



University of  
Natural Resources and  
Life Sciences, Vienna



Department of  
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Division of Livestock Sciences  
WG Feeding Systems

# Efficiency of Austrian dairy farms in terms of net food production and strategies for improvement

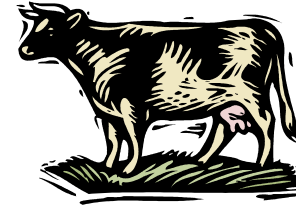
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# Which cow is more efficient?



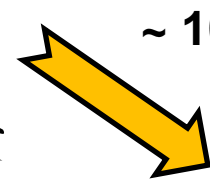
10,000 kg/y



5,000 kg/y

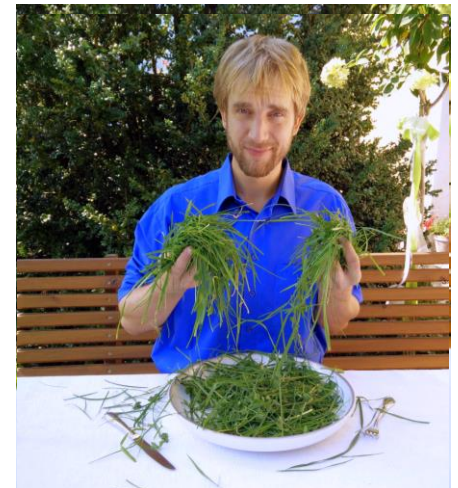
- ↑ kg milk / cow space
- ↓ Kg feed / kg milk
- ↓ CH<sub>4</sub> / kg milk
- ↓ Fixed costs / kg milk
- ↑ Milk per ha land
- ↑ Pasture (cheapest feed)
- ↑ Net food production?

# Net food production

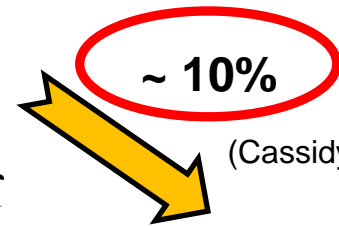


~ 10%

(Cassidy et al., 2013)



# Net food production



up to 100%



# Why worry?

Feeding the planet in 2050: with or without animal products?

Livestock And Feed Conversion: Food Producers Or Food Thieves?



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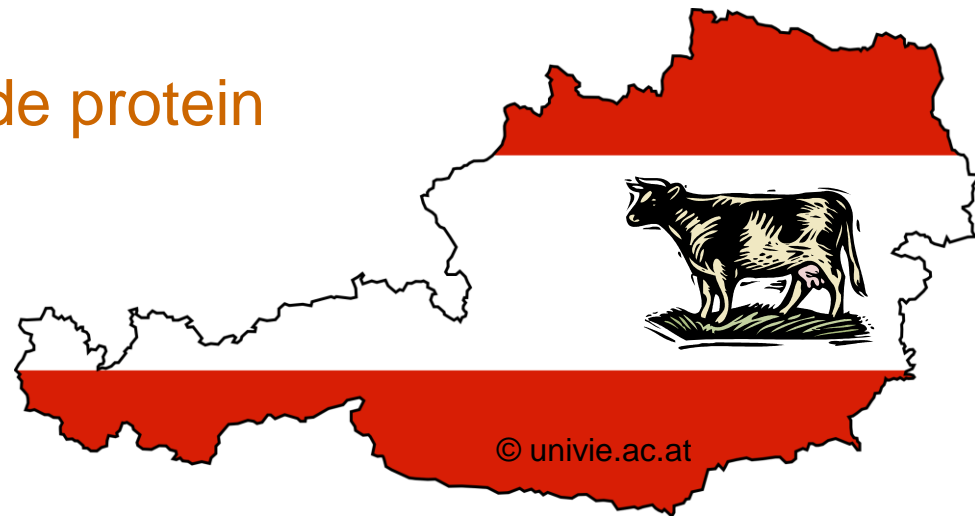
U.S. could feed 800 million people with grain that livestock eat, Cornell ecologist advises animal scientists

# Situation on Austrian dairy farms?

- Human-edible feed conversion efficiency (**heFCE**)  
(Wilkinson, 2011)

$$= \frac{\textit{Human-edible Output (animal product)}}{\textit{Human-edible Input (feedstuffs)}}$$

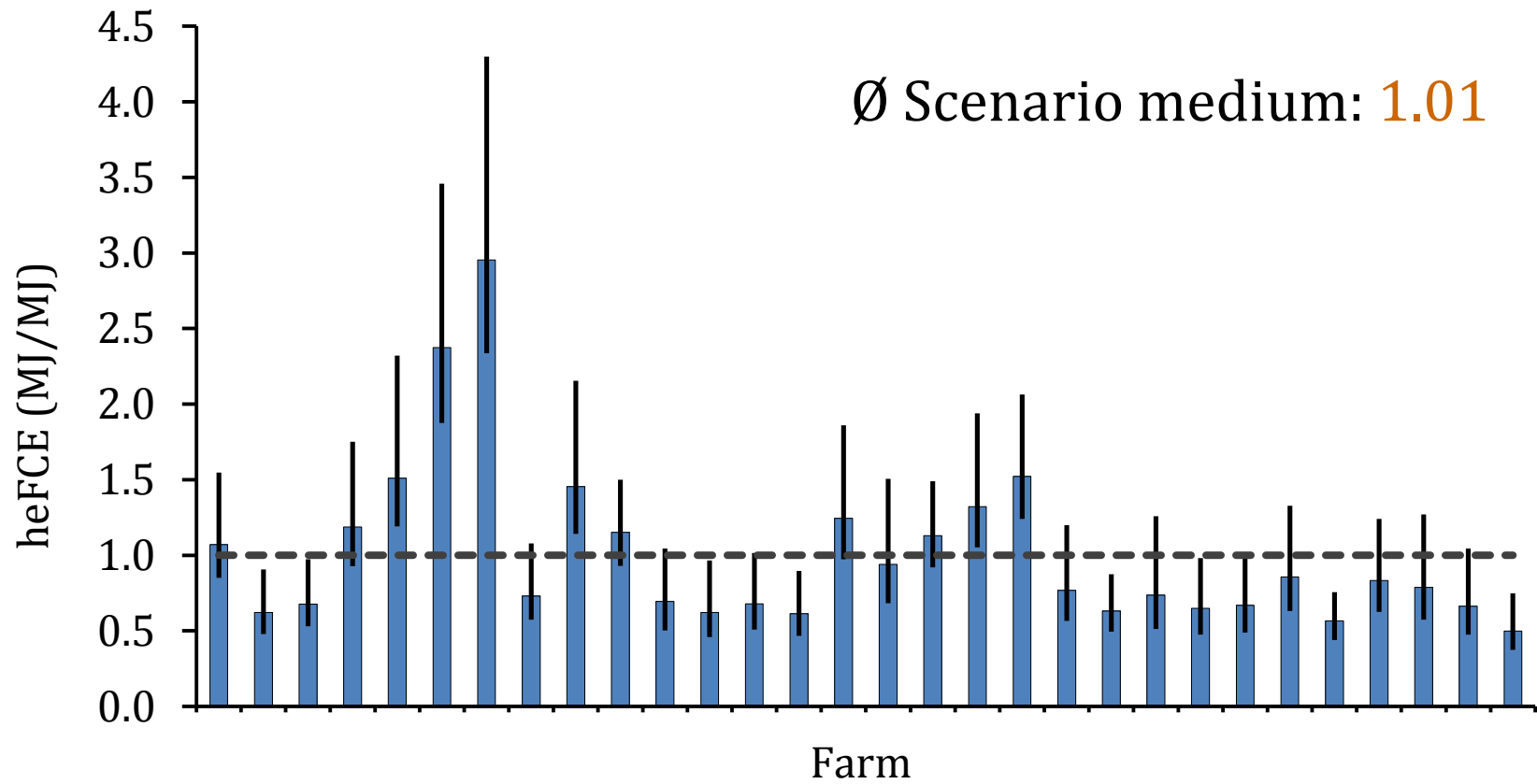
- 30 Austrian dairy farms
- For **gross energy** and **crude protein**
- On farm gate level



# Calculation of human-edible Inputs

- Potential **edible fractions** based on literature
- 3 scenarios (low, medium, high)
- Examples for edible fractions:
  - Wheat: 60 – 100%
  - Sunflower cake: 14 – 46% (CP) / 20 – 30% (GE)
  - Dried distiller grains: 0%

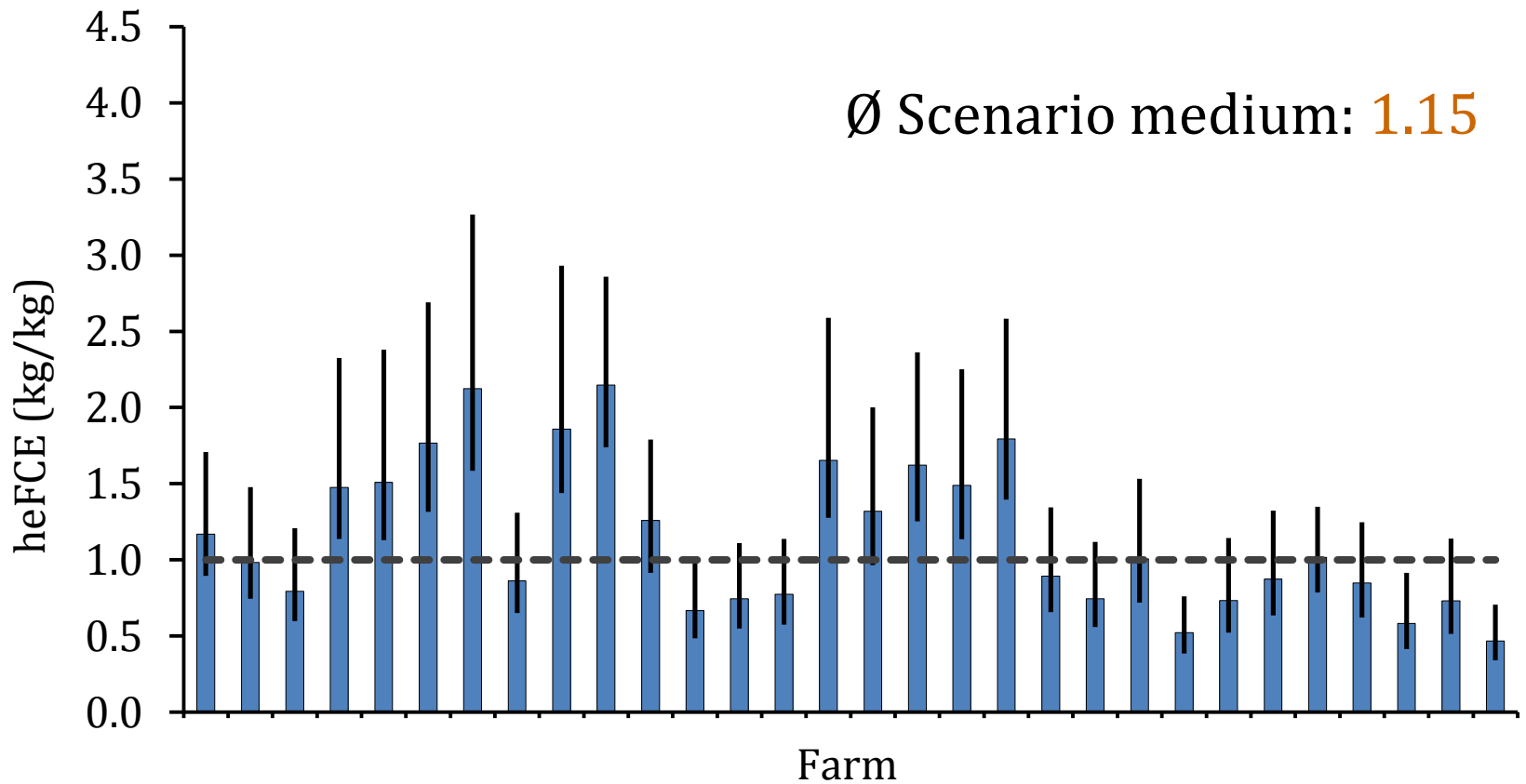
# heFCE for energy



(Ertl et al., Agr Sys, 137:119-125; 2015)



# heFCE for protein



(Ertl et al., Agr Sys, 137:119-125; 2015)

# Strategies for improvement

- $\text{heFCE} = \frac{\text{Human-edible output (animal product)}}{\text{Human-edible input (feedstuffs)}}$
- Increase output vs. decrease input!?



# Take home messages

- Efficiency  $\neq$  efficiency
- On average, dairy farms showed slightly positive heFCE
- Dairy farms as net contributors to human food supply

# Questions?

