Project Title: **Formulation and Testing of Meat Goat Finishing Ration for Immature Stock in Rangelands Feedlot Production systems**

**Annual Report**

**Period Covered:** Oct 2020 to Sept 2021 (1 year)

**KCSAP livestock Applied**

**Value chain:** Red Meat

**Duration:** 18 Months

**Start Date:** Oct 2020

**Lead Institution:** KALRO (Sheep, Goat & camels Research Institute (SG&CRI), Buchuma Research Centre

**PI and contacts**

Margaret Syomiti

Email: Syomitimargaret15@gmail.com

**Collaborators and their contacts:**

1. Mr. Joseph Mwangi (KALRO Buchuma)
2. Mr. Johnstone Ruto (KALRO Buchuma)

**Background**

Small ruminant production contributes to food production, rural employment and gross national product by converting roughages into meat, wool and skin. Under the existing production system, the slaughter weight of sheep and goats in Kenya is low (<40 kg live weight), and age at which it is usually achieved is much higher (>15 months) as compared to <12 months in well managed farms. There is high demand particularly from the unemployed youth of a market-oriented production system for meat products that reduces the age at slaughter while increasing the market weight of marketed animals. The major advantage of this system is that the farmer would rear the sheep and goats for only seven months, as compared to >15 months currently practiced by livestock farmers under extensive grazing systems. It would also ensure that a “flying herd” operation that sources immature weaner goats and other old emaciated animals from a more arid rangeland and finishing them on better rangelands is achieved with a special formulated finisher ration for immature/weaner meat goats.

However, semi-intensive rearing of small ruminants is fairly a new concept in Kenya, and has not been adequately emphasized by the authorities. There is need for enhancing local production of small ruminants through intensive rearing to ensure sustainable quality meat supply in the country. Previous findings (Hassan, et al., 2012) indicated that shoats reared on well balanced diets have a capacity to reach market weight fast enough to offset the cost of rearing. However, fattening rations for small ruminants are not available in the Kenyan market, from feed manufacturers. This project is aimed at developing and testing a profitable grass-based finishing ration and management system for production of chevon in Kenya’s rangelands as one way of commercializing livestock production in the arid and semi-arid ecosystems of Kenya.

**Objectives**

1. To formulate and test meat goat finisher rations for immature stock On-station during the dry and wet seasons.
2. To determine the profitability/cost-benefit analysis of the formulated test diets for fattening immature meat goats in intensive feedlot systems in Kenya.

**Expected Outputs**

1. Finisher rations specifically for immature meat goats commercially available to livestock

2. Profitability/cost-benefit analysis of the small ruminants fattening diets for immature meat goats determined and best-bet recommended by quarter 5 and 6 for use in semi-intensive feedlot systems.

ANNUAL REPORT

I ACHIEVEMENTS

Objective 1: To formulate and test meat goat finisher rations for immature stock On-station during the dry and wet seasons.

Activity 1.1. On-station feeding trials

Achievement 1.1: This activity was completed during the reporting period. The experimental male Galla goats were managed in a semi-zero grazing system where they graze 6 and half hours before they are brought to the station for test diet supplementation (See figure 1 and 2). Feed intake and average daily weight gains were recorded for a period of three months.

Figure 1: The experimental animals grazing semi-intensively
Figure 2: Housing for test goats

Activity 1.1.1: On station refurbishment of animal finishing feedlot

Refurbishment of a 60-unit feedlot for finishing livestock was completed in the Centre. This will be an important asset with regard to climate change negative impacts such as frequent droughts where large livestock herds die of starvation.

Achievement 1.2: Corporate communications for technology marketing

This activity entailed video shooting of the KCSAP funded technology development for awareness creation and effective dissemination to end users and key stakeholders (Figures 3 and 4).
Figure 3: Sughusi Farmer group presenting their song on praising KALRO for their Climate Smart Technology Developments during a video shooting

Figure 5: Nutri-Cakes being sun-dried (curing)

The Galla goat finisher ration can be processed into many forms such as Nutri-cakes (above), pellets and/or marsh form.
## Summary of achievements under objective 1

<table>
<thead>
<tr>
<th>Output 1</th>
<th>Activities</th>
<th>Targeted achievements (Milestones)</th>
<th>Actual Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Finisher ration specifically for immature meat goats commercially available to livestock feedlot producers in Kenya by end of quarter 4 (April-June, 2021).</td>
<td>Activity 1.1. On-station feeding trials. Approximately 10 tons of finisher rations were formulated for testing On-station. Activity 1.1.1: On station refurbishment of animal finishing feedlot</td>
<td>1.1 Finisher rations specifically for immature meat goats commercially availed to livestock feedlot producers in Kenya by end of quarter 4 (April-June, 2021).</td>
<td>1.1 This activity was completed as planned. However, slight delay by about a quarter were observed due to many constraints such as long procurement processes and covid 19 related problems viz reduced mobility due to curfews. Achievement 1.1.1: This activity was completed during the reporting period.</td>
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<td>1.2 Corporate communications for technology marketing</td>
<td>Corporate communications Completed by Q6 &amp; 7</td>
<td>This activity was pushed backwards during the budget adjustment as advised by the KCSAP secretariat. Thus, this activity has now been implemented and completed.</td>
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## II Other achievements
None

## III Constraints and how they were overcome

- Inadequate staff (scientists) has delayed funds absorption rate. To solve this problem, the PI occasionally works intensively to ensure wide work coverage, even past midnights.

- Procurement process: Going through all the procurement processes takes a bit of time. Constant consultations with the Director, SCM has assisted much in solving many procurements problems.

## IV Summary of funds received, accounted for and balance

<table>
<thead>
<tr>
<th>Project Amount (KES)</th>
<th>Amount Received (KES)</th>
<th>Amount accounted for (KES)</th>
<th>Balance (KES)</th>
</tr>
</thead>
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### IV Way Forward

Activities Planned for the Period Oct 2021-June 2022

<table>
<thead>
<tr>
<th>Output 2</th>
<th>Activities</th>
<th>Targeted Milestones (Targeted)</th>
<th>Actual Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 Profitability/cost-benefit analysis of the small ruminants fattening diets for immature meat goats determined and best-bet recommended by quarter 5 and 6 for use in semi-intensive feedlot systems.</td>
<td>3.1 Cost-benefit analysis of the formulated Galla goat finisher ration for feedlot system</td>
<td>3.1 One consultative meeting/participatory partial budgeting workshop with stakeholders held by end of Q5 &amp; 6. This will be a subject matter specialists meeting comprising of biostatisticians, Agricultural economics and animal nutritionists.</td>
<td>PENDING</td>
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Cited literature
