



REFERENCE: Short Term Scientific Mission, COST TD1404 NEOH

CASE STUDY - Occupational health risks posed by an Animal Health intervention in Zambian Cattle

BENEFICIARY:

Gabrielle Laing, PhD student, University of Liverpool, UK

HOST INSTITUTE:

Department of Agricultural and Food Science and Technology
University of Bologna (UNIBO- DISTAL), Italy

HOST NEOH MEMBERS:

Dr Daniele De Meneghi
Department of Animal Sciences,
University of Turin, Italy

Prof Maurizio Aragrande
UNIBO-DISTAL,
University of Bologna, Italy

DATES OF STSM:

2 week duration from 10th October – 21st October 2016.

1. Purpose of the visit

Following WG2 training School in Serbia, I was working alongside Dr. Daniele De Meneghi on his case-study taken from a project he completed on the occupational health risks of acaricide dipping of cattle in Zambia to control tick-borne diseases. We will continue to work on the case summary and then to collaborate with Prof. Maurizio Aragrande of University of Bologna, to perform an in-depth economic evaluation of the case-study. The exchange will see myself, an early career investigator travel to Bologna to learn about agricultural economics and rural appraisal techniques with Prof. Maurizio and his colleagues. We will then apply these techniques to perform the evaluation of the case-study for WG2 with Dr. Daniele De Meneghi.

2. Description of the work carried out

Following the structure of the NEOH handbook Chapter 3, we initially set out to identify the system from our case study. A description of the system was produced including a visual flow chart for rapid extraction of the main case study points (Figure 1).

Once a thorough discussion of the case study system had been had by all collaborators, we aimed to then identify the five One Health elements that would form part of the OH assessment and final OH index score. These included: OH planning, OH thinking, transdisciplinarity and leadership, OH learning and OH sharing.

The evaluation element of our case study will try to highlight how our OH approach in the case study, compared to a single (animal) health approach. Elements for economic evaluation have then been identified for data collection.

3. Description of the main results obtained

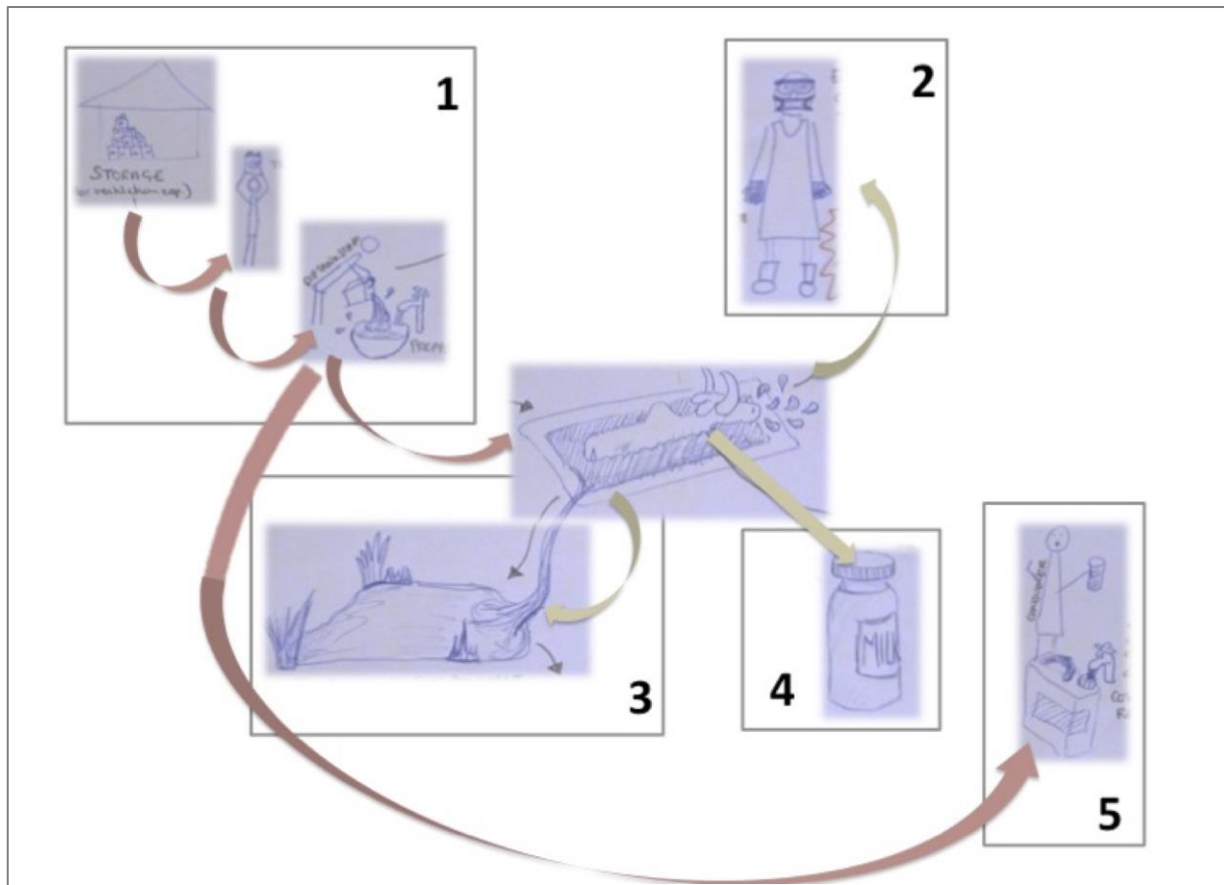


Figure 1: System diagram for a satellite project of an Animal Health Programme (AHP) which, examined the implications for public and environmental health from the widespread use of acaricides to control ticks on cattle in Zambia. (draft diagram only).

(1) Dip tank operators handle concentrated acaricide in 5L canisters and dilute 3-8 canisters to fill a dip tank (8000-25000L capacity).

(2) Cattle jump into the dip tank containing diluted acaricide fluid, this occurs weekly for ~7month of the year. 61 out of 130 communal dip tanks in the Southern Province of Zambia were targeted; equaling around 2 million dip procedures over the study period. Each cow dipped removes 2.5L, so tanks must be replenished after every 1000 dips using 6-15 5L canisters.

(3) Tanks must be emptied when contaminated or at the end of the season. Tanks are emptied onto fallow land. Residues of organophosphate in the acaricide fluid can persist in soil for up to 30 weeks, potentially contaminating water sources and agriculture. Decantation pits can be used to allow degradation of the acaricide first before disposal onto fallow land to minimise residues.

(4) Residues of acaricide can also be found in the meat and milk of cattle. It is recommended that milk must not be consumed for 24 hours after dipping, and that suckling calves be returned to the cow only after 5 hours. Meat may have residues for upto 3 days.

(5) Empty acaricide containers may be reused by local community members to store fuel e.g. kerosene, thus helping to reduce the amount of waste canisters that must be disposed of. However, canisters were often being used outside of this purpose to store consumables.

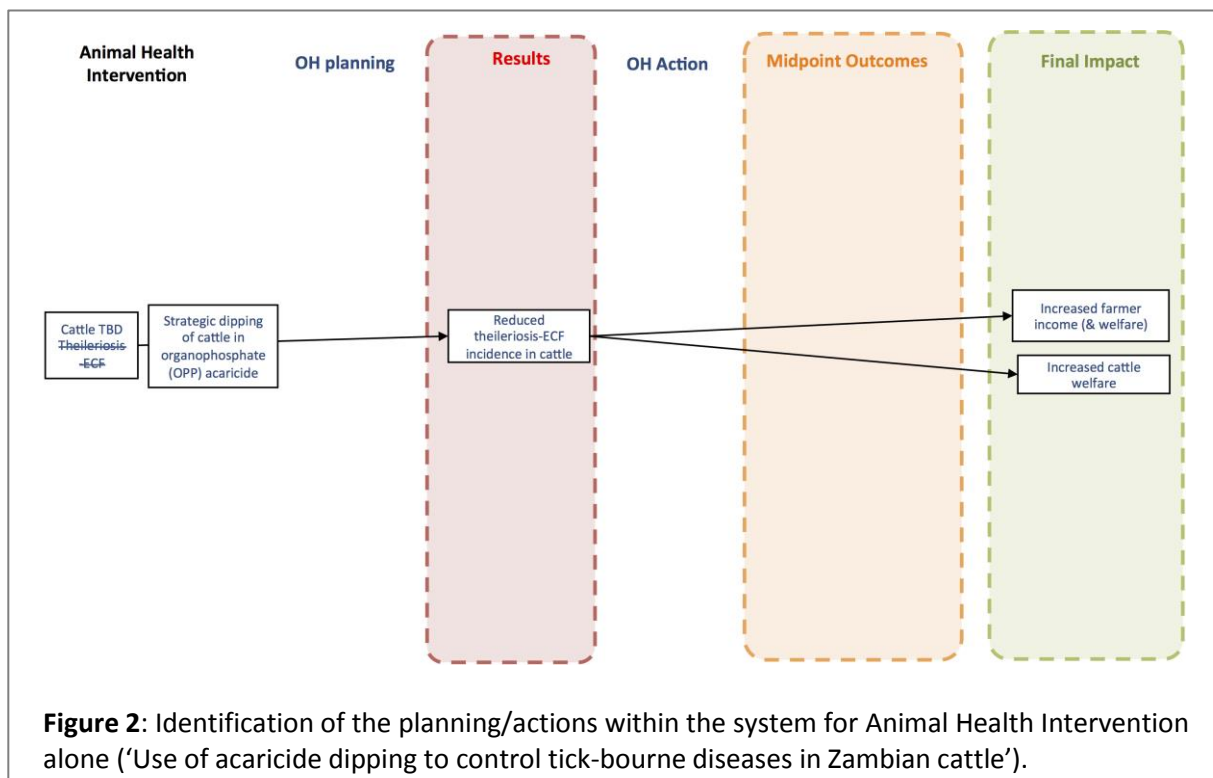


Figure 2: Identification of the planning/actions within the system for Animal Health Intervention alone ('Use of acaricide dipping to control tick-bourne diseases in Zambian cattle').

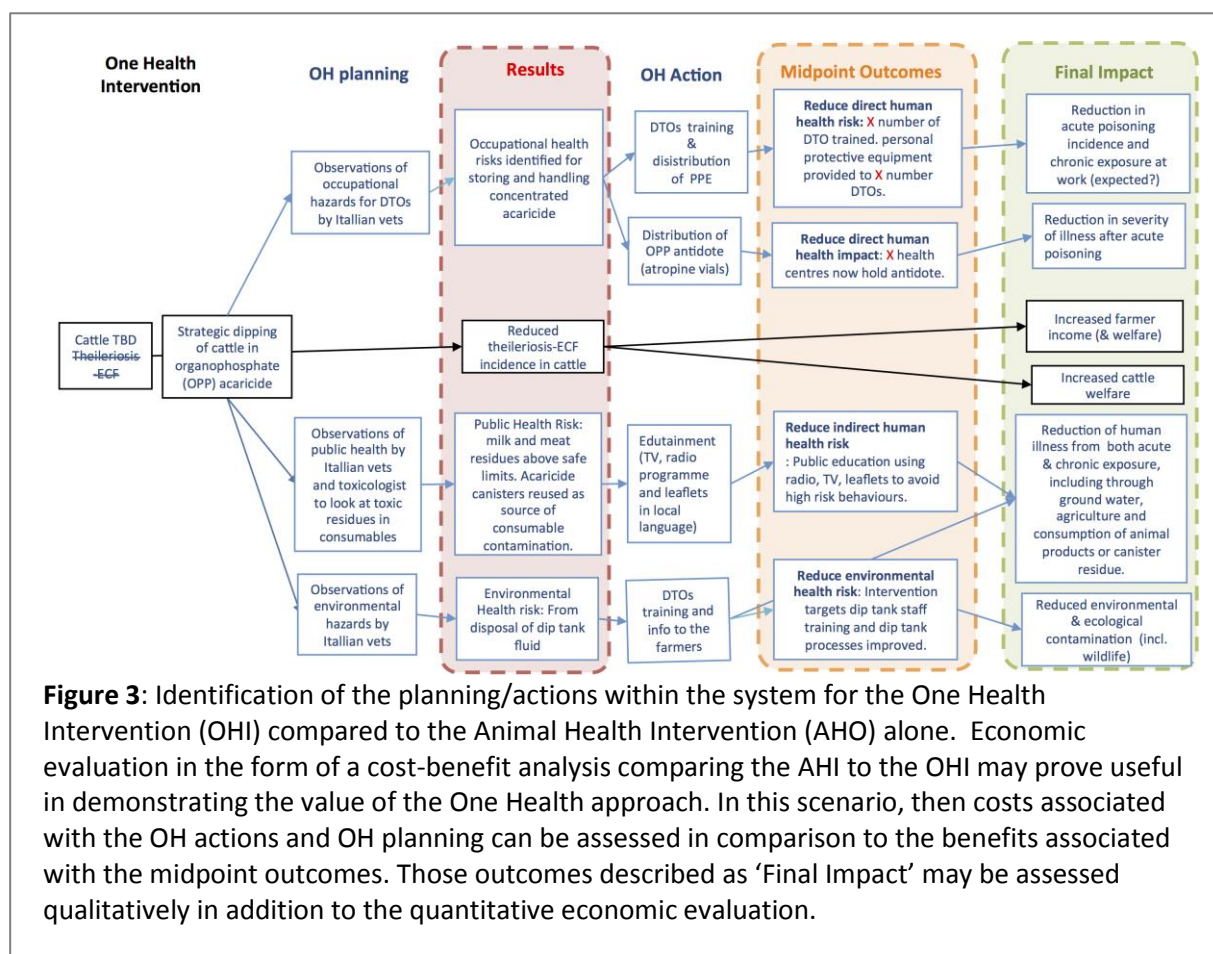


Figure 3: Identification of the planning/actions within the system for the One Health Intervention (OHI) compared to the Animal Health Intervention (AHO) alone. Economic evaluation in the form of a cost-benefit analysis comparing the AHI to the OHI may prove useful in demonstrating the value of the One Health approach. In this scenario, then costs associated with the OH actions and OH planning can be assessed in comparison to the benefits associated with the midpoint outcomes. Those outcomes described as 'Final Impact' may be assessed qualitatively in addition to the quantitative economic evaluation.

4. Future collaboration with the host

Continued collaboration on case study evaluation for presentation at Malta NEOH meeting. Maurizio Aragrande and Massimo Canali from University of Bologna and Daniele De Meneghi from University of Turin will continue to help develop this case study structure and assessment tools, including a 'visual method'.

5. Projected publications resulting or anticipated to result from STSM

The case study will be presented at the NEOH meeting in Malta (January 2017) and results published in accordance with other case evaluation (Spring 2017).

6. Confirmation of the host of successful completion of STSM

The mission was carried out and completed successfully. Development of the evaluation for the case study has been substantial and will contribute to the case studies for the NEOH handbook eventually.

7. Financial summary

Item	Provisional budget	Covered by NEOH STSM (%)
Accommodation	13 nights*€83= €1079	€1079 (100%)
Meals (based on COST flat rate estimate for Italy)	13 days*€40= €520	€260 (50%)
Travel expenses	€350	€350 (100%)
Total	€ 1949	€1689 (85%)

8. Other comments

I would like to thank my hosts and others at the host institution for making me feel welcome and all the productive discussions.

Signatures

Grantee

Host

Gabrielle Laing

Maurizio Aragrande