

## MILK PRODUCTION FROM THE INDIGENOUS MALAWI GOAT

R A Cooper<sup>1</sup>, J A Kirk<sup>1</sup>, L Kamwanja<sup>2</sup> and J Banda<sup>2</sup>

<sup>1</sup> Seale-Hayne Faculty, University of Plymouth, Devon TQ12 6NQ, United Kingdom

<sup>2</sup> Bunda College of Agriculture, PO Box 219, Lilongwe, Malawi

### INTRODUCTION

It has been established that in some areas of Malawi the incidence of malnutrition in children under the age of 5 may be as high as 70%. The problem is particularly severe in children who have been weaned off breast milk. Milk is seen as being of special benefit to such children and in many parts of the world the source of milk would be the goat. Estimates of the number of goats in Malawi vary between 1,0m and 1,5m and yet with the exception of a few localised areas, those goats are not milked. There does not appear to be any custom or taboo prohibiting the consumption of goats milk. Indeed, in a survey Banda (1992)<sup>1</sup> showed that goats milk was acceptable to many people and was even preferred to that of the sheep or cow. The aim of this project was therefore to examine the milking potential of the indigenous Malawi goat and specifically to answer the following questions:

- i) How much milk, per day per lactation is the indigenous goat capable of producing when hand milked once / day?
- ii) What effect does removal of this milk have on the liveweight and reproductive performance of the lactating doe?
- iii) Does improving feeding regimes by using a locally available by-product (maize-bran) produce a performance response?

### MATERIALS AND METHODS

The trials were undertaken at Bunda College (13°S, 34°E) between 1993 and 1995. Animals used were indigenous Malawi goats of the small East African type, with a mature weight of 30-35 kg. The breeding females (does) and their offspring (kids) grazed unimproved indigenous grassland by day and were housed overnight in a blue-gum pole and wire pen under a galvanised iron roof. Kids were separated from the does at housing and returned to them at turnout to grazing the following morning. Where supplementary feed was offered, it was fed at a rate of 250± 10g daily, at housing. Does were hand milked once daily, before turnout, and individual yields were measured. Milking commenced 25± 3 days post kidding and continued until yields were below 50 ml on 3 consecutive days. Kids ran with the does daily until they weaned naturally.

### RESULTS

Milk production to hand milking was extremely variable, with individual yields ranging from 5.2 to 85 litres. In the year 1993-1994 supplemented (MS) does gave significantly more milk than unsupplemented (MNS) in each of the first 20 weeks ( $P < 0.05$ ). Total yields were 29.3± 18.3 litres per lactation for MS, compared to 15.0± 8.6 litres for MNS ( $P < 0.01$ ). In 1994-95, weekly yield differences were only significant in week 4, ( $P < 0.05$ ) Total yields were 27.9±15.2 and 20.2±12.6 litres for MS and MNS respectively.

Across years the patterns of milk production were similar within treatment but showed treatment differences, with MS animals peaking in week 4 whilst MNS yields declined from week 1. Mean peak yields for MS were  $2109 \pm 962$  ml/week in 1993/94 and  $1404 \pm 530$  ml/week in 1994/95, while the equivalent figures for MNS were  $1535 \pm 568$  ml and  $1398 \pm 496$  ml.

Total yields were affected both by daily yield and by lactation length. In both years lactation length was shorter for MNS animals, with MS average lactations  $129 \pm 28.4$  days in 1993-94 and  $194.4 \pm 55.6$  days in 1994-95. MNS animals averaged  $117.4 \pm 56.8$  and  $155.2 \pm 70.3$  days.

Reproductive performance was affected by treatment ( $P < 0.01$ ). In both years litter size was greatest in MS animals ( $1.9 \pm 0.7$ ) and lowest in MNS ( $1.35 \pm 0.5$ ) with unmilking animals (C) in between at  $1.65 \pm 0.5$ . There was no significant effect of treatment on the number of days from kidding to conception, though there was a tendency for MNS does to conceive faster than MS or C. Figures for MS, MNS and C were  $155 \pm 49.8$ ,  $143 \pm 83.0$  and  $164.6 \pm 91.4$  days in 1993-94 and  $171 \pm 61.6$ ,  $163.9 \pm 86.3$  and  $175.9 \pm 47.3$  days in 1994-95. These figures may be a reflection of bodyweight changes. Control does were slightly heavier at kidding ( $33.0 \pm 7.0$  kg) than MS ( $31.7 \pm 6.9$  kg) and MNS ( $31.1 \pm 5.9$  kg), but MNS animals subsequently lost the least, only dropping to  $30.4 \pm 5.3$  kg in week 16, a loss which they had regained by week 20. MS does dropped to  $29.8 \pm 7.3$  kg by week 16 but did not recover until week 23 whilst control animals dropped to  $31.5 \pm 5.4$  kg in week 14 and had regained lost weight by week 18.

## CONCLUSIONS

It is concluded that despite considerable variation between animals it is possible to produce usable amounts of milk from the indigenous Malawi goat, with only minor modification to traditional husbandry and without prejudice to the doe. The use of a supplementary feed, such as the bran used in these trials will lead to increased yields. The compositional quality of milk from the Malawi goat is high. (Banda<sup>2</sup>) reported an analysis of 5.3 g protein/kg, 67g fat/kg and 47g lactose/kg. In these trials, MS does sustained daily yields in excess of 200ml for 16 weeks in 1993-94 and in excess of 150 ml in 1994-95. Such quantities would provide a child with valuable amounts of protein, as well as calcium and Vitamin A. It is therefore further concluded that the hand milking of the indigenous Malawi goat could make a useful contribution to the nutrition of children in the families of goat-owning small holder farmers.

## REFERENCE

<sup>1</sup>Banda, J 1992. Acceptability of goats, sheep and cows milk in Malawi. *J Cons. Stud & Home Econ.* 16, 129 - 138.

<sup>2</sup>Banda, J 1992. Genotypic and seasonal influence on milk yield and composition of sheep and goats in Malawi. PhD Thesis, University of Geissen.