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Investigation of culling of primiparous cows in Swedish herds

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Introduction

Swedish official statistics for dairy cows (average numbers)

- Lifespan: **5.1** years (61.2 months)
- Age at first calving: **27** months
- Productive life: **2.9** years (34.6 months)
- Calving interval: **13.1** months
- Number of lactations: **2.6**
- **34** per 100 cows leave the herd per year
- **6** of these die or are euthanized in the herd
- **27%** of the cows are culled during their first lactation



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Introduction



Increasing dairy cow longevity may be aspired for a number of reasons:

- Increasing the proportion of productive life compared to the unproductive recruitment period as a heifer may have several benefits such as:
 1. Economic (*Grandl et al., 2019*)
 2. Environmental (*Grandl et al., 2019*)
 3. Increased social acceptability (*Röcklingsberg et al., 2016; Schuster et al., 2020*)
- To increase longevity we may need a better understanding on why **young** dairy cows are culled

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To describe the most common culling reasons in **primiparous** dairy cows,
in the two most common breeds in Sweden:

Red dairy cattle (RDC)



Swedish Holstein (HOL)



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Material & Methods

- **20** high yielding ($> 9,000$ kg) commercial dairy herds in southern Sweden (originally recruited for a study on extended lactations)
- **4,023** primiparous RDC and HOL dairy cows
- Data from the Swedish National Herd Recording Scheme:
 - Birth date + breed
 - Calving dates
 - Test milkings
 - Reproductive performance
 - Culling date + reason



Material & Methods

Statistical analysis – generalized mixed linear model (binomial)

Random factor:

- Herd (20 levels)

Fixed factors:

- Breed (2 levels: RDC and HOL)
- Inseminated after first calving (2 levels: yes/no)
- First calving year (5 levels: 2016-2020)
- Calving age in relation to herd average (3 levels)
- Milk yield 100 first days in relation to herd average: (5 levels)

■ MY.dev = -2192 to -397 kg, (n = 755)

■ MY.dev = -396 to -129 kg, (n = 755)

■ MY.dev = -129 to 118 kg, (n = 754)

■ MY.dev = 118 to 408 kg, (n = 754)

□ MY.dev = 408 to 1857 kg, (n = 754)

The model was used for both:

- Overall culling
- Each separate culling reason

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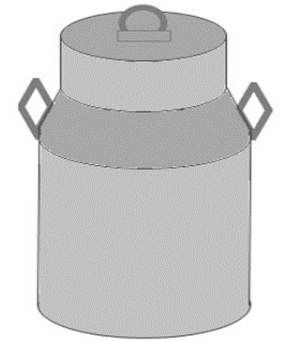
Results

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Preliminary results – Overall culling

894 cows culled during their first lactation = **22%**



Background

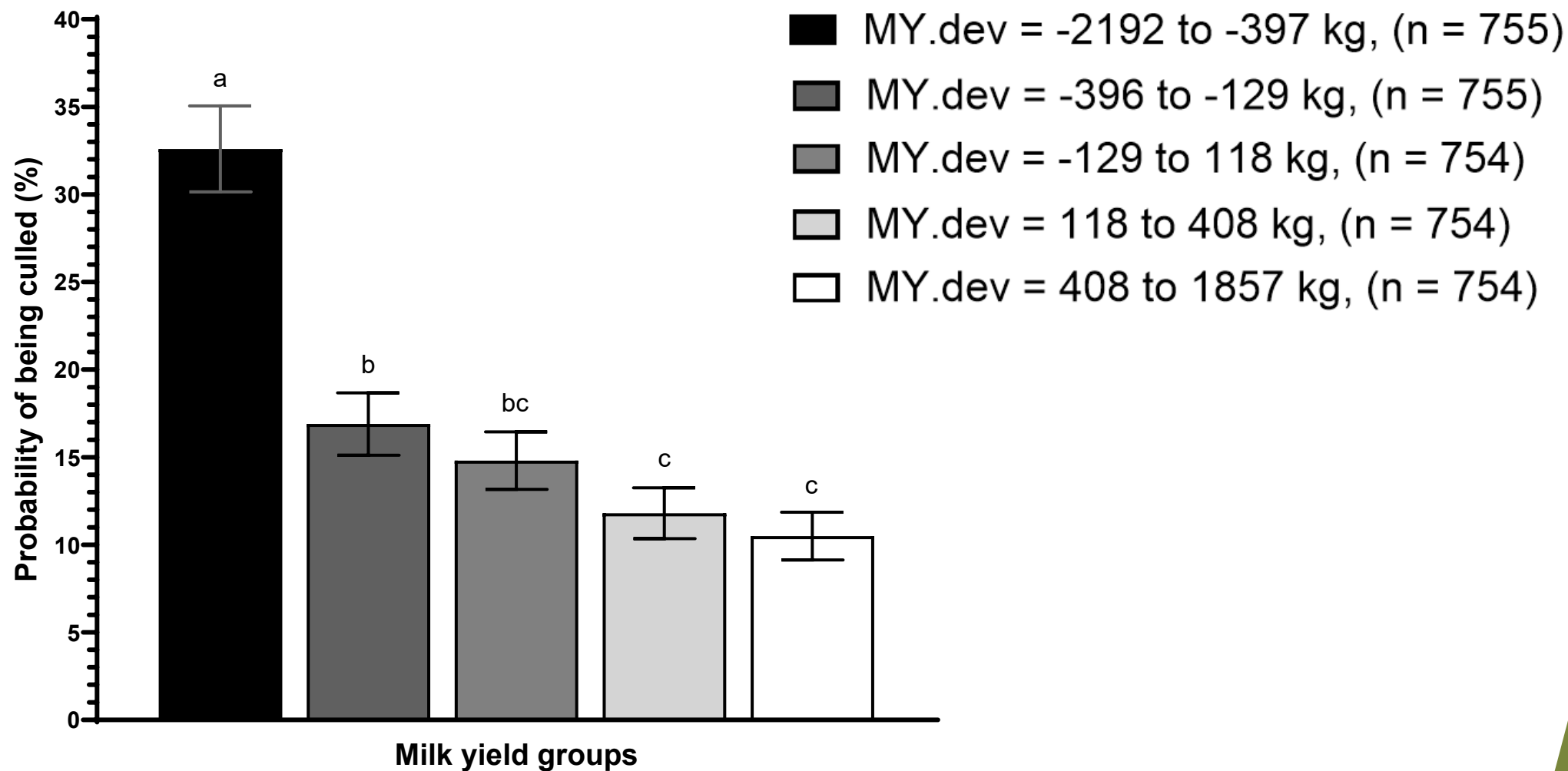
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Overall culling – Milk yield



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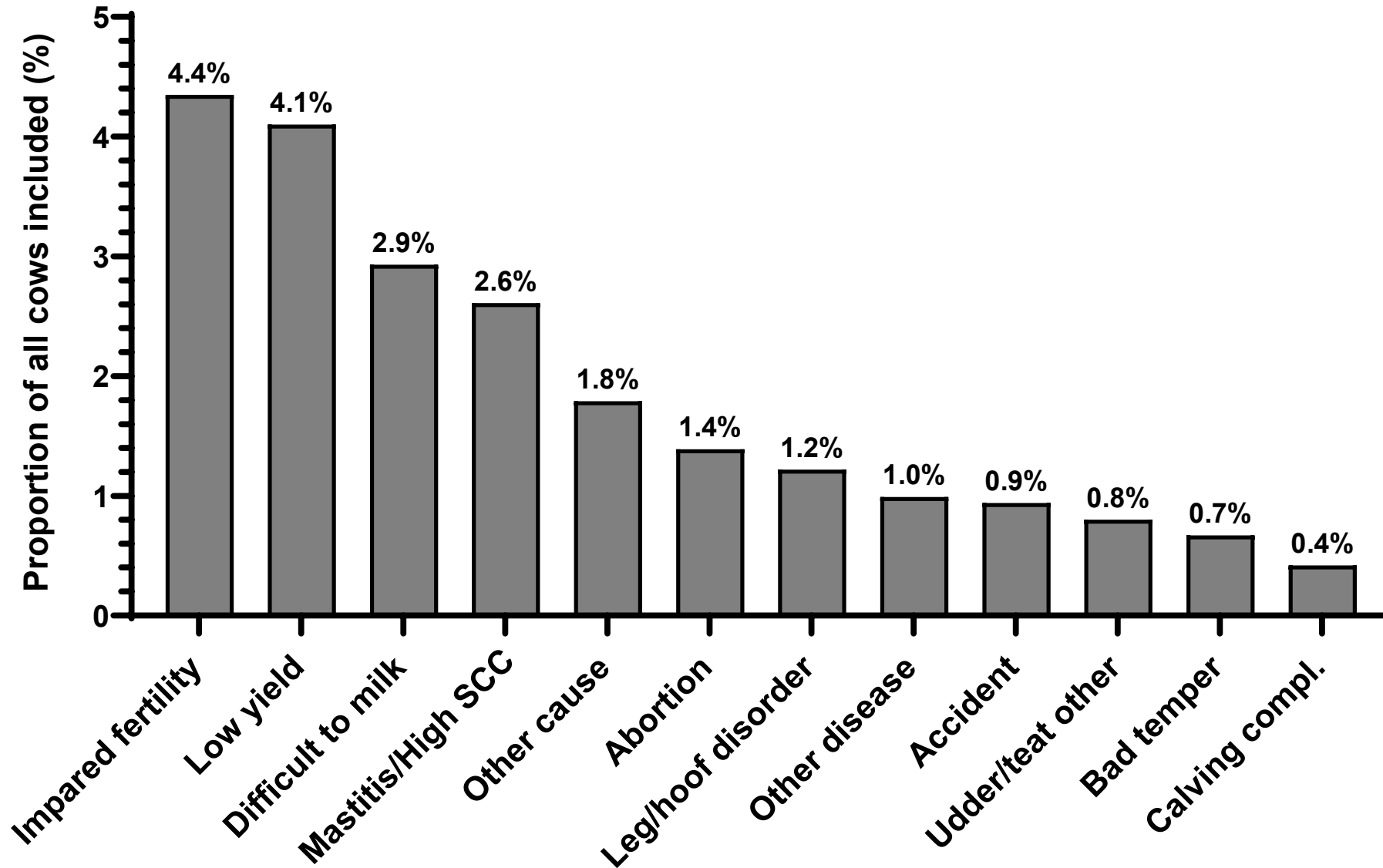
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Descriptive results: proportion cows culled for each reported reason



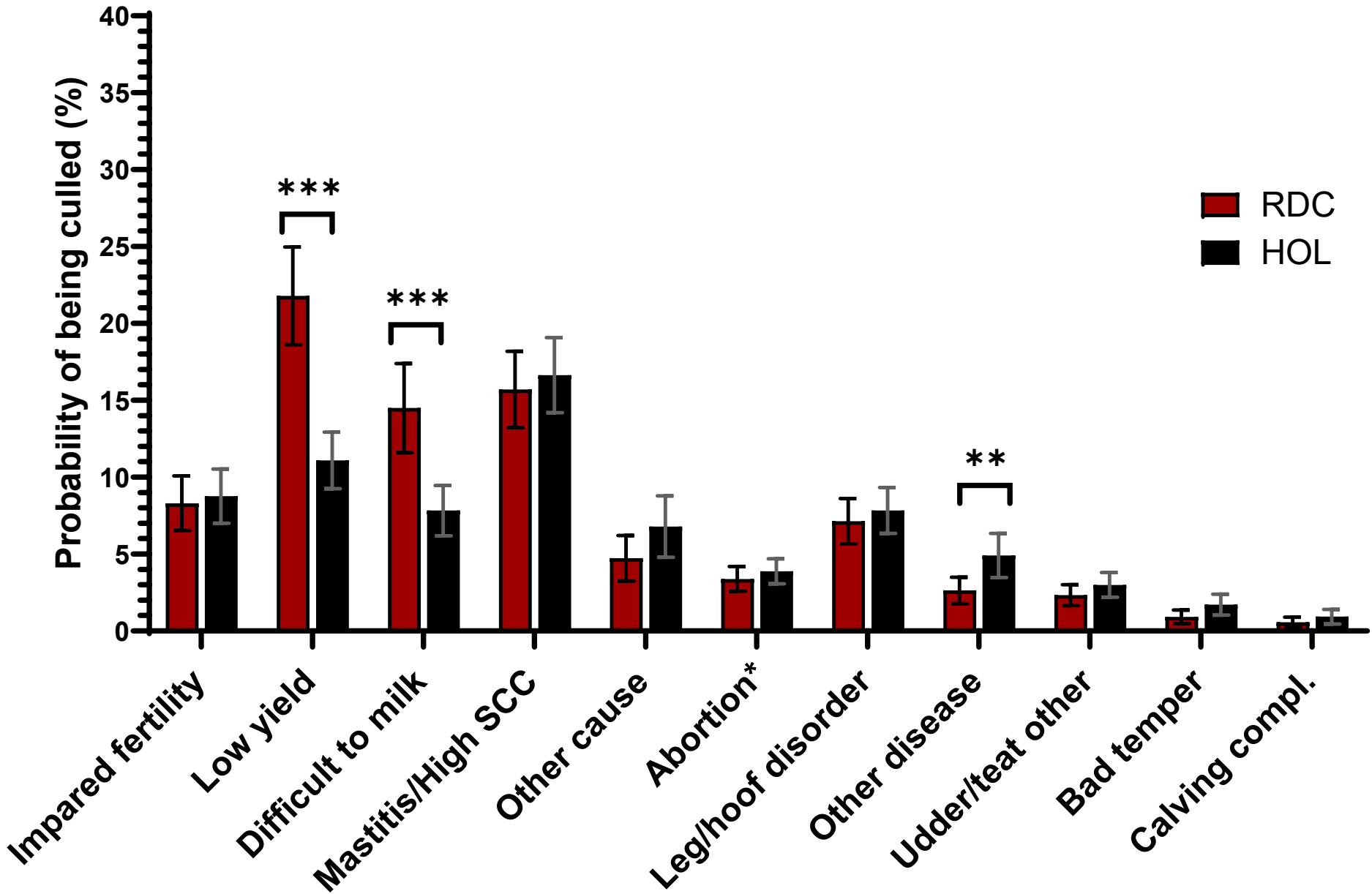
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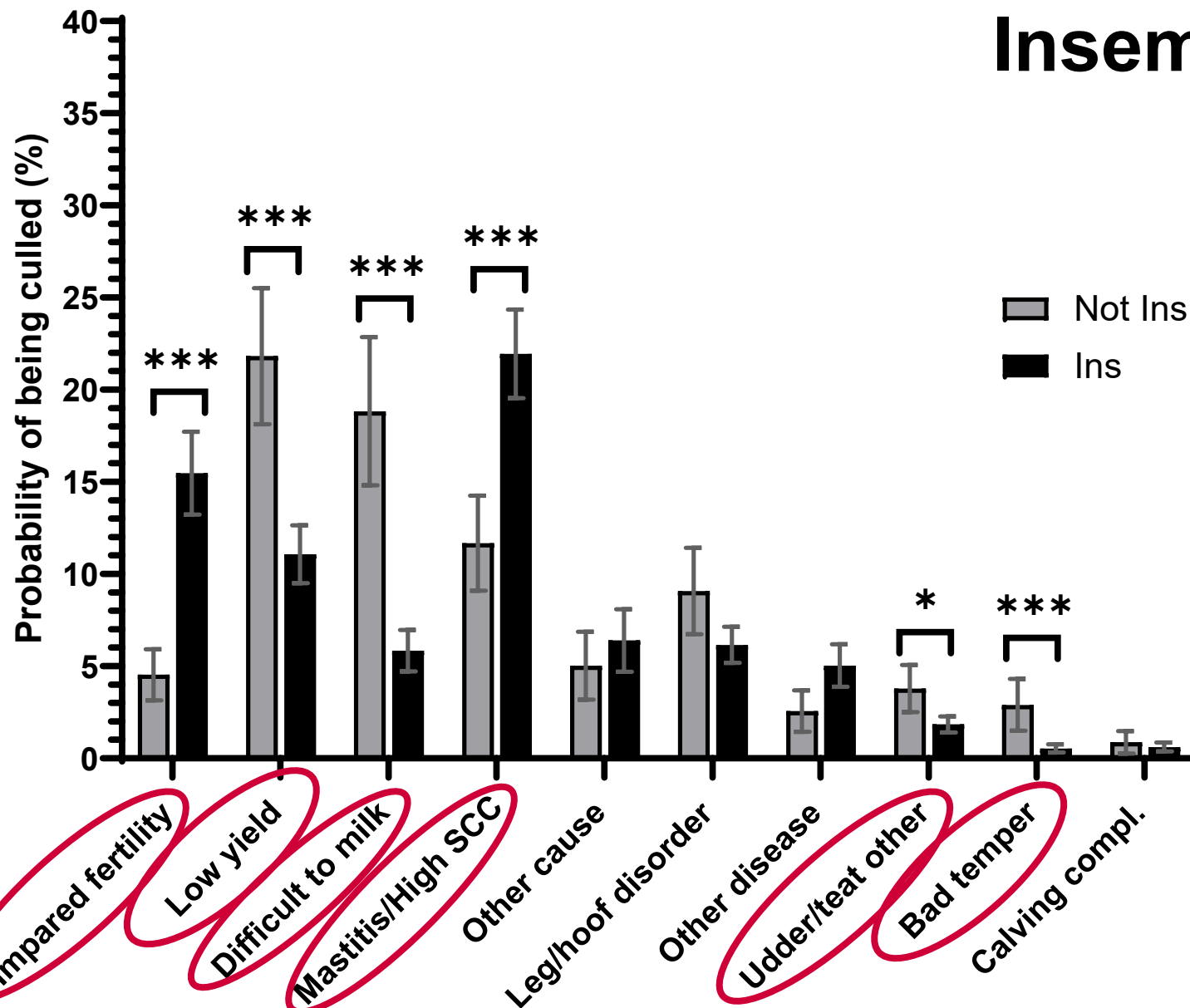
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Insemination status



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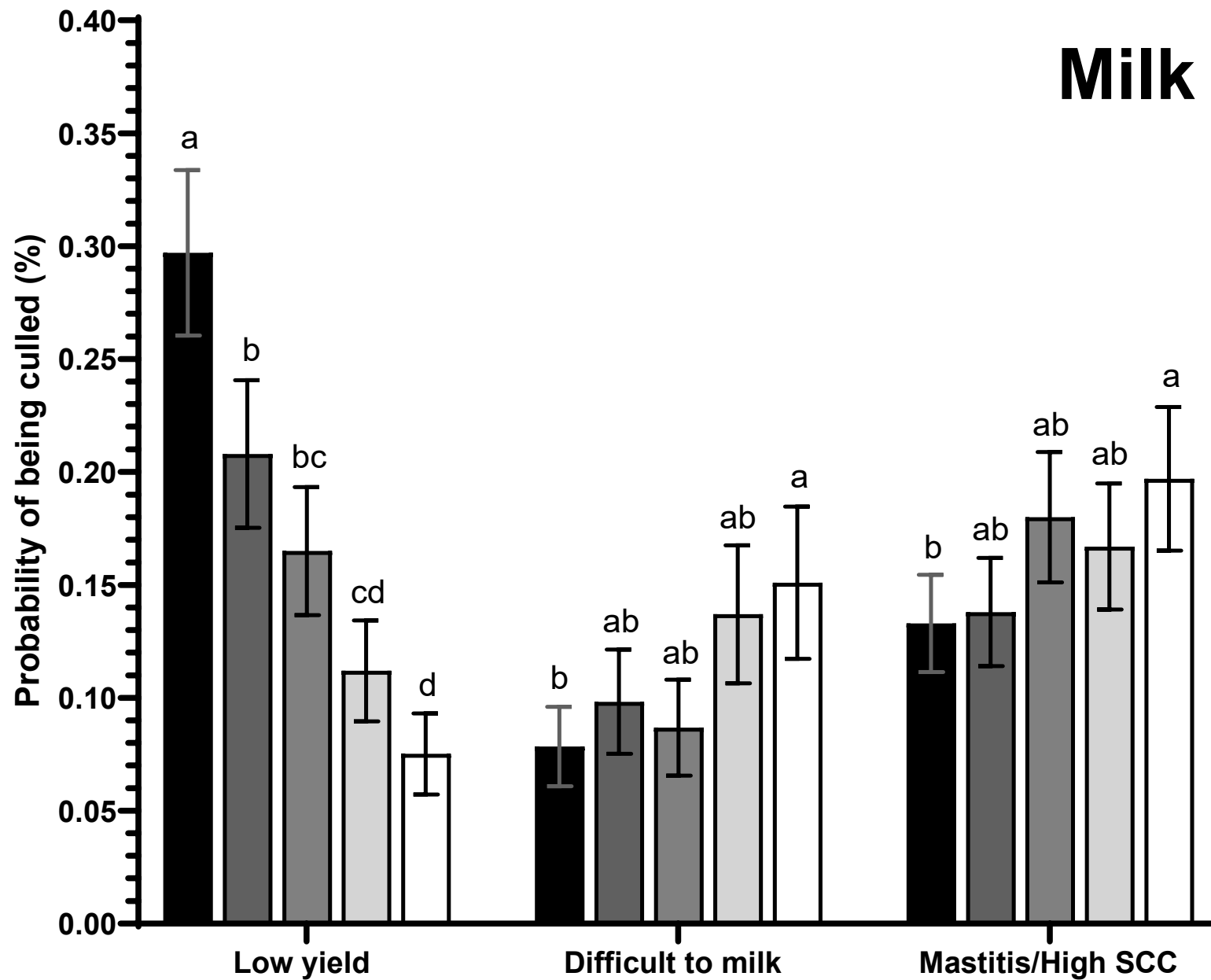
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Milk yield

■ MY.1
 ■ MY.2
 ■ MY.3
 ■ MY.4
 ■ MY.5



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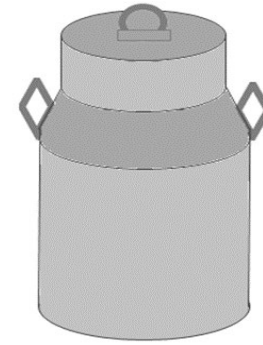
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Preliminary conclusions

- Overall culling seem to be affected by milk yield
- The four most common culling reasons reported was
 - Impaired fertility
 - Low yield
 - Difficult to milk
 - Mastitis
- Breed:
 - RDC cows were more likely to be culled due to Low yield and being Difficult to milk
 - HOL cows were more likely to be culled due to Other disease
- Yield:
 - Cows with high yield were more likely to be culled due to Mastitis and being Difficult to milk
 - Cows with lower yield were more likely to be culled due to Low yield



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★ *Thank you for your attention!* ★

I'll be happy to try to answer if there are any questions!

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Thank you to:

- My colleagues:
 - W. F. Fikse & M. Lindberg
- All the farmers
- The funders



For making this possible!



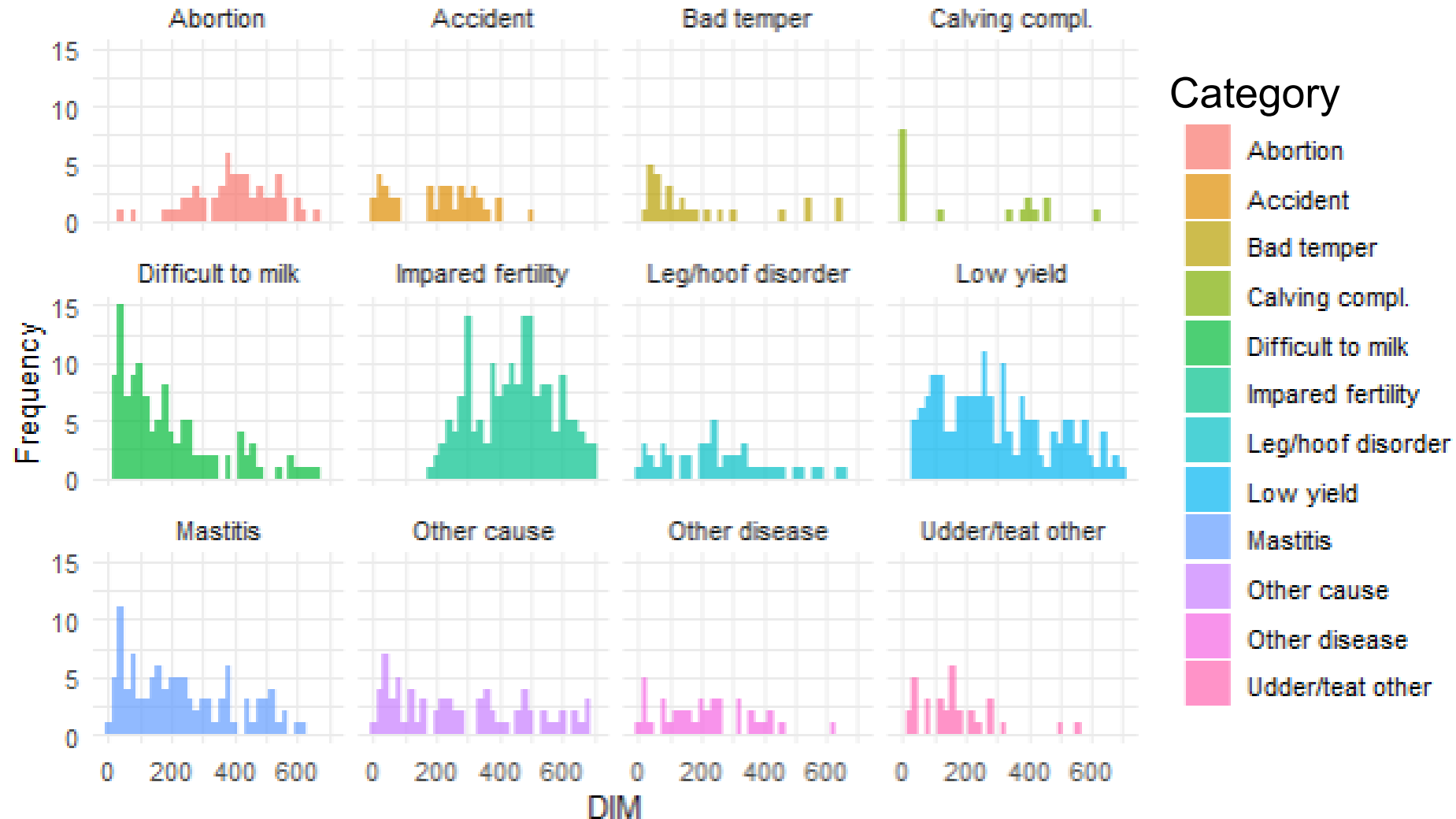
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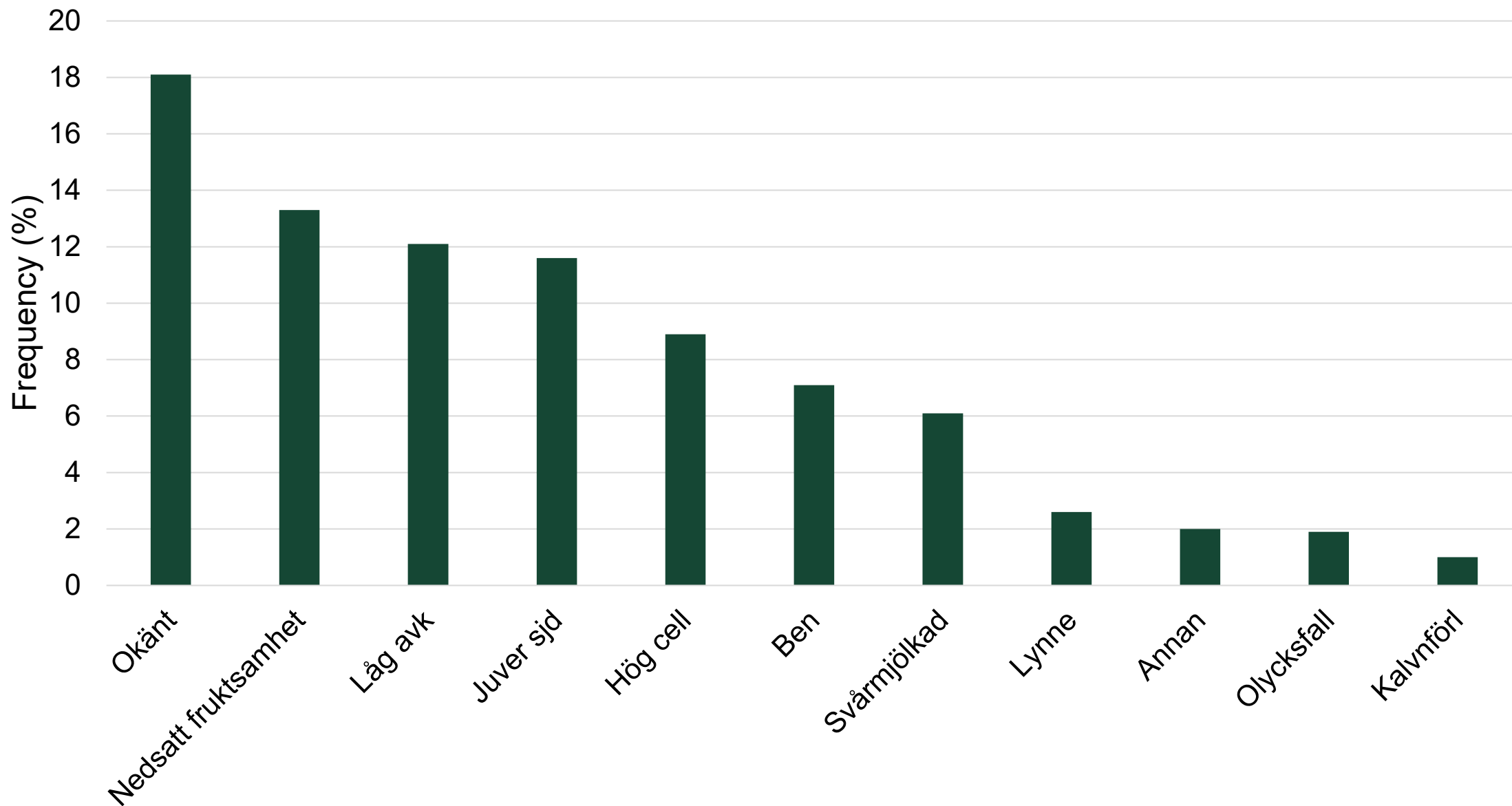
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Extra slides

Preliminary results - Days in milk at culling for the different culling reasons



Kokontrollen utslagning



Culling cause	Category
No registration	Unknown
Sold to life	Sold
Impaired fertility	Impaired fertility
Not pregnant	Impaired fertility
Mastitis	Mastitis
Udder/teat injury	Udder/teat other
Calving compl.	Calving compl.
Puerperal paresis	Other disease
Hoof disorder	Leg/hoof disorder
Leg disorder	Leg/hoof disorder
Difficult to milk	Difficult to milk
Abortion	Abortion
High age	Other cause
Low yield	Low yield
Bad temper	Bad temper
Accident	Accident
Metabolic disease	Other disease
Other disease	Other disease
Difficult to milk (conformation)	Difficult to milk
Difficult to milk (slow yield)	Difficult to milk
Udder/teat disconformation	Udder/teat other
Sold for slaughter	Other cause
BVD: chronic inf.	Other disease
High SCC	Mastitis
Slaughtered at farm	Other cause
Culled/died - destruction	Other cause
Culled/died - not to destruction	Other cause
Other culling cause	Other cause
Died - destruction	Other cause
Culled - destruction	Other cause
Died - not destruction	Other cause
Culled - not destruction	Other cause
Herd out	Sold
Sold	Sold
Calfuse 6	Other cause
Calfuse 7	Other cause



References

- Adamie, B.A., Owusu-Sekyere, E., Lindberg, M., Agenäs, S., Nyman, A.-K., Hansson, H., 2023. Dairy cow longevity and farm economic performance: Evidence from Swedish dairy farms. *J. Dairy Sci.* 106, 8926–8941. <https://doi.org/10.3168/jds.2023-23436>
- Grandl, F., Furger, M., Kreuzer, M., Zehetmeier, M., 2019. Impact of longevity on greenhouse gas emissions and profitability of individual dairy cows analysed with different system boundaries. *Animal* 13, 198–208. <https://doi.org/10.1017/S175173111800112X>
- Röcklingsberg, H., 2016. 7. Understanding Swedish dairy farmers' view on breeding goals – ethical aspects of longevity, in: *Food Futures: Ethics, Science and Culture*. Wageningen Academic Publishers, pp. 61–66. https://doi.org/10.3920/978-90-8686-834-6_7
- Schuster, J.C., Barkema, H.W., De Vries, A., Kelton, D.F., Orsel, K., 2020. *Invited review: Academic and applied approach to evaluating longevity in dairy cows*. *J. Dairy Sci.* 103, 11008–11024. <https://doi.org/10.3168/jds.2020-19043>
- VÄXA, 2024. Växa statistik - Djurhälsa 2022-2023 [WWW Document]. URL <https://vxa.qbank.se/mb/?h=3fb6d74d47ca02f4f86b10e5bc2e1465&p=dccda36951e6721097a93eae5c593859&display=feature&s=name&d=desc> (accessed 3.6.24).