

Improving small ruminant productivity and livelihoods through feed and health interventions

Evidence from northern Ghana



Goats and sheep feed on dried cowpea pods in Duko Community in northern Ghana. Africa RISING is assessing the viability of cowpea residue as a dry season feeding option for small ruminants. Photo credit: Jonathan Odhong'/ IITA

Key messages

- Integrated technological options are necessary for improving livestock production. Therefore, feed interventions for improving small ruminant production have to be associated with health interventions.
- Supplementary feeding did not only lead to improved performance of sheep and goat in terms of weight gained, but it was reported by the farmers to reduce animal losses through theft and accidents .
- There is high potential for scaling up of the feed and health interventions from the great interest demonstrated by the farmers in the intervention communities.
- Given the significant involvement of women in raising small ruminants, feed-health packages can enhance the livelihood of women and the household in general.

The issue

Livestock assume great importance as a major source of livelihood and income for many households as well as in food security of farm families and whole communities in the three regions in the North of Ghana (northern, upper east and upper west regions). Rural poultry, sheep and goat rearing, and smallscale dairy, particularly, are known to best serve the interests of women and poor households. Key constraints to improving meat and

milk outputs include low resource endowment of the smallholder farmers, low productivity of local breeds, and inappropriate management practices in feeding, health, and housing which result in high mortality rates.

The extensive small ruminant production system is characterized by low productivity due to high mortality, seasonal feed shortages and low productive potential of local breeds. The mortality rate among pre-weaning sheep and goats could be as high as 35% in some flocks in northern Ghana. It has been demonstrated that simple interventions involving disease control, improved nutrition, and better management lead to marked, positive effects on small ruminant performance and productivity. Considering whole farm productivity, profitability, and sustainability, interventions to improve small ruminant production should be in the context of effective integration with crops.

Findings

- The growth rate of treatment animals was higher than that of control animals ($P < 0.05$) (Table 1). Lambs grew about twice as fast as kids ($P < 0.05$) (Figs. 1a & 1b).
- A lower mortality rate was observed in treatment animals compared to control ($P < 0.05$) partly contributing to higher birth rate observed in treatment animals ($P < 0.0001$) (Table 1).

Table 1: Performance of treatment and control flocks of animals in northern Ghana

Parameter	Treatment	Control
Weight gain/animal (kg)	1.10	-0.39
Growth rate (g/d)	49.00a	39.42b
Survival rate (%)	89.82a	83.33b
Birth rate (%)	186.74a	97.17b
Offtake rate (%)	24.49	20.20

- Farmers in the treatment group had higher off take compared to those in the control which suggests more sales and consequently more income for the farmers who received feed and health interventions.
- Supplementary feeding led to production of more manure and encouraged the sheep and goats to return to the homestead. This made it easier to collect manure for crop field (Fig. 2).

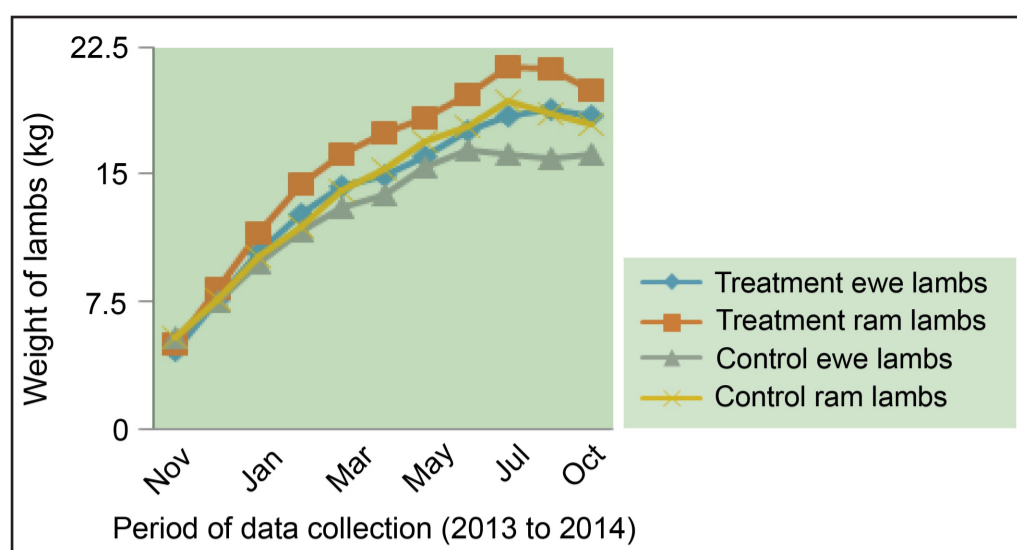


Figure 1a: Cumulative growth trend of lambs aged zero to 12 months

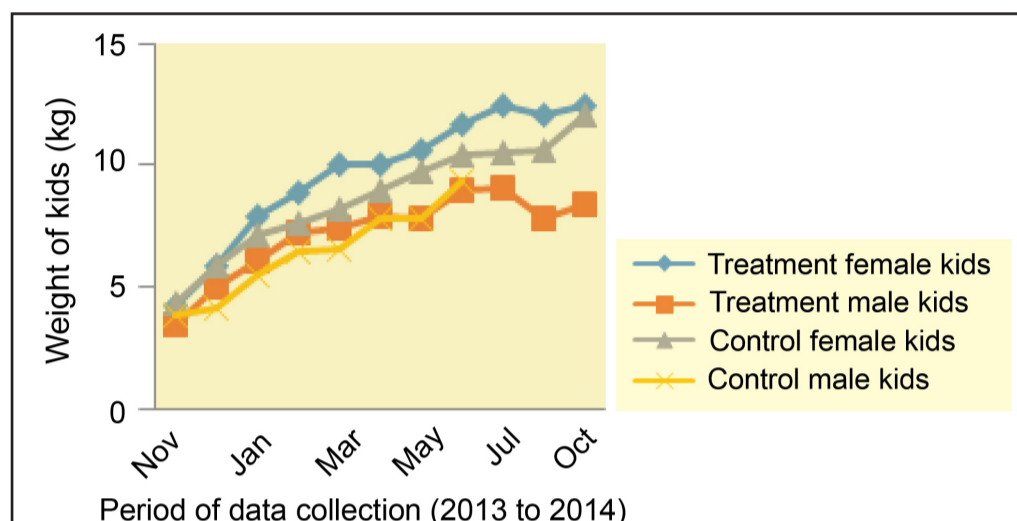


Figure 1b: Cumulative growth trend of kids aged zero to 12 months

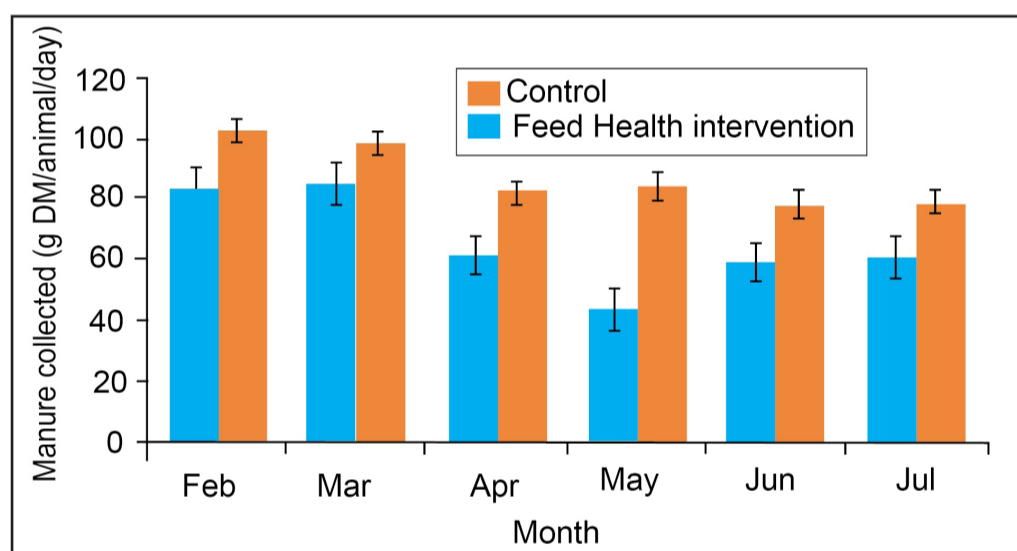


Figure 2: Manure collected by farmers from sheep and goat under treatment and control groups

Recommendations

- The study confirms the positive effects of feed and health interventions on improved animal productivity and flock growth, and the potential for better integration of crop and livestock production systems. However, the net returns from such interventions should be considered in view of the relatively high

cost of concentrate feed and the use of locally available feed resources to replace concentrate feed is recommended to ensure profitability and sustainability.

- There is need to build the capacity of the farmers in ration formulation using locally available feed resources to ensure sustainability of the feed-health interventions. In this regard, it is also essential to strengthen the capacity of the community animal health workers to improve animal health service delivery.

Methodology

The underpinning hypothesis for this study was that a combination of improved best animal husbandry practices (health, feed and housing) will increase total productivity and net profit from livestock production systems more than single technologies.

The experiment which lasted for one year (from November, 2013 to October, 2014) was conducted in six Africa RISING intervention communities in Northern, Upper East and Upper West regions of Ghana. Ten farmers were selected per community with five on treatment (feed and health treatment) and five on control (farmers' practice) consisting of 39 men and 21 women in total. A daily amount of 200g of concentrate feed was given to each treatment animal.

The health treatments consisted of quarterly antibiotic injection, treatment against endo- and ecto-parasites, multivitamin injection, and a one-time PPR vaccination. Sheep and goats of the participating farmers were ear-tagged and weighed monthly throughout the study from November 2013 to October 2014. About 800 sheep and goats were involved in the study. The manure of both sheep and goats were collected by the experimental farmers every month in a sack and were air dried and weighed.



The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative.

Through action research and development partnerships, Africa RISING will create opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads an associated project on monitoring, evaluation and impact assessment.

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