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PROCEEDINGS

Baiting stray dogs in an extra-urban area as innovative tool for an integrated control of cystic echinococcosis

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INTRODUCTION

Cystic echinococcosis (CE) caused by the larval stage of the cestode *Echinococcus granulosus*, is one of the major zoonosis, affecting humans as well as domestic and wild animals. This parasitic disease represents one of the most widespread problems in Mediterranean countries, including Italy, causing economic losses both in the public health sector and in the livestock industry.

The CE control in a highly endemic area of southern Italy (Campania region) is based on a control program focused on the development of new procedures and tools that includes among the activities the treatment of shepherd dogs. Therefore, the aim of this study was to implement the anthelmintic treatment by extending it also to stray dogs in the proximity of CE positive sheep farms, by dropping baits with a drone in peri-pasture areas.

MATERIALS AND METHODS

Assessments were focused on the resistance of three different types of the baits over the time (at least ten days) to different climatic conditions while preserving the palatability and attractiveness for dogs, and on integrity resistance after release by drone from different heights. Subsequently, grazing areas were located using mobile global positioning system (GPS) devices applied to sheep and shepherd dogs of a CE positive sheep farm, and a pilot baiting site for bait delivery was selected based on the movements of the sheep and dog in the farm. Baits were placed in several arrangements and at different locations and the uptake by stray dogs was investigated using camera traps.

RESULTS AND CONCLUSIONS

The double praziquantel-laced baits showed the greatest resistance in the environment while also preserving the attractiveness for ten days, withstanding different climatic conditions. In addition, the double layer coverage withstood heights of 25 meters dropped by drones on hard surfaces remained perfectly intact after the impact, thus, they resulted also the mainly suitable for delivery by drone. The results on field showed that 80% of the baits were eaten after 1 day, 15% after 2 days, 5% after 3 days. Most of the baits (93%) were consumed by stray dogs and the remaining (7%) were consumed by foxes, badger and wild boar.

In conclusion, the double praziquantel-laced baits tested have shown better reliability resulted optimal for the treatment of stray dogs presents in the peri-pasture areas of CE positive sheep farms and seem to be well suited in a control plan for CE.

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References: Cringoli et al., 2021. *Veterinary parasitology*, 290, 109347.

Yu et al., 2017. *Infectious diseases of poverty*, 6(03), 80-85.

Umhang et al., 2019. *Food and Waterborne Parasitology*, 15, 2405-6766

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