Risk perception and management strategies in southern Mali

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Farming system

Rain-fed agriculture (800-1000 mm/year)

Main food crops
FSS is 1st objective

Main sources of income

Crop-livestock interaction

Sorghum  Millet  Maize  Cotton  Livestock
Pressures and rationale

- Population pressure,
- Stagnation of yield
- Options for improving sustainable production
- Tailor to local context
- Risk perception and management strategies play a role in farmers decision making
Research questions

• What are the risks perceived as most important by farmers?

• Does perception differ among different groups of farmers?

• How do farmers prepare for and react to risks?

• How do different farmers manage risk?
Definition

Risk is the combination of

- Likelihood of a hazardous event (frequency)
- Severity of the possible losses (impact)

After World Bank (2006), Jones and Boer (2003), IPCC (2001)
Methodology

▪ Focus Group Discussion in 4 villages
  ● Define a list of hazards

▪ Individual surveys
  ● 250 household members of 58 farms
  ● Ranking and scoring concern of hazards
  ● Household heads: what was the reaction to hazard?
Perception

Post Harvest Losses

![Graph showing the perception of post harvest losses](chart.png)
Perception

- Sickness labour force
- Sickness animals
- Late start rains
- Bad rainfall distribution
- Lack of rain
- Pests and diseases
- Empty granaries lean season
- Bad quality fertiliser
- Bad quality seed
- Bad market price
- Bad quality pesticides
- Too much rain
- Animals damaging crops
- Unforeseen sales
- Lack of access fertiliser
- Lack of access equipment
- Theft
- Misunderstandings
- Migration
- PHL
- Lack of access seed
- Soil erosion
- Lack of access pesticides
- Health hazard from pesticides

Timing
- Start
- During
- End

% of importance
Intra-household diversity

**Gender**

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>50%</td>
</tr>
<tr>
<td>M</td>
<td>49%</td>
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**Position**

<table>
<thead>
<tr>
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<th>Percentage</th>
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<tbody>
<tr>
<td>Head</td>
<td>38%</td>
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<tr>
<td>Farmer</td>
<td>46%</td>
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<tr>
<td>Youth</td>
<td>62%</td>
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</tbody>
</table>
Farm Types

After Falconnier et al. (2015)

High Resource Endowed + Large Herd
- 30 TLU
- 20 ha
- 23 actives
- 6 draft tools

High Resource Endowed
- 12 TLU
- 13 ha
- 16 actives
- 4 draft tools

Middle Resource Endowed
- 8 TLU
- 9 ha
- 7 actives
- 3 draft tools

Low Resource Endowed
- 2 TLU
- 4.5 ha
- 5 actives
- 1 draft tool
Inter-farm diversity

Are you concerned about the hazards taking place?

- **LRE**: 42%, 58%
- **HRE**: 45%, 55%
- **MRE**: 49%, 51%
- **HRE-LH**: 50%, 50%

Response: no, little, medium, high
## Risk Management Strategies

<table>
<thead>
<tr>
<th>Type of action</th>
<th>Reactive risk management (ex-post)</th>
<th>Preventive risk management (ex-ante)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Examples</td>
<td>Examples</td>
</tr>
<tr>
<td>Nothing</td>
<td>23 /</td>
<td>30 /</td>
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<tr>
<td>Field</td>
<td>19 Change variety; re-sow; harvest early</td>
<td>9 Early maturing varieties; spread sowing dates; germination test</td>
</tr>
<tr>
<td>Medical</td>
<td>18 Traditional or modern medical treatment</td>
<td>15 Traditional or modern preventive treatment</td>
</tr>
<tr>
<td>Social</td>
<td>16 Remittances; borrow oxen, seeds or food in the village; get credit</td>
<td>16 Sell in group; associate with cooperatives; keep family reunions</td>
</tr>
<tr>
<td>Animal</td>
<td>15 Sell animal; stall feeding; buy or loan ox</td>
<td>11 Buy animals; store more fodder</td>
</tr>
<tr>
<td>Inputs</td>
<td>13 Increase dose of fertiliser; buy other product; change targeted crops</td>
<td>8 Increase production of organic fertiliser</td>
</tr>
<tr>
<td>Consumption</td>
<td>11 Buy or sell more cereals; consume lower diversity of food</td>
<td>3 Calculate how much cereal the family needs and store this amount; sell less</td>
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<tr>
<td>Crops</td>
<td>10 Reduce cropped area; change crops</td>
<td>15 Cultivate fodder; reduce cropped area</td>
</tr>
<tr>
<td>Labour</td>
<td>10 Work harder; hire labour; off-farm labour</td>
<td>5 Off-farm labour</td>
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<tr>
<td>Other</td>
<td>0 /</td>
<td>8 Build a granary; buy material</td>
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Risk Management Strategies: Reactive

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<th>Event</th>
<th>Nothing</th>
<th>Field</th>
<th>Medical</th>
<th>Social</th>
<th>Animal</th>
<th>Input</th>
<th>Consumption</th>
<th>Crop</th>
<th>Labour</th>
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<tr>
<td>Sickness labour force</td>
<td>16.7</td>
<td>80</td>
<td>16.7</td>
<td>6.7</td>
<td>6.7</td>
<td>13.3</td>
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<td>Sickness animals</td>
<td>20.8</td>
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<td>29.2</td>
<td>20.8</td>
<td>45.8</td>
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<td>Late start rains</td>
<td>12.5</td>
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<tr>
<td>Bad rainfall distribution</td>
<td>42.9</td>
<td>28.6</td>
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<tr>
<td>Lack of rain</td>
<td>54.5</td>
<td>9.1</td>
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<td>Pests and diseases</td>
<td>25</td>
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<td>Empty granaries lean season</td>
<td>8.3</td>
<td>5.3</td>
<td>58.3</td>
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<td>8.3</td>
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<tr>
<td>Bad quality fertiliser</td>
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<td>Animals damaging crops</td>
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<td>Unforeseen sales</td>
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<td>Lack of access fertiliser</td>
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<td>Lack of access to animal feed</td>
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A variety of risks of concern for farmers
Mostly related to production domain, less to the market
Differences in perception
  - Position in household
  - Farm type
Main risks are of concern for all
Conclusion (2)

- Diversity in coping reactions
  - Change field or labour management
  - Consumption-sales rates
  - Call on solidarity, institutions

- Livestock can be source of concern, but also of solution

- Risk acceptance is common
Tailoring options

- Adapted to different weather situations
- Do not increase labour requirements (beginning of season)
- Improving feeding regimes cattle
- Strengthen cooperations
- Outside agriculture: health care, off-farm work
Thank you

Questions?
Comments?