Chapter 8

Conclusion

This study has adapted the FAMACHA© clinical assay for use in goats of resource-poor farmers in the summer-rainfall area of South Africa. *Haemonchus* spp., the parasite targeted by the FAMACHA© system, was shown to be an important worm in these animals.

The FAMACHA© assay may be used with a sensitivity of between 76% and 85% in the goat, provided that animals in categories three, four and five are treated and one wishes to identify goats with haematocrits less than 19%. This means that between 76% to 85% of the animals that are anaemic are identified as such.

Based on the fact that only between 47,6% and 51,9% of the animals are treated when goats categorised as three, four or five are dewormed, the use of the FAMACHA© method would reduce the selection pressure for anthelmintic resistance because a large proportion of the animals would be left untreated. This assists in maintaining on the pasture a large proportion of anthelmintic-susceptible infective larvae derived from eggs passed in the faeces of untreated animals. The susceptible larvae dilute the larvae of any resistant strains and in that way delay the emergence of anthelmintic resistance (Jackson, 1993).

Given that the sensitivity of the FAMACHA© method in the goat is less than 100%, it is obvious that some animals in need of treatment would be missed. As such, the use of the FAMACHA© system alone in the absence of other worm managemental strategies cannot be recommended, but only within the context of an integrated worm control programme.

The recommendation that the FAMACHA© clinical assay be used in the goats studied is based on the fact that *Haemonchus* spp. was shown to have a seasonal distribution in the summer months. The worm was found to be the most important of the possible causes of anaemia in the animals studied. These periods of lower haematocrit were reflected clinically by the fact that more

Table 8.1

Countries in Africa in which *Haemonchus* spp. has been reported as a parasite of major importance in small ruminants and in which the possibility of introducing the FAMACHA© system exists (the list is incomplete)

Country	Period of importance of *Haemonchus* infection	Host species	Reference
Cameroon (Bamenda)	Most of year, particularly wet season (mid-March to November)	Sheep and goats	Ndamukong et al., 1987
Kenya (Naivasha)	August to October and June and July (also March and April when pasture condition is poor)	Sheep	Allonby and Urquhart, 1975
Kenya (Nairobi-Limuru-Ruiru)	Following rainfall (September to November and March to June), but pattern inconsistent in this study	Goats	Lutu, 1984
Nigeria (derived savannah of eastern Nigeria)	April to October (wet season, cropping season — animals confined under traditional husbandry system)	Sheep and goats	Fakae, 1990
Nigeria (northern)	May to October (wet season), particularly early wet season	Sheep and goats	Fabiyi, 1987
Sierra Leone (Freetown)	November to June (dry season)	Sheep and goats	Asanji and Williams, 1987
Sierra Leone (Freetown)	October to January (dry season)	Sheep and goats	Asanji, 1988
Tanzania (northern)	March to August (wet season)	Sheep and goats	Njau, 1987
Tanzania (southern)	December to April (wet season)	Goats	Connor et al., 1990
Zimbabwe (Marandellas)	November to March (warm, wet season)	Sheep	Grant, 1981
Zimbabwe (Mashonaland East)	October to May (wet season)	Goats	Kusina et al., 1999

goats were scored as having paler mucous membranes during the periods of heavier worm infection (November to April) than during the intervening winter period.

The numbers of sheep used in the current study were small and wider application of the FAMACHA© system under resource-poor conditions in sheep should be further investigated.

The FAMACHA© system may be further relevant for the tropics and sub-tropics of sub-Saharan Africa and elsewhere. In many of these areas (Table 8.1), haemonchosis represents a major disease constraint on increasing production in small ruminants. Where appropriate, the method should be taught as part of an integrated approach to worm control within participatory agricultural extension programmes. Further testing of the FAMACHA© clinical assay should also be pursued under these other epidemiological and farming conditions.