

INVITATION PUBLIC DEFENSE

Optimizing part-time group housing for female breeding rabbits

Liesbeth Van Damme

28th of September 2023
17:00

PROMOTORS

Prof. dr. Frank Tuyttens
Ghent University, Faculty of Veterinary Medicine
Flanders Research Institute for Agriculture,
Fisheries and Food (ILVO)

Dr. ir. Evelyne Delezie
Flanders Research Institute for Agricultural,
Fisheries and Food (ILVO)

Curriculum Vitae

Liesbeth Van Damme was born on the 24th of December 1992 in Ghent, Belgium. In 2017 she obtained her Master in Biology cum laude at Ghent University. From 2017 until 2019, she worked for Labo Iliano and ECCA as laboratory assistant. In 2019, she started her PhD research at Flanders Research Institute for Agriculture, Fisheries and Food (ILVO) and the Faculty of Veterinary Medicine of Ghent University. The PhD, aiming to optimize part-time group housing for female breeding rabbits, was funded by the Government of Flanders (Department Environment, Section Animal Welfare) and supervised by Prof. Dr. Frank Tuyttens and Dr. ir. Evelyne Delezie.

Liesbeth Van Damme is (co-)author of several scientific peer-reviewed publications in international journals. She has been a speaker at symposia and participated in national and international conferences. Alongside her PhD, she is active as regional secretary of the International Society of Applied Ethology (ISAE) of the Benelux from 2022 onwards. Between 2021 and 2023, she has worked on an international pilot project on Best Practices for Alternative Egg Production Systems, funded by the European Commission, DG SANTE. From July 2023 onwards, she is working at the ILVO on tail-biting in pigs, a project funded by Government of Flanders (Department Environment, Section Animal Welfare).

Where?

The defense will take place on 28 September 2023 at 17:00

ILVO auditorium

ILVO-Plant 39

Caritasstraat 39

9090 Melle

The defense will be followed by a reception (registration is required).

How to attend?

If you would like to attend, please register before 21 September 2023 by email to

Liesbeth.VanDamme@ilvo.vlaanderen.be

Members of the Jury

Prof. dr. Sarne De Vliegheer
Chairman of the Jury
Faculty of Veterinary Medicine, UGent

Prof. dr. Katleen Hermans
Faculty of Veterinary Medicine, UGent

Prof. dr. ir. Stefaan De Smet
Faculty of Bioscience Engineering, UGent

Dr. ir. Karel de Greef
Wageningen Livestock Research, Animal Breeding and
Genomics

Dr. Hilde Vervaecke
Odisee University of Applied Sciences, Agro- and
Biotechnology

Summary

Society increasingly expects social farm animals, including rabbits, to be housed in group, preferably in well-adapted housing in compliance with the animals' species-specific needs. In Belgium, weaned meat rabbits are already housed in group in enriched multi-litter cages. In contrast, breeding female rabbits (does) kindle and nurse their kits in single-litter cages throughout their entire reproduction cycle, imposing a restriction on their social needs. Continuous group housing systems, in which breeding does and their litters are housed in group from kindling until weaning, are unattractive for the rabbit farming industry due to reported negative effects on both kit and doe performance, mainly caused by aggression among females around kindling. Part-time group housing systems are an alternative for continuous group housing systems that have received considerable interest. In this system, does are housed in single-litter cages during the first weeks after kindling and housed in group when the kits are older and have become more independent from the mother. Although doe reproductive performances improved compared to continuous group housing, inter-doe aggression, mainly due to hierarchy fights, remains an important and yet to overcome problem. In order to optimize part-time group housing, animal experiments were conducted with the aim to reduce aggressive behaviour among females and to improve doe reproductive performance and welfare of both does and kits.

The first animal experiment, outlined in chapter 3, assessed the optimal timing in the reproduction cycle to group breeding does with their litters. Results showed that grouping does with their kits, as indicated by lower kit skin injury scores, was more beneficial 22 days after kindling instead of 25 or 28 days (in a 42-day reproduction cycle). Does from the earliest grouping treatment also showed more non-aggressive social contact (e.g. huddling and grooming) towards other does compared to does grouped at later timings. Unfortunately, in all grouping treatments, the prevalence of injured does and kits was high throughout the group housing phase.

The second experiment, detailed in chapter 4, examined the effects of group size (three or four does) and cage enrichment (plastic pipes and extra elevated platforms) when does were housed with their kits in multi-litter cages 22 days after kindling. Cage enrichment, however, did not affect doe reproductive performance, the number and score of doe and kit skin injuries, or doe social (agonistic) behaviour. Compared with groups of four, however, does in groups of three had lower mean injury scores. Yet, even in the groups of three does skin injuries were still common among does as well as their kits.

The third experiment, described in chapter 5, was conducted to evaluate the addition of cage enrichment aimed to provide fleeing options (wooden panels) and distraction (alfalfa) at the start of grouping. Kit mortality was highest in groups provided with wooden panels but lowest in groups provided with both panels and alfalfa. The number of injured does was lowest in the treatment with alfalfa and in the treatment with both alfalfa and wooden panels, compared to the control treatment (which did not receive enrichment). No other cage enrichment effects, however, were found on doe and kit injury scores. The number of injured does and kits from the onset of grouping until the end of the group housing phase was high.

Lastly, does from the second experiment were used to assess if does possessed fixed personalities, outlined in chapter 6. After housing three or four unfamiliar does in multi-litter cages, two social behavioural strategies were identified based on post-grouping social doe behaviour: an offensive behavioural strategy or a submissive/avoider strategy. Behaviour was studied during three reproduction cycles and groups of unacquainted does were created in each cycle. Nearly half of the does in the study changed social behavioural strategy between cycles and were marked with an 'all-rounder' personality profile. The remaining non-changing does were marked as either 'consistently offensive' or 'consistently submissive'. No significant correlations were found between skin injuries and doe strategy or profile. In all groups, at least one offensive doe was present. In the future, it should be ascertained whether selecting against offensive does would indeed lead to reduced rates of aggression and fewer skin injuries.

While it is acknowledged that agonistic behaviour among does is inevitable during the early stages of grouping due to the establishment of dominance hierarchies, it is essential to prevent prolonged unrest and severe skin damage, as they are detrimental to animal welfare. The findings of this thesis highlight the challenges in achieving satisfactory solutions. Furthermore, effects of multi-litter housing on long-term doe welfare and post-weaning kit welfare remain largely unknown. If no significant improvements can be achieved, it may be necessary to reassess the suitability of part-time group housing as an alternative to single-litter housing. Nevertheless, given the importance of social interaction for rabbits, it remains crucial to explore alternative approaches for housing does in group.