POLISH PARASITOLOGICAL SOCIETY

ANNALS OF PARASITOLOGY

volume 70 · supplement 1 · 2024

eISSN 2300-6706

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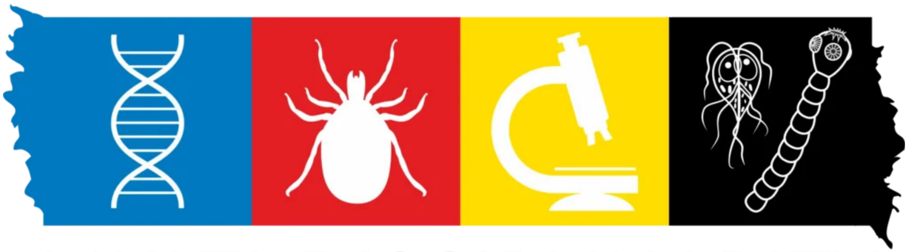

MULTI-DISCIPLINARITY

EMOP XIV 26-30.08.2024
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Authors are responsible for supplied abstracts.
Acting Editor-in-Chief of *Annals of Parasitology*: Rusłan Sałamatin

The XIV European Multicolloquium of Parasitology

Wrocław, Poland
August 26–30, 2024

Abstracts

[SE10]
Parasite infections in livestock and their control

Session: [SE10] Parasite infections in livestock and their control

Strongylids of domestic horses: influence of anthelmintic treatment on species composition and parasite community structure

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Abstract

Strongylid nematodes are the most prevalent horse parasites worldwide; the main method of their control is using of anthelminthic drugs. We aimed to estimate the alterations in the species composition and structure of strongylid communities in domestic horses after two-decade use of highly effective anthelmintics.

The study was performed at two farms in Ukraine where almost no anthelmintic treatments were practiced before 2004, and regular dewormings with highly effective anthelmintics were applied during the last 10–15 years. Strongylid nematodes were collected after horse deworming with macrocyclic lactone anthelmintics in 2004 (from 22 horses) and 2023 (from 17 horses). In total, 18,999 strongylid specimens were collected and identified.

Twenty-one strongylid species were collected in horses in 2004 – six species of Strongylinae and 15 – of Cyathostominae. In 2023, only 13 cyathostomin species were collected. The similarity of the strongylid species compositions between farms was higher in 2023 (Jaccard index, J=0.66) than in 2004 (J=0.62). The similarity of species compositions between samples notably decreased from 2004 to 2023 (J=0.43). We observed that the rare species with a prevalence <20% (*C.elongatus, C.ultrajectinus, P.mettami, P.poculatum, C.bidentatus*) disappeared from the community during two decades; the prevalence of background species (*C.labiatus, C.labratus, C.insigne*) dramatically decreased. Only 10–12 most prevalent and abundant cyathostomin species survived regular dewormings with highly effective anthelmintics. Also, the dominance of one species, *C nassatus*, dramatically increased during two decades (Berger-Parker index=28.8 in 2004, and 74.4 in 2023). General structure of the strongylid community gradually transformed from multimodal to a bimodal (core–satellite mode) structure.

The study was funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under the project No. 09I03-03-V01-00015 and 09I03-03-V01-00046.

Keywords: Strongylids, parasite community structure, species diversity, anthelmintic treatment, macrocyclic lactones

OS – oral session

Session: [SE10] Parasite infections in livestock and their control

Non-invasive monitoring of parasite infections in beef cattle grazing nature conservation areas

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Abstract

The use of cattle for nature conservation is increasing in Denmark and is often termed as “rewilding”, which implies that the animals should be considered wild and interventions kept at a minimum. It is well known that parasite infections constitute a major health issue for grazing livestock, and with this increasing tendency of rewilding, it is debated how best to follow the health of animals over time.

To develop a non-invasive strategy for monitoring parasite infections in cattle by developing a method to identify individual cattle based on faecal samples.

A cohort of 45 *Angus* heifers (9-10 mos. at start) was monitored for two years. Blood and faecal samples were collected at turn-out. During the grazing seasons, 20 freshly deposited fecal droppings were collected monthly. Fecal egg counts (FEC) were done for gastrointestinal nematodes (GIN) and flukes. DNA was extracted from blood and feces of 12 individual heifers and genotyped using the Illumina BovineSNP50 chip. The genotypic concordance between blood (high-quality DNA) and feces was analyzed as a proof of concept to demonstrate that individual cattle could be identified using fecal DNA.

The GIN FEC peaked (mean 339 epg) one month after turn-out and declined during the 1st season and stayed low (< 50 epg) in the 2nd season. Fluke FEC levels showed a similar pattern for liver flukes while FEC for rumen flukes were persistently high with a prevalence of 95-100% at all times during the two years. The genotyping of blood and fecal DNA was able to identify 11 of 12 heifers with an adjusted call-rate of >90% using 30k SNPs.

The consistently high FEC and prevalence observed for the rumen flukes have not been observed in Denmark before and requires further investigation. This first attempt of genotyping cattle using SNP-analysis on faecal DNA showed promising results, and the method will be further validated for non-invasive monitoring of individual animals.

Keywords: cattle, parasite, genotype, livestock, fluke

OS – oral session

Session: [SE10] Parasite infections in livestock and their control

Longitudinal monitoring of parasite infections in two Danish organic pig farms with agroforestry

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Abstract

Production of pigs in an agroforestry system may contribute to increased animal welfare, less nutrient leaching and affect parasite levels. The trees used in these systems may be selected for potential anti-parasitic effects. To describe the occurrence of gastrointestinal nematodes (GIN) in pigs in farms with agroforestry systems.

Two organic Danish farms with outdoor farrowings in paddocks, each with a partial cover of 20-30% poplar trees (*Populus* spp.), were monitored quarterly for one year. Farm 1 had 650 sows and reared 11000 piglets annually; the piglets were weaned at 10 weeks and reared in the farrowing paddocks until housing at 12 weeks. Farm 2 had 350 sows and reared 6000 piglets annually; the piglets were weaned at 10 weeks and moved to stables with outdoor access. On both farms, 20 fecal droppings were collected from different groups (small weaners, large weaners, finishers, lactating sows and pregnant sows) at each visit and analyzed for GIN fecal egg count (FEC).

The weaners and finishers had low *Oesophagostomum* spp. FEC (means <20 epg), while pregnant and lactating sows had consistently high *Oesophagostomum* spp. FEC (means >3500 epg). The weaners had sporadic infections with low *A. suum* FEC, whereas the finishers were more infected (means of 1000-2000 epg). Pregnant and lactating sows had a lower *A. suum* FEC of 100-200 epg. Both farms routinely dewormed piglets at weaning and pregnant