

1 A comparison of seasonal nematode egg outputs from co-grazed weaner sheep  
2 derived from the foundational Camden Park Estate and Australian Meat Merino  
3 flocks

4

5 Emily Onizawa

6

7 Faculty of Veterinary Science, University of Sydney, NSW, 2006, Australia

8

9 Corresponding author

10 Emily Onizawa ([eoni6012@uni.sydney.edu.au](mailto:eoni6012@uni.sydney.edu.au))

11

12

13

14

15

16

17

18

19

20

21

22

45 **1. Abstract**

46

47 The Camden Park Estate (CPE) sheep are an inbred line of sheep that are reported to  
48 originate from the colonial line of Australian Merino. The CPE merinos are  
49 maintained as a closed flock for many years and have long been suspected to be  
50 more resistant to gastrointestinal nematodes when compared to contemporary  
51 sheep. However, this anecdotal evidence has not been tested or the possible  
52 resistance investigated. This study investigated the seasonal egg counts of the CPE  
53 merino when co-grazed with the Australian Meat Merino (AMM). Wether lambs  
54 from the CPE and AMM lines were co-grazed for 10 months on *Haemonchus*  
55 *contortus* prone pastures. Faecal egg counts (FEC), Multiplex Tandem PCR (MT-PCR)  
56 for eggs speciation and bulk larval cultures (LC) were completed and compared  
57 between the sheep lines. FEC were significantly lower ( $P=0.03$ ) in the CPE (mean  
58  $8746 \pm 1289.0$  S.E,  $n=40$ ) compared to AMM sheep (mean  $12541 \pm 1187.8$  S.E,  $n=49$ )  
59 during acute haemonchosis at the initial sampling during the Australian summer  
60 (February). Subsequent sample collections (April, July, September) occurred under  
61 medicated management. These subsequent sample collections did not reveal any  
62 significant FEC differences between the sheep lines. The MT-PCR and LC confirmed a  
63  $>95\%$  prevalence of *H. contortus* in February. This reduced to 71% and 93% in the  
64 CPE and AMM lines respectively during the Australian Winter with other nematodes  
65 present including *Trichostrongylus colubriformis*, *Oesophagostomum* spp and  
66 *Cooperia curteci*. This is the first study to assess the anecdotal evidence of resistance  
67 of the CPE line of merino during *H. contortus* infection. Current management  
68 practices and ethical considerations limited interpretation of the subsequent

69 sampling time points. The prevailing weather conditions during summer-autumn and  
70 an increasing *Haemonchus* challenge resulted in the use of an anthelmintic  
71 treatment with long residual effects. An extension of this study under controlled  
72 experimental conditions, such as a pen trial, would be required to further investigate  
73 the significant difference observed in the summer result which suggested the CPE  
74 line was more innately resistant to gastrointestinal nematodes.

75

76 Key Words: Faecal Egg Count, host resistance, Larval Culture, Merino, MT-PCR,  
77 nematode

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92