Understanding Decisions Makers: Food Security in Developing Countries Livelihoods Activities and Portfolios

Corinne Valdivia
Objectives of this session

• Who are the decision makers

• Developing Profiles of Potential Users of Forecast Information
  – A Livelihoods Framework
  – Household Portfolios: Strategies

• User Profiles
Who are the decision makers

- Small farms
- Many enterprises
- Diversified
- Multiple goals
- What sets them apart?
Developing profiles of potential users of forecast information

- A livelihood: multiple needs, objectives, and outcomes

- Structures

- A guiding framework: Rural Livelihoods
Components of a livelihood

• Capabilities: Demographics, knowledge

• Stores and resources: Tangible assets

• Claims and access: Intangible assets
Livelihoods: components and flows

(Chambers and Conway, 1992)
External effects: structures, institutions and climate

- Markets
  - Inputs, outputs, credit, insurance
- Government Policies
  - Import subsidies, land reform
- Climate
  - Production losses, disasters
- Non-market Institutions
  - Community networks, reciprocity, sharing
Livelihoods: components and flows
(Modified from Chambers and Conway, 1992)

- Climate
- Markets
- Stores Resources Assets
- Capabilities
- Policies
- Non Market Institutions: Networks
- Livelihood
- Strategies
- Claims And Access

(Modified from Chambers and Conway, 1992)
Identifying strategies

- Diversity of individual and household characteristics
- Variety of production conditions
- Institutions (regulations and norms)
- Infrastructure
- Markets
- Cultures
- Household portfolio approach
A Household Portfolio: theoretical considerations

• Decisions on production and consumption are joint: vulnerability and food security
• Individual roles in household income and coping strategies
• Networks and non market institutions as coping mechanisms
• Partial market integration: unreliable, costs of full participation
Components of the household portfolio

• Assets and resources:
  – Human capital
  – Natural capital
  – Productive capital
  – Cultural capital
  – Social capital

• Activities:
  – Agricultural
  – Non agricultural
  – Reproductive

• Decisions: households and individuals- Gender
Households and livelihood strategies: assets decisions and portfolios

- Land
- Human
- Animals
- Productive

Household and Individuals

- Food Crops
- Forages and Livestock
- Off-farm
- Reproductive
- Migration-Remittances

Social
Diversification

• An ex-ante strategy
• Reduce risk – economic theory
• Maximize use of resources
• Income smoothing
Coping strategies

- **Ex-ante**: diversification to reduce risk through non covariant activities
- **Ex-post**: 
  - Sale of liquid assets
  - Stinting
  - Sale of assets
  - Temporary migration
  - Claims from kin and others
  - Aid
User Profiles

• Who benefits from forecast information:
  – Information asymmetries
  – Portfolio characteristics
  – Ability to act

• Characteristics of the information

• Scale: locality
An example: Bolivian Andean profiles

- Household Strategy Profiles:
  - Household data available for 1993, 1995 and 1999

- Economic Portfolios:
  - Techniques: cluster analysis
  - Variables: individual income streams (cash and in-kind), assets, demographic information

- Survey on access to information on forecasts
Problem & Setting

• Climatic variability: droughts, El Niño events, floods and frosts.

• Agro-pastoral production systems; semiarid environments; 7,200 Has, different soil quality, water access, and land uses; 3,725 m altitude; 402 mm rainfall (CV 31%); 50% probability frost; 116 km south of La Paz Bolivia; 6 neighborhoods.
Economic portfolios

- **1993**: Life cycle; intensive dairy and extensive producers sheep and cattle production.
- **1995**: Life cycle; Rural and agricultural strategies. Sales of sheep and cattle.
- **1999**: Life cycle; Commercial production: dairy and potatoes.

- **Diversity Index**: 
  - 1
  - 2
  - 3

- **1993 Average Rainfall**: 3.57  3.24  2.26
- **1995 Drought**: 3.3  2.96  2.64
- **1999 After Niño**: 5.1  2.68  1.67
What shapes the profile?

- Markets: shifts in activities and varieties
- Climate: loss of assets and land use change
- Demographics: what the elderly can do
- Individuals:
What shapes the coping strategies?

• Activities: dairy vs potato production
• Stocks available
• Demographics
• Outside linkages
• Individual control of resources
Who knows about climate forecasts?

• Knowledge about el Niño
  – 79% knew about el Niño
  – 56% knew before decisions were made
    • 80% of the rural group knew
    • 64% of the agricultural knew
    • 13% of elderly/passive knew
  – 44% of the sample did not know about El Niño before decisions were made
    • 59% thought there would be a drought that year
    • 41% did not think there would be a drought

• Decisions
  – 50% of rural that knew planted less
  – 21% of agricultural that knew changed
  – elderly did not change
What are the reasons for not planting more potato varieties in 1998

<table>
<thead>
<tr>
<th>Reason</th>
<th>Rural</th>
<th>Agric</th>
<th>Elder</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1: Did not have more seed</td>
<td>70</td>
<td>73</td>
<td>50</td>
</tr>
<tr>
<td>R2: Did not have more land available</td>
<td>30</td>
<td>18</td>
<td>40</td>
</tr>
<tr>
<td>R3: No more money to purchase seed</td>
<td>50</td>
<td>59</td>
<td>40</td>
</tr>
<tr>
<td>R4: There was no seed available in market</td>
<td>10</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>R5: Could not purchase more fertilizer</td>
<td>20</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>R6: Did not have cash to purchase pesticide</td>
<td>10</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>R7: Did not want to grow more of the type</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R8: Feared the climate would not be good</td>
<td>0</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>R9: Feared the year would not be good</td>
<td>0</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>R10: Did not have more prepared land</td>
<td>40</td>
<td>27</td>
<td>40</td>
</tr>
<tr>
<td>Sources that contribute to knowledge about climate</td>
<td>Respondents Yes %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>Rural / Agric / Eld*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Knowledge from our grandparents</td>
<td>56 / 50 / 73 / 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Information from radio or TV</td>
<td>4 / 10 / 5 / 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Neighbors in the community</td>
<td>16 / 20 / 18 / 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Neighbors from other communities</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Technical personnel from organizations or institutions</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The Bristol Calendar (Farmers Almanac Bristol)</td>
<td>4 / 0 / 4 / 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Natural Indicators (Three days in August, winds)</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Biological Indicators (flowering bushes, birds, other animals)</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Other: Dreams, God's disposition</td>
<td>29 / 10 / 32 / 40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Portfolios

• Changing income through time according to strategies (rural dairy strategy, agricultural-potato strategy, the elderly people) Tables 1-3

• An example of the characteristics of strategies from cluster analysis: Bolivia 1995 Table 4
Table 1

Changing Income Sources:
Rural Strategy HHs, San José Llanga

<table>
<thead>
<tr>
<th>Years</th>
<th>Food Crops</th>
<th>Sheep</th>
<th>Cattle</th>
<th>Wages</th>
<th>Milk</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovators 1993</td>
<td>1200</td>
<td>600</td>
<td>800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovators 1995</td>
<td>1400</td>
<td>700</td>
<td>1000</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovators 1999</td>
<td>1200</td>
<td>800</td>
<td>900</td>
<td>500</td>
<td></td>
<td>300</td>
</tr>
</tbody>
</table>
### Changing Income Sources:
Agricultural Strategy Households

<table>
<thead>
<tr>
<th>Years</th>
<th>Food Crops</th>
<th>Sheep</th>
<th>Cattle</th>
<th>Milk</th>
<th>Wages</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous 1993</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous 1995</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous 1999</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 2*
Table 3

Changing Income Sources: The Elderly Households

Years

Food Crops
Sheep
Cattle
Milk
Wages
Other
<table>
<thead>
<tr>
<th></th>
<th>Productive Rural</th>
<th>Productive Agricultural Less Resources</th>
<th>Productive Agricultural More Resources</th>
<th>Elderly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>41.9</td>
<td>49</td>
<td>47.7</td>
<td>67</td>
</tr>
<tr>
<td>Labor (adult eqv.)</td>
<td>2.9</td>
<td>2.8</td>
<td>3.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Criollo Sheep (head)</td>
<td>4.7</td>
<td>16</td>
<td>19.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Criollo Cattle (head)</td>
<td>1.3</td>
<td>4.4</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Improved Sheep (head)</td>
<td>42.3</td>
<td>12.4</td>
<td>10.1</td>
<td>6.2</td>
</tr>
<tr>
<td>Improved Cattle (head)</td>
<td>5.8</td>
<td>5.3</td>
<td>5.2</td>
<td>0.6</td>
</tr>
<tr>
<td>Forages (has)</td>
<td>4.1</td>
<td>4.2</td>
<td>7.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Consumption (Bs.)</td>
<td>9,703</td>
<td>4,253</td>
<td>5,837</td>
<td>1,944</td>
</tr>
<tr>
<td>Off-farm Income (Bs.)</td>
<td>4,809</td>
<td>333</td>
<td>952</td>
<td>301</td>
</tr>
<tr>
<td>Diversity Index*</td>
<td>3.3</td>
<td>2.95</td>
<td>2.97</td>
<td>2.64</td>
</tr>
</tbody>
</table>

Sources: Surveys of rural households in San José Llanga in 1995; *Valdivia et al.