SUMMER SUPPLEMENTARY FEEDING OF EWES IN NORTHLAND

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SUMMARY

In six trials in Northland from 1974 to 1977, ewes grazing pasture were fed daily supplements during February and March, a consistently dry period with poor pasture growth. The supplements used were meadow and lucerne hay, ground maize grain, protein plus urea meal. a proprietary pelleted formulation, chopped green maize, and grass silage. Supplemented ewes were 2 to 4 kg heavier at the end of the feeding period and, except for the ewes supplemented with lucerne hay or protein plus urea meal, had higher lambing percentages than unsupplemented ewes.

INTRODUCTION

Northland is consistently dry during February and March and pasture growth is severely depressed. This has serious implications for sheep production. A recent survey (Mowbray, 1974) showed that most ewes were below 50 kg at tupping in March and in poor body condition. This may largely explain Northland's poor lambing percentages which rarely average over 90%. In an attempt to improve bodyweights prior to tupping, trials were conducted to investigate responses to supplementary feeding during this period.

METHODS

Field trials were conducted at three sites. The initial liveweights and periods of supplementary feeding are given in Table 1, and supplementary feeds are listed in Table 2. In most cases supplements were fed on to the paddock with almost complete apparent utilization. Meal was fed in troughs. The first four trials were conducted annually from 1974.

The site at Warkworth was rolling with Northern yellow-brown-earth soil. The ewes were mixed-age Border Leicester × Romney at stocking rates of 15 to 20 ewes/ha (relatively high for the district).

Trial 1: The supplemented group were set-stocked, and the non-supplemented sheep remained in the farmer's main, rotationally-grazed, mob (200 sheep/group).

TABLE 1: INITIAL UNFASTED LIVEWEIGHTS AND FEEDING PERIODS FOR EACH TRIAL

Trial	*Initial Liveweight (kg)*	*Starting Date*	*Period (days)*
1	45.6	7-2-74	42
2	47.9	28-1-75	84
3	48.6	2-2-76	50
4	54.2	9-2-77	43
5	55.7	11-2-77	52
6	48.1	4-2-77	44

Trial 2: 200 control ewes and 100 ewes in each supplemented group were rotationally grazed in separate mobs.

Trials 3 and 4: Groups of 120 ewes per treatment were rotationally grazed around separate 3-paddock farmlets.

Apparent pasture intakes were assessed by before and after grazing estimates of standing DM, with the addition of intervening pasture growth (this was measured for trials 3 to 6 by a movable cage technique). In trial 3 standing pasture DM was estimated from 5 hand-sheared 2500 cm^2 quadrats per paddock, and in trial 4 by a pasture height meter (100 random measurements per paddock, with 5 or 10 calibration cuts using hand-sheared 1000 cm^2 quadrats).

The high N meal contained vegetable protein and urea. The crude protein content was assessed as 25% (D. N. Gusscott, pers. comm.). The sheep "nuts" (Tomoana sheep nuts, W. and R. Fletcher Ltd) were compounded primarily from barley meal, maize meal and vegetable protein.

Trial 5 (1977): The trial site was flat with a rendzina-clay soil. Two groups of 65 mixed-age Perendale ewes were rotationally grazed around 3-paddock farmlets at 25 ewes/ha. Green maize was chopped by flail forage harvester and fed on to the paddock for one group. Apparent pasture intakes were assessed by ten 1000 cm^2 hand-sheared quadrats, taken before and after grazing.

Trial 6 (1977): Two groups of 50 Perendale mixed-age ewes, stocked at 17/ha, were rotationally grazed (separately) on an easy rolling podzolized clay site. Wilted and double-chopped grass silage was fed to one group in racks. Pasture DM was estimated as for trial 5 by cutting five 2500 cm^2 quadrats to ground level with motorized shears.

At all sites sheep were weighed at least three times during the feeding period. Rams were joined with each group within 30 days of the start of supplementary feeding. Over winter all groups were grazed together at each site. Lambing percentage was recorded on a group basis in trials 1 and 2, and on a per-animal basis in trials 3, 4 and 5. There were no barren ewes in trial 5. Lambing data were not recorded from trial 6.

RESULTS AND DISCUSSION

An important objective of these trials was to determine the acceptability to ewes of the supplementary feeds offered. Immediately prior to the start of each trial, treatment groups were fed the appropriate supplementary feed as a sole ration while held overnight in sheep yards while the control ewes remained on pasture. In all cases over 90% of the ewes accepted the feeds, and ate them adequately when the supplements were subsequntly fed out on pasture. However, at this time the trial pastures were unpalatable, consisting of browned-off rust-infected ryegrass, stalky browntop, and wilted clover.

In all trials supplement-fed ewes either gained more or lost less weight than unsupplemented ewes (Table 2). Supplemented ewes had higher numbers of twins and this provided an increased lambing percentage, with the exception of the high N meal and lucerne hay groups of trial 3. These two groups had fewer twins than the control group and higher proportions of dry ewes compared with the other supplemented groups. The lucerne hay group of trial 4 also had more dry ewes than the other groups. The lambs born to control and supplemented groups were not significantly different by χ^2 tests in any trial. However, this test is very insensitive (Coop, 1966).

To investigate this twinning response to supplementary feeding the sheep of trials 3, 4 and 5 (955 ewes) were classified according to their liveweight at the start of the trials (3 weeks before ram joining — Table 3). These groups were then assessed for their subsequent proportions of multiple births. Ewes with multiple or single births were also assessed for their weight gains in the 3 weeks prior to joining. For ewes above 55 kg at the start of the trials, or reaching this weight by joining, the percentage bearing twins was 33% and this did not increase with further increases in liveweight. Ewes initially below 55 kg gained more liveweight. Also the liveweight gain difference between multiple and single bearing ewes was more marked for the lighter ewes. The primary effect of supplementary feeding apparently was to

TABLE 2: SUPPLEMENTS FED, INTAKE, LIVEWEIGHT CHANGE AND FERTILITY RESPONSE

Treatment	*Daily Feed Intake (kg DM/head)* *Supplement*	*Pasture*	*Liveweight Change (kg)*	*Lambs Born/Ewe*	*Barren Ewes (%)*
Trial 1:					
Control	—		—5.9	0.90[1]	—
Lucerne hay	0.22		—2.0	1.09	—
Trial 2:					
Control	—		—2.0 cC	0.99	—
Lucerne hay	0.22		2.3 aA	1.09	—
Meadow hay	0.22		0.1 bB	1.05	—
Trial 3:					
Control	—	1.1	3.3 dD	1.27	11
Lucerne hay	0.20	0.8	5.3 bB	1.13	12
Maize meal	0.15	1.1	5.8 aA	1.36	4
Sheep nuts	0.12	1.0	5.4 bAB	1.33	4
High N meal	0.12	0.8	4.1 cC	1.07	7
Trial 4:					
Control	—	0.6	—4.4 cB	1.04	4
Grass silage	0.30	0.7	—1.1 aA	1.21	5
Lucerne hay	0.30	0.7	—1.7 bA	1.15	10
Trial 5:					
Control	—	0.9	1.2 bB	1.29	0
Green maize	0.30	1.0	4.0 aA	1.39	0
Trial 6:					
Control	—	0.8	—2.9 bB	—	—
Grass silage	0.40	1.1	—1.0 aA	—	—

[1] Lambs surviving for at least one week.

TABLE 3: INITIAL LIVEWEIGHT AND SUBSEQUENT LIVEWEIGHT CHANGE IN THE 3 WEEKS PRIOR TO JOINING IN RELATION TO LAMBS BORN

WeightRange (kg)	*No. of Ewes*	*Multiple Births (%)*	*Liveweight Change (kg)* *Multiple*	*Single*	
< 45	141	11	4.8	3.9	NS
45-49	245	22	4.8	3.3	***
50-54	279	28	4.0	2.8	**
55-59	173	33	2.1	1.9	NS
⩾ 60	117	33	1.8	2.1	NS
Mean			3.5	2.9	*

raise low liveweight ewes (below 55 kg) into higher liveweight groups, thus capitalizing on the direct relationship between liveweight and twinning percentages.

These results support the use of high energy feeds such as sheep nuts or maize meal, or practical on-farm alternatives such as green maize or wilted grass silage, as summer supplements to increase lambing performance. Economic assessments (D. F. Rendall, pers. comm.) favour greenfeed maize or grass silage. The cost of producing and feeding silage and green maize would be met by 3 to 5% more lambs weaned, whereas 10 to 12% more lambs weaned are required to pay for the concentrates.

Finally, subjective observations of sheep in these trials suggest that some relief from facial eczema and ryegrass staggers may accompany supplementary feeding.

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