FAO AND OIE INTERNATIONAL CONFERENCE FOR THE
CONTROL AND ERADICATION OF
PESTE DES PETITS RUMINANTS (PPR)

ABIDJAN, CÔTE D'IVOIRE
31 MARCH – 2 APRIL 2015
Tabitha Kimani*,
Jonathan Rushton, Alana Boulton, Nick Lyons, João Afonso, Pablo Alarcon, Ndama Diallo, Joseph Domenech

*Socio-economist, ECTAD, FAO

Socio-economics of PPR
Acknowledgements

- Nicoline DeHaan,
- FAO - Juan Lubroth, Bouna Diop
- OIE – Bernard Vallat
- Farmers and traders who participated in data collection efforts
Outline

• What role do sheep and goats have in the regions affected by PPR?
• What is the impact of PPR on these sheep and goat systems?
• The impact of PPR across the economy
• Some reflections
Sheep and goats
Population of sheep and goats by region

Head of population (Millions)

Africa: 700
East Asia: 300
Middle East: 100
South Asia: 200
West Eurasia: 80

Sheep and Goats

Africa: 300 (Sheep) 400 (Goats)
East Asia: 200 (Sheep) 100 (Goats)
Middle East: 100 (Sheep) 100 (Goats)
South Asia: 100 (Sheep) 100 (Goats)
West Eurasia: 50 (Sheep) 30 (Goats)
Sheep and goats represent a major investment in many regions affected by PPR.
17 countries have more than 1 sheep and goat per person.
Number of poor livestock keepers in Africa and Asia

- West and Central Africa
- East Africa
- Southern Africa
- North Africa
- South Asia
- SE Asia

Population (millions)
Proportion of the human population in poverty

Globally, small ruminants support livelihoods of many of the poorer households in Africa, Asia and the Middle East.

Importance of sheep and goats to livelihoods - the case of Kenya and Somalia

<table>
<thead>
<tr>
<th>Region and item</th>
<th>Very poor</th>
<th>Poor</th>
<th>Middle</th>
<th>Better off</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NE Kenya</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small ruminants</td>
<td>5 to 8</td>
<td>18</td>
<td>32 to 42</td>
<td>48 to 75</td>
</tr>
<tr>
<td>Cattle</td>
<td>0 to 2</td>
<td>0 to 6</td>
<td>3 to 20</td>
<td>5 to 35</td>
</tr>
<tr>
<td>Camels</td>
<td>0</td>
<td>0 to 5</td>
<td>5 to 19</td>
<td>15 to 39</td>
</tr>
<tr>
<td>Estimated total family income (US$)</td>
<td>371 to 389</td>
<td>448 to 558</td>
<td>774 to 979</td>
<td>1263 to 2042</td>
</tr>
<tr>
<td>Income from livestock (US$)</td>
<td>48 to 121</td>
<td>193 to 265</td>
<td>774 to 807</td>
<td>1263 to 2042</td>
</tr>
<tr>
<td><strong>Somalia (Nugal Valley and Addun)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small ruminants</td>
<td>0 to 15</td>
<td>60</td>
<td>96 to 110</td>
<td>170 to 200</td>
</tr>
<tr>
<td>Cattle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Camels</td>
<td>0</td>
<td>2 to 3</td>
<td>10 to 11</td>
<td>20 to 23</td>
</tr>
</tbody>
</table>
# Goats role in improving livelihoods

- a case from the terai in Nepal

## Key events

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Key events</td>
<td>Family have 2 or 3 goats</td>
<td>Roadhead construction</td>
<td>Forest grazing banned</td>
<td>Goats treated for worms on a regular basis</td>
<td>Different forage grass and fodder trees introduced by livestock services</td>
<td>Traders come to the village and buy goats at a good price</td>
<td>Family have 7 to 8 goats</td>
</tr>
<tr>
<td>Status</td>
<td>Poor to Medium</td>
<td>Transition from Poor to Medium</td>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangible benefits</td>
<td>Intangible benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Products</strong></td>
<td><strong>By products</strong></td>
<td><strong>Benefits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td>Manure and Fertilizer</td>
<td>Bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td>Fuel and biogas</td>
<td>Smoothing out cash flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skins and hides</td>
<td>Horns</td>
<td>Risk reduction and diversification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber and wool</td>
<td>Weed control</td>
<td>Pathway out of poverty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shock buffer and resilience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Food security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
And what of trade and processing?

The areas most dependent on sheep and goats have important international trade in live animals. Between 3-4 million sheep and goats are exported from the Horn of Africa every year.
The impact of PPR
Animal Health Impact

Losses

Visible Losses

Dead animals
Thin animals
Animals poorly developed
Low returns
Poor quality products

Fertility problems
Change in herd structure
Delay in the sale of animals and products
Public health costs
High prices for livestock and livestock products

Invisible Losses

Medicines
Vaccines
Insecticide
Time
Treatment of products

Expenditure & Reaction

Additional Costs

Access to better markets denied
Sub-optimal use of technology

Lost Revenue

Rushton et al, 1999; Rushton, 2002; Rushton, 2009
Disease Impact

Impact caused by the disease

Visible Losses
- Dead animals
- Thin animals
- Animals poorly developed
- Low returns
- Poor quality products
- Fertility problems
- Change in herd structure
- Delay in the sale of animals and products
- Public health costs
- High prices for livestock and livestock products

Impact caused by human reaction

Expentiture & Reaction
- Additional Costs
  - Medicines
  - Vaccines
  - Insecticide
  - Time
  - Treatment of products
- Lost Revenue
  - Access to better markets denied
  - Sub-optimal use of technology
## Small ruminant systems: magnitude of PPR impact related to production function

<table>
<thead>
<tr>
<th>Overall goals</th>
<th>Market oriented systems</th>
<th>Social value oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit maximization</td>
<td>Cash generation</td>
<td>Risk minimization</td>
</tr>
<tr>
<td>Productivity</td>
<td>Cash generation</td>
<td>Family support</td>
</tr>
<tr>
<td>Productivity</td>
<td></td>
<td>Stability and sustainability</td>
</tr>
<tr>
<td>Productivity</td>
<td></td>
<td>Income smoothing</td>
</tr>
<tr>
<td>Targets</td>
<td>Increased production</td>
<td>Multi-functional animal</td>
</tr>
<tr>
<td>Single purpose animal</td>
<td></td>
<td>Improved viability of animals</td>
</tr>
<tr>
<td>Genetic homogeneity</td>
<td></td>
<td>Biological vigor</td>
</tr>
<tr>
<td>Risk of PPR</td>
<td>Smaller</td>
<td>High</td>
</tr>
<tr>
<td>Potential impact</td>
<td>Small</td>
<td>Variable – high</td>
</tr>
<tr>
<td>Disease approach</td>
<td>Invest in protecting</td>
<td>Reduction of impact</td>
</tr>
<tr>
<td></td>
<td>Input driven</td>
<td>Limited inputs</td>
</tr>
</tbody>
</table>
Impact of the disease
- Mortality and morbidity rates

- In endemic countries morbidity rates range from 6.2 to 65% in Somalia and 48.4 to 56.6% in Cote d’Ivoire.
- During epidemics these rates rise to between 86 to 100% (reported in Kenya, Ethiopia and Eritrea).
- Mortality rates also vary with reports - 0-97% in Cote d’Ivoire; 69 to 74% in Tanzania; 33 to 90% in Kenya, Ethiopia and Eritrea.
- The rates depend on methodology used in data collection, species and farming systems.
The impact of the disease - Depletion of productive assets in Africa

- From: mortality; increased off take to adjust to shifts in food sources (cattle and shoats); culling or distress sales
  - 28 to 60%: 7 month; Mixed farming systems, Cote d’Ivoire – distress sales halved prices
  - 52% - 68%: 2 years; Pastoral systems, Kenya - 1.2 million deaths :US$ 23.6 million
  - 33% and 63% in mixed and agro-pastoral systems respectively, Tanzania - 1 million dead and 64,661 culled
- In Tanzania it was estimated that 330,910 kids/lambs were not borne due to abortions.
- In Kenya and Tanzania 10% of households lost their entire herd or flock
- It was estimated that in Kenya, Tanzania and Somalia milk production losses were in the region of 2 million litres
PPR disease losses in Asia
- the case of Madhya Pradesh and Maharastra, India

• Two studies from India indicate that while the mortality rate was relatively low per animal affected, the overall losses were high even when the animal recovered

• The loss per animal affected was Rs 523 (US$ 8.44) in Madhya Pradesh (Awase et al, 2013) and Rs 918 (US$14.81) and Rs 945 (US$ 15.24) respectively for sheep and goats in Maharastra (Thombare and Sinha, 2009)
The responses to the presence of PPR - control costs in Africa

- Tanzania: 2010-2011
  - 7.4 million vaccinated.
  - About 3,484,505 treatments estimated

- Kenya: 2009
  - 10 million animals vaccinated at an estimated unit cost of US$0.75
  - US$ 4.4 million (including surveillance and post vaccination monitoring)

- Somalia: 2012-2014
  - 31.5 million animals vaccinated at unit cost of US $ 0.3 per dose
Eroded sustainability of herds and increased poverty levels

- Eroding sustainability of livelihoods
- 10% increase in poor and very poor
Impacts on household income

- Shift in the income sources:
  - Very poor/Poor/Middle: ➔ reliance on wild product selling
  - Middle/Better-off: ➔ livestock sale (vicious circle of asset loss)

In Tanzania, household forgone income was US$ 233.6.
• Consumption of small ruminants milk decreased to nearly 0% in all wealth categories,
• Increased consumption of small ruminant meat- consumption of dead animals
  • Highly unsustainable distress coping strategy, a sign of acute food insecurity
• Increased share (by 25-40%) of wild food in the food sources
Estimated global impact of PPR
– production losses and vaccination costs only

Estimated impact is between US$ 1.4 and 2.1 billion
Africa: 40%; South Asia 27%; East Asia 20%; Middle East 7%; West Eurasia 6%
Reflections
Sheep and goats play a role in the livelihoods of many people across the regions affected by PPR.

These people are a mixture of producers, traders and processors.

Probably the largest group affected are consumers.

The rapid assessment of global impact of PPR indicates that it is a costly disease.
PPR – its impact

• A number of case studies of PPR impact have been conducted and reported for Africa and Asia
• These all indicate the dramatic impact of this disease on people
• The contagious nature of this disease means it creates **negative externalities**
And yet we have solutions - PPR control in Somalia
PPR – have we got the investment right?

- PPR disrupts trade and affects supply chains yet we have **good technical solutions**
- PPR control needs **investment** in coordination and disease management
- PPR needs political will to ensure this disease is first controlled and then eradicated
Thank you

Tabitha Kimani*,
Jonathan Rushton, Alana Boulton, Nick Lyons, João Afonso, Ndama Diallo, Joseph Domenech

*Socio-Economist, ECTAD, FAO
Tabitha.Kimani@fao.org
References


Knight-Jones, T.J.D.; Rushton, J. (2013) The economic impacts of foot and mouth disease – What are they, how big are they and where do they occur? Preventive Veterinary Medicine 112 (3-4) pp 161-173

Knight-Jones, T. J. D., & Rushton, J. (2013). The economic impacts of foot and mouth disease - what are they, how big are they and where do they occur? Preventive Veterinary Medicine, 112(3-4), 161–73. doi:10.1016/j.prevetmed.2013.07.013


