OPTIMAL FEEDING SYSTEMS FOR SMALL SCALE DAIRY HERDS IN THE NORTH-WEST PROVINCE OF SOUTH AFRICA

By

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DEDICATION

To my dearest mother Margaret Manzana, my brother Setumo and my two lovely kids Tshegofatso and Kamogelo for their encouragement, support and also for believing in me.

SUMMARY

Title:

OPTIMAL FEEDING SYSTEMS FOR SMALL SCALE DAIRY HERDS IN THE NORTH-WEST PROVINCE OF SOUTH AFRICA

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Key words:
Small-scale dairy farming, Dairy cow nutrition, Feeding systems, Milk yield, North West Province

Abstract:
The North West Province (NWP) identified dairy farming as a priority as it has the potential, not only for job creation, but also as a sustainable source of high quality protein for rural communities. With the correct type of management systems, small-scale dairy farms have the potential to be economically feasible. For the purposes of this study, a small-scale dairy farm was defined as a farm which produced less than 500 litres of milk a day irrespective of the number of cows or size of the farm. The study area was Central North West Province and the study was a longitudinal observational study conducted with 15 small-scale dairy farmers from 2002-2006. Nutrition was found to be a major constraint to the production capacity of dairy cows studied. It was found that farmers were deficient in the knowledge, skills and experience required to develop an affordable and balanced feeding system based on locally available ingredients. Dairy rations were given to prevent malnutrition or starvation, rather than to increase production. It was also shown that feeding of the cattle on the farms investigated, was influenced more by availability and affordability of locally obtained feed ingredients than by planning nutrition to increase milk production. Available statistics show that there are approximately 257 000 dairy cattle in NWP, with the greatest numbers in the Central Region (175 235)

and smaller numbers in the Western (59 852) and Eastern (21 873) Regions. These cattle produced approximately 230.4 million litres of milk annually (12.5% of national production) with an estimated value of R304.1 million at R1.32/l, excluding value-added products in the form of cheese, yoghurt, milk powder, and others in 2002.

The method used was a longitudinal study conducted from 2002 to 2006 in three phases. In the first phase, situational analysis using participatory rural appraisal (PRA) and observation was used to outline the extent of the constraints and start to design appropriate interventions. Feeds used by the farmers for feeding dairy cows – both supplements and roughage - were tested and evaluated. In the second phase, three different feeding systems were designed from the data obtained from PRA, in consultation with small-scale dairy farmers, established commercial dairy farmers, state veterinary and agriculture staff, feed manufacturers and distributors and the commodity organization (MPO) to optimize the nutrition of the dairy cows. The third phase was field testing of interventions and observations of the implementation by farmers.

It was found during the PRA phase that the majority (n=9) of farmers had been in dairy farming for not more than five years, five farmers had six to ten years in dairy farming and only one farmer had 11 to 15 years in dairy farming. Dairy farming is a very highly skilled operation and farmers need to have experience and knowledge to succeed. Five years is insufficient. Therefore capacity building and training were instituted over the period 2002 to 2005. Also, 60% (n=9) of the farmers were not affiliated to any agricultural organisation, so membership of the Milk Producers Organisation was facilitated for all farmers in the study. It was also found that the cattle were not identified and neither production nor financial records were kept. Testing and evaluation of feed used showed that it was of poor quality, deficient in protein, energy and minerals and no effort was made to balance the ration.

In the second phase, three feeding systems were developed form data obtained and observations during phase one. These were A: a semi-intensive farm based ration using available crops, pastures and crop residues with minimal rations purchased; B: an intensive, zero-grazing dairy system using a total mixed ration (TMR) for farmers with smallholdings of less than 5 hectares per cow and C: Traditional, extensive or dual purpose system where the calf drank from the cow until weaning and milking was done only once a day, for farmers with more than 5 ha grazing available per cow. The last was a low-input/low output system and was implemented by a majority (n=8) of the farmers. System B was chosen by two farmers and not

adopted by any of the two farmers in the long run. System A was adopted by three farmers. Four farmers left dairy farming for various reasons during the study. By July 2006, the farmers had changed to commercially formulated rations or licks and the body condition score of the cows had improved. Milk production per cow did not increase, but this may have been due to the increased price of meat and the fact that a majority of the farmers were using a dual purpose system and selling calves at weaning for a very good price.

It was concluded that extension officers should get extra training in dairy if there are dairy farmers in their areas as this is a very specialist type of extension. They should also work closely with veterinary services including veterinarians, animal health technicians and the health inspectors. Further research should be done to optimise the traditional model as this is relatively profitable, has a lower risk and is less labour intensive. It is probably a good way to increase food security, particularly in families when only one or two members have an income from a pension or part-time employment. The prices realised from informal sales of milk and calves can give a stable income. The “community farms” should be economically evaluated in terms of each beneficiary being able to get a “living wage” out of the projected profits of the farm. The MPO and other stakeholders should give very specific training to new dairy farmers, based on the models that were used in this study. It is essential that framers be taught to “look forward” and get a pro-active attitude. They must also understand that quality, balanced rations are the key to success – poor rations are expensive rations, because they result in unhealthy cows and poor production.

Finally, ongoing and effective monitoring and evaluation of extension is an effective instrument for project sustainability – farmers must be involved and participate in their own evaluation - extension is not all about paper work it is about measuring performance and good service delivery.

DECLARATION

I, Nonzwakazi Patience Manzana, hereby declare that the work on which this dissertation is based is original and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree at this or any other University.

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SIGNATURE DATE

TABLE OF CONTENTS

CHAPTER 3 MATERIALS AND METHODS

CHAPTER 4 RESULTS AND DISCUSSION

CHAPTER 5 CONCLUSIONS & RECOMMENDATIONS

CHAPTER 6 REFERENCES

APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES