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57.45%(27/47) of ticks were found resistant. We can conclude that our study demonstrates that tick resistance to acaricide is a widespread problem in Ecuadorian cattle farming for the two products examined. There was no significant decrease in resistance between the two years surveyed. There is broad scope to work with farmers to assess practices and improve them to insure continuing efficacy of active principles and the availability of acaricide control options for farmers.

Key words: pesticide, ticks, farms, cattle.

OA12.03

**Functional and genetic comparison of *Ctenocephalides felis* and *Rhipicephalus sanguineus* isolates from different geographic regions** \_Heuer, Dr. Lea\_MSD Animal Health Innovation GmbH

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Currently available regulatory guidelines for EU approval of canine and feline ectoparasiticides require the conduct of dose confirmation studies with European isolates. This requirement may be redundant if there are no substantial differences between EU and non-EU laboratory parasite isolates. A project compared the sensitivity of multiple *Ctenocephalides felis* fleas and *Rhipicephalus sanguineus* ticks from different geographic locations to fluralaner functionally and by comparative sequence analysis. Isolates of *C. felis* sourced from Europe, USA and Australia and *R. sanguineus* isolates from Europe and USA were exposed to increasing fluralaner concentrations. After 48h of incubation, fleas and ticks were assessed by counting the number of dead, damaged and/or live individuals per fluralaner test concentration. Furthermore, comparative cDNA and genomic DNA sequence analysis of the predicted fluralaner binding sites in the GABA-gated chloride channel (GABAR) and glutamate-gated chloride channel (GluR) of the mentioned parasite isolates were performed, to detect potential alterations that may influence the fluralaner binding efficacy and dieldrin resistance. Predicted lethal and effective concentrations of fluralaner for the different flea isolates fell within a narrow range, as did the values for both tick isolates. No between-isolate differences were identified in the protein sequence of the most important fluralaner interaction sites of the European, US or Australian *C. felis* isolates, nor of the European or US isolates of *R. sanguineus*. These results indicate possible between-country interchangeability of in vivo results in dose confirmation studies for fluralaner-containing products. Thus, the data provide a justification for the potential reduction of the number of required dose confirmation studies for EU approval.

OA12.04

**Baiting stray dogs in extraurban area: Innovative tools for an integrated control of echinococcosis** \_Ciccone, Dr. Elena\_Department Of Medicine Veterinary And Animal Production, University Of Napoli Federico Ii

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Cystic echinococcosis (CE) is an endemic zoonosis causing by the larval stage of *Echinococcus granulosus*, which presents worldwide distribution, especially in the Mediterranean countries. The CE control in a highly endemic area of southern Italy (Campania region) was based on a control program focused on the development of new procedures and tools that includes among the activities the treatment of sheepdogs. 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. Assessments were focused on the resistance of the baits over the time (at least 10 days) to different climatic conditions while preserving the palatability for dogs. Highly palatable chews laced with anthelmintic praziquantel were used as baits to perform this study. In addition, the integrity of the baits released by the drone from different heights was evaluated. Grazing areas were detected using GPS devices applied to sheep and sheepdogs, and a pilot baiting site was selected based on micro-epidemiology. Baits were placed in several arrangements and at different locations. The uptake by stray dogs was investigated using camera traps. The baits with double layer coverage showed the greatest resistance in the environment while preserving the palatability up to 10 days. In addition, the double layer coverage withstood heights of 30 meters dropped by drones on hard surfaces. In total 80% were eaten after 1 day, 15% after 2 days, 5% after 3 days. Most of the baits (95%) were consumed by stray dogs and the remaining (5%) were consumed by foxes, badger and wild boar. In conclusion, the baits tested are well suited in a control plan for the treatment of stray dogs present in the peri-pasture areas of CE positive sheep farms.

OA12.05

**In vitro and in vivo characterization of resistance to commercial acaricides in field isolates of economically important ticks from East and West Africa** \_Evans, Mr. Alec\_Clinglobal

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To increase their productivity and sustainability, small scale producers in Africa need access to affordable yield-enhancing inputs of which tick control is of paramount importance. Many acaricide classes have been in use for decades and treatment failure poses a major threat. Several factors may contribute to the establishment and spread of acaricide resistance and characterizing the extent of resistance in regionally applicable isolates is needed to provide relevant local advice. Larval packet tests following the FAO guidelines were performed on 23 strains of three tick species (*Rhipicephalus microplus*, *Rhipicephalus appendiculatus* and *Amblyomma variegatum*) isolated from six countries in East and West Africa. The results demonstrated widespread resistance to chlorfenvinphos and amitraz in all species and regions. Surprisingly, resistance to ivermectin was also demonstrated in *A. variegatum* and *R. appendiculatus* in West Africa. The efficacy of commercial acaricides against the four least susceptible isolates was further characterised in a series of nine in vivo, controlled GCP studies in cattle and goats. Cypermethrin, cymiazole and ivermectin were only partially effective against *R. microplus* with no residual efficacy. Flumethrin spray-on provided short-term control against *A. variegatum* after application directly to tick predilection sites whilst the pour-on formulation applied to goats showed residual efficacy up to one month. Therapeutic control was achieved against *R. appendiculatus* through the weekly spraying of flumethrin, amitraz or cymiazole and cypermethrin. Fipronil achieved moderate control of *R. microplus* and *R. appendiculatus* however the associated withdrawal restricts its practical application. Results from these analyses and the limited options for tick control available to livestock farmers in Africa are discussed in further detail. This highlights the need to focus on managing the use of available acaricides, identifying new classes or repurposing existing compounds as acaricides, prioritising vaccinology targeting ticks and improving our understanding of the impact and value of integrated tick management.