u>53</u>	<u>44</u>	<u>47</u>	<u>56</u>
		100	100	100	100	100	100
Zambia	Head/Spouse	69	46	62	49	76	44
	Other	<u>31</u>	<u>54</u>	<u>39</u>	<u>51</u>	<u>24</u>	<u>56</u>
		100	100	100	100	100	100

Source: Mather et al. (2004b); Chapoto and Jayne (2005).

households may well have suffered negative effects on household crop production and income, most affected households have similar *ex post* land/labor ratios and income levels as compared to households without a death (Table 2.) However, households which have suffered the death of household head or spouse form a particular subset of affected households which tend to have lower *ex post* land/labor ratios and incomes relative to non-affected households, and are thus more likely to be in need of assistance.

The results question the usefulness of a homogeneous conceptualization of 'affected households,' especially in the context of proposals for targeted assistance and technology development. The implications of this heterogeneity are important for the design of HIV/AIDS mitigation strategies, as well as for considering the HIV/AIDS epidemic within the context of rural poverty alleviation and growth strategies. For

example, indicators beyond 'adult mortality' are required to help to identify affected households most in need of immediate assistance (such as households with a male head death) as well as what technology is most appropriate and beneficial for 'affected households'.

Yet there are potential mitigation responses which appear to be appropriate to the needs of hardest-hit households while also benefiting other poor but non-affected households at the same time: improved land tenure; LSTs for water, fuel and food processing; redressing gender bias in extension and education and thus access to cash crop and non-farm income opportunities. While it is important to provide a safety net for the hardest-hit households to protect their assets, investing in pro-poor agricultural productivity growth is one of the most effective means to respond to the HIV/AIDS epidemic.

**Table 2. Selected *Ex post* Characteristics of Rural Households With and Without Deaths: Mozambique, Rwanda, and Zambia.**

		Mozambique (2002)				Rwanda (2002)				Zambia (2000)			
Household Characteristic		Non-Affected HHs <sup>1</sup>	HH with PA Death <sup>2</sup>	HH with Head / Spouse Death	HH with Other Death	Non-Affected HHs <sup>1</sup>	HH with PA Death <sup>2</sup>	HH with Head / Spouse Death	HH with Other Death	Non-Affected HHs <sup>1</sup>	HH with PA Death <sup>2</sup>	HH with Head / Spouse Death	HH with Other Death
		----- mean value -----				---- mean value ----				---- mean value ----			
Household Size (persons)		5.2	4.8	4.3	5.0	4.9	5.2	5.5	4.8	5.7	6.5	5.3	6.7
No. of Prime-Age Adults (persons)		2.3	2.0	1.6	2.1	2.5	2.6	2.8	2.5	2.6	2.9	2.3	3.1
		----- median value -----				----- median value -----				----- median value -----			
Cultivated Land Area (hectares)		1.36	1.10	1.20	1.08	0.63	0.57	0.59	0.54	1.43	1.56	1.46	1.58
Cultivated Land Area/capita (ha/cap)		0.31	0.28	0.33	0.26	0.15	0.13	0.13	0.13	0.30	0.30	0.32	0.30
% cultivated area in roots/tubers (%)		26%	30%	42%	25%	46%	45%	50%	38%	55%	52%	51%	52%
Area/capita in roots/tubers (ha/cap)		0.079	0.082	0.148	0.057	0.065	0.057	0.065	0.047	0.171	0.148	0.165	0.140
Total Income ('000 local currency)		3,114	2,673	2,118	3,293	212	191	209	159	950	1,006	808	1,108
Total Income/capita ('000 l.c./cap)		731	555	491	614	45	39	44	36	192	186	173	193
		-- % of HH in each quartile --				-- % of HH in each quartile --				-- % of HH in each quartile --			
Provincial quartiles of HH per Capita Income (%)	Lowest	25.0	25.3	22.2	27.9	24.5	31.1	32.6	30.7	24.3	27.6	28.4	27.3
	Mid-low	24.2	30.9	44.5	26.1	24.8	26.1	19.7	33.5	25.2	22.7	24.3	22.0
	Mid-high	25.5	20.5	14.9	20.2	25.0	24.6	22.7	26.5	25.0	23.8	20.6	25.1
	Highest	<u>25.3</u>	<u>23.3</u>	<u>18.3</u>	<u>25.7</u>	<u>25.7</u>	<u>18.2</u>	<u>25.1</u>	<u>9.4</u>	<u>25.5</u>	<u>25.9</u>	<u>26.7</u>	<u>25.6</u>
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of Households in analysis		1,317	202	44	138	657	64	35	30	4,606	725	147	536

Sources: Authors' estimates based on data from TIA 2002 Rural Household Survey (Mozambique); FSRP/DSA Rural labor and deaths survey, 2002 and FSRP/DSA Demographics Survey, 2001 and Household Living Standards Survey, 2002 (Rwanda) / Supplement to PHS 1999/2000 (Zambia).

notes: 1. Column only includes households in villages with at least one PA death.

2. PA death occurred between 1999-2002 (Mozambique, Rwanda) or 1996-2000 (Zambia).

The results also demonstrate the value of representative survey research in measuring impacts of adult mortality within the context of representative sample of the non-affected population. Combining the investigation of the characteristics of individuals and households affected, and demographic and mortality data, with production and income data collected regularly in household surveys is a relatively cost-effective way to investigate the (pre-and/or post-death) characteristics of affected individuals and households and measure mortality impacts.

Important areas for additional future research are time use studies of adults and children, which provide information vital for the assessment of the potential costs and benefits of alternative labor-saving technologies. There is also widespread recognition that AIDS may affect rural communities in ways not always detectable at the household level. Future research is therefore needed to better understand the community-level impacts of AIDS-related mortality.

-----  
\* This Policy Synthesis is an executive summary of an article by the same name to be presented at the AAEA summer meetings in July of 2005, and to be published in the AJAE in December of 2005. See MSU IDWP No. 75, downloadable, at:  
<http://www.aec.msu.edu/agecon/fs2/papers/recent.htm> .

This brief is also a summary of a much larger series of studies described in detail in MSU IDWP No. 73, downloadable at:  
<http://www.aec.msu.edu/agecon/fs2/papers/idwp82forreview.pdf>  
and this larger report is also summarized in MSU Policy Synthesis No 71, downloadable at:  
[http://www.aec.msu.edu/agecon/fs2/polsyn/number71\\_draft.pdf](http://www.aec.msu.edu/agecon/fs2/polsyn/number71_draft.pdf)

For access to the full set of reports and methods used by MSU and African

collaborators, consult the following location on the FS III website: *Effects of Prime-Age Adult Mortality on Rural Households in Africa* at:

[http://www.aec.msu.edu/agecon/fs2/adult\\_death/index.htm](http://www.aec.msu.edu/agecon/fs2/adult_death/index.htm)

\*\* Mather and Donovan are Assistant Professors, and Jayne and Weber are Professors, International Development, Department of Agricultural Economics, Michigan State University. The authors gratefully acknowledge the contributions of Antony Chapoto, Edward Mazhangara, Elliot Mghenyi, and Kyeongwon Yoo to a working paper from which the empirical results shown here are drawn (Mather et al, 2004b). The authors also thank colleagues at Tegemeo Institute (Kenya), Bunda College and the Ministry of Agriculture (Malawi), Ministry of Agriculture, Livestock and Forestry (Rwanda), Ministry of Agriculture and Rural Development (Mozambique) and the Ministry of Agriculture and Cooperatives and The Central Statistical Organization (Zambia), as well as a number of in-country researchers. Funding was provided by the above organizations and by the Food Security III Cooperative Agreement (GDG-A-00-000021-00) between Michigan State University and the United States Agency for International Development, through the Bureau for Economic Growth, Agriculture and Trade's Office of Agriculture and Food Security with supplemental funding from the Africa Bureau's, Office of Sustainable Development, as well as from USAID/Kenya in collaboration with Tegemeo Institute/Egerton University under the Tegemeo Agricultural Monitoring and Policy Analysis Project, and from USAID Malawi, Mozambique, Rwanda and Zambia.

## REFERENCES:

Mather et al. 2004b: See: MSU IDWP No. 75, downloadable, at:  
<http://www.aec.msu.edu/agecon/fs2/papers/recent.htm> .

Chapoto and Jayne. 2005. See FSRP Research Report, downloadable at:  
<http://www.aec.msu.edu/agecon/fs2/zambia/index.htm>