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High animal production from low herbage allowance

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ABSTRACT

With high quality herbage from irrigated Nui ryegrass and Huia white clover pastures, supplemented with Matua prairie grass pasture, realised herbage allowances were considerably lower than current recommendations. Allowances were calculated from herbage on offer in a 10-paddock rotational grazed system, with no adjustment being made for herbage grown during the grazing period, and with grazing always to a residue of less than 300 kg DM/ha. An allowance of 1.7 kg DM/ewe/d at flushing provided for a live-weight gain of 3.3 kg over a 6 week period, an allowance of 2.35 kg DM/ewe/d during 90 days lactation supported twin lambs at a growth rate of 230 g/d; an allowance of 1.32 kg DM/d for weaned lambs supported a growth rate of 129 g/d during summer. These results were achieved in self-contained farmlets, with annual herbage production of 14 500 kg DM/ha, stocked with high fertility Coopworth ewes at 22/ha, and calculated to yield 670 kg lamb meat/ha (193% lambs surviving to sale at 33.0 kg live weight). Feed efficiency in this system reflects full utilisation of available herbage, thus never allowing dead material or seed heads to build up in the pasture.

INTRODUCTION

In systems grazing experiments at Grasslands Division, DSIR, Lincoln, an attempt has been made to follow closely the recommended feeding levels for a breeding ewe given by Jagusch and Coop (1971). Under controlled rotational grazing, with maximum duration of grazing at any time of 10 days, invariably there has been very high utilisation of herbage grown with high stocking rate.

The purpose of this paper is to outline the herbage allowances in the system and the animal production achieved. To date, published recommendations have been constructed from several experiments encompassing different locations, breeds and ages of stock. These recommendations are (kg DM/head/d):

Lambs	—ewe	2.0
	—fattening	3.0

Ewes	—flushing	
	mid pregnancy	5.0
	—high pasture yield	1.1
	—low pasture yield	2.0
	—lactation	
	singles	4.0
	twins	6.0

(Thompson and Jagusch 1979 from Rattray and Jagusch, 1978; Cooney and Thompson, 1978).

EXPERIMENTAL

Replicated self-contained farmlets of 'Grasslands Nui' ryegrass-Grasslands 'Huia' white clover pastures, with either 'Grasslands Matua' prairie grass or 'Grasslands Tama' Westerwolds ryegrass as a greenfeed component were sown in February 1979. Only the farmlet containing Matua will be discussed

here in relation to herbage allowance and animal performance. Farmlets of 1 ha were subdivided to 7 paddocks and Nui ryegrass and Huia white clover and 3 paddocks of Matua prairie grass and legume and stocked with 22 mixed age Coopworth ewes/ha, mated to Coopworth rams on 10 April. Paddocks were rotationally grazed at all times, with 1 to 2 day shifts over winter, 3 to 4 days during lactation and 7 to 10 days over summer and autumn, usually when 1500 kg to 3000 kg DM/ha had accumulated. Lambs were weaned on 8 December and retained till 5 February. Animal live weights were recorded at regular intervals and lamb meat/ha was calculated from live weights at 5 February. Ewes were given selenium 4 times during the year and lambs were drenched with selenium plus worm drench at weaning and in early January.

Herbage was measured before each grazing by cutting 8 x 0.25 m² quadrats and pasture composition of the sample was determined by dissecting grass, legume and dead material.

RESULTS

Herbage allowances given in Table 1 are the mean values for the various paddock grazings at appropriate times in the animal production cycle. No account has been taken of regrowth during grazing and this may have increased herbage allowance by an additional 0.2 kg DM/ewe/d over the spring and summer period. Pastures were always grazed to a residual herbage of less than 300 kg DM/ha. No supplementary feeding was carried out. Ewe live weight at the start of the trial (5 March 1980) was 63.6 kg and 12 months later was 66.6 kg. A lambing of 193% (survival to 5 February) was achieved. Twin

lambs gained 230 g/d over the 90 day lactation period of the ewes. Weaned lambs given an allowance of 1.32 kg DM/d gained 129 g/d over the summer, resulting in a mean lamb live weight of 33 kg by 5 February. Lamb meat yield of 670 kg/ha was calculated on the basis of 50% of live weight minus 1 kg.

Mean annual pasture production was 14 500 kg DM/ha, legumes contributing 17% of that yield. Legume content over the late spring and summer period was to 30% decreasing to less than 10% over winter. Dead material was less than 5% at all times. Some surplus herbage was conserved as hay during summer but was not required as supplementary feed.

DISCUSSION

Many experiments relating to herbage allowances have been carried out in segments of a pastoral animal production cycle, rather than in a self-contained system. High herbage allowances, while giving good animal performance will generally give high residual herbage, the influence of which must be coped with in succeeding grazings. In a high producing animal system pasture quality must be maintained at a high level and there is no possibility that enough dry or other stock will be available as followers to effectively utilise the residual herbage left under some grazing recommendations.

The experiment under discussion shows that satisfactory per head performance was obtained on what could be considered low herbage allowances. Probably because Nui, and in particular Matua are erect growing species, the grazing animal is able to utilise more of the available herbage than where pastures have considerable amount of dead material in their base. With residual herbage being kept at a

low level at all stages, herbage available at the next grazing is of a high quality with low levels of dead material, thus allowing for continued high utilisation. Leaving high residual herbage may result in considerable dead material component at subsequent grazings requiring high feed allowances to allow sufficient selectivity in grazing for satisfactory animal performance.

The physical requirement in pastoral farming is for a satisfactory management interface for high, continued yield of both animals and pasture. The quality of feed and thus allowances reflect the particular system. Feed allowances are merely a guideline and there is continuing need to update recommendations.

REFERENCES

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TABLE 1 Herbage allowance (kg DM/ewe/d)* and ewe live-weight change (kg).

	Allowance (Paddock range)	Ewe live weight change
Flushing-tupping	1.7 (1.4-2.0)	+3.3
Winter	1.0 (0.8-1.2)	-3.8
Pre-lambing	1.3 (1.0-1.8)	
Lactation	2.4 (2.0-3.6)	-1.3
Summer	1.0 (0.8-1.3)	+4.8

* Calculated from total herbage yields over the period.