

Multiblock analysis reveals key areas and risk factors for dairy cow losses



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AIM

Describe the relative contribution of the production areas (thematic blocks) to cow losses characterized by herd on-farm mortality risk (MR), culling rates (CR) and mean age of culled cows (MAofCC). Also, the study aimed to identify within each block, the variables mostly contributing to the cow losses

METHODS

- 120 freestall dairy herds with more than 100 cows
- Data about the last year predominant cow housing system and management
- On-farm measurements and cow scorings
- Bulk tank milk and heifer blood samples (10 samples per herd)
 - Antibodies against BHV-1, BVDV, BRSV, paratuberculosis, *Mycoplasma bovis* and *Salmonella* Dublin
- Herd-based yearly cow CR, MR and MAofCC as dependent variables
- Multiblock Partial Least Squares (mbPLS) regression

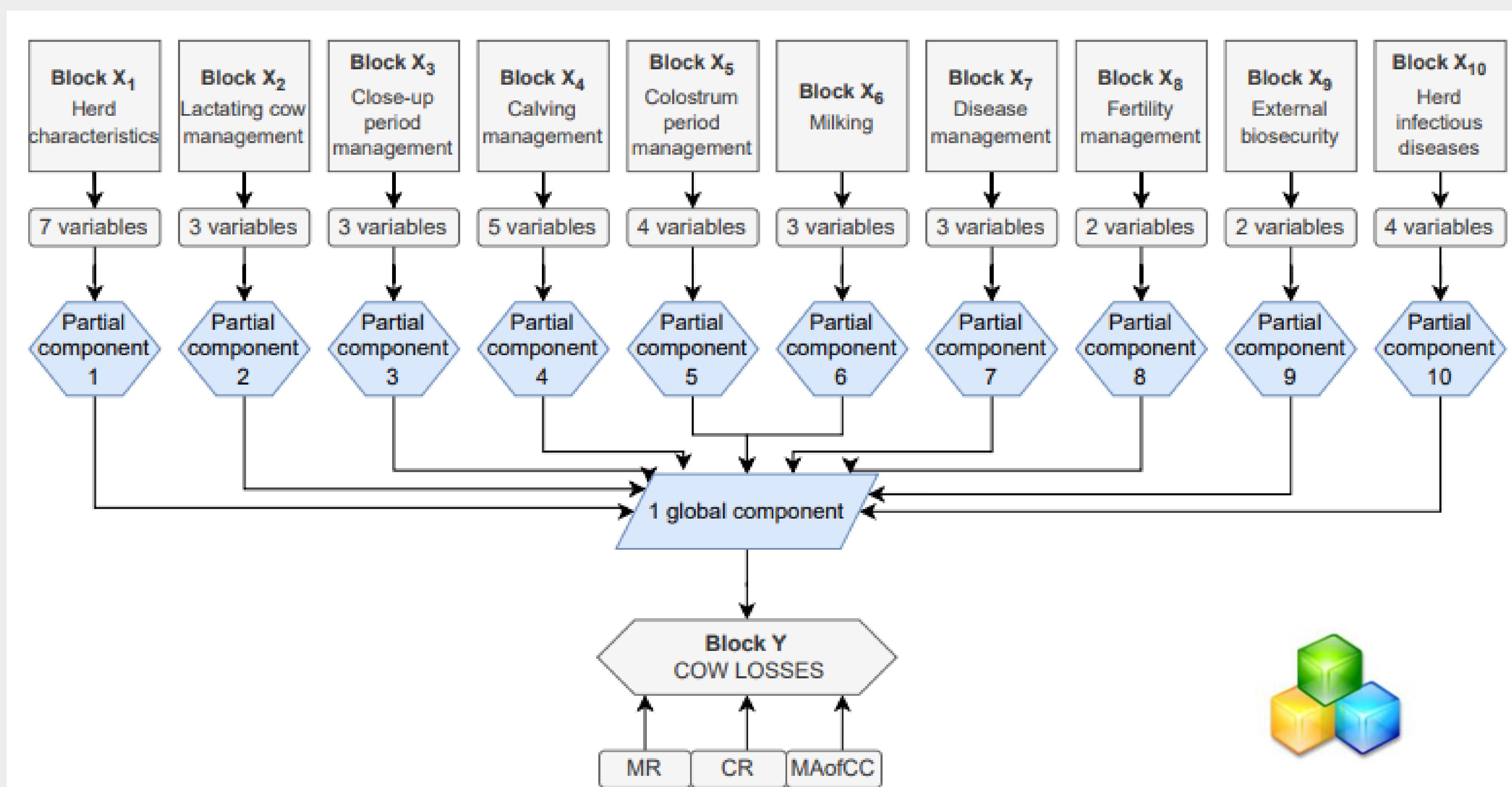
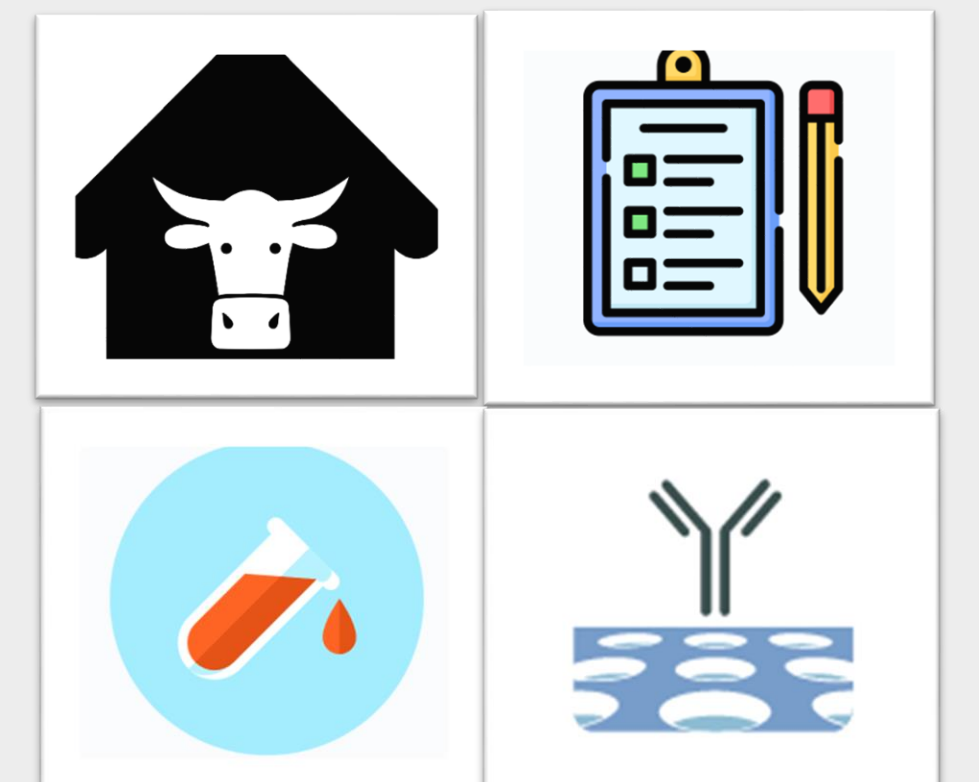


Fig.1. Conceptual scheme of the multiblock model and relationships between explanatory blocks and the response block Y.

CONCLUSIONS AND RECOMMENDATIONS

- Cow fertility management, effective infectious disease control measures, lactating cow management and milking routines were most influential in determining herd cow losses and longevity.
- Sufficient heat detection and pregnancy testing routines matter in achieving lower culling rates.
- Herd BRSV, BHV-1 and BVDV control enhance cow persistency.
- Special emphasis should be put on barn design and installation to ensure acceptable cow comfort and hygiene as well as to avoid injuries.
- To ensure cow endurance, it is essential to avoid over-conditioning before calving and afford calving in conditions resembling the natural environment of the cow with good calving monitoring.
- Robot milking system farms had overall better cow persistency, while milking cows three times a day counteracted in achieving fair longevity.
- Wet teat cleaning methods should be preferred over dry ones.
- Grouping principles around calving had substantial impact on cow longevity and keeping heifers together with cows at that time should be preferred.
- More flexible rearing conditions after calving could help to meet the individual needs of cows during this critical period.

RESULTS

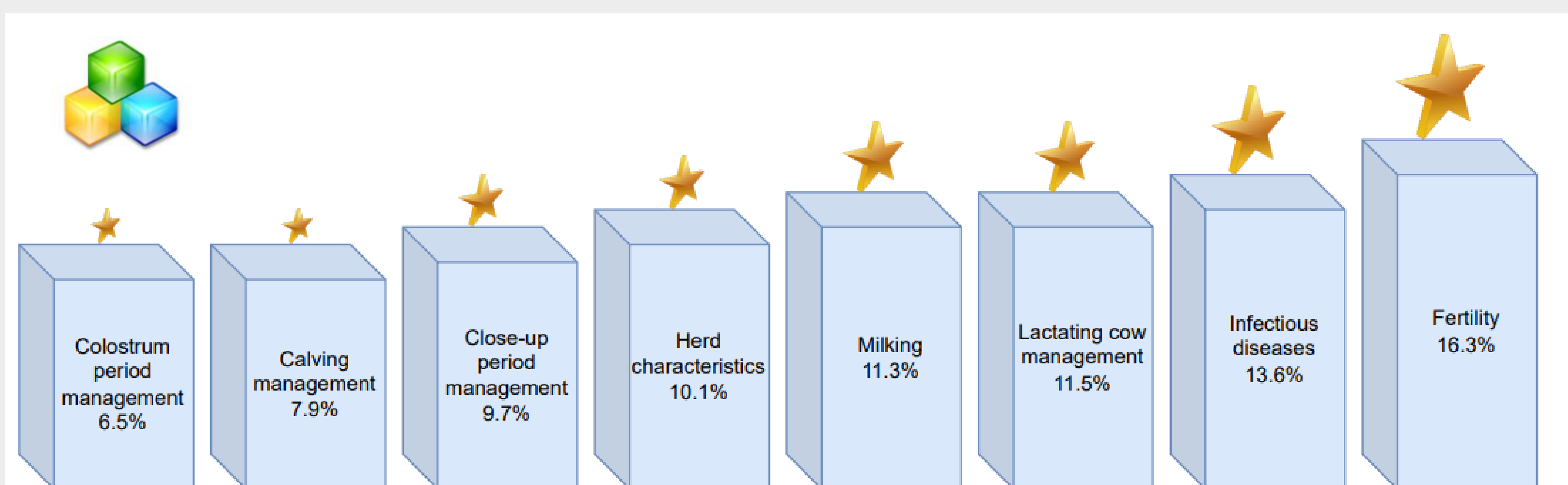


Fig. 2. Block importance index in explaining dairy cow losses expressed as herd yearly on-farm mortality risk, culling rate and mean age at culling

ACKNOWLEDGEMENTS

Authors are grateful to all producers involved in this study. We thank Estonian Livestock Performance Recording Ltd. and Agricultural Registers and Information Board. This work was financed by the Estonian Research Council grant (PSG268).



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