

## Dedication

Peace and prayers to great prophet Mohammed.

I dedicate this research

To

My father,

Mother,

To my brothers and sisters,

And To

My friends.

## **Acknowledgement**

Praise and thanks to Allah for helping me.

I am deeply indebted to my supervisor professor Babo Fadlalla Mohammed for his valuable help and guidance through this work.

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Thanks are also due to the farm owner Mr. Khalid. Mohammed Hamid .

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## ملخص الدراسة

اجريت هذه الدراسة في السودان بولاية الخرطوم بالتحديد مزرعة البان بمنطقة تبنا وذلك لتكوين عليقة تفي باحتياجات الابقار الحلوب من ناحية الحفظ والانتاج وبتكلفة اقتصادية اقل.

هدفت الدراسة الي معرفة احتياجات الابقار الحلوب من ناحية الحفظ والانتاج والتعرف علي العلائق التي تعطي للابقار في المزرعة وهل هي تلبي احتياجات الابقار الحلوب ومعرفة انتاج الابقار من الحليب.

اعتمدت الدراسة علي جمع المعلومات من المزرعة ومقابلة صاحب المزرعة ومعرفة العلائق المستخدمة في المزرعة وتحليل العلائق كيميائيا ومعرفة كمية البروتين الخام والطاقة الايضية والمادة الجافة لكل من العليقة ثم معرفة انتاج الابقار ومعرفة مايعطي للابقار يوميا.

وجدت هذه الدراسة ان الكمية التي تعطي للابقار يوميا من البروتين تزيد عن الاحتياج اليومي بمقدار 60% وايضا الكمية التي تعطي من الطاقة للابقار يوميا تزيد عن الاحتياج اليومي من الطاقة بنسبة 30% وهذه زيادة تكاليف لاحاجة لها.

كونت عليقه تفي باحتياجات الابقار من الحفظ والانتاج وبتكلفه اقتصاديه اقل .

اوصت الدراسة بان اصحاب المزارع يجب ان يستشيروا اخصائي تغذية حيوان حتي لا تعطي ابقارهم كمية من الغذاء اكثر من حاجة الابقار وبالتالي زيادة التكلفة وان يعملوا ايضا تحليلا كيميائيا للعلائق التي يعطوها للابقار لمعرفة مقدار البروتين والطاقة التي بها.

## Abstract

This study was conducted in Khartoum State, more specifically in a dairy farm at (Tebna ) area. The purpose of the study was to formulate a ration which satisfies the needs of dairy cattle in terms of maintenance and production, with least cost.

The study compared the needs of dairy cattle in terms of maintenance and production as well as knowing the amounts and types of feeds which are provided to cattle in the farm, and whether these satisfy the needs of dairy cattle. In addition to that, the study aimed at balancing the ration with respect to the major nutrients, metabolizable energy and protein while keeping lowest possible costs.

Data were collected from the farm and some individual owners of farms were interviewed.

The types of feeds used in the farm were studied and analyzed chemically. These were: *Syamposis tetragonolobus meal* (Guar), *Sorghum bicolor* (Crushed Sorghum grain), Molasses, Green *Sorghum bicolor var. Abu 70*, *Arachis hypogaea* cake (Groundnut), *Vicia faba straw*( Broad bean),*Arachis hypogea straw* (Groundnut),*Triticum aestivum* (Wheat bran), and Babiker mix. Besides, the quantity of crude protein and metabolizable energy were determined. Then, cow milk production was determined as well as the feed that was given to cows daily.

The study found that the daily quantity of protein given to cows exceeded their needs by 60% and also the quantity of energy exceeded needs by 30%. That is means 60% of the protein and 30% of the energy are extra than the needs of the cows, indicating unjustified additional cost.



A ration was formulated that should meet maintenance and production requirements of the cows with the least cost.

This study recommends that farm owners should consult nutrition specialists, in order to avoid giving their cows more food than needed, and hence more expenses. They should also analyze the feeds given to their cows so as to know the quantity of protein and energy in it.

## Abbreviations and acronyms

**CP:** crude protein

**DM:** Dry matter

**DMI:** Dry matter intake

**EBW:** Empty body weight

**Kg:** Kilogram

**ME:** Metabolizable energy

**MFP:** Metabolic fecal protein

**MJ:** Mega joule

**MP:** Metabolizable protein

**N:** Nitrogen

**NE:** Net energy

**NPN:** Non protein nitrogen