Roles of small ruminants in the improving rural livelihood – Case study in Egypt

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Section 1

LIVESTOCK FARMING SYSTEMS IN EGYPT AND OBJECTIVES
Main farming systems

• The rainfed production system: a complex system based on livestock, annual crops (mainly barley), tree, and off farm jobs. This system is well developed by traditional farmers and Bedouins in North coastal zones.

• The irrigated production system: the typical mixed agriculture-livestock system that represents the majority of farms in the Delta and Nile Valley (around 76% of farming systems in Egypt).
  – Mixed livestock system with large ruminants (cattle and buffaloes), small ruminants and poultry.
  – Feeding system based on berseem, green corn and external feedstuff and concentrates
Contrasting livestock farming system

Campement, Burg El Arab

Farmyard ou housing system
New valley
Berseem: the main feed resource...

Collect or graze
More generally...

At the regional level, sheep and goat ensure many functions:

- **Food security**: Around 23.5% of meat production and 25.3% of milk production;
- **Subsistence** in very harsh conditions thanks to their mobility and rusticity, low capital;
- **Strong adaptive capacity** to climatic changes;
- **Satisfy cultural and family events**;
- **Factor/dynamism of social networks from the family until the region**
Objectives...

• To analyze the contributions of small ruminants activities to reduce vulnerability

• Analysis also the diversity of the roles of small ruminants in three contrasted regions of Egypt: the pastoral systems of North West Coastal zone (Matruh), the intensive systems in the Nile Valley (Sohag governorate) and the oasian systems in west desert of Egypt (New Valley governorate).
Within a first collaborative project CIRAD-INRA-APRI-ICARDA

- to promote the capacity of livestock farmers and their ability to cope with the major challenges, focusing on feed gap, climatic changes, and emerging markets;

- to promote understanding of the constraints along the commodity value chain (production to consumption), and the emerging opportunities for value additions, differentiating and branding quality products;
Section 2

METHODOLOGY AND MATERIALS
Variation of resource management (land, water access and management) → feed constraints → social, technical and market adaptation

- Climate gradient ($T^\circ C$, $H$, radiation)
- → a biotic stresses
- Physiological and biochemical adaptative processes
- Demand/market
Rapid description of the sample in the 3 zones *(Source: survey, 90 farmers, 2010)*

<table>
<thead>
<tr>
<th>Governo rate</th>
<th>Location</th>
<th>Sample (flock size)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matruh</td>
<td>- Matroh</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>- Negila</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Sidi Barani</td>
<td></td>
</tr>
<tr>
<td>Sohag</td>
<td>- Sohag city : 2 villages</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>- Al Muncha : 2 villages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Saqolta : 2 villages</td>
<td></td>
</tr>
<tr>
<td>New Valley</td>
<td>- El Karga</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>- Darlha</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Paris</td>
<td></td>
</tr>
</tbody>
</table>
Vulnerability .. definition

– to Chambers (2006), vulnerability is the exposure to contingencies and stress and difficulty coping

– Adger (2006) prefers the term of social vulnerability
  • "the state of susceptibility to harm from exposure to stresses associated with environmental and social change and from the lack of capacity to adapt" (p268)

– ...the vulnerability approaches the human (in)capacities to withstand an external shock that is difficult to predict even if its threat is permanent
Schema of the livelihood approach
(Source: Carney, 1999)
Capital asset approach

• Human capital: education, active, family size

• Physical capital: small ruminant, large ruminant, irrigated land, total land

• Financial capital: off farm job
Section 3

FIRST RESULTS: DESCRIPTION OF THE FARMING SYSTEMS
## Rapid description of farming system in the 3 zones
(Source: survey, 90 farmers, 2010)

<table>
<thead>
<tr>
<th>Zone</th>
<th>Farming system</th>
<th>Share of fodder crop on cultivated area (%)</th>
<th>Av. Small ruminant stock (heads)</th>
<th>Av. large ruminant stock (heads)</th>
<th>Feed cost per SR head (LE/head)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sohag</td>
<td>Mixed crop-livestock farming system</td>
<td>66,5% [15%]</td>
<td>7 [15,68]</td>
<td>4 [4,84]</td>
<td>105 [187]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Green corn: 36,8%; berseem: 18,2%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Valley</td>
<td>Oasian system</td>
<td>58,9% [16%]</td>
<td>54 [87,10]</td>
<td>28 [45,61]</td>
<td>66 [124]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Alfafa: 23,5%; berseem:17,6%; green corn: 16,02%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matruh</td>
<td>Agro-sylvo-pastoral system</td>
<td>75,26% [20%]</td>
<td>112 [155,93]</td>
<td>1 [3,95]</td>
<td>459 [205]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Barley: 83,4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 4

SOME INDICATORS OF POVERTY AND VULNERABILITY
Net income per capita and per day for all sample (Survey: 90 farms, CIRAD/APRI, 2010)
Repartition of the regional sub sample between the different levels of poverty (Survey: 90 farms, CIRAD/APRI, 2010)

<table>
<thead>
<tr>
<th>Region</th>
<th>Very poor (less than 1.25 US$/day)</th>
<th>Poor (between 1.25 and 2 US$/day)</th>
<th>Medium (between 2 and 6 US$/day)</th>
<th>Rich (more than 6 US$/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matruh</td>
<td>76,7%</td>
<td>23,3%</td>
<td>0,0%</td>
<td>0,0%</td>
</tr>
<tr>
<td>New valley</td>
<td>37,9%</td>
<td>13,8%</td>
<td>27,6%</td>
<td>20,7%</td>
</tr>
<tr>
<td>Sohag</td>
<td>34,5%</td>
<td>34,5%</td>
<td>31,0%</td>
<td>0,0%</td>
</tr>
<tr>
<td>All sample</td>
<td>50,0%</td>
<td>23,9%</td>
<td>19,3%</td>
<td>6,8%</td>
</tr>
</tbody>
</table>
capital asset radar for Sohag

Family size

Off farm income

Small ruminant

large ruminant

Irrigated land

education

active

1. very poor
2. poor
3. medium
capital asset radar for New Valley

Family size

- Off farm income
- Small ruminant
- Large ruminant
- Irrigated land
- Education
- Active

1. very poor
2. poor
3. medium
4. rich
capital asset radar for the North Coastal zone

- Family size
- Off farm income
- Small ruminant
- Large ruminant
- Education
- Rainfed land
- Wadi

1. very poor
2. poor
Main reasons to become poor according to farms (Survey: 90 farms, CIRAD/APRI, 2010)

<table>
<thead>
<tr>
<th>Region</th>
<th>Drought</th>
<th>Land fragmentation</th>
<th>Social events</th>
<th>Employment</th>
<th>Livestock risk</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matruh</td>
<td>91.7%</td>
<td>0%</td>
<td>0%</td>
<td>6.3%</td>
<td>0%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Sohag</td>
<td>0%</td>
<td>54.9%</td>
<td>21.6%</td>
<td>9.8%</td>
<td>13.7%</td>
<td>0%</td>
</tr>
<tr>
<td>New Valley</td>
<td>56.7%</td>
<td>10.0%</td>
<td>16.7%</td>
<td>16.7%</td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>
Main factors to escape poverty according to farms (Survey: 90 farms, CIRAD/APRI, 2010)

<table>
<thead>
<tr>
<th>region</th>
<th>Employment/ Off farm</th>
<th>Development project</th>
<th>Livestock development</th>
<th>Social support</th>
<th>Other/ No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matruh</td>
<td>38.0%</td>
<td>32.4%</td>
<td>18.3%</td>
<td>2.8%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Sohag</td>
<td>64.4%</td>
<td>17.8%</td>
<td>8.2%</td>
<td>6.8%</td>
<td>2.7%</td>
</tr>
<tr>
<td>New Valley</td>
<td>26.6%</td>
<td>20%</td>
<td>16.7%</td>
<td></td>
<td>36.7% (cost of life)</td>
</tr>
</tbody>
</table>
Section 5

DISCUSSION AND CONCLUSION
For New valley... Roles of SR to escape poverty

• For the landless and very small land owners, sheep and goat provide the main source of income to escape the poverty trap.
  – Poor farmers used mainly the common land along the canal or ground berseem after large ruminants.

• As soon as the farmers are able to invest in large ruminants (cattle or buffaloes), sheep and goat become basically cash flow while large ruminant provide a sort of family insurance.
In Sohag: role of SR for diversification

• In Sohag governorate, sheep and goat constitute one way of income diversification for the “medium” household who haven’t the human resource to be employed in other sector.

• In the ‘poor’ categories, the farmer prefers to invest in large animals that constituted a more consequent social and economic capital.
In Matruh... SR a traditional activity for rainfed zone

- The livestock development is mainly cited as one way to escape poverty where livestock represent the main asset faced to drought events.
  - The perception of livestock to escape the poverty is completely linked to the livestock size.

- But not only... During drought events the main sources of cash flow come off farm diversification, mainly through the social networks at the Libyan-Egyptian border.

- Another way: capture the support from development project such as the Matruh Resource Management Project (MRMP) that had prevailed during ten years in the region.
Main conclusion

• The factors to escape poverty are more diversified and they are well embedded in the history of each area.

• But the analysis of poverty profile conducted to several questions. In Matruh, we need to distinguish the structural poverty from the conjunctural poverty linked to climatic conditions.
  – In Matruh, an important economic activity emerges from the social network in the society. This activity is based on livestock activities (exchange of animals, keeper activities) and smuggling activities at the Lybian-Egyptian border that can be linked.

• However the key roles of small ruminant stock in the different farming/household systems explain its increasing population at the regional and the national level.