Prevalence and Economic Importance of Fasciolosis in Cattle, Sheep and Goats in Kenya:

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Abstract
A 10-year (1990-1999) retrospective study using post mortem records was carried out at Veterinary Department Headquarters Kabete to determine the prevalence and economic importance of fasciolosis in cattle, sheep and goats in Kenya. Records from abattoirs in 38 districts in 7 of provinces of Kenya were examined. Fasciolosis prevalence was calculated. Using an average weight of (3 kg) cattle and (0.5) sheep and goats and market price of approximately US $ 2.0 per kg, the monetary loss occasioned by condemnation of Fasciola infected livers was calculated. Out of 5,421,188 cattle, 1,700,281 sheep and 2,062,828 goats slaughtered, 427,931 cattle (8%), 61,955 sheep (3.6%) and 48,889 goats (2.4%) were infected with Fasciola. The highest prevalence was recorded in Western province (16% for cattle, 10% for sheep and 9% for goats). The lowest was in Coast province (3.5% cattle, 0.74% sheep and 0.5% goats). The economic loss due to condemnation of infected livers from cattle, sheep and goats was US$ 2.6 million, US$ 61,955 and US$ 48,889 respectively. Fasciolosis is prevalent in cattle, sheep and goats in Kenya and a major cause of economic losses, as a result of condemnation of infected livers.

Introduction
Helminthosis is one of the most important factors adversely affecting tropical livestock productivity (1,2,3). Helminth infections, which are chronic and asymptomatic in the field lead to retarded growth, delayed and reduced productivity and increased susceptibility to secondary infections (1,2,3). Of the gastrointestinal helminths infecting meat animals, Fasciola is the commonest infection and cause serious economic losses (4).

There are only a few scanty reports on the prevalence and economic importance of fasciolosis in cattle, sheep and goats in Kenya, in spite of the well-known importance of the disease in livestock in the country (4, 5). The existing accounts of fascismllosis in Kenya are based on local surveys in some areas of the country, often covering a few months or years. (6, 4) For instance only determined the incidence of Fasciola at the Kenya Meat Commission (KMC) abattoir over a period of 12 and 4 years respectively. (7) determined the incidence of Fasciola in few districts in Kenya, while (8) determined the prevalence of Fasciola in calves in a single division of Nyeri District. Both of these studies were based on data obtained during a period of 12 months. Also (10) determined the incidence of Fasciola in small ruminants slaughtered in selected abattoirs around Nairobi over a period of three months, while (10) investigated the prevalence and economic importance of fasciolosis in sheep slaughtered in local slaughter slabs in Nyandarua Districts during a period of 12 months. The only study that reported the national prevalence and economic importance of the disease in cattle, sheep and goats is that of (5). Thus, no clear picture of national prevalence of fasciolosis has emerged from these reports. The importance of carrying out retrospective study on the prevalence and economic importance of a disease is to determine its importance in the livestock industry so that the disease can be given the attention it deserves when instituting control measures. If the information obtained covers a number of years, such study can also indicate whether there has been a change in the prevalence or economic significance of the disease during that period, and the likely factors that caused the change can be attributed to various factors.

Materials and methods
Calculation of prevalence and economic losses
Field reports sent to the Veterinary Department Headquarters at Kabete from 38 districts distributed over 7 of the 8 provinces of Kenya, during the period 1990-1999, were used to calculate the prevalence and estimate economic importance of bovine fasciolosis in Kenya. Post mortem inspection records from North Eastern Province were not available for analysis in this study. All the abattoirs in these districts are classified as local as opposed to export slaughterhouses and are patterned in the traditional slaughter slab system. Adult cattle, sheep and goats slaughtered in these slaughterhouses are usually brought there through the cattle trade system by trekking or transport by road. Meat inspection in the abattoirs is carried out by Veterinarians or Public Health Meat Inspectors from the Ministry of Health using standard procedures as described by (11). Records of the total number of cattle, sheep and goats slaughtered and the number that was positive for fasciolosis were obtained. Unfortunately these records show no indication of the severity of the condition. The national and provincial prevalence of fasciolosis was calculated as the number of cattle, sheep and goats found to be infected with Fasciola expressed as a percentage of the total number of cattle, sheep and goats slaughtered. The economic losses due to condemnation of infected livers were estimated by putting a monetary value to the total number of livers condemned. Using an estimated average weight of 3 kg for a bovine and 0.5 kg for sheep and goat livers and a market price of approximately US $ 2.0 per kg, the quantity in kilograms and economic loss in US $ was calculated.