



ANNUAL REPORT October 2020 – September 2021

Project Title:	Development of feed rations appropriate for ASAL’s.		
Annual Report	Period Covered:		
KCSAP livestock Applied	Value chain:	Duration: 18 Months	Start Date: Oct 2020
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Background: In the ASAL’S of Kenya, livestock production transcends other sectors as the key economic activity. However, minimal income is obtained by the pastoralists as animals are sold at low market prices due to their low body weights mainly caused by inadequate and inappropriate feeding. Pastoralists rarely finish their animals citing inadequate knowledge on beef finishing technologies. The project is aimed at developing low-cost forage-based beef finishing rations suitable for ASALs by using locally available feed resources. The technology once developed will then be packaged and disseminated to enhance the pastoralists’ knowledge and capacity on beef cattle finishing strategies.			

Objectives

1. To formulate and test feed lot rations suitable for ASALs of Kenya
2. To evaluate the effects of rations on finishing steers in the feedlot
3. To compute the cost/benefit analysis of feeding the formulated rations

Expected Outputs

1. Appropriate feedlot beef finishing rations developed using locally available feed resources in the ASALs

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ACHIEVEMENTS

Objective 1.0: To formulate and test feed lot rations suitable for ASALs of Kenya

Activity 1.1 Sourcing of feeds

ASAL's, locally available feed materials namely, *Acacia. Tortilis* pods, *Balanites aegyptiaca* fruits and *Prosopis juliflora* pods were sourced from Baringo County and were used as protein source in the ration formulation. Sorghum silage and Rhodes grass hay that were used as energy source were sourced locally from Beef Research Centre, Lanet. Other minor required to formulate the Total Mixed Ration (TMR) feed ingredients were sourced commercially.



Prosopis juliflora pods

Activity 1.2: Feed analysis

Samples of sourced feed materials were taken to KALRO – Muguga laboratories for proximate analysis to determine their nutritive composition.

Activity 1.3: Feed formulation, mixing and packages.

Feed formulation using the sourced feeds was done and ingredients mixed in different proportions as per the formulation to form Total Mixed Ration (TMR)

Activity 1.4: Repairing of feeding structure

Existing feedlot structure and animal holding structures were repaired and renovated before the beginning of the feeding trial.

Achievement 1.1

Feeds required for ration formulation acquired as follows: - 5 tons of *Prosopis juliflora*, 4 tons of *Acacia tortilis* pods, 5 tons of *Balanites aegyptiaca* fruits, 30 tons of sorghum silage and 500 bales of Rhodes grass hay. Other minor feed ingredients were also acquired.

Achievement 1.2

Feed analysis results obtained. A comprehensive laboratory analysis report obtained for DM, ME and CP contents of the feeds.

Achievement 1.3

Two forage-based rations were developed, namely, Rhodes grass-based ration and sorghum silage-based ration.

Achievement 1.4

22 feedlot feeding cubicles renovated, 2 livestock holding structures and 3 clutches repaired

Objective 2.0: To evaluate the effects of rations on finishing steers in the feedlot

Activity 2.1 Feeding of ration 1 & 2 to the steers

A total of 27 steers with an age ranging from 24 to 36 months and comprising of 9 improved Boran, 9 Improved Boran X Sahiwal crosses and 9 Zebu were randomly divided into three groups where group 1 and 2 was confined in the feedlot and subjected to feeding trials using the formulated rations for a period of 90 days.



Feeding on the formulated rations

Group 3 steers was used as control and was left in the field for free-range grazing. During the feeding process, faecal and urine samples were collected from animals fed with on ration 1 and 2 and also from the control group. A grazing study was conducted to assess the nutritive value of rangeland pastures fodder where the control group of steers were grazing

Activity 2.2: Data collection

At the beginning of feeding trial, weight was recorded. Data was collected on feed offered, left overs and feed intake for the two rations on daily basis for each animal. Weighing of animals was done after every week. Any other important data pertaining to animal health was also recorded.

Achievement 2.1

The 18 steers were successfully fed on formulated rations, Feed analysis results from faecal and urine samples for DM, ME and CP were obtained. A comprehensive laboratory analysis report was obtained for the nutritive value of rangeland pastures and fodder.



Faecal sample collection

Achievement 2.2

Data on feed offered, left overs and feed intake for the two rations on daily basis for each animal obtained. Weekly weight data of animals obtained.

II Other achievements (e.g., patents, publication such as journal papers, technical reports, presentation in workshops and conferences etc.,) - None at the reporting period

III Constraints and how they were overcome

High cost of sourcing indigenous feed ingredients such as *Balanites egyptica* fruits, *prosopis* and *acacia tortilis* as they are not available in the experimental localities and has to be sourced in ASAL areas of Baringo and Isiolo counties. Their availability is also seasonal.

IV Summary of funds received, accounted for and balance

Project Amount (KES)	Amount Received (KES)	Amount accounted for (KES)	Balance (KES)
4,508,350.00	1,136,031.00	1,136,031.00	3,372,319.00
	898,015.00	898,015.00	2,474,302.00
	2,034,048.00	2,034,048.00	2,474,302.00

IV Way Forward

Activities Planned for the Period Oct 2021-June 2022

1. Data analyses

2. Carcass analysis
3. Cost-Benefit analysis
4. Write shop to produce project technical report and scientific write ups