

## Study Cover Sheet October 2017

### Impact study of dewormers in goats and chickens in India and Tanzania

#### At a glance

<b>Aim of study</b>	A comparative assessment of weight gain in poultry and small ruminants following treatment or non-treatment with dewormers.
<b>Field study dates</b>	November 2016 – May 2017
<b>Locations</b>	India and Tanzania
<b>Total sample size</b>	2,104 chickens 487 goats

#### Study Outputs Available on GALVdox

- Study write up
- Raw data files
- PowerPoint slides for use in presentations
- Peer-reviewed publication (work in progress)

#### Strategic Context - why did GALVmed undertake this study?

The generally accepted understanding is that intestinal parasites (helminths) pose a considerable burden to the smallholder livestock farmer and that dewormers (anthelmintics) should therefore be a regularly administered veterinary product. Current and future GALVmed market development initiatives all promote the use of dewormers.

What is not known is the beneficial impact (in terms of improved smallholder productivity and profitability) arising from the use of these dewormers. There is currently very little published data from the smallholder setting on this (see results of a literature review below) and therefore very little by which impact can be reasonably estimated or modelled.

With this in mind GALVmed commissioned a field study to generate data on the effect of dewormers on smallholder livestock. The study focused on a comparison of weight gain between treated and non-treated poultry and small ruminants. The locations were smallholder settings in rural Tanzania and India. Ideally, large ruminants would have been included but this was ruled out on the practical and cost considerations of requiring the necessary handling and weighing facilities in the field.

The focus on weight gain (and condition scoring for the small ruminants) reflected a pragmatic, measurable parameter and one that is arguably an important determinant in either the price received by the smallholder for the bird / animal, or, the reproductive potential of the bird / animal. The results of this study would therefore give some indication on the effect of dewormers and these could be incorporated in subsequent impact modelling exercises (probably through SEBI) where the beneficial impact of a portfolio of products (including dewormers) are considered.

#### Headline Observations

- In Q1 of 2016, Monitoring and Evaluation (M&E) conducted a literature review on helminths and anthelmintic interventions in poultry, small ruminants and cattle in developing countries, specifically in Asia and Africa. The target populations for the review were villages and small production systems. Whilst many studies indicated a high prevalence of helminths in poultry and small ruminants, to our knowledge, at the point of review submission, only three studies examined the impact of dewormer treatment on growth rates when compared to untreated animals. The three cited studies were small-scale poultry studies with sample sizes of 100 birds or less.

- In Q4 of 2016 a large-scale M&E field study was undertaken to look at the impact of dewormers in poultry and small ruminants in village settings in India and Tanzania (Table 1)

	Tanzania	India
<b>Chickens</b>	1,064	1,040
<b>Goats</b>	253	234
<b>Villages</b>	7	18

Table 1: Sample and village size summary

- The study measured the difference in weight between treated and untreated animals (Table 2).

Species	Country	Difference in daily change in weight (g) Treated - Non-Treated
Goat	India	25.2
Goat	Tanzania	9.88
Chicken	India	1.61
Chicken	Tanzania	0.156

Table 2: The difference in daily weight change between the treatment and non-treatment groups on Day 56. Treatment also improved body condition scores in goats (a key determinant of the market value of the animals) in both locations.

- Treatment of animals with anthelmintics has a clear beneficial effect on the development of goats, with the beneficial impacts being seen in both study countries (Figure 1). In chickens, there was a smaller overall effect which was only seen in India.

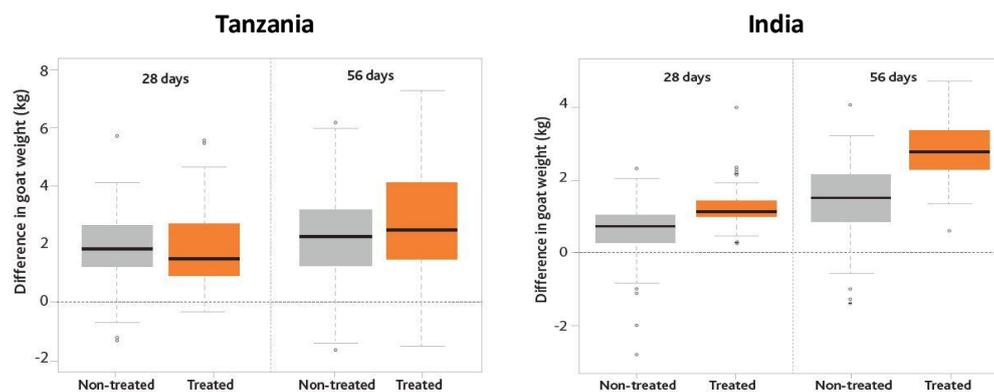


Figure 1: Box plot of the change in goat weight for treated and non-treated goats after 28 days (left) and after 56 (right).

### Further Studies

Further dewormer specific field studies will not be undertaken. It is however hoped that this study and the resultant publication may lead to further research in this important area of smallholder husbandry. The outputs from this study will be incorporated into subsequent impact modelling exercises where the beneficial impact of a portfolio of products will be considered.

**Cross Reference: Other Related GALVmed M&E Studies**

Study	Relevance
ND Vaccinator Performance Studies	The ND Vaccinator Performance Studies relate to the assessment of ND vaccinator performance in six partner organisations in India and Nepal. The studies aimed to obtain a quantitative understanding of vaccinator performance levels, and profiled high performing vaccinators and their successful business models. Vaccinator deworming practices were explored.
Vaccine Dividend Studies	The Vaccine Dividend Studies are an assessment of the adoption of improved inputs and management practices following ND vaccination. The studies aimed to look for quantitative comparative data on husbandry practices of vaccine adopters vs non-adopters, to attempt to ascertain poultry improvements in the groups. Farmer deworming practices were explored.
8,000 km <sup>2</sup> Array Studies	The 8,000 km <sup>2</sup> Array Studies are designed to build a better quantitative understanding of the animal health products currently being sold in rural smallholder markets and the associated smallholder demand for these products. Retailer inventories collected included dewormer stocks.
Poultry Productivity Studies	The Poultry Productivity Studies are impact / productivity related studies looking to make a direct comparison between ND vaccine adopters and non-adopters. Farmer deworming practices were explored.