In-silico model of lifetime trajectories of dairy cows

Commonly used acronym: *INSILICOW*

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Organisation

Name of the organisation Katholieke Universiteit Leuven (KUL)
Department Department of Biosystems
Country Belgium
Geographical Area Flemish Region
Name of the organisation Institut national de la recherche agronomique (INRAE)
Department MoSAR
Country France

SCOPE OF THE METHOD

The Method relates to	Animal health
The Method is situated in	Basic Research, Translational - Applied Research
Type of method	In silico

DESCRIPTION

Method keywords

dairy cow
white-box model
lifetime trajectory
reproduction
milk yield
modelling
simulation

Scientific area keywords

Animal science
statistical modelling

Method description

This white-box model uses energy partitioning throughout the lifetime of dairy animals (growth, lactation, gestation, ...) to simulate reproduction performance, lifetime length, production performance etc. The method is developed by dr. Olivier Martin at INRAE, MoSAR, Paris.

Lab equipment

You need the model codes to work with them.

Method status

History of use
Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

Replaces costly animal trials,
Accurate outcomes if you put the right parameters in.

Challenges

Parameter choice and identifiability

Modifications

Further extensions and improvements are in constant course of development

Future & Other applications

Simulation studies in dairy cows, for example for studying resilience and perturbations in milk yield, or reproduction progesterone profiles

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

Adriaens I., Martin O., Saeys W., De Ketelaere B., Friggens N.C., Aernouts B. (2019). Validation of a novel milk progesterone-based tool to monitor luteolysis in dairy cows. Timing of the alerts and robustness against missing values. JOURNAL OF DAIRY SCIENCE, 102 (12), 11491-11503 doi:doi.org/10.1101/526095.
Martin O, Blavy P, Derks M, Friggens NC, Blanc F. (2019) Coupling a reproductive function model to a productive function model to simulate lifetime performance in dairy cows. Animal. 13(3):570-579.

Links

Validation of a novel milk progesterone-based tool to monitor luteolysis in dai…