Value chain analysis for products and by-products from egg laying birds in peri-urban areas of Nairobi City

Joshua Onono, Pablo Alarcon, Barbara Haesler, Eric Fevre, Maurice Karani, Patrick Muinde, James Akoko, Maud Carron and Jonathan Rushton

14th conference of the International Society for Veterinary Epidemiology and Economics
Merida, Yucatan, Mexico
3-7 November 2015
Population of layer birds in Nairobi

There is a need for better understanding of flow of inputs and outputs between these systems to identify and target disease risks.
Objectives

The objective was to map profiles of value chains for products and by-products from commercial layers and indigenous birds within the City of Nairobi.
Materials and methods – Study areas
Materials and methods – Data collection

- **Focus group discussions with poultry farmers**: layers, Indigenous birds.
  - **Inputs** (day old chicks, mature birds, water, veterinary care, feed);
  - **Outputs** (products, buyers, farm gate prices).
  - **Challenges** of poultry production, disease and food safety risk.

- **Key informant interviews with extension officers**
  - Triangulation of information
Materials and methods – Data analysis

- Mapping the chain for each system
  - Interaction between value chain actors
  - Flow of products and inputs.
  - Qualitative description of risk practices

- Ranking challenges using non-parametric methods (Kruskal Wallis One way Anova).
Results: Commercial layer profile

Sources of chicks
- Large-scale hatcheries
- Small-scale hatcheries
- Hawkers

Sources of feed
- Commercial feeds: Unga, Pembe, etc
- Leftover, wastes from Posho mills

WATER SOURCES
- Water vendors and borehole

Small-scale farms
- (1-1,000)

Medium-scale farms
- (1,000-2,000)

Large-scale farms
- (2,000-10,000)

Spent layers
- Brokers: 60%
- Home consumption: 30%
- Hotels/kiosks: 10%

Eggs
- Shops: 50%
- Hawkers: 20%
- Brokers/markets/hotels/home consumption: 30%

Empty feed bags
- Brokers: 60%
- Furniture workshops: 20%
- Maize farmers/shops: 20%

Manure
- Unfiltered
- Filtered

Crop farms, neighboring farms, up-country, horticultural projects
- Cattle feed

Brokers
- Home consumption
- Hotels/kiosks

Hawkers
- Brokers/markets/hotels/home consumption

Results: Indigenous bird’s profile

Sources of birds

- Up-country farms
- Own farm (fertilised eggs)
- NGO (Dolep)
- Chicks from other farms (to start a flock)
- Improved indigenous genotypes

FEED
- Leftovers, Kienyeji mash, maize and scavenging

WATER
- Vendors & borehole

Small scale farms
- (1-50 birds)

Medium scale farms
- (50-100 birds)

Large scale farms
- (100-150 birds)

Mature live birds

- Majority
- Very few
- Few

- Neighbours
- Ceremonies
- Home consumption (holidays, visitors)
- Established farms
- Starter farms
- Neighbours
- Hawkers
- Shops
- Home consumption
- Hatching

Eggs

- Neighbours
- Hawksers
- Brokers
- Hotels / Kiosk
- Hatching

By-products

- Manure
- Feathers
- Own farm
- Other farms
- Animal feeds
- Festivals
- Disposal
- Fishing line

FEED
- Leftovers, Kienyeji mash, maize and scavenging

WATER
- Vendors & borehole
## Results: type of eggs destination

<table>
<thead>
<tr>
<th>Types of eggs</th>
<th>Retailer type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small egg size</td>
<td>Brokers who mixes with bigger eggs</td>
</tr>
<tr>
<td>Eggs with yellow yolk</td>
<td>Restaurants and kiosks</td>
</tr>
<tr>
<td>Eggs with cracked shell</td>
<td>Hawkers, neighbouring households</td>
</tr>
<tr>
<td>Eggs with weaker shells</td>
<td>Hawkers, neighbours households</td>
</tr>
<tr>
<td>System</td>
<td>Peri-urban areas</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Commercial layers</td>
<td>• Seek advice from veterinarians, hatcheries</td>
</tr>
<tr>
<td></td>
<td>• Isolation of sick birds</td>
</tr>
<tr>
<td></td>
<td>• Slaughter before bird dies</td>
</tr>
<tr>
<td></td>
<td>• Take the sick birds to agrovets and seek advice on treatment of those remaining in flock</td>
</tr>
<tr>
<td></td>
<td>• Dead birds are boiled and fed to dogs</td>
</tr>
<tr>
<td>Indigenous layers</td>
<td>• Burying dead birds</td>
</tr>
<tr>
<td></td>
<td>• Taken to “agrovets” for advice on how to treat those remaining in flocks</td>
</tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Results: Challenges of layer production

<table>
<thead>
<tr>
<th>Barriers for layer production</th>
<th>Commercial farms (Mean sum ranks)</th>
<th>Indigenous farms (Mean sum ranks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability &amp; quality of feed</td>
<td>108.1 (2.6)*</td>
<td>130.5 (3.2)*</td>
</tr>
<tr>
<td>Occurrence of diseases</td>
<td>107.0 (2.4)*</td>
<td>134.8 (3.5)*</td>
</tr>
<tr>
<td>Price volatility</td>
<td>87.9 (0.6)</td>
<td>111.1 (1.4)</td>
</tr>
<tr>
<td>Water availability</td>
<td>82.7 (0.1)</td>
<td>85.8 (-0.8)</td>
</tr>
<tr>
<td>Competition from producers</td>
<td>80.2 (-0.1)</td>
<td>86.7 (-0.8)</td>
</tr>
<tr>
<td>Land for expansion</td>
<td>76.9 (-0.4)</td>
<td>89.6 (-0.5)</td>
</tr>
<tr>
<td>Transport costs to markets</td>
<td>74.9 (-0.6)</td>
<td>61.3 (-3.0)</td>
</tr>
<tr>
<td>Seasonality of poultry markets</td>
<td>66.2 (-1.5)</td>
<td>89.1 (-0.5)</td>
</tr>
<tr>
<td>Harassment by County staff</td>
<td>49.6 (-3.1)</td>
<td>66.3 (-2.6)</td>
</tr>
</tbody>
</table>

() Numbers in parenthesis are Z-scores

* significant
Conclusion

- Value chains framework which have been described are useful for:
  
  - Findings are important for assessment of zoonotic pathogen and risk of their spread within the urban areas and in similar settings
  
  - Value chain framework provides some context in which public health officers and veterinarians can formulate policies for control of zoonoses.
  
  - Limited value addition activities along poultry value chains (layers and indigenous birds).
Thank you

The partners

Collaborators
Results: Farmers knowledge of diseases affecting flocks

<table>
<thead>
<tr>
<th>System</th>
<th>Peri-urban areas</th>
<th>Informal settlements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial layers</td>
<td>coccidiosis; diarrhoea; infectious bursal disease; Mareks disease; Newcastle disease; worm infestations</td>
<td>calcium deficiency; cannibalism; respiratory problems; foreign bodies; swollen eyelids; coccidiosis; Newcastle disease</td>
</tr>
<tr>
<td>Indigenous layers</td>
<td>coccidiosis; diarrhoea; flea infestation; sick bird syndrome</td>
<td>diarrhoea; coughing; swollen eyelids; swollen necks</td>
</tr>
</tbody>
</table>