

- Treat and quarantine newly introduced animals to avoid importing resistant parasites.
- Always observe withdrawal period indicated for the different products.



*Administering anthelmintics to sheep*



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## **OVERCOMING DRUG RESISTANCE THROUGH PRUDENT USE OF DEWORMERS**





The active compounds in these drug classes are effective against a broad range of nematode species. In addition, the MLs are also active against many arthropod parasites, while BZs are active against some flat worm species (liver flukes). Each class of anthelmintics has a unique mode of action against parasites.

### What is anthelmintic resistance?

Anthelmintic resistance is defined as the ability of parasites to survive doses of drugs that would normally kill parasites of the same species and stage. This trait is inherited and selected for because the survivors of the treatments pass genes for resistance to their offspring. These resistant genes are initially rare in the population or increase as rare mutations, but as selection continues, their proportion in the population increases as does the proportion of resistant parasites.

### Why is anthelmintic resistance important in livestock production?

Anthelmintic resistance leads to production losses, which include slowed growth rate in animals as a result of sub-clinical helminth infection and costs of repeated treatments. Such scenarios are seen in form of animals in poor body condition, faecal breach soiling and poor growth. Some of the animals especially lambs and kids die when drugs with resistance are continually used.

### How widespread is the problem of resistance in Kenyan farms?

The earliest report of anthelmintic resistance in the world was reported in 1962 (against benzimidazoles) while the first incidence of resistance in Kenya was recorded in 1986 (against benzimidazoles). Many researchers have since recorded cases of anthelmintic resistance against all the broad-spectrum anthelmintics in many farms across the country. In some farms, the situation is so serious that some classes have literally ceased to be useful and efficacies gone below 40%. This situation manifests as treatment failures, where animals fail to improve in body condition following deworming. In some cases, the quality of the drug is blamed.

Resistance against drugs belonging to the same anthelmintic drug class is called side resistance, whereas cross and multidrug resistance refer to resistance against two or more drugs belonging to different anthelmintic classes.

### What are the likely risk factors to anthelmintic resistance?

Anthelmintic resistance development can be limited by ensuring that the parasites are exposed to an effective drug dose and to consider the timing and frequency of anthelmintic drug treatment so that only a small proportion of the population is exposed to the anthelmintic. Some of the main risk factors include high treatment frequency, under-dosing and continued use of the same anthelmintic class over several years. Underestimating the actual weight of animals leads to under-dosing. All parasites surviving treatment are resistant and contribute to pasture contamination.

### Approaches in delaying development of anthelmintic resistance

Many of the suggested approaches for prevention of anthelmintic resistance are mainly applicable to sheep keepers who graze animals on their farms but not suitable for communal grazing systems of many resource –poor farmers. Some of the approaches recommended include the following:

- Always read the label and follow instructions given by drug manufacturer.
- Use well calibrated equipment to deliver anthelmintics.
- Give proper dose based on actual live weight or on the basis of the heaviest in a group.
- Reduce frequency of dosing as much as possible (not more than 4 times a year).
- Goats require higher doses, usually 1.5 to 2 times the sheep's dose.
- Give preference to oral anthelmintics
- Administer the drug correctly, aim to deliver the drug over the base of the tongue to avoid spillage.
- Efficacy of benzimidazoles is improved by repeat treatment 12-24 hours after the first dose.
- Fasting animals improves efficacy of some anthelmintics (BZ, ML).
- Do not mix anthelmintics with other drugs or dilute them.

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In a majority of farms, worms control is entirely based on dewormer (anthelmintic) treatments rather than on management practices that embrace integrated strategies. The currently available broad-spectrum anthelmintics belong to three main classes; namely macrocyclic lactones (MLs), benzimidazoles (BZ) and levamisoles (LEV).