

Selection of Sheep Resistant to Worms

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Genetically determined differences in the resistance of animals to gastro-intestinal nematode infections are well recognised and offer an alternative control procedure. The objective of this study was to select sheep for resistance to *Haemonchus contortus* and to investigate the inheritance of that resistance in their offsprings.

The breed of sheep used was Santa Ines belonging to Ladang Pembiakan Bebiri, Jabatan Perkhidmatan Haiwan Malaysia at Gajah Mati, Kedah. A total of 57 animals were selected from a population of 123 three month-old lambs from two flocks. Animals were categorised based on their faecal egg counts (FEC) following naturally acquired infection. Animals were ranked according to their individual FECs for each sampling date. At the end of the field study cumulative ranking was obtained. High responder lambs (HR) were deemed to be those with the lowest cumulative FEC ranking (mean epg < 2725) or those lambs which, responded well to strongyle infection. Animals with highest overall ranking (mean epg > 3675) were classified as Low Responders (LR) which were more susceptible to strongyle infection. The selected animals were treated to remove the field infection and subsequently infected with larvae of *Haemonchus contortus* to study their response to experimental infection. Based on their responses to the field as well as experimental infections, the animals were classified as HR and LR. Upon attaining sexual maturity HR males were mated with HR females and LR males were mated with LR females. The offsprings of these matings, at 3-4 months old, were challenged with infective larvae to confirm their responder status and hence the inheritance of resistance. The lambs were also weighed pre-infection and post-infection for a period of 12 weeks. FECs of HR animals at pasture was significantly ($P < 0.001$) lower than that of LR animals. FECs of HR animals was also significantly less than the herd average.

Following challenge infection the differences in FEC between the HR and LR animals were significantly different post-infection.

The FECs of the pedigrees showed that sires and ewes who are high responders produced offsprings who have similarly low FECs. Conversely parents who are low responders produced lambs with high FECs.

In the present study there was no significant difference in body weights of lambs between the responder animals. Genetically resistant lambs had no significant growth rate advantage over their susceptible counterparts when both genotypes grazed together under the same nematode challenge.

The appearance of a trend of higher FEC among the LR animals when compared to HR animals suggest that it is possible to segregate animals into high and low responders based on FECs and that FEC can be used as an indicator for resistance. This study shows that it is possible to select and breed *Haemonchus contortus* resistant lines of Santa Ines sheep. Resistant lines of sheep are of economic interest in areas where production losses due to helminthosis are severe.

Reader Enquiry

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