The relationship between level of somatic cell count and greenhouse gas emissions

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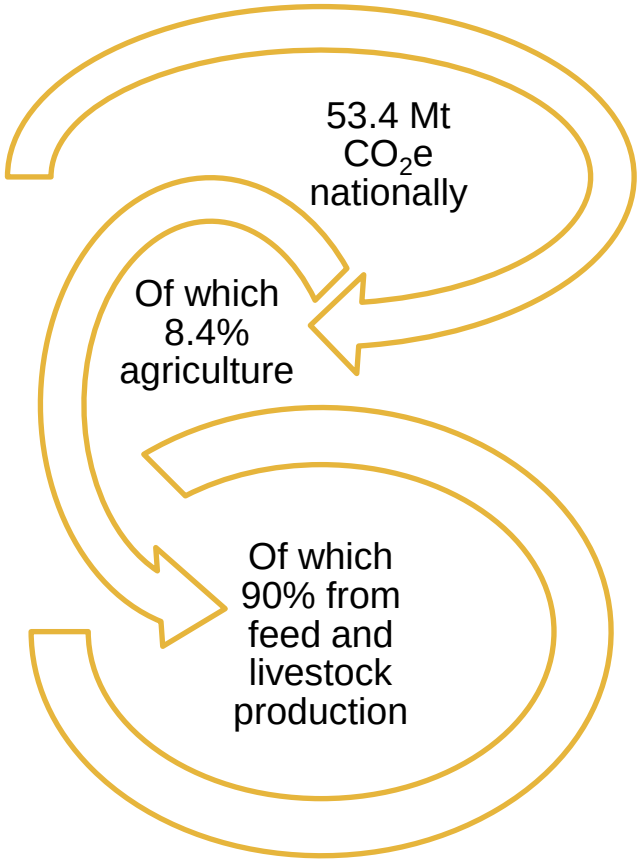
MACSUR Science Conference, Reading University
8-10 April 2015

Introduction



30% of emissions from animal production DAIRY

By 2020, 20% reduction in agricultural emissions

Animal health and GHG emissions

Is it possible to reduce emissions intensity from herds with health problems?

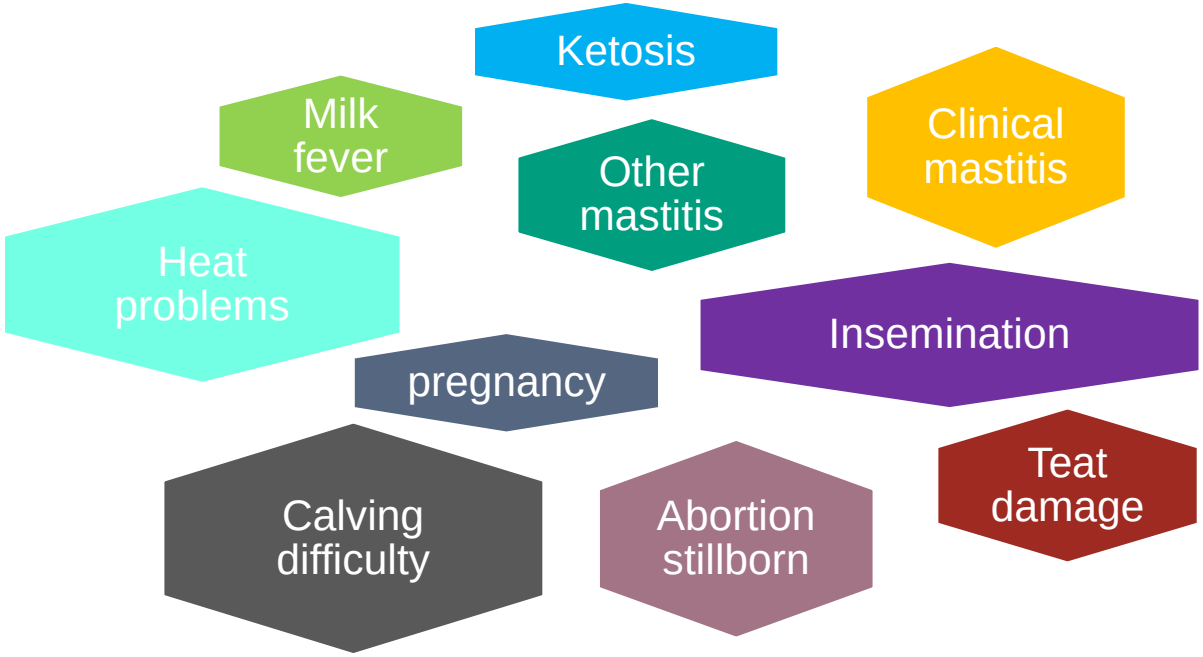
Data

- Bioforsk Norway collected data for project Environmilk
- Environmilk project: organic and conventional dairy farming
- Effect of farm size and farming intensity

on environmental and economic sustainability.

- 10 organic and 10 conventional dairy farms
- in the Møre-Romsdal County.

Data on animal health

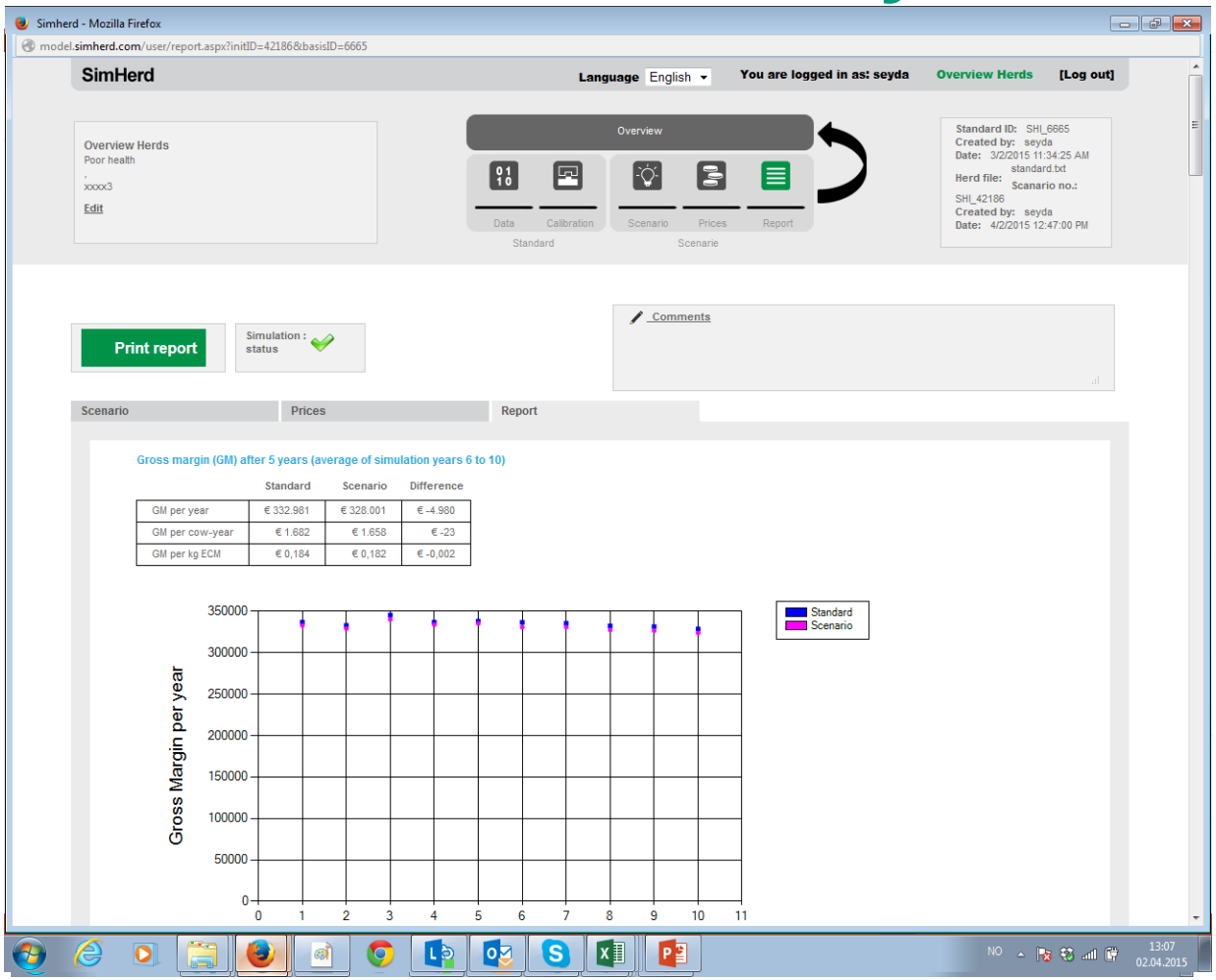


Tools available: Simherd and HolosNor

Simherd

- **“SimHerd** develops and commercializes a web-based advisory tool, which offers dairy farmers the possibility to estimate the economic impact of alternative management strategies in their herds”

Simherd for herd dynamics



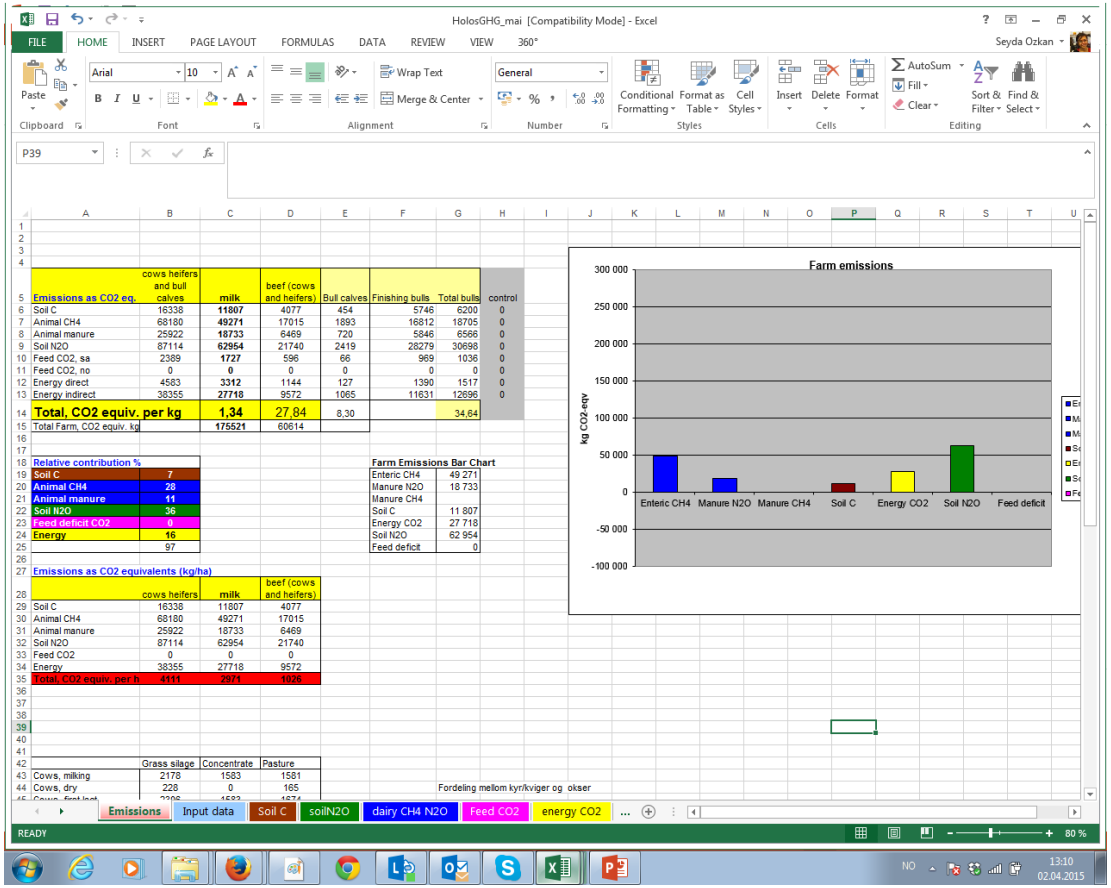
Compares Gross margins

Outputs to HolosNor

HolosNor for ghg emissions

- Excel-based calculator
- All significant ghg emissions inc soil C changes
- Uses input data

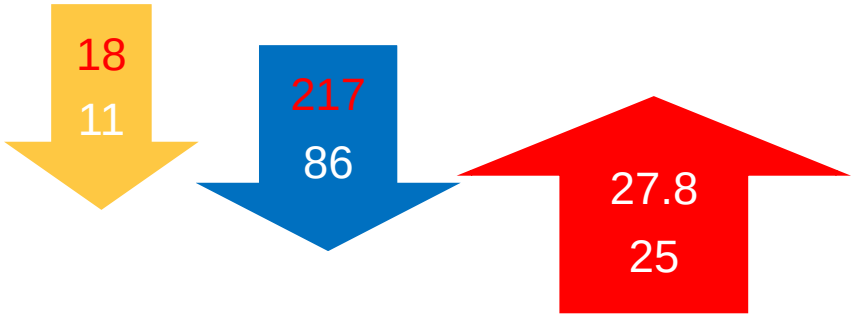
Compares emissions intensity



Simherd Simulations

Good Health vs Poor Health

- Mastitis occurance
- Somatic cell count
- Milk yield



Gross margin (GM) after 5 years (average of simulation years 6 to 10)

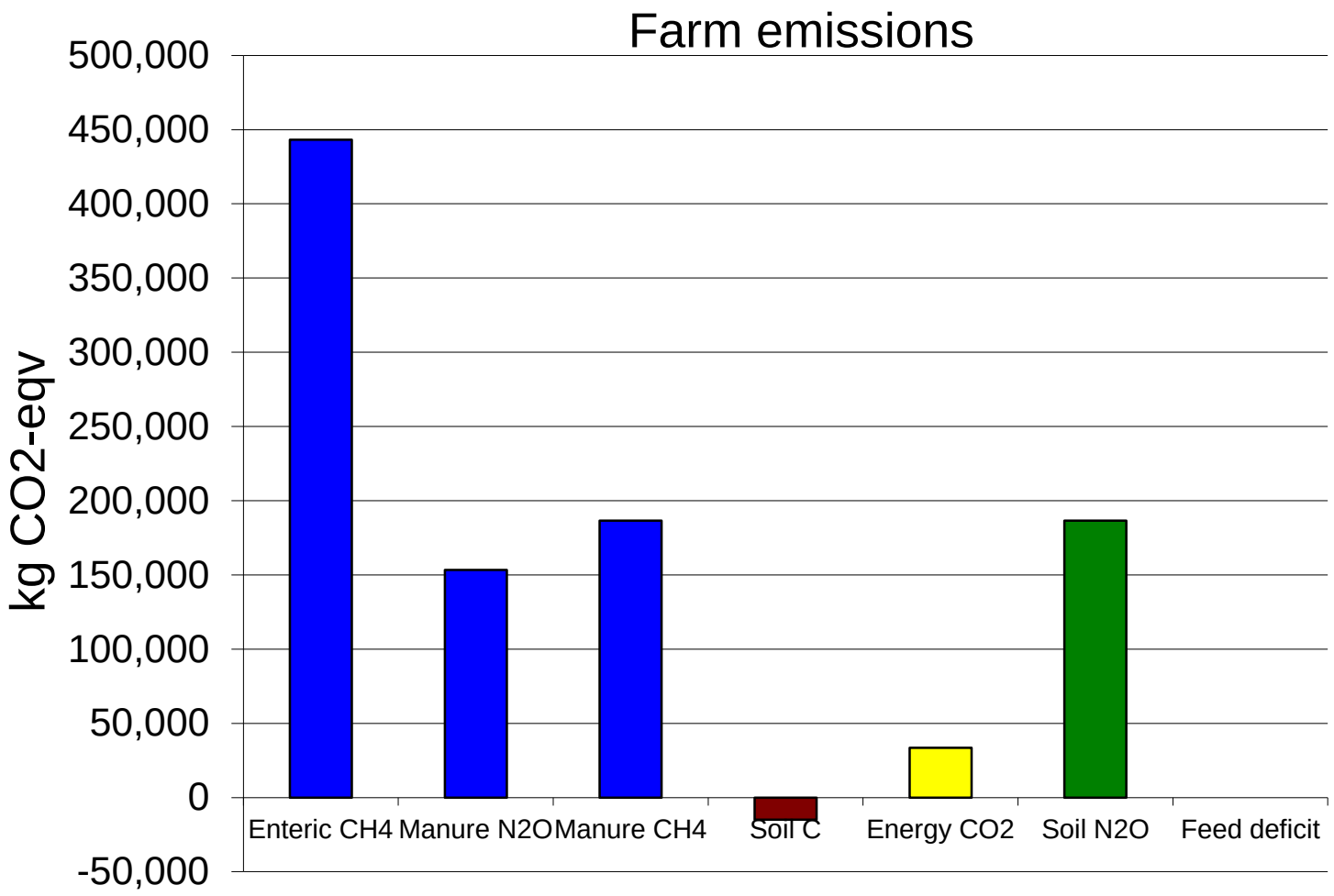
	Poor health	Good health	Difference
GM per year	€ 308 300	€ 366 400	€ 58 100
GM per cow-year	€ 1 545	€ 1 829	€ 284
GM per kg ECM	€ 0,183	€ 0,199	€ 0,016

Simherd outputs (2)

	Poor health	Good health	Difference
Milk yield per cow-year, kg ECM	9324	10187	863
Feed intake in FE per cow-year	6080	6447	367
Replacement rate	39	36,7	-2,3
Involuntary culling	35	24	-11

Cow-year = total number of feeding days for cows in the herd / 365

GHG emissions (HolosNor)



GHG emissions (2)

	Poor health	Good health
Enteric CH_4 (kg CO_2e)	443 200	476 400
Total emissions (kg CO_2e)	808 400	846 000
Emissions intensity (kg CO_2e/kg ECM)	0,40	0,38

Total emissions *vs* Emissions intensity

Final remarks & future work

- Simherd does not represent the actual farms (except for input parameters).
- Calibration of the herds needed
- Herd structure
- Comparing disease interractions (e.g. mastitis plus fertility problems)

Announcement

MACSUR LiveM Task 2.1 and 2.2 Joint workshop with GRA's AHGHGEIN

Reading

24-25 June 2015

To register or for further info, email seyda.ozkan@nmbu.no or rpk@aber.ac.uk

Thank you

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