



A customized assessment tool to differentiate safety and hygiene practices in emerging dairy chains

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Background

Emerging dairy chains are typified by a dominant informal production and distribution system. The ensuing quality and safety issues need improvement to meet rapidly growing demands for dairy, which requires tools to assess current practices. Existing tools are often based on public and private standards. However, these tools do not consider the emerging dairy chains, where practices are often below the minimum requirements. Using existing tools will present an inaccurate picture, limiting improvement.

Objective

This study presents the development of a customized tool to assess and differentiate levels of safety and hygiene practices crucial for control of microbial and chemical (i.e. aflatoxin) safety of fresh milk in emerging dairy chains.

Tool development and pilot study design

Demarcation of emerging dairy chain
The tool focuses on farm, trading, bulking and retailing activities where hand handling, milk cooling and sanitation are crucial.

Design steps for developing customized tool [1,2]

Step 1
Identification of crucial safety and hygiene activities, and practices for control of microbial/chemical contamination from literature. Synthesized into a conceptual framework

Step 2
Establishment of dairy safety performance output by selecting specific microbial/chemical safety parameters (i.e. Total bacteria count, *S. aureus*, Aflatoxin M1).

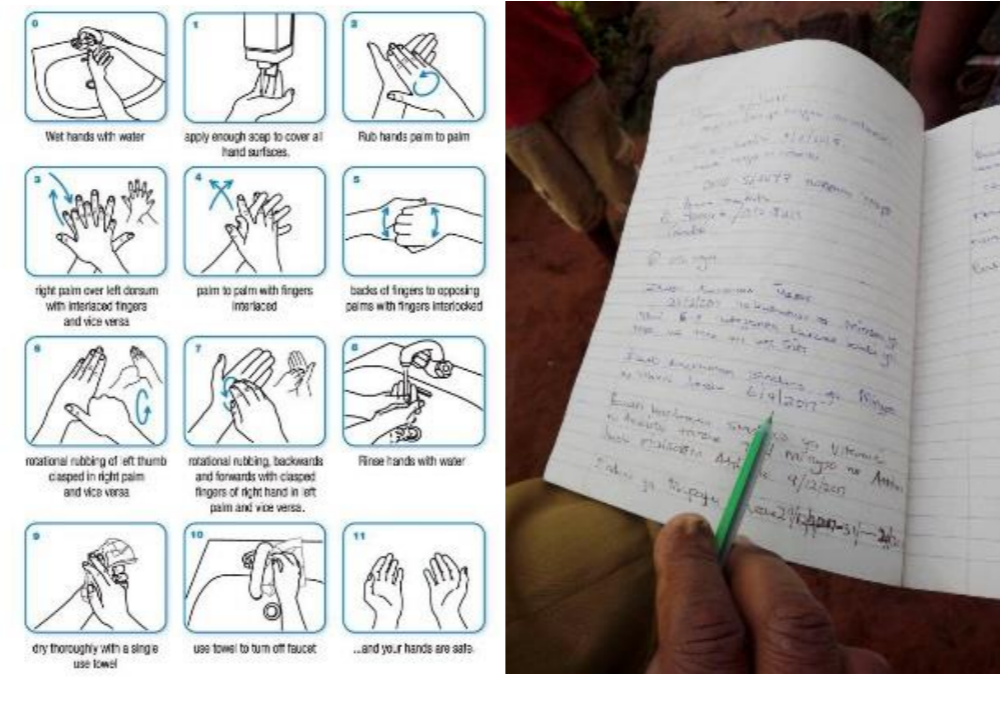
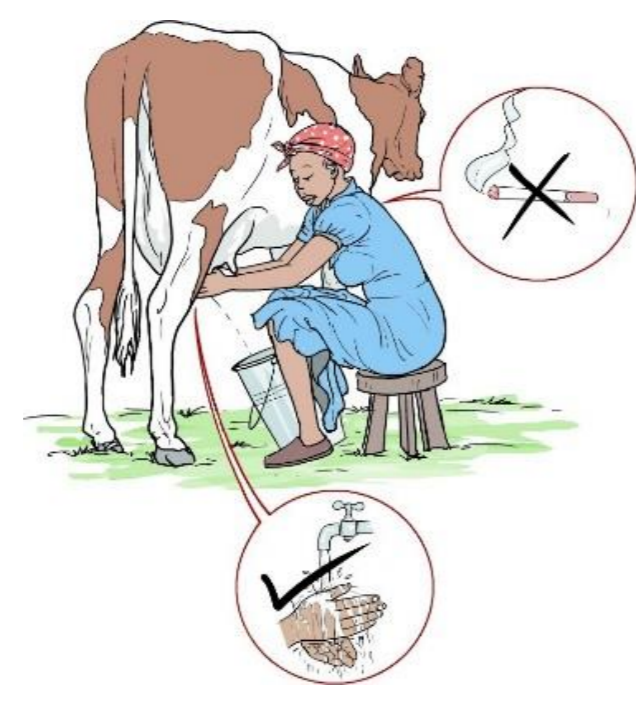
Step 3
Development of grids for differentiating practices: four situational performance levels (poor, basic, intermediate and standard) were developed based on formulated criteria.

Criteria for developing grids

Type of equipment used

Actual practice steps

Extent of documentation



Grids description for differentiating practices

Standard

- Right and specific equipment for dairy
- All practices systematic, regular, precise & rightly done
- Work protocols are well described/documentated & specific notebook for recording data

Intermediate

- Basic food grade equipment suitable for dairy
- Systematic, regularly & practices not always done well
- Work protocols described & basic reporting of some data on materials not specific & difficult to retrieve

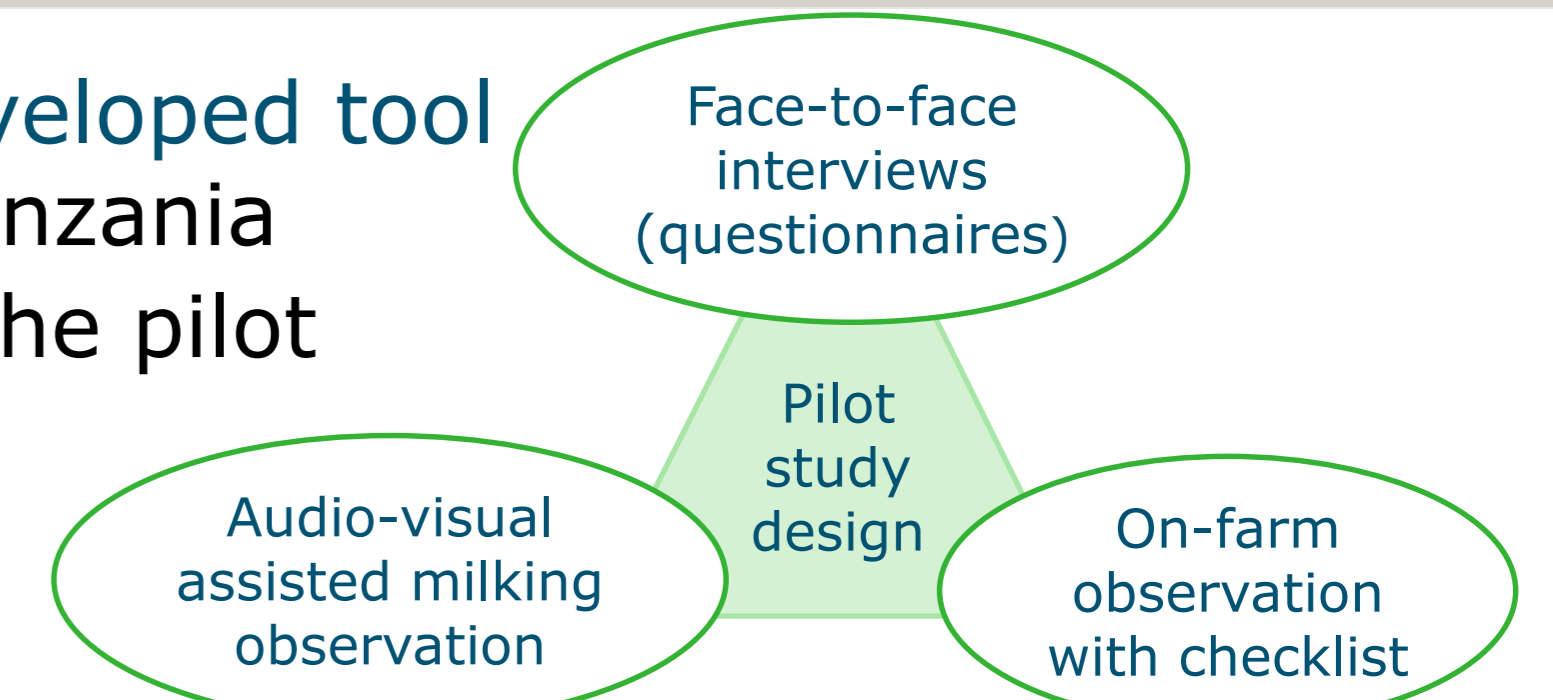
Basic

- Rudimentary equipment not specific for dairy
- Irregular/sometimes inappropriate practices
- No documented work protocols on how to do practices, often verbal & ad hoc data collection

Poor

- Improved equipment
- Inadequate multiple practices leading to high risk
- No documentation of protocols and no data reporting

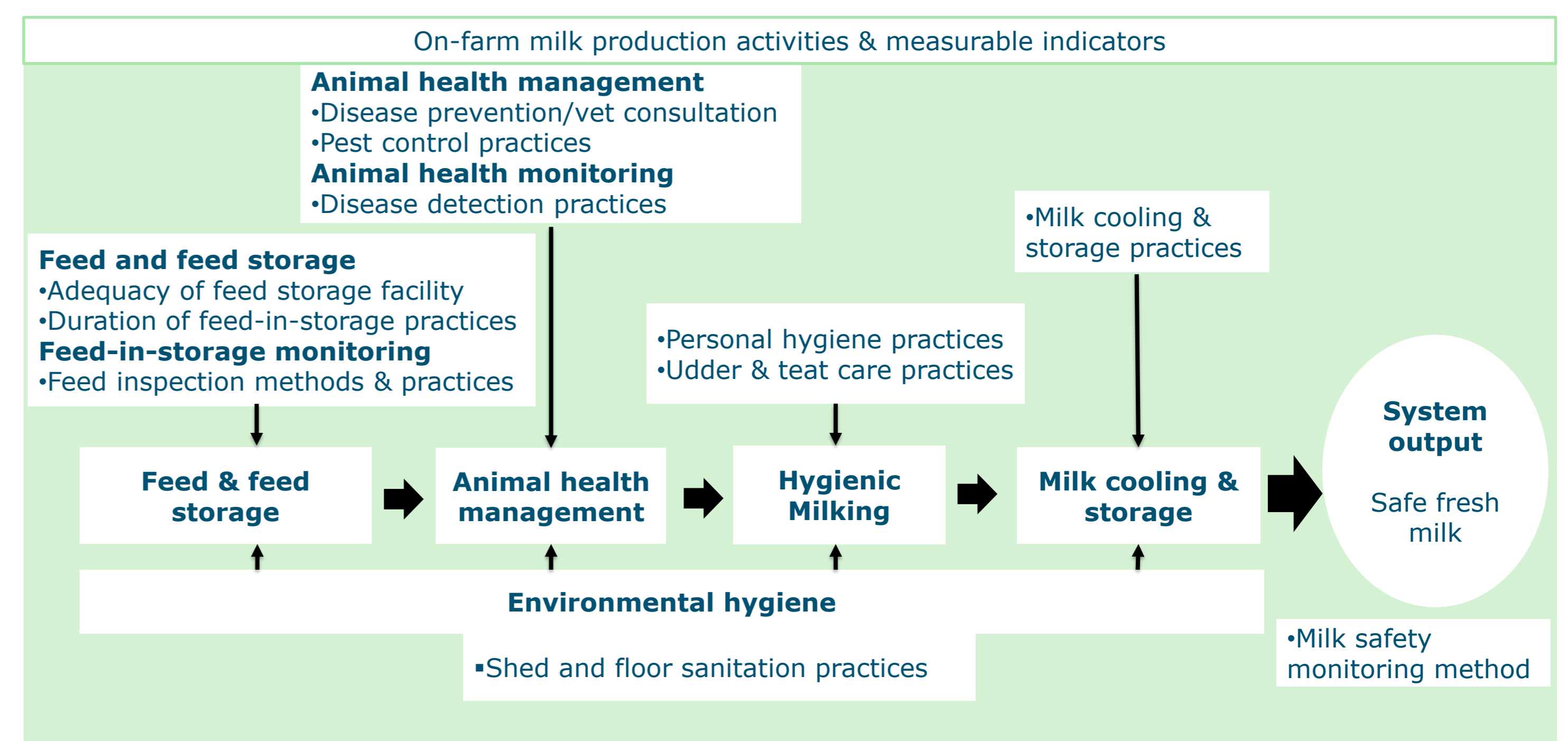
Pilot study design to test developed tool
38 small and 3 large-scale Tanzania dairy farmers participated in the pilot study.



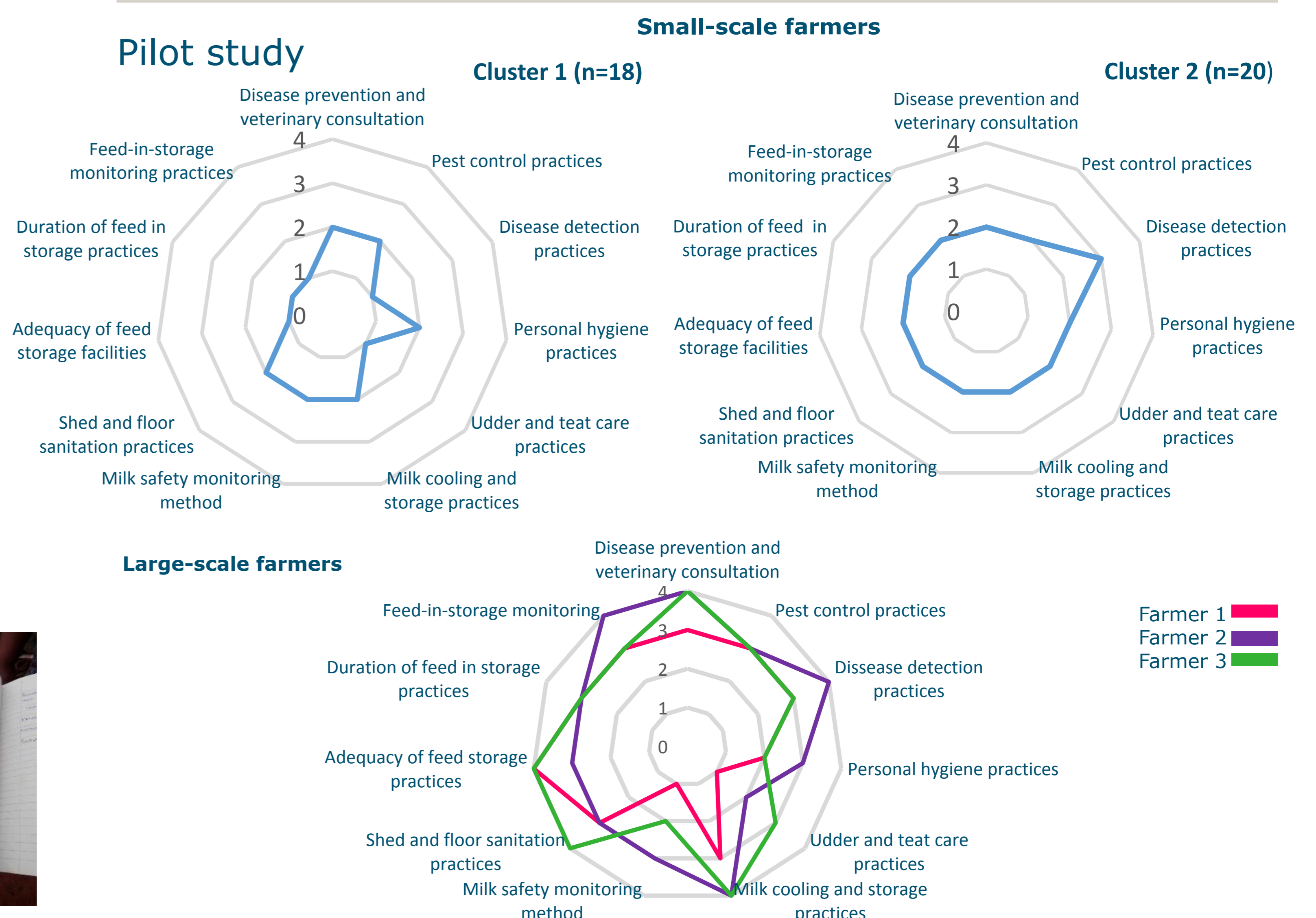
Practice grids translated into questionnaires
Poor, basic, intermediate and standard level responses correspond to scores 1, 2, 3 and 4, for data analysis.

Results

Conceptual framework of on-farm activities



Pilot study



Conclusions

- The tool was robust to differentiate small and large-scale dairy farmers on different practice performance levels.
- The profiles provide a starting point for development of tailored training programs to specific target groups of similar farmers.
- The tool is useful for pre- and post- assessment of on-farm control practices to measure intervention impact.

References

1. Luning, P. A., Bango, L., Kussaga, J., Rovira, J., & Marcelis, W. (2008). Comprehensive analysis and differentiated assessment of food safety control systems: a diagnostic instrument. *Trends in Food Science & Technology*, 19(10), 522-534.
2. Jacxsens, L., Luning, P., Marcelis, W., van Boekel, T., Rovira, J., Osés, S., Kousta, M., Drosinos, E., Jasson, V., & Uyttendaele, M. (2011). Tools for the performance assessment and improvement of food safety management systems. *Trends in Food Science & Technology*, 22, 580-589.
3. Some pictures taken from <https://images.google.com>

