



PROCEEDING

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In practice: bovine nematode control in the face of resistance. Fourteen years of adaptive strategies.

Objectives

Integrated Nematode control of bovines in Argentina has been considered "state of the art" for many years because it comprises diagnosis, reasonable use of drugs and epidemiology, and it involves a veterinarian with a holistic vision of the farm's health and production objectives. In the year 2000 resistance to macrocyclic lactones was discovered and three years later, we found resistance to benzimidazol drugs. Resistance was spread in many fattening farms by the transportation of animals from different areas.

The objective of this paper is to show the author's experience in several farms in different areas of the country where resistance was found, the evolution of resistance in the farms (simple-multiple / one species-multispecies), the significance of "importing" resistance, and the need of continuous adaptation in control measures. The use of drugs, the importance of drug rotation (long term-short term) in treatments, and different strategies were analyzed.

Method

Through the years we have analyzed and compared the evolution of different farms which developed resistance to gastrointestinal nematodes. Monitoring of nematode infection levels and treatment failures was mostly done by EPG (modified Mc Master). FERCTs were performed in three different management situations (no management - management - only drug rotation) and we analyzed the evolution of the results over the years. Strategic rotation of drugs and its respective results were evaluated by EPG in real systems. Larval cultures (Roberts O'Sullivan) were performed to assess the relevance of different parasitic species on resistance and management.

Results

In Argentina, nematode resistance in bovines has evolved since the year 2000 from the initial macrocyclic lactones/*Cooperia oncophora* to benzimidazole/*Cooperia oncophora* and *punctata*-*Haemonchus* - *Ostertagia*. We later found macrocyclic lactones post treatment egg shedding for *Ostertagia* and *Nematodirus*. Different macrocyclic lactones show similar degree of

failure when used more than once in a farm.

Resistance measured by FERCT showed some degree of reversion and we found (in practice) that short term rotation (four to six months) can allow us to reuse the drugs with some expectations. Long term rotations (one year) did not show improvement over the short ones, and in some cases resistance to a new chemical group appeared.

FERCTs at farm level are influenced by previous treatment on the animals and also by previous selection exerted -by treatments- over the parasite paddock population; this leads to overestimation of resistance levels. We also found that the nematode involved can mask the real result of the test, because they have different egg shedding levels.

Conclusions

Resistance at farm level is not only a finding; it's a dynamic and evolving situation that varies from farm to farm and year to year. Monitoring treatments and sensitivity to drugs are of major importance, and the strategies used have changed through the past years adapting to the evolution of resistance in each farm. Management and production systems are very important in defining the overall parasitological risk. Drug rotation (which is not just the alternation of them), species of parasites involved and their susceptibility, time of year, age of animals and resistance actual status must be considered on treatment decision.

Approval Confirm

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