HIV/AIDS and the Agricultural Sector: What do We Know, and What do We Need to Know

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Effective Response to HIV/AIDS Requires Knowledge of:

- How individuals, households, & communities respond to AIDS-related illness and mortality
- 20+ years after the onset of the disease, the empirical foundation for the design of programs is still weak
Major Research & Policy Questions:

- If Donors Provided an Additional $500 million to Combat AIDS, how should it be allocated:
  - To ARV treatment?
  - To improved nutrition programs?
  - To agricultural & rural development?
  - To investment in vaccines?
  - To community-driven development programs?
- Is the “New Variant Famine” scenario real?

Outline

- PART I: what do we know about how households respond to prime-age death
- PART II: broader trends affecting the appropriateness of various responses to HIV/AIDS
- PART III: consideration of “response strategies” to improve resistance / resilience
### Characteristics of MSU household surveys

<table>
<thead>
<tr>
<th>Country</th>
<th>Sample size</th>
<th>Year(s) of surveys</th>
<th>Panel or cross-sectional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>n=1422, n=1266</td>
<td>1997, 2000, 2002</td>
<td>Panel</td>
</tr>
<tr>
<td>Malawi</td>
<td>n=420, n=372</td>
<td>1990, 2002</td>
<td>Panel</td>
</tr>
<tr>
<td>Mozambique</td>
<td>n=4908</td>
<td>2002</td>
<td>Cross-section</td>
</tr>
<tr>
<td>Rwanda</td>
<td>n=1395</td>
<td>2002</td>
<td>Cross-section</td>
</tr>
<tr>
<td>Zambia</td>
<td>n=6922</td>
<td>2001, 2004</td>
<td>Panel</td>
</tr>
</tbody>
</table>

#### Map of Zambia

- **Western**
- **Lusaka**
- **Central**
- **Luapula**
- **Copperbelt**
- **Northern**
- **Southern**
- **Eastern**
- **Northwestern**

**HIV+ prevalence rate, 1999 vs. Adult mortality rate 1996-2001**
What “danger signs” should we be seeing?

<table>
<thead>
<tr>
<th>Expected</th>
<th>Evidence?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area cultivated ↓</td>
<td>Mixed</td>
</tr>
<tr>
<td>Agricultural production ↓</td>
<td>Mixed</td>
</tr>
<tr>
<td>Child school attendance ↓</td>
<td>Yes</td>
</tr>
<tr>
<td>Reverse urban → rural labor migration</td>
<td>Yes</td>
</tr>
<tr>
<td>Agricultural labor income ↓</td>
<td>??</td>
</tr>
</tbody>
</table>

Finding #1

Afflicted households/individuals are not random

- Early 1990s: positively correlated with income, wealth, education, mobility
- Still the case in some countries (e.g., Zambia)
- Recent evidence in other countries: increasingly concentrated among the poor (e.g., Kenya, South Africa)
### Income Status (2000) of Households Incurring a Prime-age Death between 2000-2003, rural Zambia

<table>
<thead>
<tr>
<th>Income Category</th>
<th>Deceased prime-age males</th>
<th>Deceased prime-age females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorest 25%</td>
<td>21.0</td>
<td>24.7</td>
</tr>
<tr>
<td>2nd quartile</td>
<td>20.9</td>
<td>20.4</td>
</tr>
<tr>
<td>3rd quartile</td>
<td>32.2</td>
<td>27.6</td>
</tr>
<tr>
<td>Wealthiest 25%</td>
<td>25.9</td>
<td>27.3</td>
</tr>
</tbody>
</table>

### Finding 2: 60% of PA mortality is women

Prevalence of PA mortality, by sex and income, Zambia, 2001-2004

![Graph showing prevalence of PA mortality by sex and income]
Finding #3: Certain factors affect the magnitude of impacts on households

- Initial level of household vulnerability (assets, wealth)
- Sex of the deceased
- Position in household of deceased
- Ability of household to attract new members
- Characteristics of adults remaining in household (e.g., skills, education level)

Gender Effects of Mortality on Crop Cultivation

- In Kenya:
  - Death of male head ➔ 0.9 acre to cash crops (e.g., sugarcane, horticulture)
  - Death of female head ➔ 1.8 acre to cereals, tubers
Finding #4: Household Composition Responds to Mortality

- Death of adults other than head/spouse:
  - draws additional members into household
- Death of head/spouse
  - Less ability to attract additional members
  - More likely that other young members will leave household

Finding 5: For afflicted households, cash constraints often become the limiting factor in crop production

- Drawing non-resident members back to the farm can sever off-farm income sources
  - Kenya: death of head or spouse associated with $120 and $260 per year reduction in off-farm income
Finding 6: Effects Most Severe on the Poor

- Very few significant effects detected among households in top half of asset distribution
- Effects on ag production and non-farm income were larger and more highly significant among the poor

Part 2: Major Exogenous Trends Influencing Policy Options for AIDS Mitigation

- Population growth trends
- Decreasing farm size
- Rural → urban migration (“push” effect)
  - underemployment in burgeoning informal sector
- Partial dismantling of fertilizer + maize production subsidies in E. and S. Africa
Projected Population in the 7 Most Highly Affected Countries, “With AIDS” vs. No-AIDS Scenario, by Sex and Age Group, 2025.

Population Size, 2000 vs. 2025 (projected)
Seven Most Highly Afflicted Countries
Trend #2: Evidence of population shifting into agriculture, 1990 and 2000 Census, Zambia

<table>
<thead>
<tr>
<th></th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>+33.9</td>
</tr>
<tr>
<td>Urban pop</td>
<td>+18.7</td>
</tr>
<tr>
<td>Rural pop:</td>
<td></td>
</tr>
<tr>
<td>agricultural</td>
<td>+43.6</td>
</tr>
<tr>
<td>non-agric.</td>
<td>-47</td>
</tr>
</tbody>
</table>

Farm Size Distribution – Smallholder Sector only
Implications - I

• Not clear that afflicted households need or should be urged to use:
  – labor-saving crops
• Why?
  – crops that reduce labor input per acre may sacrifice income and food produced per acre
  – Must take into account population density and extent of under-employed labor
  – Conventional wisdom hasn’t adequately recognized the effect of underemployment in informal sector on urban → rural labor migration

Is the Cassava Boom Related to AIDS-related Labor Shortages?

<table>
<thead>
<tr>
<th></th>
<th>Rwanda</th>
<th>Mozambique</th>
<th>Zambia</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of area cultivated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-afflicted</td>
<td>35</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>male death</td>
<td>30</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>female death</td>
<td>25</td>
<td>20</td>
<td>15</td>
</tr>
</tbody>
</table>

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Implications - II

• Not clear that afflicted households should be urged to grow:
  – “more nutritious” foods
• Why?

<table>
<thead>
<tr>
<th>Crop</th>
<th>Nutritional units / kg produced</th>
<th>Kgs produced per acre</th>
<th>Nutritional units per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop X</td>
<td>10</td>
<td>100</td>
<td>1,000</td>
</tr>
<tr>
<td>Crop Y</td>
<td>5</td>
<td>250</td>
<td>1,250</td>
</tr>
</tbody>
</table>
• Crops that maximize nutrition / kg produced ≠ maximize nutrition / acre or income / acre

• need to take account of which crops provide greatest return to land / labor in a given area

PART 3: What To Do?

1. Assist in creation of *capital assets* in agricultural production
   – Loss of cash likely to be *the* greatest threat to maintenance (or improvement) in agricultural productivity
2. Promote *out-grower arrangements* for interlocked credit-input-crop sale, with specific arrangements for female-headed households
   - e.g., remove restriction on title deed
   - Use the cash crop scheme as mechanism for firm to recover input loans for food crops
   - Will help improve afflicted households’ access to cash inputs

3. Need to Overcome Gender Barriers to Women’s Participation in Training Programs for Cash Crops
   - Experience with master farmer training of cash crop husbandry practices for women
4. Skill training programs targeted at young women and widows may reduce economic need for risky behaviors
   - “do you want us to die now or die later”?
   - BUT: evidence is not showing that female mortality is inversely related to income/wealth

5. Modify rules governing women’s rights and access to resources
   • e.g. work with communities to recognize that it is in the communities’ interest for widows to retain access to land after husband’s death
   • Will require shifts in consciousness
   • Recognition that communities’ resilience to AIDS will require more equality for vulnerable groups.
**Need for appropriate balance between:**

- Investing in long-term productivity growth (education, infrastructure, markets) vs
- Targeted assistance to affected HHs
- Poverty and HIV/AIDS are mutually reinforcing → hence pro-poor productivity growth is crucial
- Resources are scarce: which investments provide greatest benefits?