

## INVITATION PUBLIC DEFENSE

The Art of Poultry Catching: balancing Welfare,  
Efficiency, and Economics

Femke Delanglez

Friday 4 April 2025, 17h

## PROMOTORS

Prof. Dr. Frank A.M. Tuytens  
Ghent University, Faculty of Veterinary  
Medicine/Flanders Research Institute for Agriculture,  
Fisheries and Food (ILVO)

Prof. Dr. Gunther Antonissen  
Ghent University, Faculty of Veterinary Medicine

Dr. Anneleen Watteyn  
Flanders Research Institute for Agriculture, Fisheries  
and Food (ILVO)

## Curriculum Vitae

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Femke Delanglez (°Aalst, 27th of December 1996) obtained her Master of Science in Bioscience Engineering Technology: Agriculture and Horticulture — Main Subject Plant and Animal Production from Ghent University in 2020 (cum laude). In 2021, she got her Master of Science in Teaching in Science and Technology — Main Subject Bioengineering (cum laude) also from Ghent University. In 2021, she started her PhD research at the Faculty of Veterinary Medicine of Ghent University and Flanders Research Institute for Agriculture, Fisheries and Food (ILVO) at the Animal Science Unit, supervised by Prof. Dr. Frank Tuytens, Prof. Dr. Gunther Antonissen, and Dr. Anneleen Watteyn. During 3.5 years, Femke investigated the selecting, catching, and crating and loading of broiler chickens and end-of-lay laying hens. To constantly grow in her field of expertise she attended several courses in: Animal welfare, ethics and law, Summer School Animal Welfare, Module 4 - Drawing Conclusions from Data: An Introduction, Advanced Academic English: Writing Skills, Research Data Management in LSM, Statistics - Getting Started with R Software for Data Analysis, and Stress and resilience from Doctoral School of Life Sciences and Medicine at Ghent University.

Femke is (co-)author of several publications in peer-reviewed scientific journals. She participated at national and international conferences and was responsible for the presentations of her different projects. She also supervised and coached three Master students (Master of Science in Pharmaceutical Care, Master of Science in Bioscience Engineering Technology, and Master of Science in Industrial Design Engineering Technology) during their Master dissertations.

## Where?

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The defense will take place on April 4, 2025 at 17.00h

The defense will be followed by a reception with snacks and drinks.

Auditorium (VAC Gent)

Virginie Lovelinggebouw (VAC Gent)

Koningin Maria Hendrikaplein 70

9000 Gent

## How to attend?

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If you wish to attend the public defense physically, please register before March 24 via email [femke.delanglez@ugent.be](mailto:femke.delanglez@ugent.be).

If you wish to follow along online, please let us know before March 31 via [femke.delanglez@ugent.be](mailto:femke.delanglez@ugent.be).

## Members of the Jury

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Prof. dr. Hans Nauwynck  
Chairman of the Jury  
Faculty of Veterinary Medicine, UGent

Prof. dr. Christel Moons  
Faculty of Veterinary Medicine, UGent

Dr. Marien Gerritzen  
Subdivision Animal Health & Welfare, Wageningen Livestock  
Research

Prof. dr. Jeroen Degroote  
Faculty of Veterinary Medicine, UGent

Dr. Kätthe Kittelsen  
Poultry Health Service, Animalia  
Oslo, Norway

## Summary

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Broiler chickens and end-of-lay hens are reared intensively to meet commercial demand. Maintaining healthy poultry flocks is essential to obtain high-quality products. Animals should be fit for transport to avoid unnecessary suffering due to changes at the end of their productive cycle. They are removed from their environment by catching, crating, loading, and transporting before slaughter. Prior to transport, chickens are exposed to situational changes, such as feed and water withdrawal, unfamiliar humans, handling, and crating, which can impair animal welfare and cause production losses. In manual catching, chickens are caught by a team. Catchers can experience uncomfortable working conditions due to repeated bending, poor air quality, and reduced visibility. Mechanical catching is an alternative, replacing some human catchers with a machine. Compared to inverted and mechanical catching, upright catching requires more time, is costlier, and more demanding for catchers. More catchers are needed and fewer birds can be caught simultaneously. However, a comparison between inverted, upright, and mechanical catching in terms of animal welfare, catcher well-being, and financial concerns is lacking in literature. Therefore, this thesis aims to optimise the pre-transport phase, including selecting, catching, crating, and loading, based on animal welfare, human well-being, and economics.

This research conducted an online survey to gather information on current pre-transport practices in Flanders for broilers and end-of-lay hens. Findings showed a minority of farmers performed catch preparation, such as selecting chickens unfit for transport. Laying hen farms were less aligned with EU legislation on water and feed withdrawal than broiler farms. All birds were caught inverted, except one broiler farmer who used mechanical catching. Although mechanical catching may incur extra costs, increased biosecurity risks, and specific stable requirements, it is preferred for broiler catchers' well-being. Upright catching (one or two birds) was considered better for animal welfare than catching more than three chickens by one or two legs, mechanically, or by wings. Poultry farmers should be sensitised

to pre-catch selection, with guidelines for estimating fit birds for transport. Pre-catch measures can streamline catching and reduce animal suffering.

Three experiments were conducted on commercial broiler chicken and laying hen farms. Animal-based measurements were performed during and after catching on-farm and in the slaughterhouse. Catchers' opinions were gathered via a survey comparing upright and inverted catching and the use of newly designed add-on prototypes for the standard container in end-of-lay hens. An ergonomist assessed inverted and upright catching. Economic measures were analysed between upright and inverted catching for both broilers and end-of-lay hens, with mechanical catching only in broilers.

Manual (inverted and upright) and mechanical catching in broiler chickens were studied on 15 commercial farms. Upright-caught broilers flapped less and had better catcher-bird interaction than inverted-caught broilers. Mechanically caught broilers showed more catch damage than upright-caught ones. However, upright catching took more time and increased working hours compared to inverted and mechanical catching, with an additional cost of € 0.012 and € 0.006 per kg of live weight, respectively. Catchers preferred inverted catching, because upright catching is more labour-intensive. Ergonomic analysis found manual catching in both methods too demanding, suggesting working conditions need optimisation.

Manual catching in end-of-lay hens was evaluated on seven commercial farms. Inverted-caught hens flapped wings more and experienced worse catcher-bird interaction. Upright catching resulted in fewer wing bruises than inverted catching. However, upright catching took longer, required more man-hours, and was more expensive, adding € 0.0005 per egg. The ergonomic outcome was similar to broiler chickens.

Additionally, the design and use of two new add-on prototypes for the container drawer of end-of-lay hens were examined. The first is a tube with small, movable flaps, and the second is a frame with fixed and flexible flaps. Previous studies show crate or container design affects efficiency, animal welfare, and catcher well-being. These prototypes were tested on five commercial laying hen farms and compared with a standard container. The goal was to prevent hens from escaping and entrapment. Hens were calmer with prototype 1 than with prototype 2, but no difference was noted compared to the standard container. Crating was less efficient with prototype 2 than the standard container. However, hens had fewer breast bruises with prototype 1 compared to the standard container. Catchers preferred prototype 1 for user-friendliness and less stressful hen behaviour.

The pre-transport phase can be improved by optimising current procedures. Increasing awareness and better training on selecting and catching poultry can achieve initial advancement. For further insight, supplementary factors and evaluations must be performed on a larger scale.

Practical recommendations include clear guidelines for the poultry sector, especially for farmers and catchers. This thesis developed a poster to identify unfit chickens during production and before catching, avoiding unnecessary suffering during catching, crating, and transport. A poster providing guidance on working conditions for those involved in catching, crating, and loading was also designed. Future research should investigate upright catching procedures in broiler chickens and end-of-lay hens on a larger scale, including effects on animal welfare, catcher well-being, and economics. Increased testing of add-on prototype 1 is recommended to gather more information on its practical use and limitations.

While catching, crating, and loading are stressful for both poultry and catchers, it is essential to prevent suboptimal working conditions and injuries. Research should continue to develop more favourable and economically viable procedures focusing on both animals and catchers. Ultimately, efficient collaboration within the poultry sector is fundamental for balancing welfare, efficiency, and economics.