An Evaluation of Grazing Value of Maize and Companion Crops for Wintering Lactating Ewes

E. A. van Zyl
Dundee Research Station, South Africa

C. S. Dannhauser
University of the North, South Africa

The XX International Grassland Congress took place in Ireland and the UK in June-July 2005. The main congress took place in Dublin from 26 June to 1 July and was followed by post congress satellite workshops in Aberystwyth, Belfast, Cork, Glasgow and Oxford. The meeting was hosted by the Irish Grassland Association and the British Grassland Society.

Proceedings Editor: D. A. McGilloway

Publisher: Wageningen Academic Publishers, The Netherlands

An evaluation of grazing value of maize and companion crops for wintering lactating ewes

E.A. van Zyl[1] and C.S. Dannhauser[2]
[1]*Dundee Research Station, PO Box 626, Dundee, 3000 South Africa, Email: vanzyle@dunrs.kzntl.gov.za,* [2]*School of Agriculture & Environmental Science, University of the North, Private Bag X1106, Sovenga, 0727, South Africa*

Keywords: grazing maize, companion crops, winter-feed, Merino sheep

Introduction Northwestern KwaZulu-Natal (KZN), in South Africa, is well known for its sheep production from natural rangeland in summer (October to May). During winter, however, the nutritional value of the rangeland cannot maintain young growing sheep or pregnant and lactating ewes. With this in mind, Lyle (1991) suggested the use of planted pastures for the winter. Crichton *et al.* (1998) and Esterhuizen & Niemand (1989) suggested the use of maize crop residues for both cattle and sheep during winter, whereas Moore (1997) evaluated grazing (not harvested) maize for this purpose. He found that the crude protein content of the crop was inadequate and for this protein-rich companion crops were evaluated in this study.

Materials and methods Maize, with eight different companion crops, was evaluated as winter feed for lactating Merino ewes and lambs on the Dundee Research Station, KZN, South Africa. One ha plots were planted with 0.5 ha maize and 0.5 ha companion crop adjacent to each other. The following companion crops were used: *Ornithopus sativus (Os), Vicia dasycarpa (Vd), Raphanus sativus (Rs), Ladlab purpureus (Lp), Glycine max (Gm), Vigna unguiculata (Vu), Avena sativa (As), Secale cereale (Sc)* and maize (M) alone. The maize and summer companion crops were planted during late November, each year, and the winter crops during February. Ten ewes and their lambs were allocated to each treatment and they were allowed to select between the maize and the companion crops. Whenever the experimental animals did not ingest sufficient of the available biomass, dry ewes were added. Grazing potential and growth of ewes and lambs were measured. The experiment was conducted over three consecutive years.

Results The rainfall data for the three years (from July-June) were 442.3mm, 792.7mm and 862.6 respectively, with the long-term average being 782.9mm. During year 1 the low rainfall resulted in poor performance of some companion crops and only M+Gm, M+Lp and M+Sc were grazed. During years 2 and 3 all treatments were evaluated. Although the rainfall in the first year was below average, M+Gm managed to carry 24.8 small stock units (SSU)/ha, with a total liveweight gain of 334 kg/ha. In a normal rainfall situation (year 2) M+Lp and M+Rs carried more than 20 SSU/ha and liveweight gains were 318 and 346 kg/ha respectively. During year 3, with a high rainfall, M+Rs and maize alone carried more than 32.5 SSU/ha, with liveweight gains of 376 and 341 kg/ha respectively.

Table 1 Grazing capacity per treatment

Treat-ment	SSU/ha/100days*			
	Season1	Season2	Season3	Mean
M+Gm	24.8	18.3	27.6	23.6
M+Vu	-	16.5	25.7	21.1
M+Lp	19.2	22.2	40.1	27.2
M+As	-	18.8	20.8	19.8
M+Os	-	16.9	27.6	22.2
M+Vd	-	19.6	25.3	22.4
M+Rs	-	20.0	32.5	26.2
M+Sc	20.4	-	-	-
Maize	-	20.0	38.7	29.3

Table 2 Total liveweight gain per treatment (kg/ha)

Treat-ment	Liveweight gain (kg/ha)			
	Season1	Season2	Season3	Mean
M+Gm	334	272	293	300
M+Vu	-	249	361	306
M+Lp	230	318	294	281
M+As	-	247	267	257
M+Os	-	270	238	254
M+Vd	-	233	291	262
M+Rs	-	346	376	360
M+Sc	285	-	-	-
Maize	-	274	341	307

*1 ewe = 1 small stock unit (SSU) and 1 lamb (average 20 kg) = 0.5 SSU

Conclusions When below average rainfall seasons are experienced, maize + *Glycine max* (soybeans) can be expected to be an appropriate winter feed. During normal rainfall seasons maize + *Lablab purpureus* (dolichos), maize + *Raphanus sativus* (Japanese radish) and maize alone are appropriate winter feeds. Maize + *Vigna unguiculata* (cowpeas) may be an appropriate winter feed during a higher rainfall season.

References

Esterhuizen, C.D. & S.D. Niemand (1989). Oesreste van ses kontantgewasse vir die oorwintering van skape. Inligtingsdag, Nooitgedacht-Navorsingstasie, Ermelo, Bl.85-107.

Lyle, A.D. (1991). The use of supplementary licks for sheep on summer and winter Sourveld. Sheep in Natal. Co-ordinated Extension Committee of Natal (5.2.1991). KwaZulu-Natal Department of Agricultural, Private Bag X9059.Pitermaritzburg. 3200.