

THE PRODUCTIVITY OF TAGASASTE AS DETERMINED BY THE PERFORMANCE OF CATTLE GRAZING IT ON A ROTATIONAL VERSUS CONTINUOUS BASIS

D.M. McNEILL^A, G.M. ALLEN, N.J. EDWARDS and C.M. OLDHAM

Faculty of Agriculture (Animal Science), The University of Western Australia, Nedlands, W.A. 6907

^A Present address: Dept of Agriculture, The University of Queensland, St Lucia, Qld 4072

Recently, producer attention has turned from the short-term use of tagasaste for sheep in the dry summer/autumn of southwest WA to its use as a year-round source of forage for cattle and the most productive way to graze it. The aim of this MRC funded study was to estimate the productivity per year that could be expected from cattle grazing tagasaste. A continuous grazing regime was compared to the more accepted rotational regime, with the expectation that productivity would be greater under continuous stocking as this has previously been found to encourage the tagasaste to assume a hedge-like growth habit containing an abundance of leaf which is where the majority of the digestible nutrients are in tagasaste (Borens and Poppi 1986; Oldham *et al.* 1994).

The experiment was conducted from 10 March 1994 to 2 February 1995 on mature plots of tagasaste (14 plots from 1.8 to 2.9 ha in size, total = 29.3 ha) sown on the deep-sand soil of the commercial property "Newdale" (130 km north of Perth). Plants were spaced every metre along rows with rows 5 m apart. On average, 60% of each plot comprised continuous rows of tagasaste with the balance as pasture. A total of 16 Shorthorn cattle (initial liveweight = 189 ± 3.4 kg) were randomly allocated to the rotation treatment and 16 (initial liveweight 183 ± 4.7 kg) to the continuous treatment. The rotation treatment comprised 2 replicates each of 4 plots, and the cattle were moved on to a new plot monthly. The continuous treatment comprised 6 plots. For the rotation plots the amount of feed remaining after two weeks grazing was assessed and the stocking rate was increased or decreased accordingly by drawing from a group of "spare" animals such that a minimal residual of feed was left in the plot at the end of the month. Similarly, the continuously grazed plots had animals removed or added as required to maintain the stem length of the new regrowth to between 5 and 10 cm. All cattle were weighed fortnightly. Treatment effects on animal performance were determined by comparing the mean fortnightly liveweight gains for those animals that were never removed from their treatment plots throughout the study, using repeated measures ANOVA. Treatment effects on total animal production per hectare per year was determined by calculating total liveweight produced per hectare of land per year on an individual plot basis with treatment means compared by ANOVA.

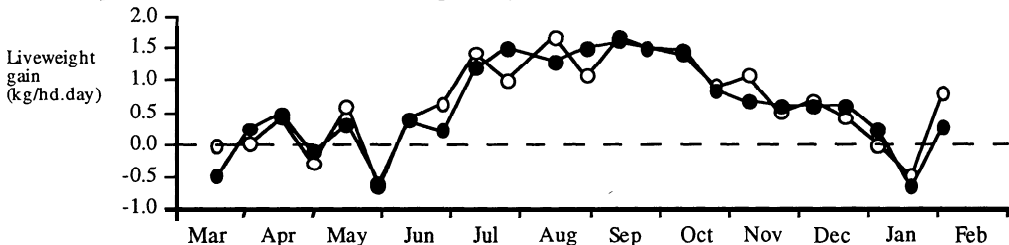


Figure 1. Mean fortnightly liveweight gains over time for young dry cattle grazing tagasaste either on a rotational (n=12, —○—) or continuous (n=12, —●—) basis for one year

Liveweight gained/ha of land per year (rotation = 240, continuous = 218, \pm pooled SD = 57.5 kg/ha.yr) and individual animal performance were not significantly different between treatments (Figure 1). There was a marked seasonal effect on animal performance, with excellent growth rates from 1.0 to 1.5 kg/hd.day achieved in the winter/spring period. This was in contrast to the dry summer/autumn period where the cattle on average only maintained liveweight. These gains translate to a yearly carrying capacity for tagasaste in the order of 11 DSE for cattle, which is approximately 7 times the accepted carrying capacity of 1.5 d.s.e/ha.yr for sheep on pasture alone in the sandplain region of southwest WA.

We conclude that tagasaste can produce in the order of 230 kg of liveweight/ha.year when intensively grazed by cattle and that a rotational or continuous grazing regime is equally productive.

BORENS, F.M.P. and POPPI, D.P. (1990). *Anim. Feed. Sci. Technol.* 28: 275-92.

OLDHAM, CM., ALLEN, G.M. and FORTUNE, J.A. (1994). *Proc. Aust. Soc. Anim. Prod.* 20: 85-8.