Recent biosecurity projects

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Trading Patterns

- **27 %** of dairy farms purchased animals in 2023 (only purchases from external herds, not internal movements)

- **44%** of farms that purchased animals bought 1–5 animals, meaning purchases were often not related to herd expansion.
    - Typical reasons: breeding/genetics, hobby beef cattle, good offers, or doing someone a favor.

- **9%** of purchasing farms bought animals from five or more different herds.

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Risk Associated with Purchasing Animals

- Farms that purchased more than 5 animals from ≥2 suppliers had a 5.8-times higher risk of Mycoplasma infection.
- Simply having purchased animals increases the likelihood of having Mycoplasma antibodies.
- Buying many animals (>5) shows a tendency towards increased risk (1.9×) of shifting to Salmonella Level 2 the following year – though not statistically significant.
  - Several documented cases exist where Salmonella was introduced via purchased animals

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Farmer Interviews – Purchase Patterns & Motivations

Main reasons for purchasing animals:

- Herd expansion or breed change
- No home-reared replacements
- Temporary shortage of animals
- Occasionally non-essential reasons (good price, persuaded to buy)

Health awareness before purchase:

- Most farmers knew they should buy from few, healthy herds
- Desired freedom from diseases such as Salmonella, Streptococcus agalactiae (B-strep) and Mycoplasma
- Some inspected animals themselves, others relied on livestock dealers
- Several farmers wanted more detailed health information but were hesitant to ask too many questions

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Advisory Practices, Qurantine & Experiences

Biosecurity practices:

- Few farmers actively sought advice about disease prevention during animal purchase
- Many assumed that livestock dealers guaranteed healthy animals
- None of the interviewed farms used quarantine

Farmer experiences & recommendations:

- Wish for clearer and more detailed health data from supplier herds
- Advice to colleagues:
  - Avoid buying animals if possible
  - Know the supplier herd's health status
  - Buy from as few herds as possible
  - Visit the herd and see the animals before purchase
  - Be aware: animals offered for sale are rarely the best ones

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Number of Contacts to a Dairy Herd

Herd with 200 cows:

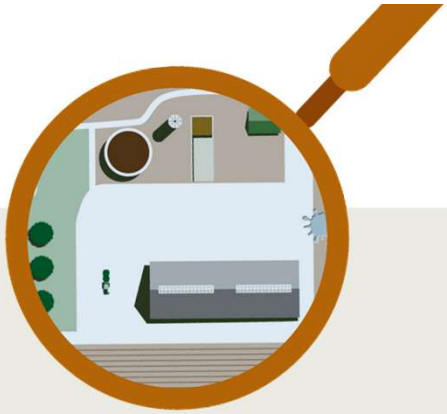
- 207 contacts
- 30 trucks with goods

Herd with 675 cows:

- 298 contacts
- 45 trucks

Frequency of Contacts and Risk

Example: One external contact every second day



Probability of transmission per contact	Annual accumulated probability that at least one contact results in transmission
1/100	84%
1/1000	16%
1/10.000	2%

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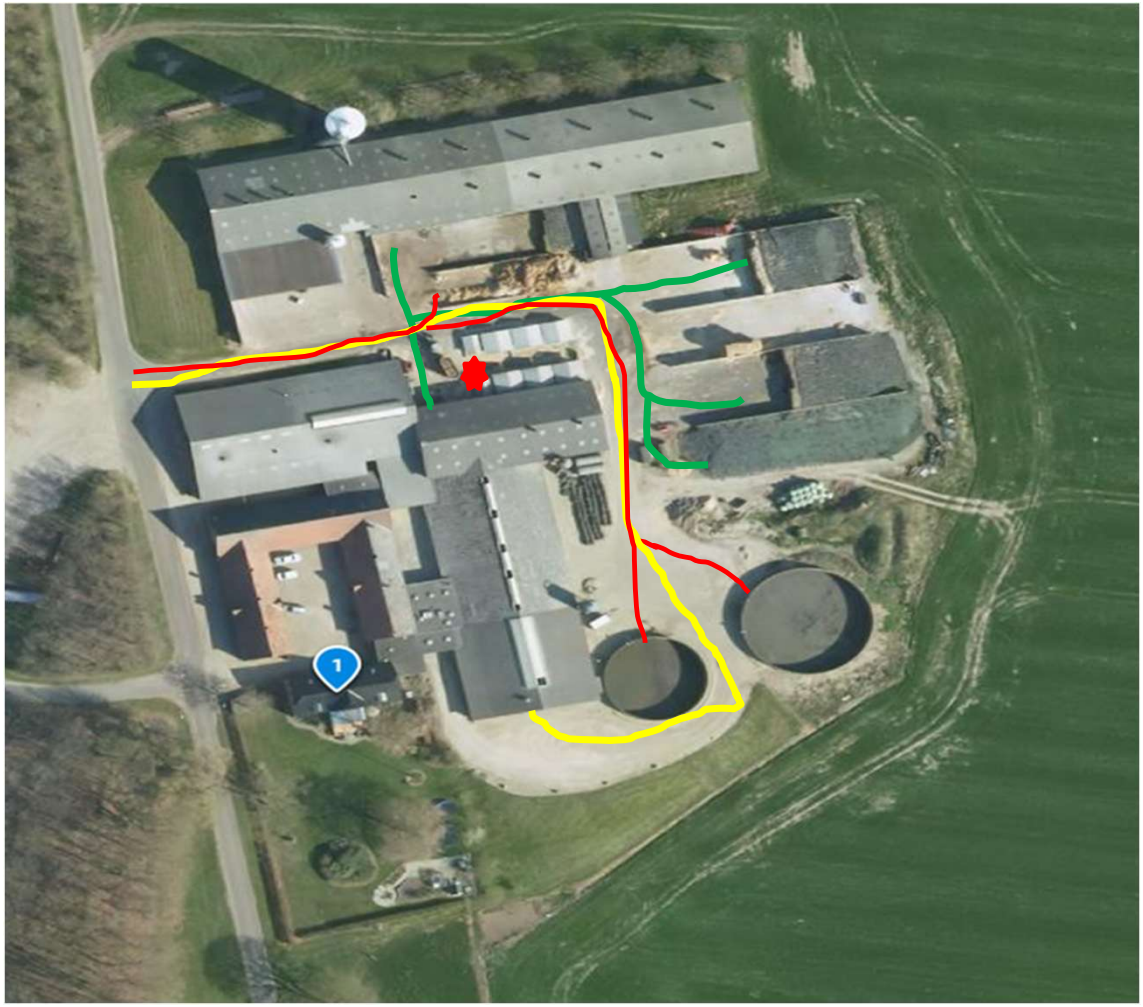
BT1

Example of logistics on a Danish dairy farm



Feed – mixer wagon

Milk truck

Manure and slurry

Calves

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Slide nummer 9

BT1 Her vil vi gerne beholde animationen

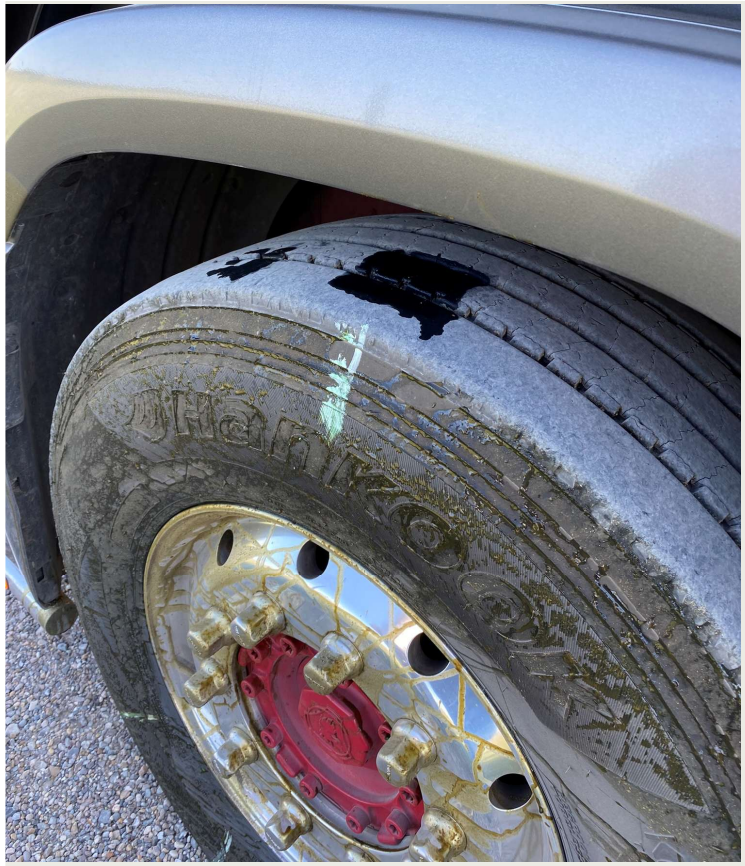
Betina B. Tvistholm; 2025-05-09T06:09:01.957

Pathogens on Tires

How far fecal material can be transported on truck tires

- Season – summer vs. winter
- Road surface – gravel vs. asphalt

How we did the study



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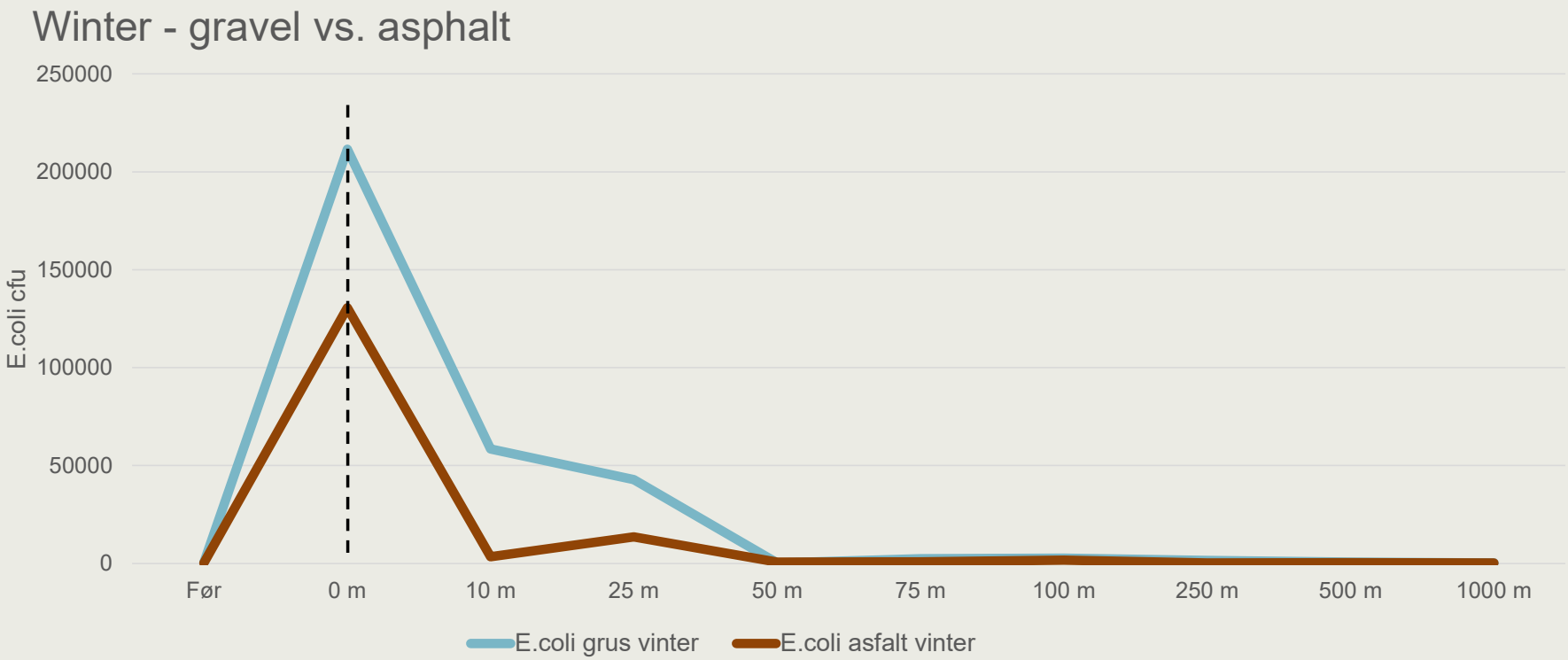
Results: Road Surface



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BT1

Conclusions – how to implement results on farm

- A hard clean surface around the farm is preferred

- Keep separate routes for external traffic to the farm

Slide nummer 16

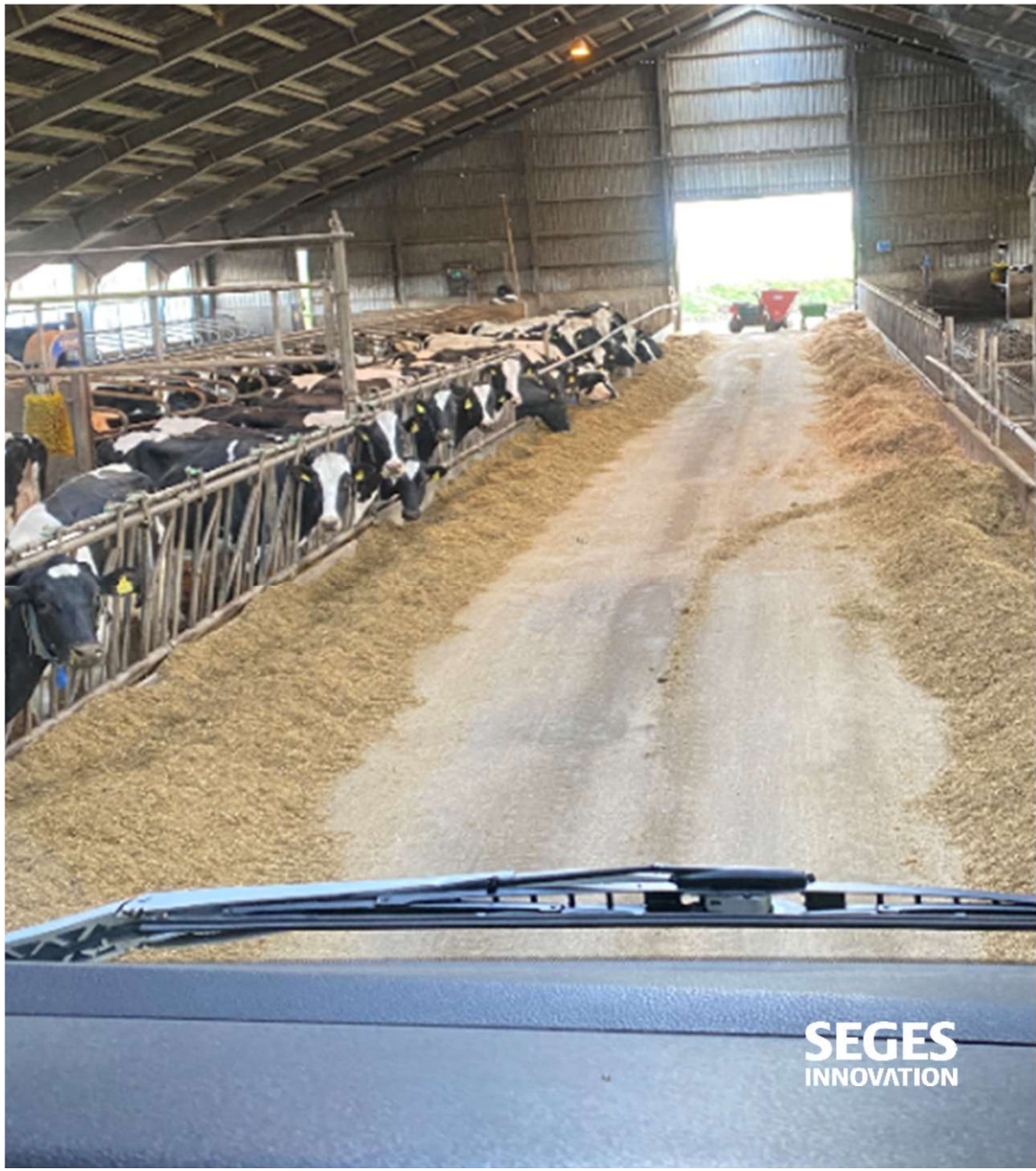
BT1 Her er lidt forskellige billeder du kan vælge imellem - brug gerne en eller flere
Betina B. Tvistholm; 2025-05-09T06:28:17.049

MB1 0 Jeg synes som minimum, at der skal bruges to - en mudder og en med asfalt
Malene Budde; 2025-05-09T10:15:23.356

Pick-up of Animals for Slaughter and Bull Calves

25%

In many dairy herds, the truck drives onto the feed alley or into the calf barn!



Delivery of Live Animals

Inspiration for improved biosecurity

Starlings and Salmonella?

Background of the Study

- Increasing problems with starlings inside barns
- Concern about disease transmission
- Costs due to feed loss

Catching Starlings

- 7 herds
  - Salmonella level 2
  - High BTM-titer(>50)
  - Stables suitable for catching starlings

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Sampling

- Feet and plumage
- Droppings

- Birds ring-marked
- Measured and weighed

Results

- Nearly 400 birds captured and examined
- No Salmonella detected
- Starlings do not play a role in spreading Salmonella bacteria

Journal of Dairy Research

Article contents

- Abstract
- Material and methods
- Results
- Discussion
- Competing interests
- References

Zero *Salmonella* prevalence found in common starlings *Sturnus vulgaris* captured in Danish cattle sheds on farms infected with *Salmonella enterica* Dublin

Published online by Cambridge University Press: **10 December 2025**

Malene Budde, Betina B. Tvistholm, Henning Heldbjerg, Erik Rattenborg and Anthony David Fox Show author details

Article | Figures | Metrics

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Abstract

Salmonella enterica serovar Dublin is host-specific to cattle, causing severe symptoms and economically impacting milk herds. Despite an eradication programme in Denmark, levels of infection have not decreased and suspicion has fallen on the common starling *Sturnus vulgaris* as a potential vector between herds. The number of breeding starlings in Denmark declined by 60% between 1976 and 2015, a trend correlated with decreases in the number of cattle grazing outside. Ironically, more starlings are now coming into Danish cattle sheds to feed on maize silage outside the breeding season, so it is increasingly important to understand the role of starlings in dispersing *Salmonella* between cattle herds. We caught and tested 394 different starlings at seven separate dairy farms infected with *Salmonella* Dublin by swabbing breast

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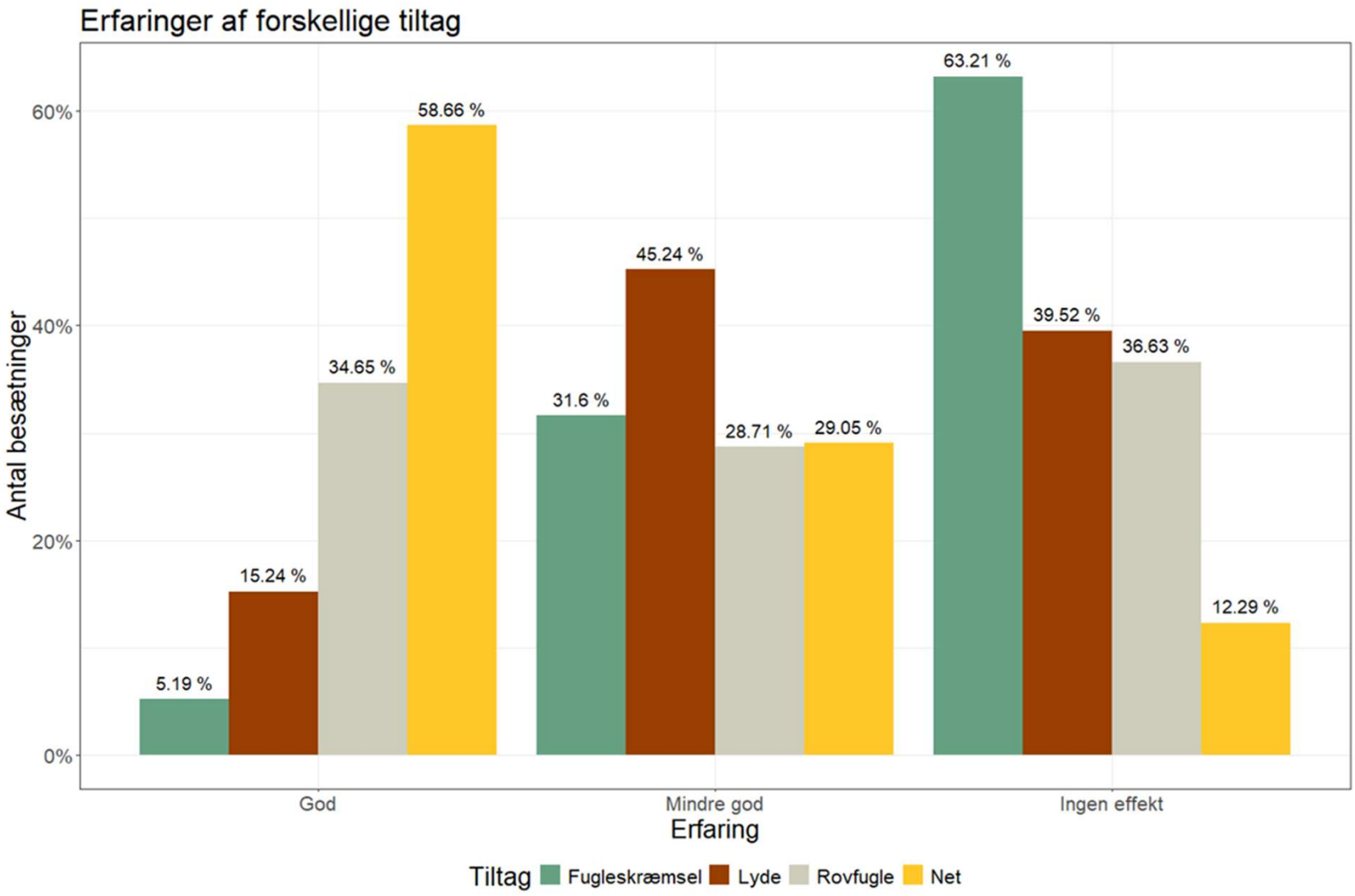
Next Steps

Solutions to keep starlings out of barns:

- What solutions exist?
- Experiences with current methods?



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Questions?

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