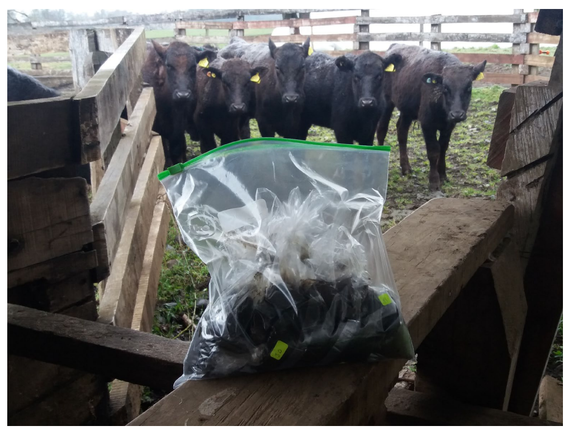
Climate change and *Strongylus* spp. in grazing cattle in southern Chile: A preliminary look on the risk factors

Marcelo Hervé F.[1], Francisco Astorga[2], Paciencia Nanga[2], Santiago Urcelay[2], Fernando Fredes[2], Luis Pablo Hervé C.[1,2,3]

1- Vetwork SpA, Chile. 2-Facultad de Ciencias Veterinarias y Pecuarias, Universidad de Chile. 3- Ross University School of Veterinary Medicine

Introduction & Methods

Data was collected from 17 farms in the Araucanía region in Southern Chile. The following information was obtained from 3 sources, every three months: **coprological egg counts**, **farm survey** and **weather information**. Each sampling involves between 20 to 30 non-randomly selected animals within each farm. Only cattle data is presented here. Data from the first 8 sampling events (2 years, n=1620 samples from cow-calf systems and dairy farms.



Data was analyzed using the PROC GLIMMIX procedure in SAS 9.4, considering a nested random effect of sampling within farm ID. The dichotomic dependent variable was "strongylus positive animals", using as cut-off value cattle with more than 200 egg per gram (epg).

Results

Cattle in **winter** were almost **11.7x** (2.8 – 48.5 95% CI, p=0.003) more likely of showing higher strongylus parasite counts than cattle in fall.

Calves had **3.2x** (1.3 – 7.8 95% CI, p=0.01) more risk of having a high parasitic count when compared to cows and with older age groups in general.

Cattle **without antiparasitic treatment** in the last 12 weeks had **3.2x** (0.9 – 11.4 95% CI, p=0.06) higher odds of showing higher parasitic counts. This result was **statistically non-significant**.

Categories
Calf
Steer
Heifer
Cow

Season
Winter
Spring
Summer
Fall

AP drug use?
No
Yes

These results are the basis for a decision tree model to provide with qualitative risk estimators to farmers and veterinary consultants

Proof of concept **Qualitative risk tree**

The highest risk is for calves, in winter!… and probably is higher in calves that have not been treated.

Relevance

These results will allow for the researchers to provide **simple recommendations to farmers**, to estimate the potential risk of strongylus infestation in grazing cattle. This system will be able to **provide warnings** to farmers that can guide them through adequate preventative measures.

From the climate change perspective, the strengthening of the seasons and **season shifting**, will have to be further evaluated to establish which specific weather factors are responsible for this increased infestation in risk in winter.

Funding: This project is funded by FIA (*Fundación para la Innovación Agraria*, www.fia.cl) of the Agriculture Ministry – Chile, Project PYT-0125-2018.