

Liveweight Change of Merino Wethers Fed a Low Quality Roughage Diet and Differentially Supplemented Using an Auto-Drafting System

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Animal identification with radio frequency identification devices (RFID) allows remote data collection which together with auto-drafting technology (developed by the Australian Sheep Industry CRC) allows differential management of individuals within an extensively grazed flock based on a range of criteria. Managing the nutrition of individual animals could allow targeted supplementation, control access to self-feeders and use supplements more efficiently. This experiment aimed to determine the effects of the frequency (both between- and intra-day) of supplementation on the liveweights of sheep auto-drafted on to supplement using RFID.

Treatment A (control) was not supplemented. The other 4 treatments had access to supplementation B) once daily, C) 3 times daily, D) once every 3rd day, or E) 3 times every 3rd day. Each replicate of these treatments was located within a 0.5 ha plot (ie a drafting system within each of 2 plots) at Orange Agricultural Institute. One hundred and sixty 4.5 year-old Merino wethers (53.1 ± 4.1 kg), tagged with RFID, were allocated to treatments using a stratified randomisation based on liveweight. Within each plot, 20 wethers were allocated to the control treatment, and 15 wethers to each of the other four treatments. All animals had access *ad libitum* to pasture hay (5.6 MJ ME/kg DM, 7.9% CP) and the supplement was oat grain (12.1 MJ/kg DM, 10.2% CP).

Within each plot a CAWD drafting system identified and drafted animals as they passed through the system to reach water, either directly (unsupplemented) or indirectly after drafting into the supplementation pen. Movement data were recorded and downloaded daily. Unfasted (mustered) liveweights were collected weekly over 5 weeks. Daily liveweight gain was estimated by regression of weekly liveweights on time. Orthogonal contrasts were used to test drafting frequency treatment effects on liveweight gain and animal movement.

Table 1. Effects of oat supplement, and access frequency to it, on mean (sem) daily liveweight gain (g/d) of wethers fed low quality roughage and the daily recorded passes through the system

Treatment	Maximum daily access to supplement	Daily mean no. recorded passes [†]	Liveweight gain
No supplement	-	0.8 (0.11) ^W	-22 (40.6) ^W
Daily	1	1.4 (0.13) ^X	134 (41.1) ^Y
Daily	3	1.9 (0.13) ^Y	189 (41.1) ^Z
Every 3 rd day	1	1.7 (0.13) ^{XY}	28 (41.1) ^X
Every 3 rd day	3	2.1 (0.13) ^Y	22 (41.1) ^X

^{WXYZ} Means followed with different superscripts are significantly different (P<0.05)

[†] Mean frequency an individual's tag was read passing through the drafting system, whether supplemented or not

There were significant differences between the groups in their movement through the drafter (Table 1). Animals with no access to supplement (no incentive, other than access to water in cool weather) made the least recorded passes through the system. Sheep with regular (daily), but limited, access appeared less inclined to pass back through, relative to those allowed supplement on multiple occasions. However, for those with irregular access (1 day in every 3 days), limiting access appeared to have less distinct effects (P=0.06) on attempts to access the supplement.

Supplementation improved the liveweight change of all supplemented groups. More frequent within-day access further improved liveweight gains of groups with daily access, but not of groups with access only every 3rd day. Our results are consistent with those reported by Bowen *et al.* (2007) for daily, twice-weekly and weekly lupin supplementation. The observed effects of access frequency on liveweight change are consistent with differences in feed intake, although, the feed intakes of individual treatments cannot be determined due to the nature of the feeding system. However, it is likely that sheep supplemented only every 3rd day had lower intakes than those with daily access.

Supplement access has important consequences for the rate of liveweight change. Auto-drafting systems are a potentially useful tool for ensuring access only to animals in need of supplementation. Access frequencies are a means of managing supplement intake. Supplement access using an auto-drafting system needs to reflect the production goals.

Bowen, M.K., Pepper, P.M., Winkleman, J.L. and Rowe, J.B. (2007). *Rec. Adv. Anim. Nutr. Aust.* **16**: 253-258.
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