Contribution of animal breeding to reduce environmental impact of animal products

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100years
1918 — 2018

BREED4FOOD

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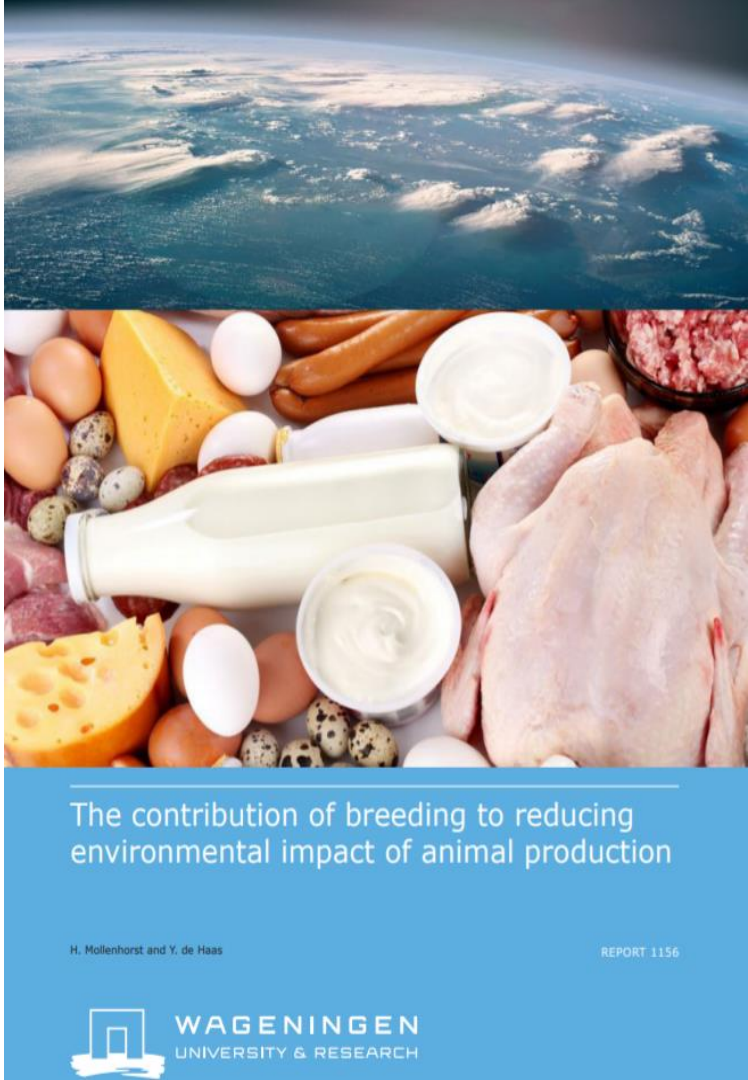

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Urgent need to reduce GHG of livestock

ON THE WAY TO PLANET PROOF

Dutch Climate Act

- 49% reduction in 2030
- 95% reduction in 2050

Market push

- Retail and food processers demand lower carbon footprint

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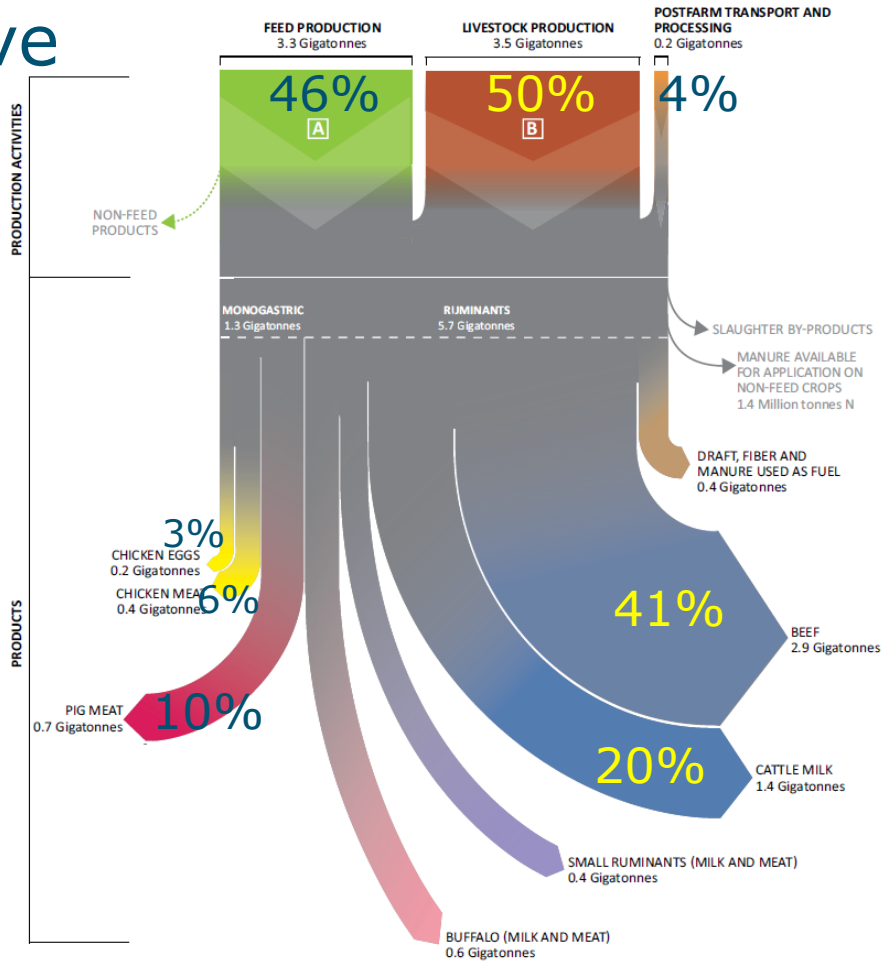
GHG - Global perspective

- Livestock total 7.1 Gton

(14.5% of the total anthropogenic emissions)

- Beef 2.9 Gton
- Cattle milk 1.4 Gton
- Pig meat 0.7 Gton
- Chicken meat 0.4 Gton
- Chicken eggs 0.2 Gton
- Others 1.5 Gton



GHG EMISSIONS FROM GLOBAL LIVESTOCK SUPPLY CHAINS, BY PRODUCTION ACTIVITIES AND PRODUCTS

Source: FAO; Gerber et al, 2013

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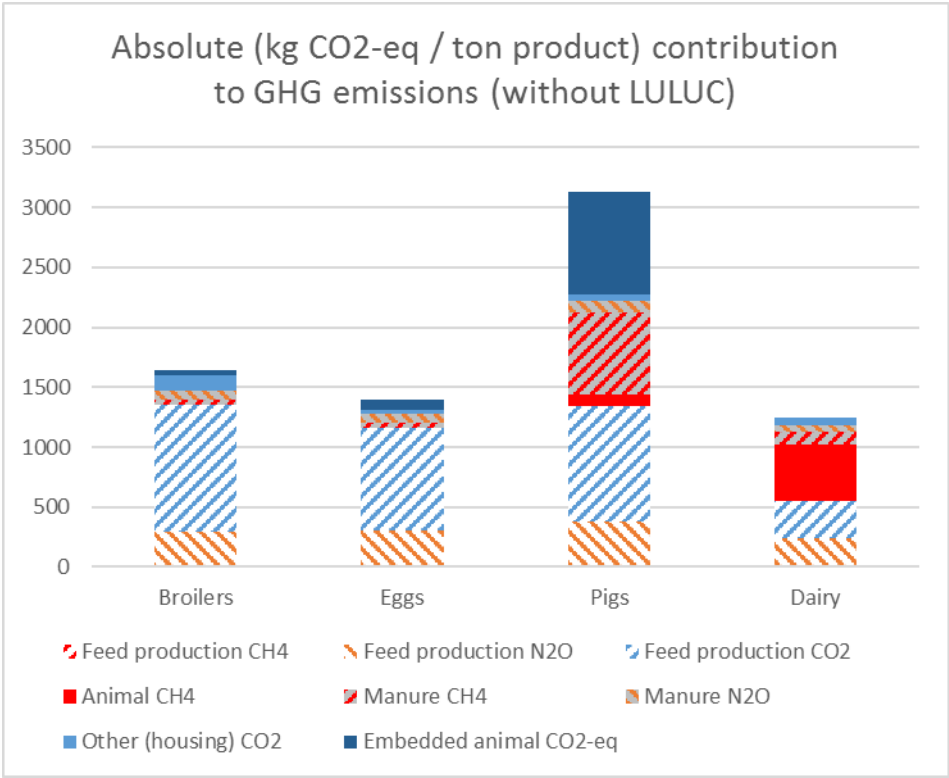
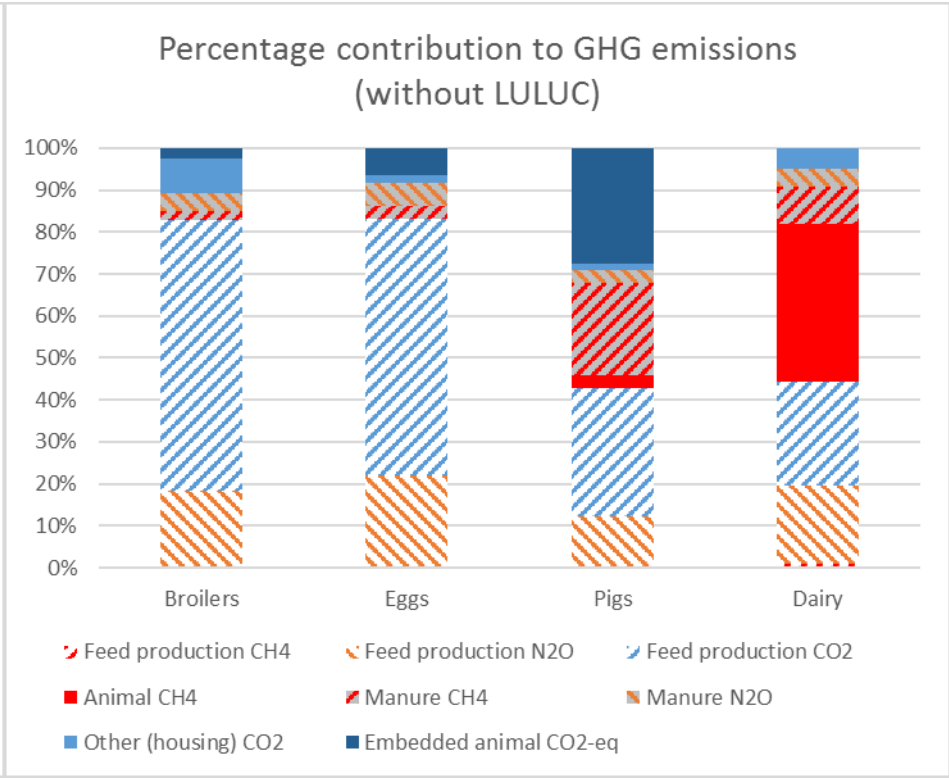
GHG emissions of different species





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Source: FeedPrint 2015.03 (Vellinga et al., 2013; WLR, 2015)

What role can animal breeding play?

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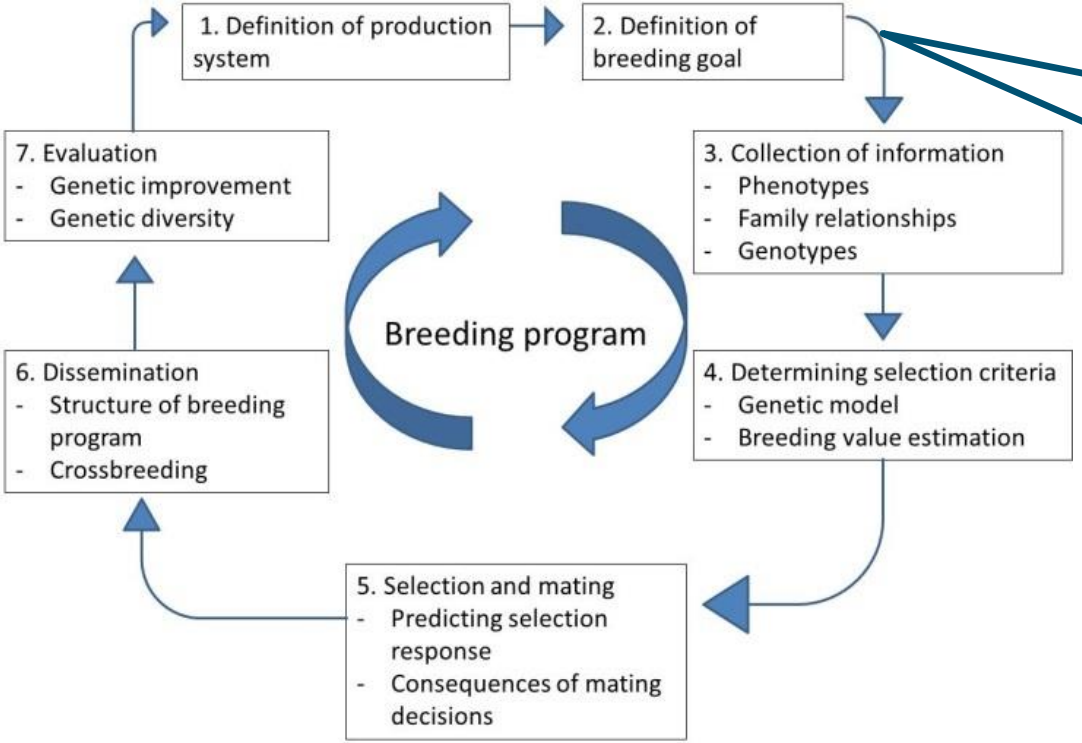
Breeding programmes of livestock species



Breeding goals of all livestock species are broad; they aim to improve many traits, like: health, welfare, efficiency, longevity

Source: wiki.groenkennisnet.nl

Impact of current breeding goal on GHG

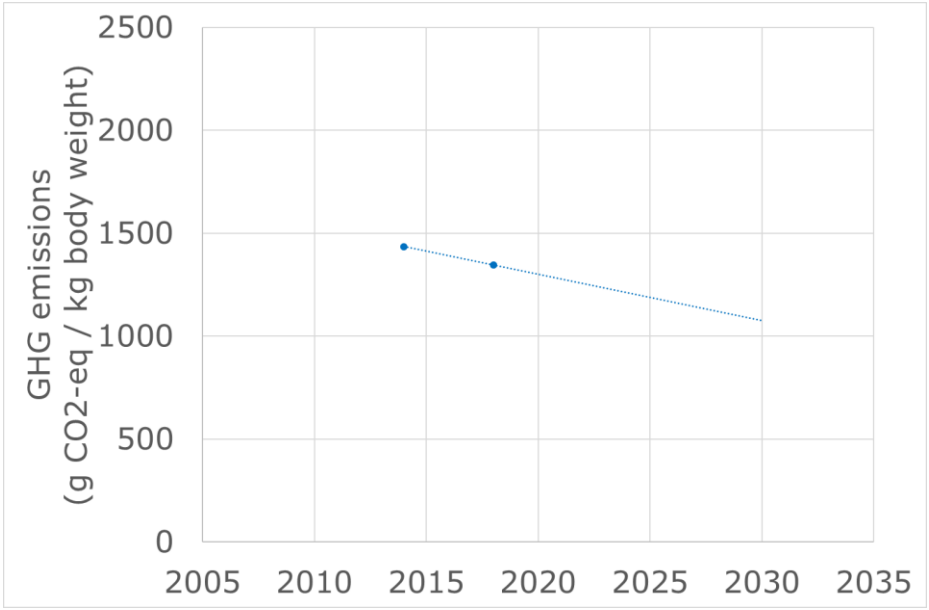
Broilers, layers, and pigs

- Life cycle assessment
- GHG emissions

Dairy

- Correlated responses of selection index
- Enteric methane emissions

Broilers – GHG results genetic progress



Genetic progress

-23 g CO_2-eq per kg[a] per yr

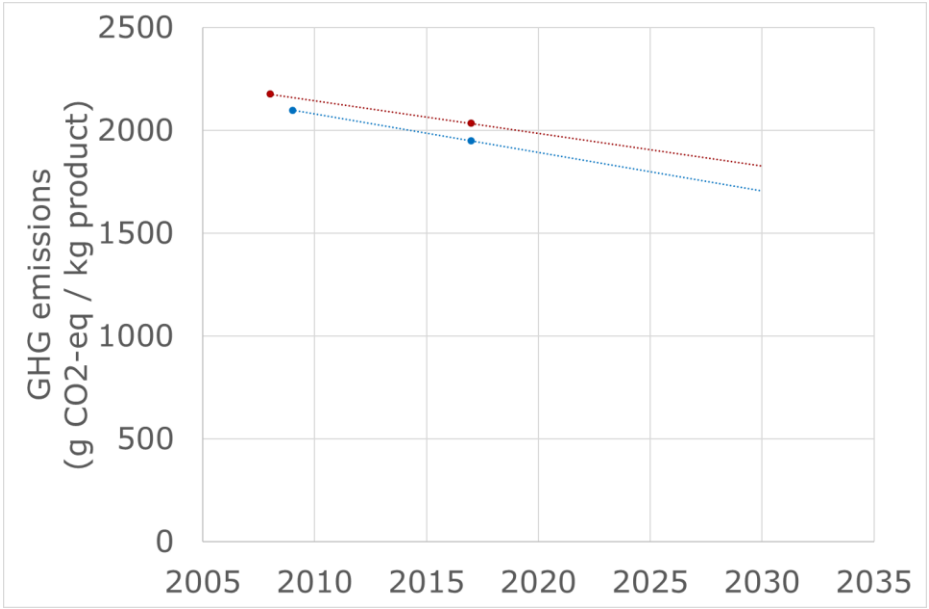
-1.7 % per yr

Predicted performance (2030)

-270 g CO_2-eq per kg body weight[a] (20.1%) compared to current

[a] Final body weight after 1 day fasting

Layers – GHG results genetic progress



Brown

-16 g CO_2-eq per kg[a] per yr

-0.8 % per yr

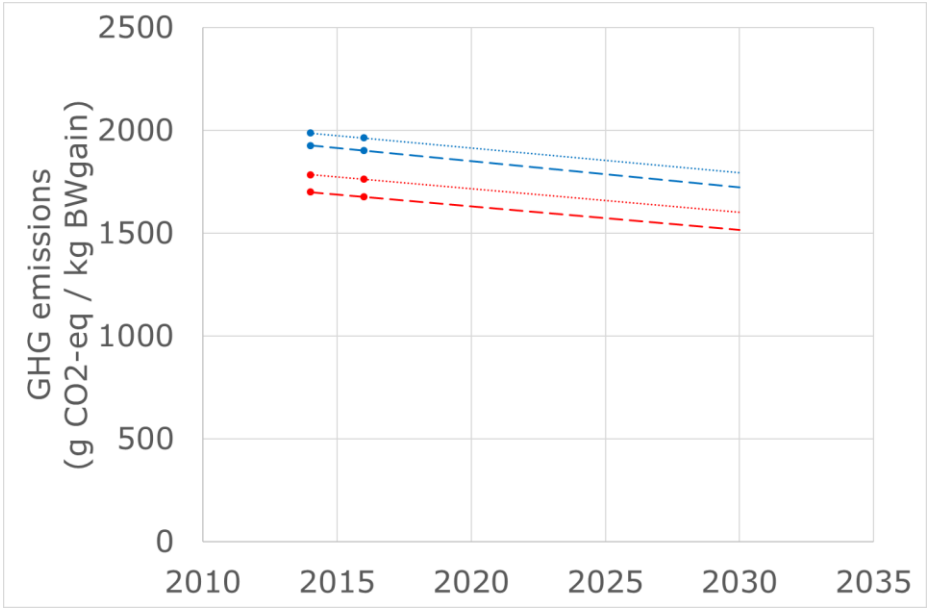
White

-19 g CO_2-eq per kg[a] per yr

-1.0 % per yr

[a] Product is egg including shell

Pigs – GHG results genetic progress



Corn / soy diet

♀ 3% higher than ♂

-12 g CO_2-eq per kg[a] per yr

-0.6 % per yr

Cereals / alternative diet

♀ 5% higher than ♂

-12 g CO_2-eq per kg[a] per yr

-0.7 % per yr

[a] Live body weight gain

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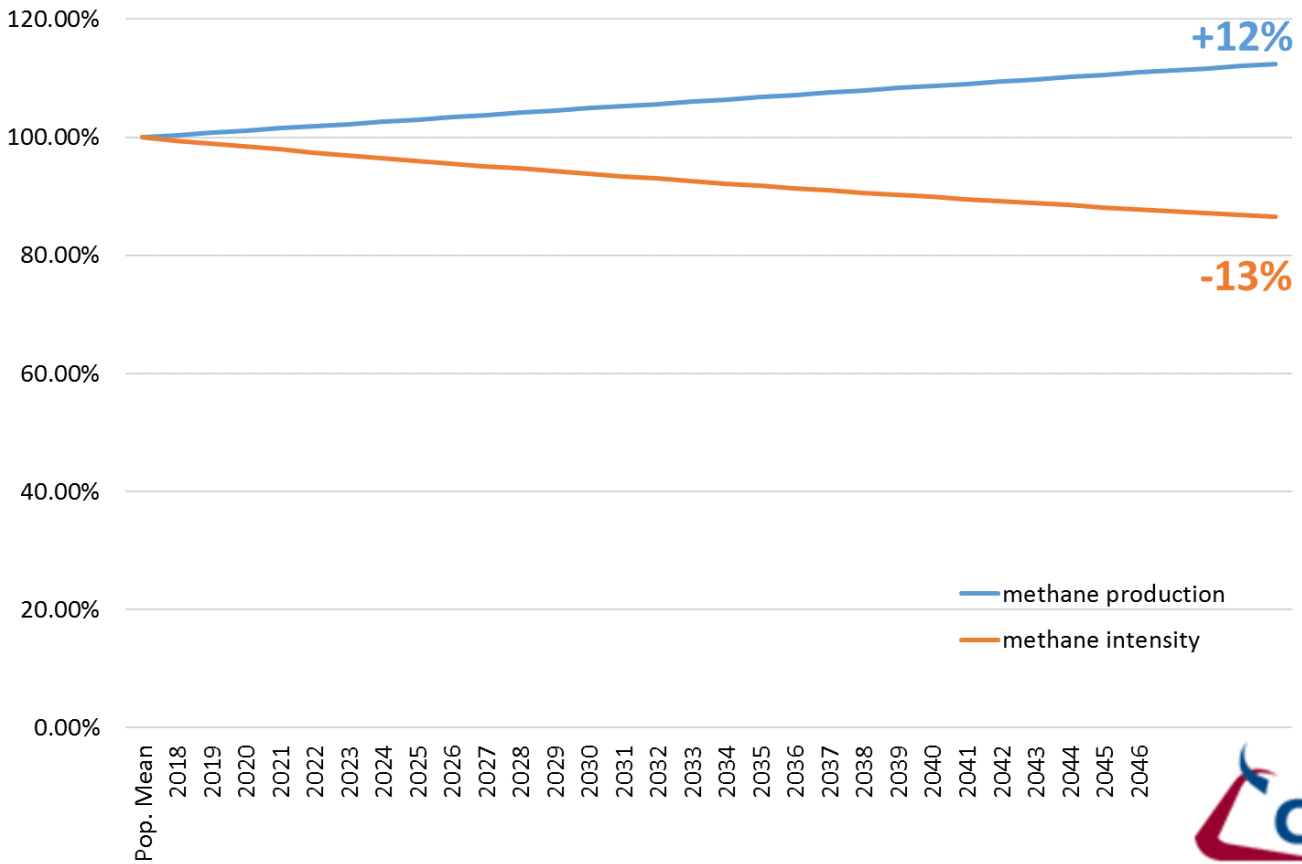
Topigs Norsvin
PROGRESS IN PIGS

Methane production and intensity per cow



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Conclusions

- Environmental impact of animal production decreases with 0.5-1.5% per year due to genetic progress on current breeding goals

- Animal breeding can contribute to a lower footprint
    - Account for individual variation in environmental impact traits

- Greater impact with specific focus on environmental impact traits
    - Needs recording schemes for these traits

Thank you!


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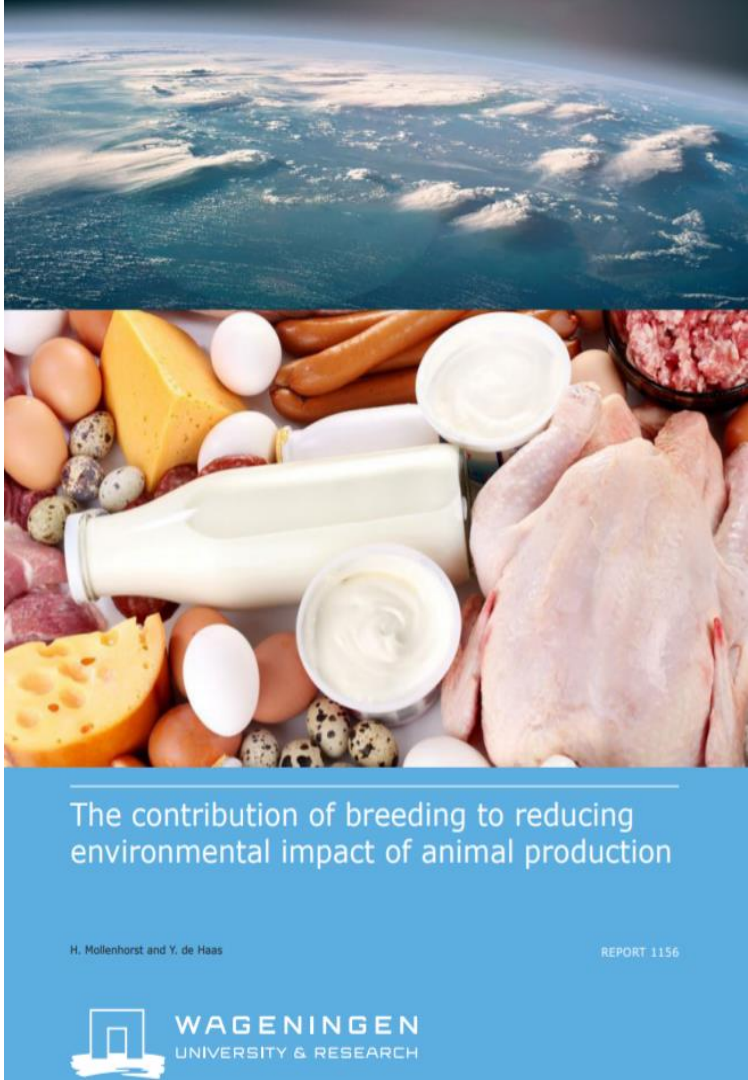
IMPORTANT DATES
12 January 2022: Deadline abstract submission
1 March 2022: Deadline early bird registration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