Reduction of *ascaris suum* in organic pig farms - a field study

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Background & Objectives

Control of *ascaris suum* is one of the most challenging issues in organic pig farming. A high burden of roundworms can be an animal welfare as well as economic issue. Therefore, special attention must be paid to timely, regular and targeted prevention and control of roundworms.

Materials & Methods

In this study five organic pig farms were accompanied by the swine health service from 2019 to 2021. In the first step an individual management und treatment plan was developed for each farm, followed by three farm visits per year to check the implementation. Per visit five manure samples were taken and checked for *ascaris suum* by flotation. In addition the slaughter findings on the livers were evaluated also three times / year. The results were discussed with the farmer and adaptations were made.

Pic. 1: *Ascaris suum* and liver with "milk spots"

Results

Measurement measures were eg. changing to all in – all out (Operation / Manure Axis / Animal Group), dividing age groups, intense manure removal, cleaning and disinfecting and strategic deworming. The manure samples were mostly negative on *ascaris suum* (96%). Evaluation of liver findings (milk spots) at slaughter showed a reduction after implementation of management measures from 98% to -16%. Highest rate of slaughter findings was 59,8%, lowest 0%. Only three of the five farms were able to implement the management measures. All three farms, who implemented the measures had, a high reduction of liver findings at slaughter (98%, 96%, 80%). A handbook for the management of *ascaris suum* in organic farms was written and released Handbuch zur Spulwurmbekämpfung im Ökolandbau : Landwirtschaftskammer Niedersachsen (lwk-niedersachsen.de) .

Pic. 2: Dividing age groups by building walls in the outdoor part of the pen

Discussion & Conclusion

Ascaris suum is a big problem in organic farms. Measurement measures can reduce the burden very well. Farmers are often not willing or able to implement management measures. Effective management measures in this study were: AIAO (Operation / Manure Axis / Animal Group), regular manure removal, separating different groups, after moving animals out: manure removal, washing and disinfecting, intense and regular strategic deworming. To measure the success of *ascaris suum* reduction slaughter findings are much more suitable than manure samples

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Fig. 1-3: Examples for *ascaris suum* reduction measures in different organic farms

Farm A (Finisher)	
Starting situation	- Management of the old building by all in all out - No consistent deworming - Cleaning usually after each passage, disinfection irregularly
Piglet source	One farm
Recommended Measures	- Cleaning and disinfection after each passage - Adjustment of deworming times: 1. Deworming: 1 week after housing 2. Deworming: 6 weeks before the first sale
Measures implemented	- All measures have been implemented - Disinfection has been neglected only in isolated cases
Results	Roundworm livers complained about at slaughter 14,8% *2018* 23,0% *2019* 1,0% *2020* 0,0% *2021 (+- 9 months)*
Remarks	This farm shows that with the right strategy, you can also fatten pigs in organic farming without having problems with ascaris suum. However, it also becomes clear that despite all in all out, consistent cleaning and disinfection, as well as deworming, cannot be dispensed with.

Farm C (Finisher)	
Starting situation	- Good owners with a great eye for the animal - Fattening in continuous system - Regular purchase of animals - Use of converted old buildings - No way to separate groups consistently - Cleaning, no disinfection - Treatment: Fenbendazol every 6 weeks
Piglet source	One farm
Recommended Measures	- Change to all in all out - Consistent cleaning and disinfection after each passage - Have an eye on on more even piglets - Consistent deworming
Measures implemented	- All measures have been implemented
Results	Roundworm livers complained about at slaughter 36,5% 2018 26,8% 2019 12,4% 2020 8,5% 2021 (+- 9 months) 15% less animals sold by switching to all in- all out
Remarks	- The example of this farm makes it clear how important the consistent separation of different age groups is for animal health. Before the switch to all in-all out, the farm had already made great efforts to improve animal health, but only the consistent separation of the groups by means of all in- all out was able to bring the desired success.

Farm D (Finisher)	
Starting situation	- The farm has a pre-fattening barn and a separate barn for middle and final fattening - Do not disinfect, only sweep it out, wash it infrequently - removement of dung is only done every 2 weeks - Uneven groups in the middle and end fattening - Deworming concept not optimally and not consistently implemented
Piglet source	One farm
Recommended Measures	- Adhere to the newly developed deworming rhythm - Assign a group to manure axes - Consistent cleaning and disinfection - Weekly removement of dung - Pay attention to even groups (allows for more precise setting of the deworming)
Measures implemented	- Deworming rhythm has been implemented more consistently - Manure removal and cleaning have been optimized. - More even sorting of the animals in the groups
Results	Roundworm livers complained about at slaughter 12,9% *2018* 18,7% *2019* 11,2% *2020* 15,3% *2021 (+-. 9 months)*
Remarks	- The manure axes in the middle and final fattening could not be managed according to the recommendation, as the feeding technology would have had to be extensively modified - During the busy months in arable farming, removement of dung or deworming was sometimes left behind.