

Dedication

*To the memory of my father
and Peter Waller*

To my mother
and my husband Pok Samkol

Contents

4.5!	Feeds and feeding	33!
4.6!	Measurements	35!
4.6.1!	Analytical procedures of feeds	35!
4.6.2!		

1 Introduction

Gastrointestinal nematode (GIN) infection is a major cause of wastage and decreased productivity in livestock worldwide (Waller

reported a huge annual increase in cassava production, from 500,000 up to

(2004) &

Haemonchus, Marshallagia

pregnant after birth the more efficient will be the herd. Flock productivity

mortality rate of 74 % for animals up to one year old, whereas it was 34 % in the adults. Also in this case postmortem examination confirmed the major cause of death as a combination of pneumonia and haemonchosis.

2.3.3 Economic losses

2.4.1 Chemotherapy

Anthelmintic treatment is a very common and in general most efficient control

production, which in turn increases protein digestion and absorption in the small intestine (Knox & Steel, 1996). This process provides a better capacity

contains between 21–24 % (Seng *et al.*, 2001; Seng & Preston, 2003). Cassava leaves have also been reported to have a good essential amino acid content, comparable to soybean meal (Eggum, 1970). Cassava leaves are also a good source of minerals, (e.g. Ca, Mg, Fe, Mn, Zn) as well as vitamins, such as A and B2 or riboflavin (Ravindran, 1992

effects of tannin-

substrate (Mühlbach, 1999). Based on the agricultural activities, rice

4.6 Measurements

4.6.1 Analytical procedures of feeds

The

4,000 epg observed in the CO group in paper I, II and III, and in the GrS and GrRb group in paper IV. Fresh cassava apparently always depressed the

5.5 Total worm burdens

Table 2. *Number of major worm species recovered at slaughter of goats, 10 weeks after inoculation with a mixture of 3,000 mixed nematode L3*

Haemonchus
contortus

approximately five times higher (Seng & Preston, 2003). Lin *et al.* (2003) also found a possible

8 Implications and futher research

In these studies we have not reported the results from an *in vitro* study using

References

ADB (2003). Report and Recommendation of the President to the Board of Directors on Proposed Loans and Technical Assistance Grant to the Kingdom of Cambodia for the Agriculture Sector Development Program. Asian Development Bank (ADB) RRP:

Devendra, C. & McLeroy, G.B. (1982). Goat and sheep productions in the tropics.

Khang, D.N. & Wiktorsson, H. (2004). Effect of fresh cassava tops on rumen environment parameters, thyroid gland hormones and liver enzymes of local yellow cattle fed urea-treated fre

Workshop on Cassava Research and Development in Asia: Exploring New Opportunities for an Ancient Crop, Bangkok, pp 48–57.

Preston, T.R. & Leng, R.A. (1987). Matching ruminant production systems with available resources in the tropics and sub-tropics. Armidale: Penambul Books, New South Wales, pp. 181–90.

Preston, T.R., Rodríguez, L. & Khieu, B. (2000). Associations of cassava and legume trees as perennial forage crops for livestock. In: Preston, T.R. & Ogle, B., (Eds.), Proceedings National Workshop-Seminar on Sustainable Livestock Production on Local Feed Resources. Ho Chi Minh City, pp 22–

- Venturina, V.M., Ancheta, P.B., Dobson, R.J., Eduardo, S.L. & Gray G.D. (2003). Use of a larval development assay to estimate anthelmintic efficacy in goats in smallholder farming systems. *Philippine Agriculturalist* 86, 134–9.
- Wallace, D.S., Bairden, K., Duncan, J.L., Fishwick, G., Gill, M., Holmes, P.H., Mckeller, Q.A., Murry, A., Parkins, J.J. & Stear. M.J. (1996). Influence of soyabean meal supplementation on the resistance of Scottish blackface lambs to haemonchosis.

Acknowledgements

This study was funded by The Swedish International Development Authority/Department for Research Cooperation (Sida/SAREC) through the regional program, Mekong Basin Animal Research Network (MEKARN). I gratefully acknowledge having access to the experimental facilities of the Mekong Basin Animal Research Network (MEKARN).

Gratitude