

THE ACCUMULATION OF VEGETABLE MATTER IN SPRING AND AUTUMN SHORN WOOL IN A MEDITERRANEAN ENVIRONMENT

A. J. M. RITCHIE^a, I. G. RALPH^b and M. R. ELLIS^b^aW.A. Dept of Agriculture, Sheep and Wool Branch, Merredin, W.A. 6415.^bW.A. Dept of Agriculture, Sheep and Wool Branch, South Perth, W.A. 615 1.

Vegetable matter (VM) contamination of wool results in an increase in the processing cost through additional carding and possible burling (hand picking of VM particles from cloth) as well as a decrease in product quality through fibre breakage and VM particle flaws in the woven material. The extent of the processing cost of VM is greater when it is shive (fibre-like plant material difficult to remove during carding) rather than burr. Autumn shearing compared to spring shearing in a Mediterranean environment has the positive outcome of an increase in fibre length after combing due to the staple's position of break. However, there is an associated negative outcome with autumn shearing of an increase in VM (Ralph 1986). Therefore research was conducted at Katanning in the Great Southern region of W.A. to establish the pattern of grass seed contamination with time over the summer months with a view to providing recommendations for either grazing or pasture management procedures aimed at reducing the level of VM in autumn shorn wool.

One hundred spring and 100 autumn shorn adult medium woolled Merino wethers from the same source were randomly allocated from within each shearing season to 1 of 5 sampling times (20 spring shorn + 20 autumn shorn/group). The samplings, which entailed total shearing of the experimental animals, were spaced at approximately 6 weekly intervals commencing 6 October 1989 when all spring shorn sheep and 1 group of autumn shorn sheep were shorn. All sheep were then stocked on a completely senesced pasture estimated to contain 7.1 ± 1.2 t DM/ha with the predominant species being Barley grass (*Hordeum* sp.) and Brome grass (*Bromus* sp.). Groups 2-5 of both spring and autumn shorn sheep were then shorn sequentially about every 6 weeks. Sixty-nine mm of rainfall were recorded on 29 January 1990 which resulted in a germination.

Whole fleeces (fleece + bellies + skirtings minus shanks) were weighed at shearing and sampled either manually in the case of the spring shorn sheep sampled 8 November 1989 or individually cored to obtain a 100 g subsample which was scoured (method IWTO-1) and VM contamination was then determined by the AWTA on the scoured wool according to IWTO standard method IWTO-19-85(E). Spring shorn animals were then assumed to initially have zero contamination. Results are presented as the weight (g) of seed/shive per head (Table 1).

Table 1. Accumulation of seed/shive in spring and autumn shorn sheep (g VM/head) over the spring to autumn period

Values within a row (a,b or c) or a column (A or B) with different letters are significantly different ($P<0.01$)

Sampling date:	6.x.89	8.xi.89	19.xii.89	1.ii.90	14.iii.91	Mean	s.d. ^a
Autumn (n)	26.0Aa (20)	176.9Ab (19)	322.1Ac (19)	278.3Ac (18)	261.1Ac (18)	213.79	93.10
Spring (n)	0.0Ba (20)	7.0Ba (20)	23.5Bb (19)	23.1Bb (20)	33.5Bb (20)	17.4	13.06
s.d. ^a	9.93	34.30	93.10	74.74	79.49	83.34	

^aThe standard deviation (s.d.) is reported because the number of observations differs for some means..

Vegetable matter contamination in autumn shorn wool reached a maximum after 12 weeks grazing with an accumulation rate of 4.2 g VM/day, this was significantly greater ($P<0.01$) than spring shorn wools which accumulated 0.3 g VM/day. As there was no difference in VM levels for the last 3 sampling periods the cessation of VM accumulation following 19 December 1989 may have been due to the January rainfall event. Given the constant rate of VM accumulation over the early summer period, methods aimed at the prevention of VM contamination will be dependent on reducing the grass seed content of the pasture at the beginning of summer.

RALPH I. G. (1986). *J. Agric. W.A.* 27: 99.