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#### Background

Nematodes are a major constraint on livestock production. They can be controlled by anthelmintics but these drugs are expensive and not always reliable, especially in developing countries. The use of naturally resistant sheep offers a safe, simple, sustainable and cost-effective solution. The project aims were to develop a composite index to more accurately identify sheep which are resistant to gastrointestinal nematodes, to quantify the influence of nematode infection on productivity, especially growth rate and carcass quality, and to develop a selection index which can be used to breed sheep with superior productivity during nematode challenge.

#### Objectives

The project objectives remained unchanged except that plasma gastrin concentrations were not measured because published research indicated that these measurements would add little additional information.

#### Previous achievements

Lambs show considerable variation in susceptibility to nematode infection. The reasons for this variation have been elucidated at the epidemiological, genetic, immunological and pathological levels. The host-parasite relationship is now as well understood in sheep as in any other species.

#### Achievements in 1997

The project objectives were met. Sheep that are resistant to nematode infection can now be accurately identified by a combination of parasitological, immunological and genetic methods. There is a strong genetic relationship between resistance to nematode infection and growth rate. Carcasses from infected lambs are lighter and less valuable. Selection indices can now be created for a variety of breeding schemes to improve productivity during nematode challenge. Modelling has indicated that the economic importance of selecting for disease resistance is underestimated in traditional quantitative genetic theory. This knowledge is being incorporated into livestock management strategies.

#### Objectives for 1998

Not applicable.

#### Dissemination

A total of 11 manuscripts were accepted for publication in international peer-reviewed journals. The results from this project have been widely reported on national television, national and local radio, the national and local press and in scientific and technical journals. The results have also been presented at international and national meetings of parasitologists, geneticists, animal and veterinary scientists. We have also written several review articles for international and national bodies. They have also been discussed directly with scientists from KARI (Kenyan Agricultural Research Institute).

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