SHORT COMMUNICATION

ANTHELMINTIC USAGE IN KENYA AND ITS IMPLICATIONS

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INTRODUCTION

It is being increasingly recognized that in the tropics as in temperate zones, 
nematode infections and are important causes of morbidity and mortality in both 
small and large ruminants. Anthelmintics are therefore being widely used. But regular 
use of anthelmintics poses the risk of drug resistant strains of nematodes 
developing. Drug resistance is a large problem to the sheep industry in the southern 
hemisphere, especially in Australia7).

In Kenya, anthelmintic resistance has been reported23,41, but its importance to 
the country's relatively advanced livestock farming is not known. In order to try 
to estimate the drug pressure to which nematodes may be subjected in the more 
important livestock producing areas we undertook a limited survey of anthelmintic 
sales and usage in different farming systems. Annual sales were obtained from 
the nine most important anthelmintic manufacturers or distributors in 
Nairobi; it is estimated that they account for over 90% of the sales in the country. 
To determine the types of anthelmintics available to farmers we visited 5 
pharmacies in Nairobi, 2 in Nakuru town and 2 in Nyeri town, and agrovet suppliers 
in Nakuru, Naivasha, Kajiado and Kibwezi towns. For information about drug usage 
on large farms we visited 5 government or parastatal farms in Makueni, Kajiado 
and Nakuru districts, and 4 private farms in Nyeri, Nakuru and Kajiado districts. For 
information about small farms and pastoralists we interviewed 12 veterinarians 
in Nakuru, Naivasha, Nyeri, Embu, and one veterinary assistant at Kibwezi. The 
veterinarians included the provincial directors or their deputies (Rift Valley
Central and Eastern provinces) and the district veterinary officers for Kajiado, 
Nyeri and Nakuru. The Ministry of Agriculture and Livestock Development 
provided the latest information about the numbers and distribution of cattle, sheep 
and goats.

Results

In 1991 Kenya had 13,079,000 cattle, 9,641,000 sheep and 10,536,000 goats. The Rift Valley, Eastern and Central provinces accounted for 63% of the cattle, 78% of the sheep and 72% of the goats. Cattle occur in all ecological zones, from high rainfall to semi-arid and arid areas. Dairy cattle, primarily exotic, are mostly kept in high rainfall areas, on large farms as well as small holdings. In the latter case they are usually zero grazed. Central Rift Valley is especially important for dairy farming. Beef cattle are mainly the indigenous Zebu or crosses with it and are primarily in semi-arid and arid regions where they are kept under ranch, nomadic or smallholder systems. Goats and sheep also occur in all ecological zones, with the majority in the semi-arid and arid areas where they are usually farmed together with cattle. In the more productive areas every smallholding has a few cattle, sheep and goats, often no more than 3 or 4 animals.

The mean annual sales of anthelmintics for the three years 1990-1992 are shown in Table 1. Some of the companies only supplied sales figures for one or two years but they indicated the variation from the figures they gave. To maintain confidentiality, an undertaking given to the nine participating companies, sales are given by pharmacological type. It was not possible to distinguish products sold
for cattle from those for sheep and goats and therefore sales are given in doses for cattle. Approximately 92% of uncouplers (mainly oxfendazole) were sold in combination with the levamisole/morantel group. Inquiries suggested that only a negligible proportion of the products sold may have been exported to neighbouring countries.

Anthelmintics were readily available to farmers in the areas we visited. The number of types/brands of anthelmintics available in pharmacies and agrovets suppliers varied between 10 in a large pharmacy in Nakuru town to 3 in a tiny agrovet supplier at Kibwezi, a small trading centre. The quantities of anthelmintics sold per annum by these outlets are considerable. We could not distinguish between sales to large farmers and small holders, but one large distributor believed they were 50:50. Large farms treat animals regularly, usually quarterly, but some more frequently (Table 2). Exotic breeds are treated regularly, but indigenous breeds are normally only treated when they show symptoms of disease. Treatment of cattle is usually confined to calves. Dairy farming is heavily dependent on use of anthelmintics. Cross breeding of native and exotic animals has been encouraged by government in order to increase productivity. For example, in Kajiado district it was estimated that 60% of the stock had been “upgraded”; the Red Maasai sheep which has considerable natural resistance to Haemonchus being replaced by the Dorper which has little resistance, thus increasing the reliance upon anthelmintics.

### Conclusion

Our observations point to 5 conclusions.

1. In Kenya, anthelmintics are used on a considerable scale in the more important livestock producing areas. Dairy farming is heavily dependent on the use of anthelmintics. Shortage of foreign exchange is a major constraint on the importation and thus availability of anthelmintics and when the economy permits usage will increase.

2. There is a growing awareness amongst small farmers of the importance of helminths, particularly nematodes, as a cause of lost production and even death in their animals. In some areas peasant farmers and pastoralists are using large

### Table 1: Mean annual sales of anthelmintics in Kenya 1990-1992 given as numbers of adult cattle doses.

<table>
<thead>
<tr>
<th>Anthelmintic group</th>
<th>Number of doses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1. Benzimidazoles</td>
<td>491,846</td>
</tr>
<tr>
<td>Group 2. Levamisole/morantel</td>
<td>1,376,672</td>
</tr>
<tr>
<td>Group 3. Ivermectin</td>
<td>8,923</td>
</tr>
<tr>
<td>Group 4. Uncouplers</td>
<td>1,175,395</td>
</tr>
<tr>
<td>(oxyfendazole etc)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>91,330</td>
</tr>
</tbody>
</table>

### Table 2: Examples of anthelmintic worming practices; numbers of doses administered per year.

<table>
<thead>
<tr>
<th>Farm</th>
<th>Frequency</th>
<th>Anthelmintic group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sheep/Goats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm A</td>
<td>4x per year</td>
<td>-</td>
</tr>
<tr>
<td>Farm B</td>
<td>4x per year</td>
<td>421</td>
</tr>
<tr>
<td>Farm C</td>
<td>12x per year</td>
<td>4,288</td>
</tr>
<tr>
<td>Farm D</td>
<td>3x 4x per year</td>
<td>-</td>
</tr>
<tr>
<td>Farm E</td>
<td>4x per year</td>
<td>-</td>
</tr>
<tr>
<td>Cattle (calves)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm F</td>
<td>6-7x per year</td>
<td>131</td>
</tr>
<tr>
<td>Farm G</td>
<td>6x per year</td>
<td>-</td>
</tr>
<tr>
<td>Farm H</td>
<td>rotational</td>
<td>446</td>
</tr>
<tr>
<td>Farm H</td>
<td>4x per year</td>
<td>-</td>
</tr>
</tbody>
</table>

*Farms A, B, C, F, and G are in Nakuru district, D and E in Kajiado district and H in Nyeri district.*
amounts of anthelmintics. Growing awareness will lead to increasing use of anthelmintics, the economy permitting, and drug resistance could become an important problem.

3. Conditions exist in parts of Kenya for the development of ananthelmintic resistance. Coles and Roush (a) have discussed factors likely to select for ananthelmintic resistance and how to slow down development of resistance. The regular use of the same anthelmintic over a long period and underdosing by small farmers trying to economise or unable to determine the right dose are both likely to favour the development of drug resistant nematodes. Governmental, parastatal and private farms which regularly use anthelmintics sell animals to small scale farmers — some are specifically mandated to breed and sell animals to small scale farmers — and thus risk spreading drug resistant parasites.

4. Although a number of farmers and veterinarians in all the areas we visited expressed concern about an increasing ineffectiveness of anthelmintics, especially levamisole, it is not clear to what extent treatment failures are due to drug resistance, underdosing or the use of substandard drugs or even fakes. The extent of drug resistance and the optimal way to use anthelmintics should be determined. Government authorities need to address the issue of drug quality control.

5. Because fascioliasis has a limited, focal distribution and cestode infections are probably not so important in many areas, the widespread use of products combining nematocides and a fascicicide is probably an unnecessary drain on the limited resources of poor farmers.

Acknowledgements

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References