

Organic fertilizer for environmental control of small ruminant gastrointestinal nematodes

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Abstract

Gastrointestinal nematodes (GIN) are potentially the most important cause of economic loss in the small ruminant production. However, for controlling GIN, the use of anthelmintic is not a sustainable strategy and needs to be reduced. The integrated parasite management (IPM) has been the best alternative. Aiming to make another strategy available for IPM and knowing that most gastrointestinal nematodes live in the environment, it was proposed a strategy for controlling the free-living stages of nematodes of small ruminants in the soil. It is based on the use of an organic fertilizer that reduces the contamination of grasses by infective larvae (L3) and increases the amount of grass biomass, thereby contributing to reduce the L3.g-1 of dry mass, favor the nutritional levels of grass, and indirectly, the animal, by increasing the supply of food in the pasture. Wastes from the juice and biodiesel industry were tested in vitro by larval development assay. Castor cake showed good anthelmintic effect in vitro and a good source of nitrogen in the bromatological composition. Firstly, it was tested in pots. In the field, the strategy was tested by using castor cake as organic fertilizer on guinea grass pastures (*Megathyrus maximus* cv Tanzania) and raising sheep on pasture. In the control group was used organic compost because it has no anthelmintic effect in vitro. The soil treatment strategy showed 63.41% effectiveness in controlling worm infestations. This work opens the opportunity to test others organic materials around the world to control free-living stages of small ruminant GIN in the environment.



Figure 1. On the left of the photo: using castor cake as a fertilizer. On the right of the photo: control group using organic compost as a fertilizer.

Biography

Hévila Oliveira Salles is graduated in veterinary medicine from the State University of Ceará (1993), master's degree in biological sciences from the University of Brasília (2000) and doctorate in biochemistry from the Federal University of Ceará (2008). She is a researcher at the Brazilian Agricultural Research Corporation (Embrapa) since 1994. She currently develops works in the biochemistry area where she studies bioactive proteins and peptides aiming to generate national biotechnological alternatives to produce inputs and for the use of agro-industrial wastes. Her group is studying a non-chemical alternative soil treatment for control of the free-living stages of small ruminant gastrointestinal nematodes, called Econemat.

Publications

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