Food Staples and African Farmers: 
An Investment Opportunity in a World of Rising Prices

Presentation to 
USAID/EGAT Bureau, Ronald Reagan Bldg. 
Washington DC. 
March 26, 2008

Presented by: Cynthia Donovan

Evolution of MSU work in Mozambique

- 1990-97: Relief to Development
  - Establishment of market information system (SIMA)
  - Applied studies of smallholder farming, market evolution and performance
  - Establishment of a policy analysis unit in Ministry of Ag
  - National rural household income survey capacity
- 2004 to present: Tackling low agric productivity
  - Establishment of socio-economics capacity within agricultural research
  - Linkages between technology, policy and markets
MSU Food Security Research elsewhere: A few examples

- **Mali:** Market information systems; links between income and nutrition; food policy reforms (esp. rice)
- **Zambia:** Agriculture sector expenditure analysis; impacts of mortality of adults; food policy analysis; assessment of fertilizer programs and conservation farming
- **Kenya:** Horticultural markets and critical role of traditional markets; fertilizer program evaluation; impact of mortality of adults; shifting into/out of poverty
- **Malawi:** Input subsidy program evaluation
- **Regional and cross-country** work in West, East, Central and Southern Africa on trade, vulnerability, food aid, …
- **Previously:** Rwanda, Ethiopia, Senegal

Objectives of this Presentation

To share key results from rural income analysis in Mozambique to inform the following questions:

- What changes have occurred in the composition of rural household income?
- Looking forward, what kinds of investment are most relevant for improving food security in the medium term?
Conclusions

- Rural households retain high % of food crop production; limited participation in high value crop sales; very few farmers with high-value crop sales and/or significant food crop sales
- Rural households will remain unable to take advantage of higher return activities, both farm and non-farm, w/o increased food crop productivity
- Current trends in world food prices will exacerbate the problem as price shifts and policy decisions add uncertainty for food markets in sub-Saharan Africa

Outline of the Rest of the Presentation

- Background on rural household income surveys (TIA)
- Changing patterns of rural household income and food security
- Implications for strategies to achieve food security
Content of TIA

- Households demographics (labor)
- Agriculture production and marketing
- Land and other assets
- Livestock holdings
- Agricultural technology use
- Selected food security indicators
- Non-farm income sources (2002 and 2005)
Current Coverage, TIA07

94 districts

6,000+ households interviewed

3.6 million households represented

Panel Data and Their Usefulness

- Yet another big survey….
- Combining ag with non-ag, income with production and assets

→ Dynamics of households
  Show change in production, income and poverty, analysis to identify sources of change
  Rural households: both agricultural and non-agricultural components are critical to understand growth or lack of it
Household Characteristics, 2005

Female headed Households (%) 27.3
Household size (number) 5.3
HH Head's years of education 2.0
Total landholding (has.) 2.0
Landholding per AE (has.) 0.6

Percentage of Households using …
Animal Traction 9%
Inorganic Fertilizers 4%
Improved food crop variety 7%
Credit from NGO, gov't., private, etc. 4%

Percentage of Households owning …
Cattle 5%
Poultry 59%
Radio 53%

Source: TIA, 2005

Figure 1: Distribution of Household Income per Adult equivalent (AE), 2005

Mean = 3,344 MTN / AE
(approx US$ 140 / AE)
Median = 1515 MTN / AE
(approx US$ 63 / AE)
### Table 1: % Change in mean annual household income per adult equivalent 1996-2002 & 2002-5

<table>
<thead>
<tr>
<th>Y Quintile</th>
<th>1996-2002</th>
<th>2002-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (low)</td>
<td>63</td>
<td>-22</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>-12</td>
</tr>
<tr>
<td>3 (med)</td>
<td>31</td>
<td>-2</td>
</tr>
<tr>
<td>4</td>
<td>38</td>
<td>11</td>
</tr>
<tr>
<td>5 (high)</td>
<td>88</td>
<td>26</td>
</tr>
<tr>
<td>TOTAL</td>
<td>65</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: TIA 96; TIA 02; TIA 05

### Table 2: % Change in annual median household income per adult equivalent 1996-2002 & 2002-5

<table>
<thead>
<tr>
<th>Y Quintile</th>
<th>1996-2002</th>
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</thead>
<tbody>
<tr>
<td>1 (low)</td>
<td>66</td>
<td>-25</td>
</tr>
<tr>
<td>2</td>
<td>39</td>
<td>-14</td>
</tr>
<tr>
<td>3 (med)</td>
<td>30</td>
<td>-1</td>
</tr>
<tr>
<td>4</td>
<td>37</td>
<td>11</td>
</tr>
<tr>
<td>5 (high)</td>
<td>59</td>
<td>17</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>-1</td>
</tr>
</tbody>
</table>

Source: TIA 96; TIA 02; TIA 05
Figure 2: Bicycle Ownership 1996, 2002 and 2005

![Bicycle Ownership Graph](image)

Figure 3: Share of farm income in total net household income (%)

![Share of Farm Income Graph](image)

Table 3: Household participation in crop markets 2005

<table>
<thead>
<tr>
<th>Y quintile</th>
<th>Crop share in HH Y</th>
<th>% HH who retain food</th>
<th>% HH who sell food</th>
<th>% HH sell high value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (low)</td>
<td>0.72</td>
<td>93</td>
<td>33</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>0.70</td>
<td>98</td>
<td>49</td>
<td>28</td>
</tr>
<tr>
<td>3 (med)</td>
<td>0.66</td>
<td>98</td>
<td>52</td>
<td>33</td>
</tr>
<tr>
<td>4</td>
<td>0.61</td>
<td>96</td>
<td>56</td>
<td>38</td>
</tr>
<tr>
<td>5 (high)</td>
<td>0.46</td>
<td>95</td>
<td>54</td>
<td>40</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0.63</td>
<td>96</td>
<td>49</td>
<td>32</td>
</tr>
</tbody>
</table>

Table 4: Crop income share by crop market 2005

<table>
<thead>
<tr>
<th>Y quintile</th>
<th>Mean Crop Income (MTN / AE)</th>
<th>% share of retained food crops</th>
<th>% share of sold food crops</th>
<th>% share of high value crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (low)</td>
<td>250</td>
<td>86</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>650</td>
<td>84</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>3 (med)</td>
<td>1144</td>
<td>83</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>1945</td>
<td>83</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>5 (high)</td>
<td>4905</td>
<td>81</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2114</td>
<td>83</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>
Figure 4: Distribution of Household Land Holdings


Figure 5: Probability of Selling Crops, by Household Land Holdings

Figure 6: Sales of maize, tobacco and cotton, by Household land holdings

Table 5: Household use of improved crop production practices 2005

<table>
<thead>
<tr>
<th>Y quintile</th>
<th>% buying improved seed</th>
<th>% row planting</th>
<th>% crop rotation</th>
<th>% access to credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (low)</td>
<td>4.7</td>
<td>34</td>
<td>34</td>
<td>1.9</td>
</tr>
<tr>
<td>2</td>
<td>4.8</td>
<td>39</td>
<td>36</td>
<td>2.9</td>
</tr>
<tr>
<td>3 (med)</td>
<td>6.6</td>
<td>40</td>
<td>38</td>
<td>3.2</td>
</tr>
<tr>
<td>4</td>
<td>7.3</td>
<td>47</td>
<td>38</td>
<td>3.9</td>
</tr>
<tr>
<td>5 (high)</td>
<td>9.7</td>
<td>51</td>
<td>40</td>
<td>5.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6.6</td>
<td>42</td>
<td>37</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Outline of the Rest of the Presentation

- Background on rural household income surveys (TIA)
- Changing patterns of rural household income and food security
- Implications for strategies to achieve food security

Strategies to achieve food security

- Need to raise labor productivity in staple foods
  - Through increasing yields as well as area expansion
  - Reducing vulnerability to drought, disease and insect attack
Strategies to achieve food security (continued)

- Increased availability of and access to improved technologies:
  - Investment in agricultural research
  - Strengthening partnership between private sector, NGO's and public sector in technology development and transfer
  - Establishing agricultural input and rural finance markets
  - Improved understanding of smallholder access to and accumulation of productive assets

Strategies to achieve food security

- Increased productivity in food staples will provide a foundation for crop diversification and increased market participation

- Continued off-farm income diversification is a necessary complement to increased value of crop production (shock absorber in drought)
Figure 8: Potential for poverty reduction through technology development


Figure 9: Expected Economic impact of USAID-funded multiplication and distribution of CBSD-tolerant cassava variety in Nampula

Source: Walker et al, 2006
Rising World Food Prices: Opportunity or threat?

- Rising world price for food staples means Moz farmers will get higher prices for their food crops?
  - Unknown price transmission
  - Potential for domestic price increase which will provide incentive for tech adoption to have greater production for market

- Mozambican consumers will face higher prices?
  - Yes, rice for southern markets is imported; maize during certain seasons imported; and those prices are going up
  - Majority of farm households are net food buyers (rice and maize in particular) and if they sell any, tend to sell at harvest season

- For rural households, with weak rural markets, food security is a primary objective and market income is secondary
  - If anything, increasing world prices will only reinforce this objective

Figure 7: Months of household reserves of basic staple

![Graph showing months of reserves by income quintile per AE for 2004/5 and 2005/6]
Muito obrigado!

http://www.aec.msu.edu/fs2/molambique/index.htm