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Animal welfare and parasite infections in organic and conventional dairy farms in central Italy: a pilot study

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Introduction

- 1 The 2021-2027 European Green Deal contains an “organic farming action plan”, thought to lead to more sustainable and adaptable farming.
- 2 Low animal welfare standards and helminth infections have heavy negative effects on the production efficiency (Orjales et al., 2017 Vet Parasitol. 243: 115-118; Dawkins et al., 2017 Anim. Prod. Sci. 57.2: 201-208).
- 3 The control of gastrointestinal (GI) helminths in conventional (CONV) dairy farms is primarily based on the use of chemotherapeutics. This approach is unsustainable as resistance to anthelmintic drugs is increasing (Vercruysse et al., 2018 Parasitol, 145: 1655-1664).

The aim of the present pilot study was to evaluate the animal welfare and parasite prevalence in organic (ORG) and CONV dairy farms in order to achieve preliminary data useful to improve the system's resilience.

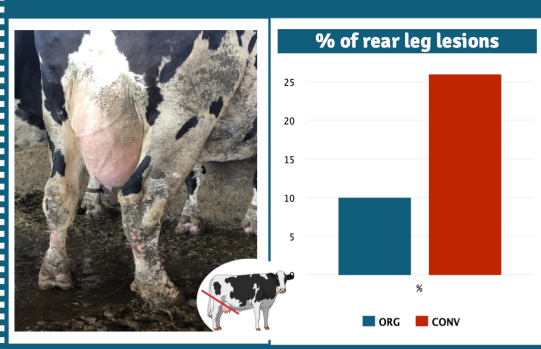
Materials and Methods

An on-farm welfare assessment (“AssureWel” protocol) and a parasitological investigation (flotation, sedimentation and McMaster techniques) were performed on a cluster of adult animals (Total: ORG-n=148; CONV-n=165) from 5 ORG and 5 CONV dairy farms in central Italy.

A Chi-squared test was used to evaluate statistically significant associations ($p \leq 0.05$) using R statistical software (R Core Team 2020).

Results

The most significant result concerning animal welfare was the difference in the animals showing **rear leg lesions** between CONV (26.7%) and ORG farms (10.1%), ($p < 0.01$).



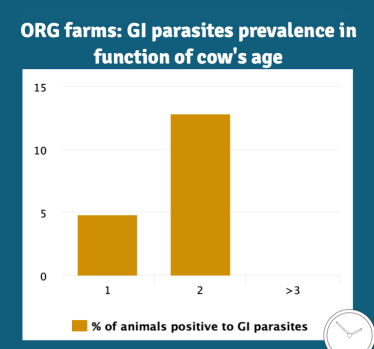
Anthelmintic treatments were used regularly in 4/5 CONV farms and in none of the ORGs.

In 2 CONV farms (40%) and 4 ORGs (80%) **at least one animal** tested positive for **GI parasites**.

No significant differences in parasites prevalence were identified between the two farming systems (ORG=10.9%; CONV=7.3%).

Specifically, **Eimeria spp.** oocysts (ORG=7.5%; CONV=4.9%) and **Strongilidae** eggs (ORG=4.1%; CONV=4.9%) were found in ORG and CONV farms.

A significant influence of cow's parity on parasite prevalence was found in ORG farms, with a reduction of the positive cases with the increase of age ($p = 0.03$).



Conclusions

Tolerance to GI parasite infections may be higher in livestock reared on ORG farms due to the continuous exposure to parasite infections that may lead to improved resilience (Orjales et al., 2017 Vet Parasitol. 243: 115-118).

Further studies on welfare and sustainable approaches to parasite control, such as integrated control measures and targeted selective treatments should be encouraged.