Economic Development, Jobs, Transport and Resources

Evaluating the ability of a lifetime nutrient partitioning model for simulating performance of Australian Holstein cows

Phuong HO
BioSciences Research Division

IMPROVING HERDS

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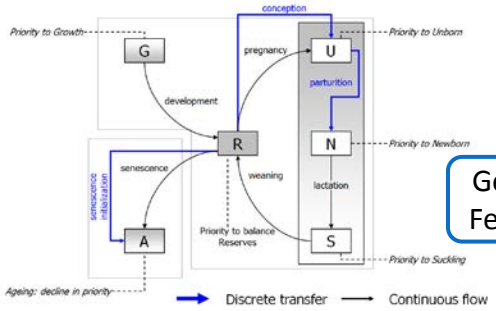
Objectives

To determine the ability of an existing lifetime nutrient partitioning model for simulating individual variability in genetic potentials of Australian Holstein cows

- Cow as “an active biological entity with its own agenda”

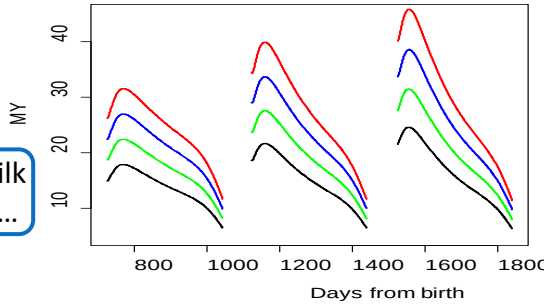


GARUNS

Genetic parameters
Feeding information

Weight, milk yield, milk composition, intake,…

- Lifetime performance as “a trajectory”



Data and methods

Data

- Performance data (milk, fat, protein, lactose, body weight, condition score, intake) of 62 HF cows at Ellinbank Dairy Research Centre
- Cows were fed with Lucerne cubes plus grain supplement

Methods

- Input dietary energy density: 11.2 MJME/kgDM
- Adjust genetic scaling parameters, cow by cow, to obtain best fit between predicted and observed with ModelMaker software version 2.0

Results and conclusions

	Mean observed ± SD	Mean fitted ± SD	RPE
Body weight	572 ± 49	575 ± 46	4.2
Milk yield	22.97 ± 7.6	22.01 ± 7.03	15.6
Milk fat	0.04 ± 0.005	0.04 ± 0.004	10.5
Milk protein	0.03 ± 0.003	0.03 ± 0.003	7.2
Milk lactose	0.05 ± 0.002	0.05 ± 0.002	3.6
Body condition score	2.08 ± 0.22	2.31 ± 0.33	11.1
Dry matter intake	24.12 ± 4.16	20.75 ± 2.39	18.1

RPE < 20%

- GARUNS is a potential tool to simulate a virtual population of Holstein cows with variability in genetic potential
- Current research: integrate GARUNS into a farm management model to simulate effects of future genetic selection and feeding strategies on farm profitability