Contrasting feeding strategies in Swiss dairy farming: Effects on milk production, GHG emissions, land use and cow health

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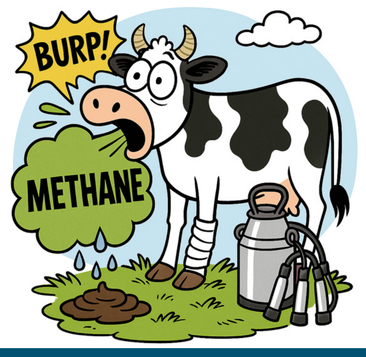


Background and Aim

The intensification of dairy farming shifts feeding strategies from pasture-based (PB) to barn-based (BB) systems. This study evaluates their relative strengths and weakness regarding sustainable dairy production in Switzerland.

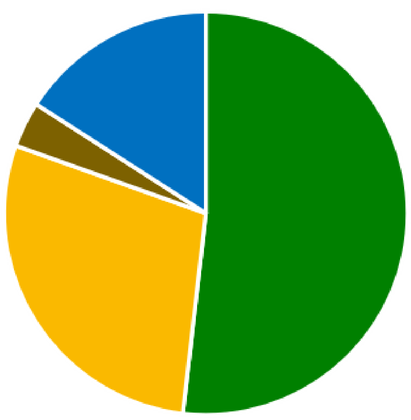
Conclusion

Several indicators need to be considered to evaluate the sustainability of dairy production, as feeding strategy strongly influences system strengths and weaknesses.

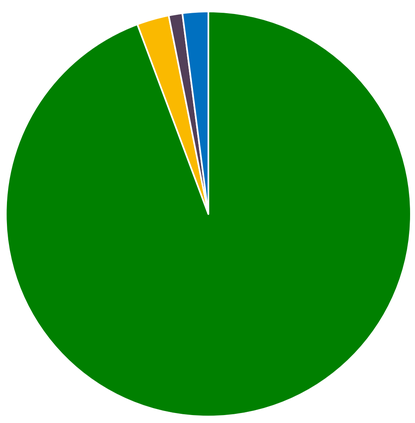
Results

Production strategy and effects on productivity, environmental impact and cow health

Feed ration



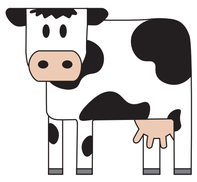
BB



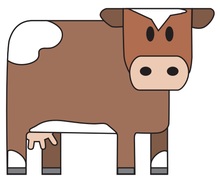
PB

Grassland-based feeds Whole-plant maize
By-products Concentrated feed

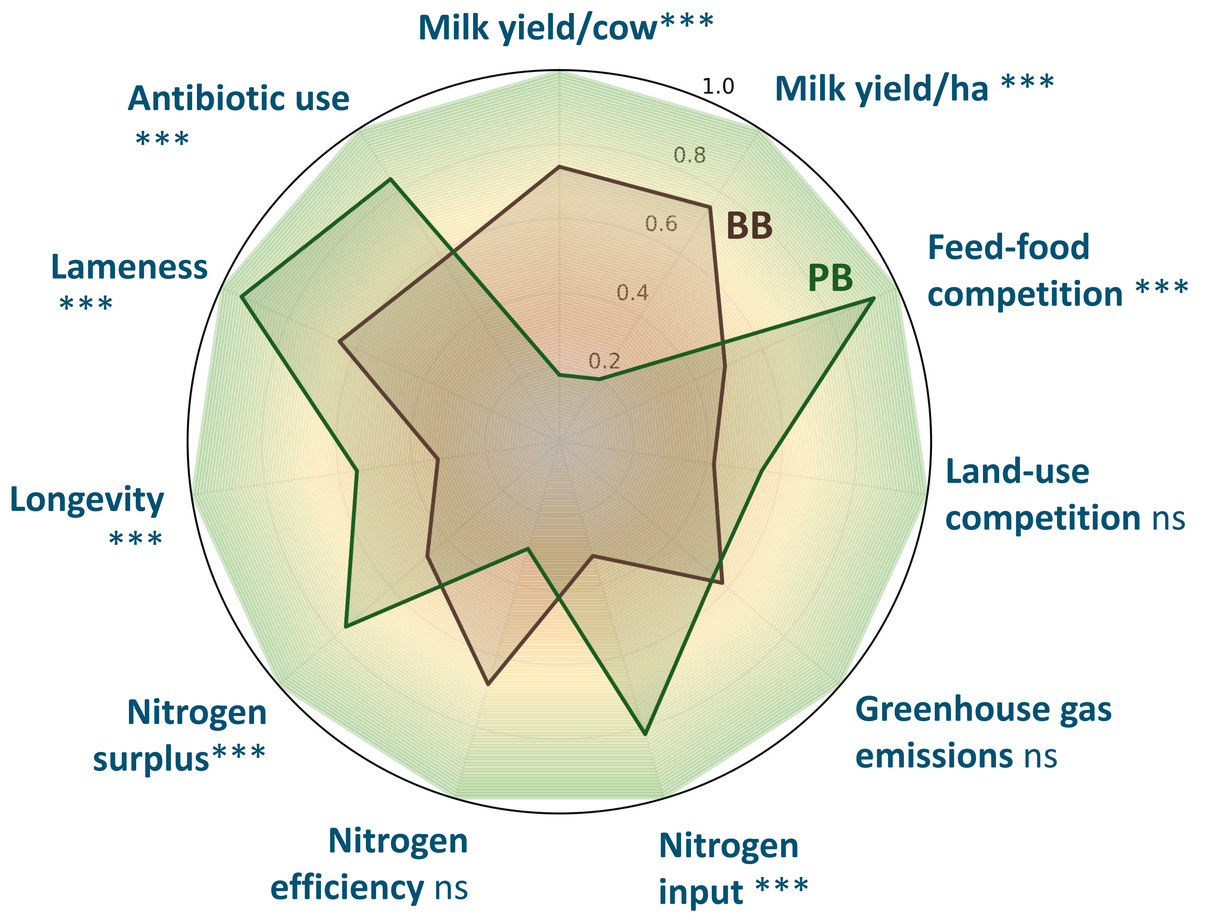
Breed



BB: 95% High-yielding
5% Others



PB: 40% Small-framed
60% Dual-purpose



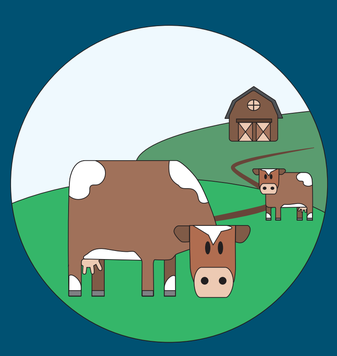
*p < 0.05, ** p < 0.01, *** p < 0.001, ns = not significant

Material and Methods

- Productivity, nutrient use and GHG emissions
  - Life cycle assessment (incl. external land use and replacement rate)
  - Farmgate nutrient balances
  - 2 years
- Animal welfare and antibiotic use (ABU)
  - 4 visits in a year
  - ABU over 3 years
- Normalised variables; some inverted (higher = better)

Barn-based (N=15)

Pasture-based (N=15)



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