

Dutch Poultry Innovation in AI, Digitalization and Smart Farming

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Rick van Emous



- I work for Wageningen Livestock Research (part of WUR)
- Member of the board DPC
- The Nr. 1 Agricultural University in the world
- Senior Poultry Researcher: scientific and applied poultry research
- Wageningen University:
 - 13,500 students (>100 countries)
 - More than 8,000 employees



Introduction

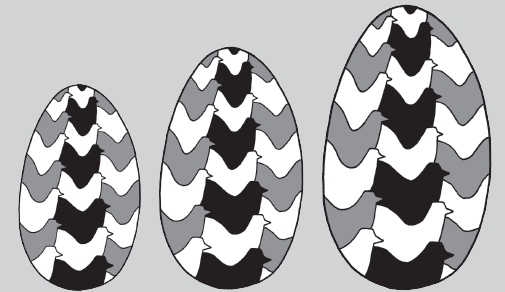
- The Netherlands is an important source ($\pm 80\%$) of poultry innovations
- Keys for innovations:
 - Independent farmers
 - Good contact between scientists and farmers
 - Collaboration via the BREF-square
 - PPP (Public Private Partnership) projects
 - BAF approach



Independent farmers

- No fully integrated poultry sector!
- Entrepreneurs:
 - Direct (financial benefits) of improved results
- Struggle with daily challenges:
 - Practical knowledge
 - Creative solutions
- Example:
 - My PhD project (feeding the modern BB)
 - Two farmers ask me an important question

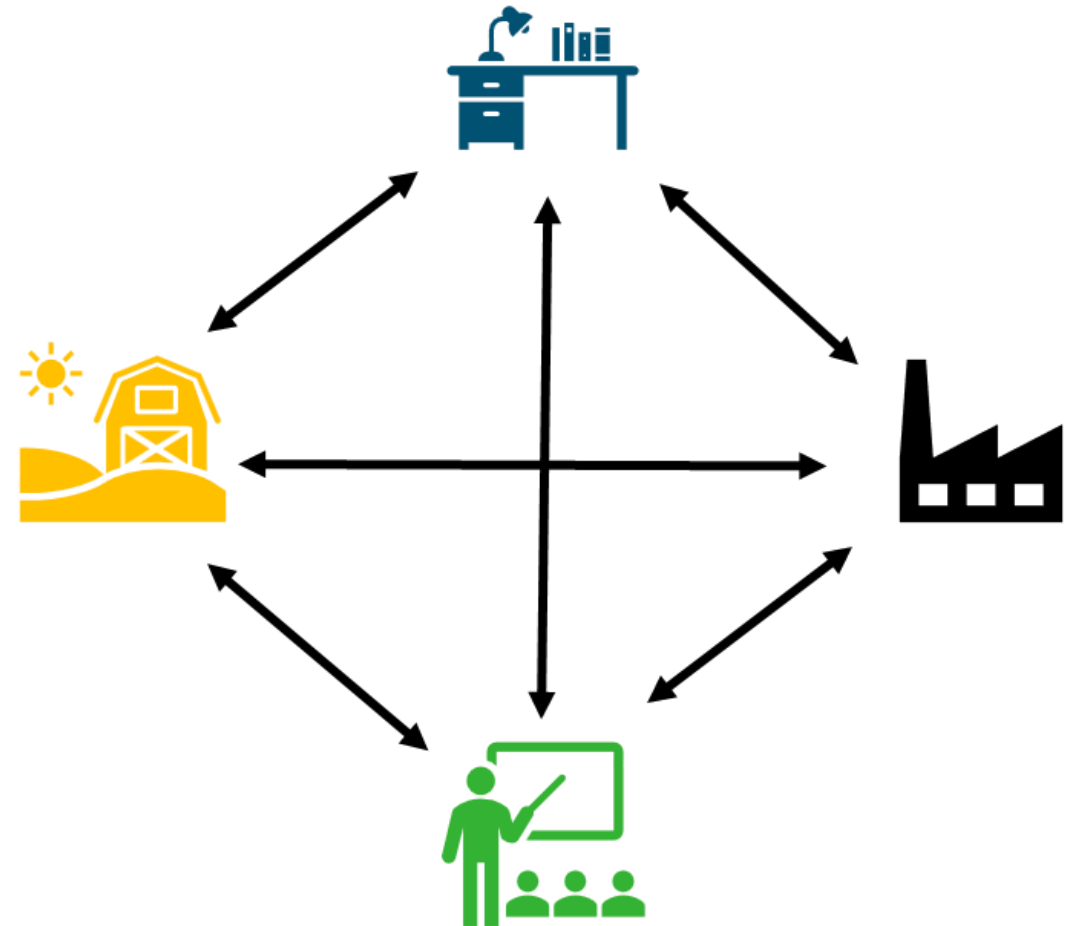
Body composition and reproduction in
broiler breeders:
impact of feeding strategies



Rick van Emous

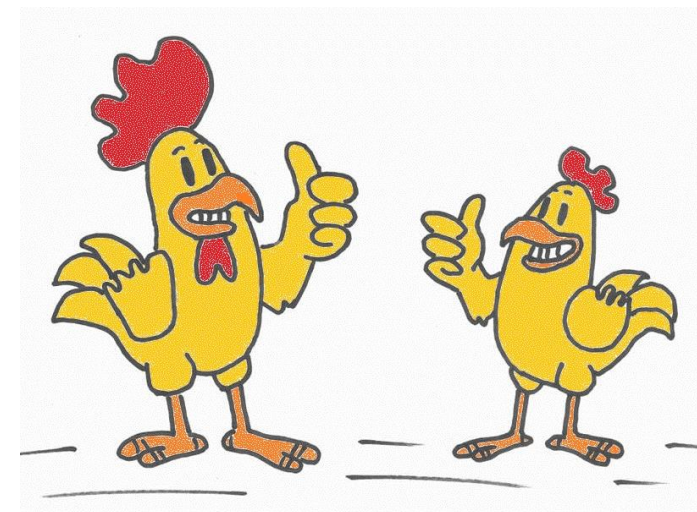
'BREF'-square approach

- Business
 - Research
 - Education
 - Farmers
- PPP projects:
 - All stakeholders of the chain!



BAF approach

- BAF (Better for Animal and Farmer) approach:
 - Improved welfare **and** higher profit for the farmer
 - Examples: footpad lesions, aviary systems, slow-growing broilers



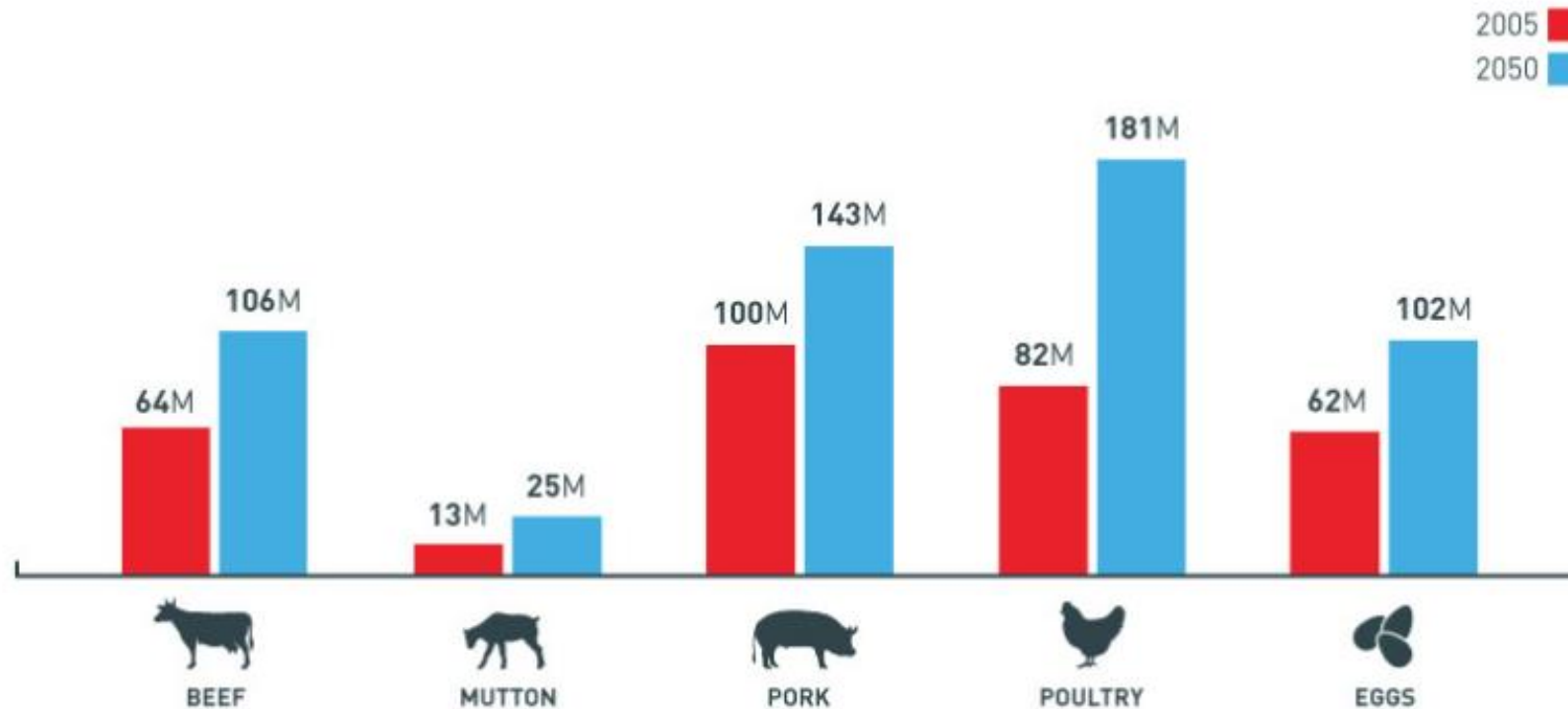
Major Dutch poultry innovations

- Broilers/hatchery:
 - On farm hatching
 - Early feeding in hatchery
 - Poultry meat production systems
- Breeders:
 - Community nest
 - Layout BB house
 - State of the art management
- Layers:
 - Alternative systems for layers
 - Novel housing concepts
 - In ovo sexing

Global demand of poultry meat and eggs

GLOBAL DEMAND FOR MEAT

2005 vs. 2050
(in tonnes)



Source: Food and Agriculture Organization of the United Nations, ESA Working Paper No. 12-03, p. 131

Challenges in poultry production

- Global demand of poultry products is rising fast
- Increased feed costs
- Labor shortages
- Welfare monitoring
- Improving health (mortality, FPD, etc.)
- Data-rich but often underutilized opportunities



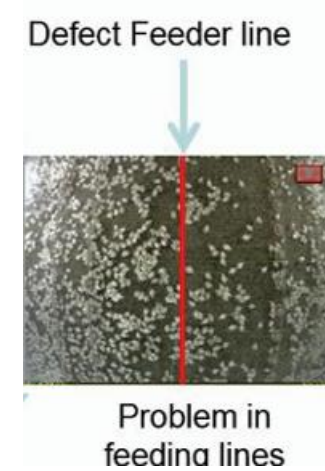
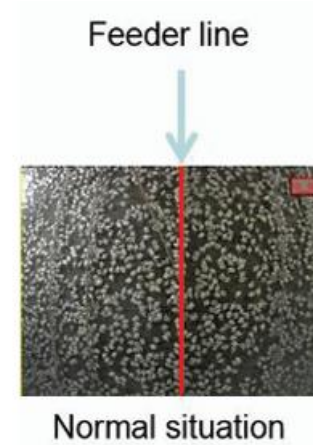
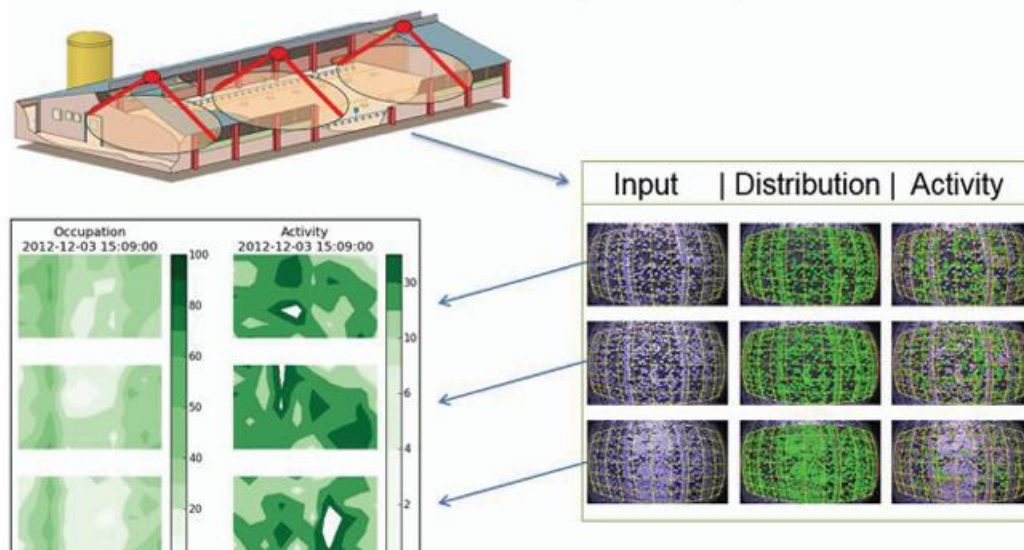
➤ In the future poultry houses will be equipped with technology!

Technology in poultry houses

- Computer vision:
 - Detecting behaviour: general, distribution, lameness, feather pecking
- Predictive analytics (early warning):
 - Forecasting growth curves, water intake, mortality, diseases
- Automation and robotics:
 - Automated grading/vaccination, smart drinkers/feeders, robots
- Environmental optimization:
 - AI-driven climate control, energy saving, diminish pollution

Distribution in poultry houses

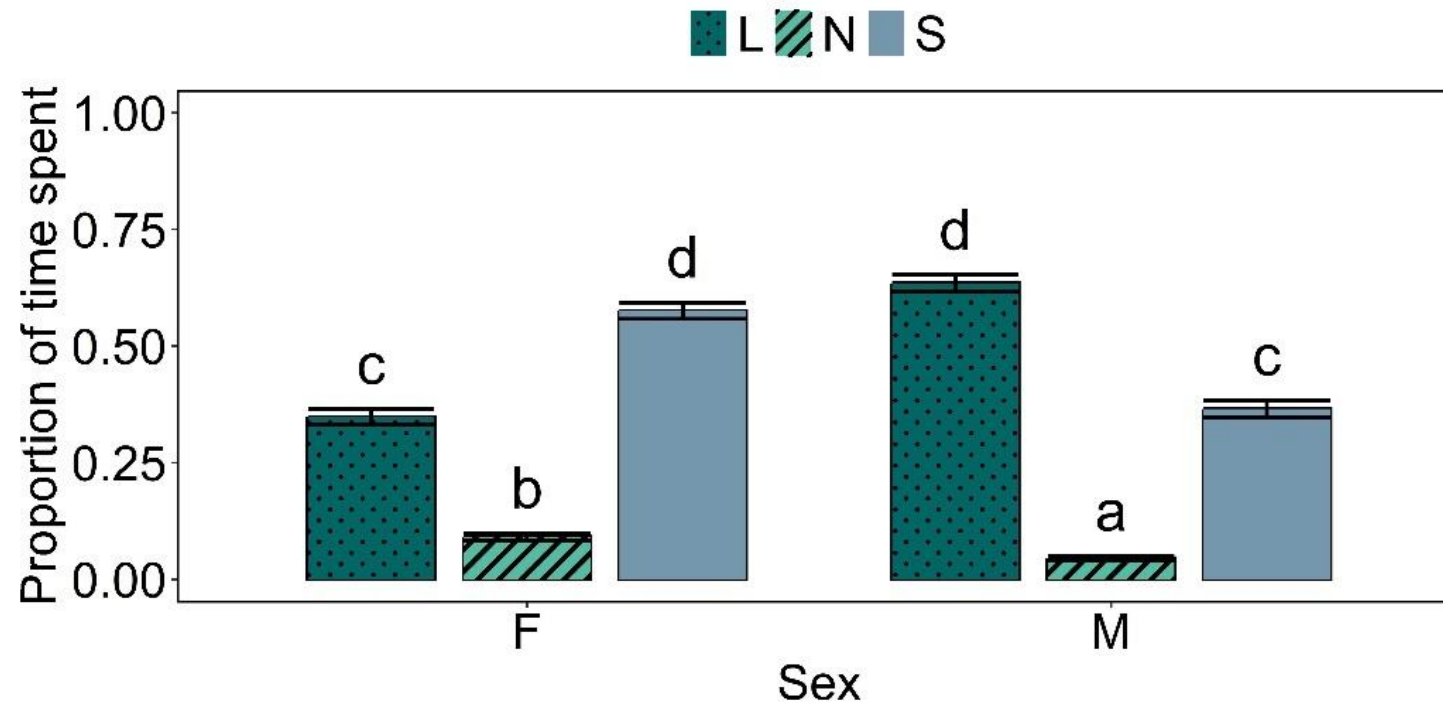
- eYeNamic from Fancom (not at the market anymore)



House use of BB

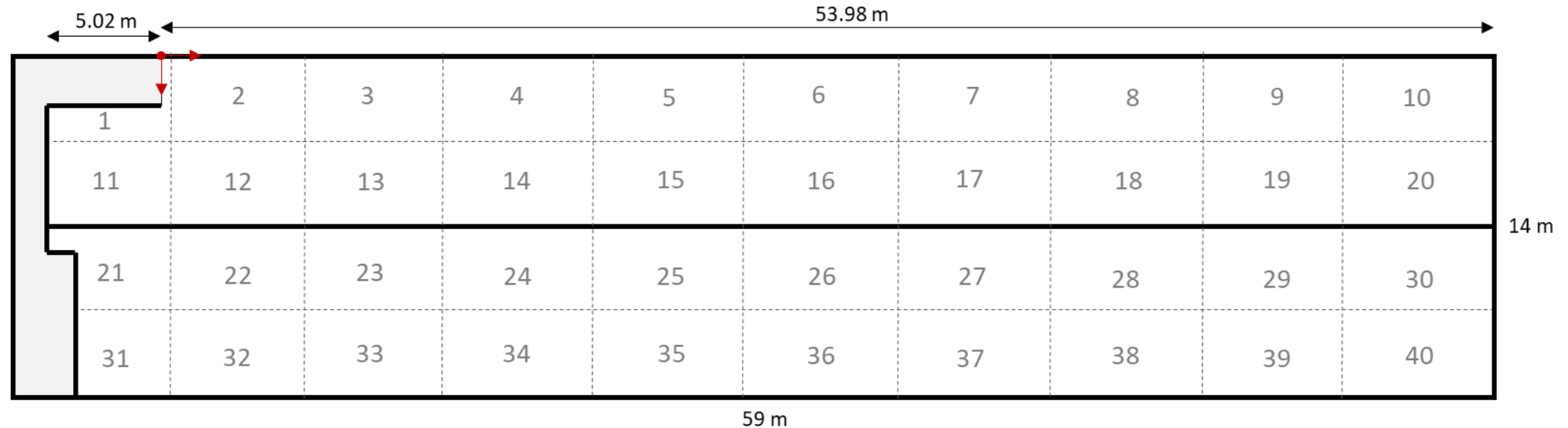


- UWB system



van der Sluis et al. (2026)

Overall area use



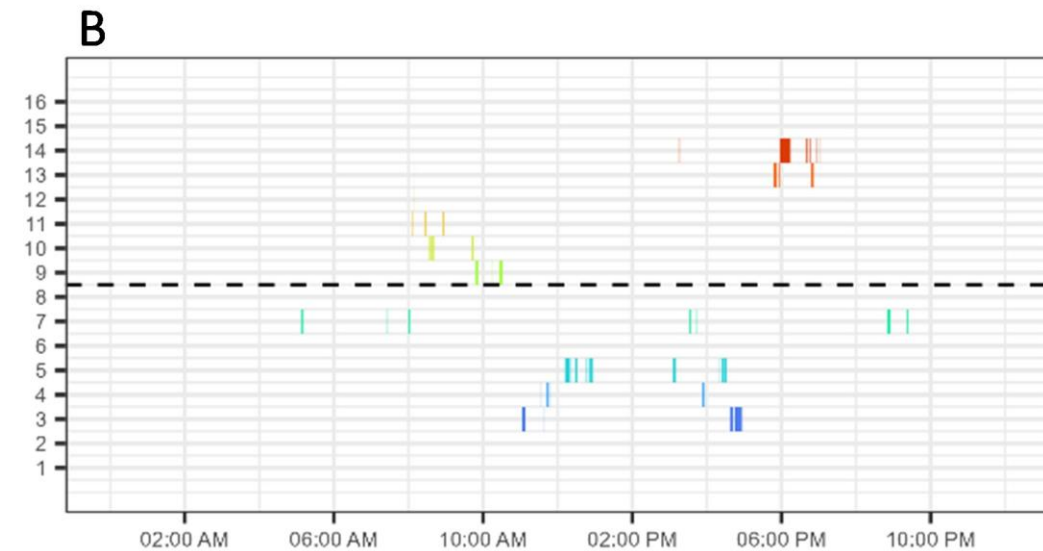
- Overall average number of zones visited in a day: 12.8 (64%)
 - Females: 58% of zones (15% - 100%)
 - Males: 71% of zones (30% - 100%)

van der Sluis et al. (2026)

RFID to assess feeding pans



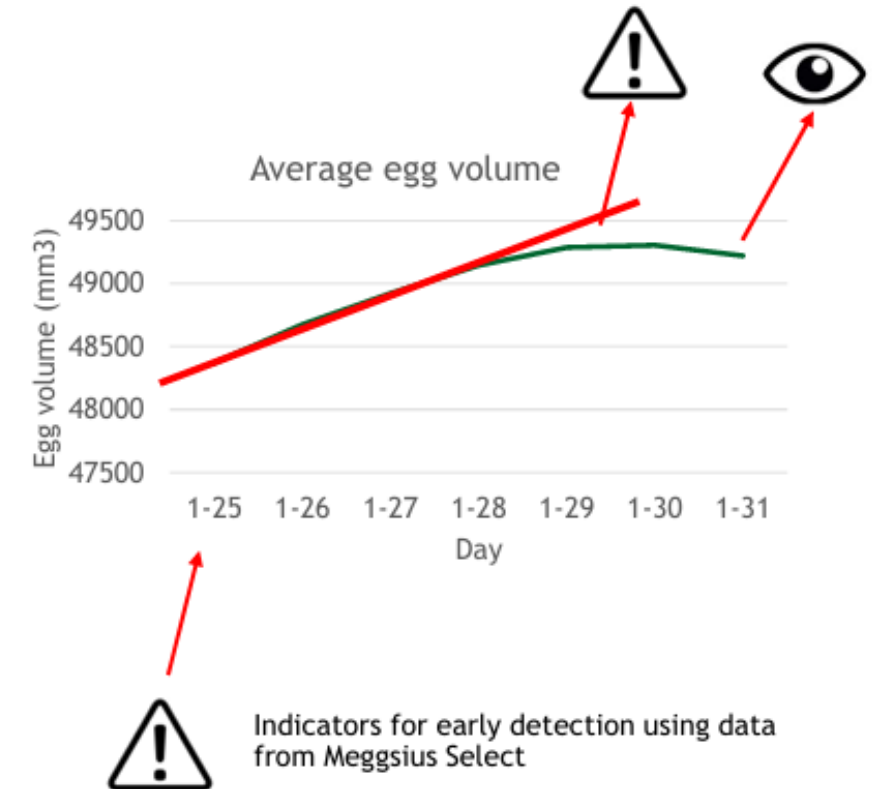
- Feeders with antennas and broilers with (leg) tags



van der Sluis et al. (2025)

Early warning system production data

- Meggsius for egg grading/counting (Vencomatic)
- Egg volume (weight):
 - 31-1: decrease detected by farmer
 - 1-2: vet diagnoses Clostridium
- Meggsius data:
 - 28-1: deviation in egg volume
 - 25-1: other indicators show earlier signs



Source: Vencomatic

Early warning system water intake

- Optifarm
- Water is the most important nutrient!
- Real time water intake to predict health status
- AI model uses 3 days of previous water data to predict the next 15 minutes
- Analyze deviations to identify probable causes, such as problems with pressure, ventilation, and temperature.



Source: Optifarm

Automated grading and vaccination

- Shortness in labour
- Vaccybot from AAT (EW group company)
- Grading and vaccination robot
- Up to 2,800 birds per hour
- Up to 4 needles & 6 vaccines simultaneously



Precision feeding system

- University of Alberta (Canada)
- Tagged birds and feeding stations
- Feeding broiler breeder pullets/breeders after comparing individual and recommend target BW
- Too expensive for commercial BB houses
- Can be used for males in BB houses:
 - Field test with Ross 708 breeders: 2% higher fertility
 - No spiking in a field test with Cobb GPS



Source: Zuidhof

Ground or ceiling robots

- Disinfecting pen floor
- Collecting data of temp, RH, etc. through the house
- Analyzing health, behaviour, and welfare
- Stimulating mating behaviour (BB)
- Reducing and/or collecting floor eggs



Take home messages

- Innovations are stimulated by the Dutch poultry sector structure
- The Netherlands is an important source for poultry innovations
- Collaboration via the BREF (Business, Research, Education, Farmers) square approach
- Many different possibilities for technology in poultry houses:
 - Computer vision, Early warning, Robotics, Environmental optimization

➤ **The future in poultry is technology!**

End

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