

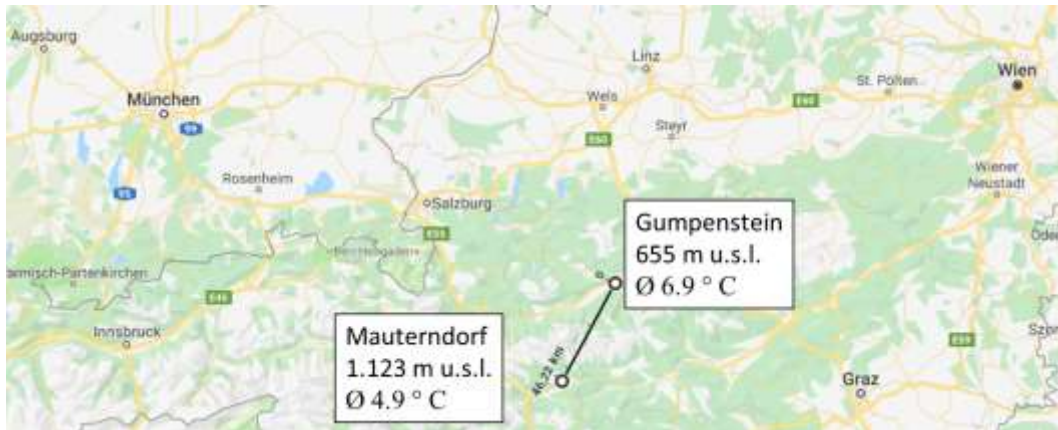
# Estimated greenhouse gas emissions of dairy cows from the Case study Lungau based on respiration measurements

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## Case study region Lungau



## Aim of the Task

- Examination of methane (and carbon dioxide) production of dairy cows fed the Lungau ration or an average Austrian ration
- Use of the outcome of this experiment in the life cycle assessment (LCA) of the project farms in the Lungau
- Comparison of methane emissions based on results of the experiment with methane emissions calculated according to IPPC

## Measurement of gaseous emissions in respiration chambers

- Air-conditioned facility with controlled ventilation system
- Continuous measurement of CO<sub>2</sub> and CH<sub>4</sub> production of dairy cows for 2 days
- Two feeding strategies
  - „Conventional“: Grass silage, maize silage, hay, ~ 25 % concentrates
  - „Lungau“: Grass silage, hay, ~ 10 % concentrates



## Analysed Parameters

- Forage and concentrate intake
- Feed analysis
- Milk yield
- Milk ingredients
- Methane and carbon dioxide production

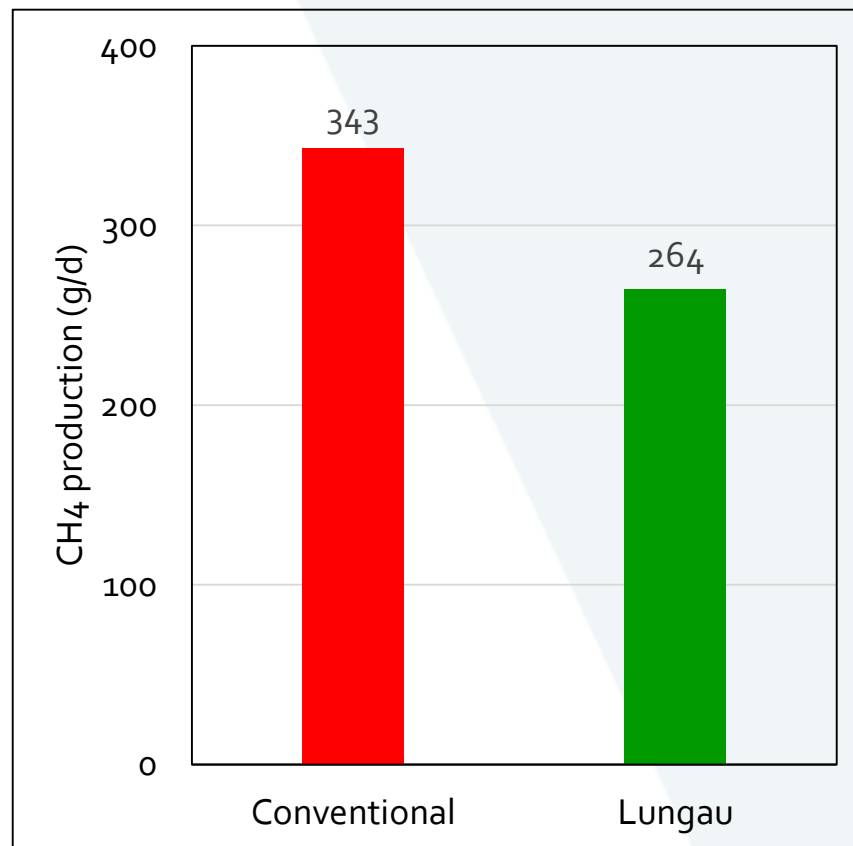
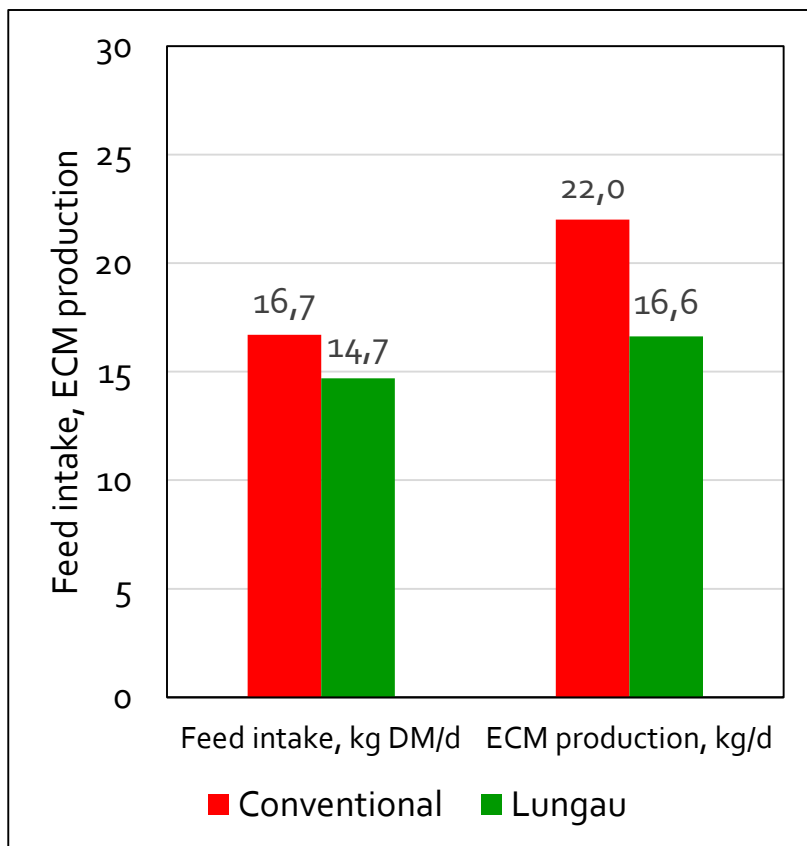




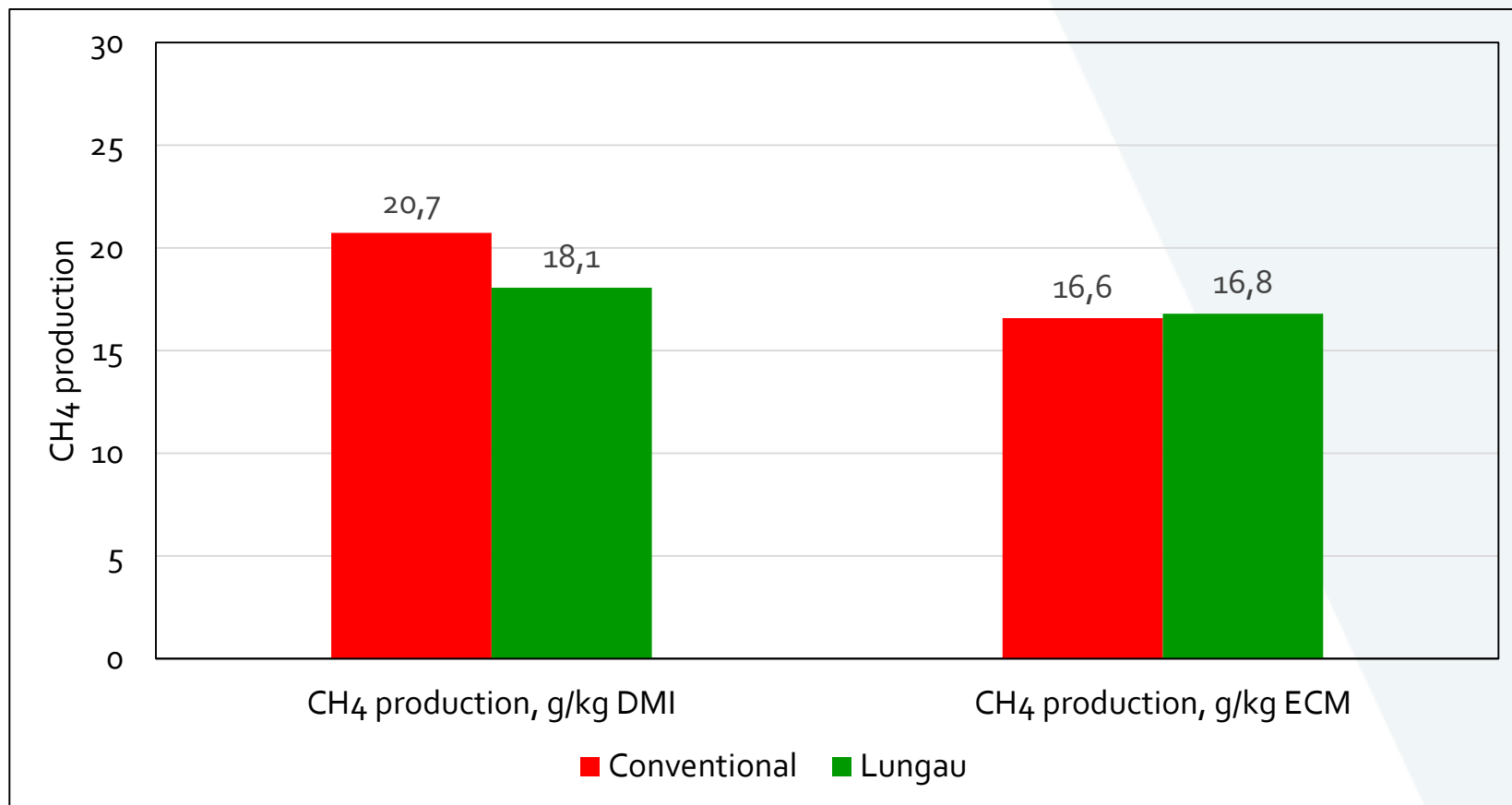
## Measurement of gaseous emissions in respiration chambers



## Feed intake, Milk yield and daily CH<sub>4</sub> emissions

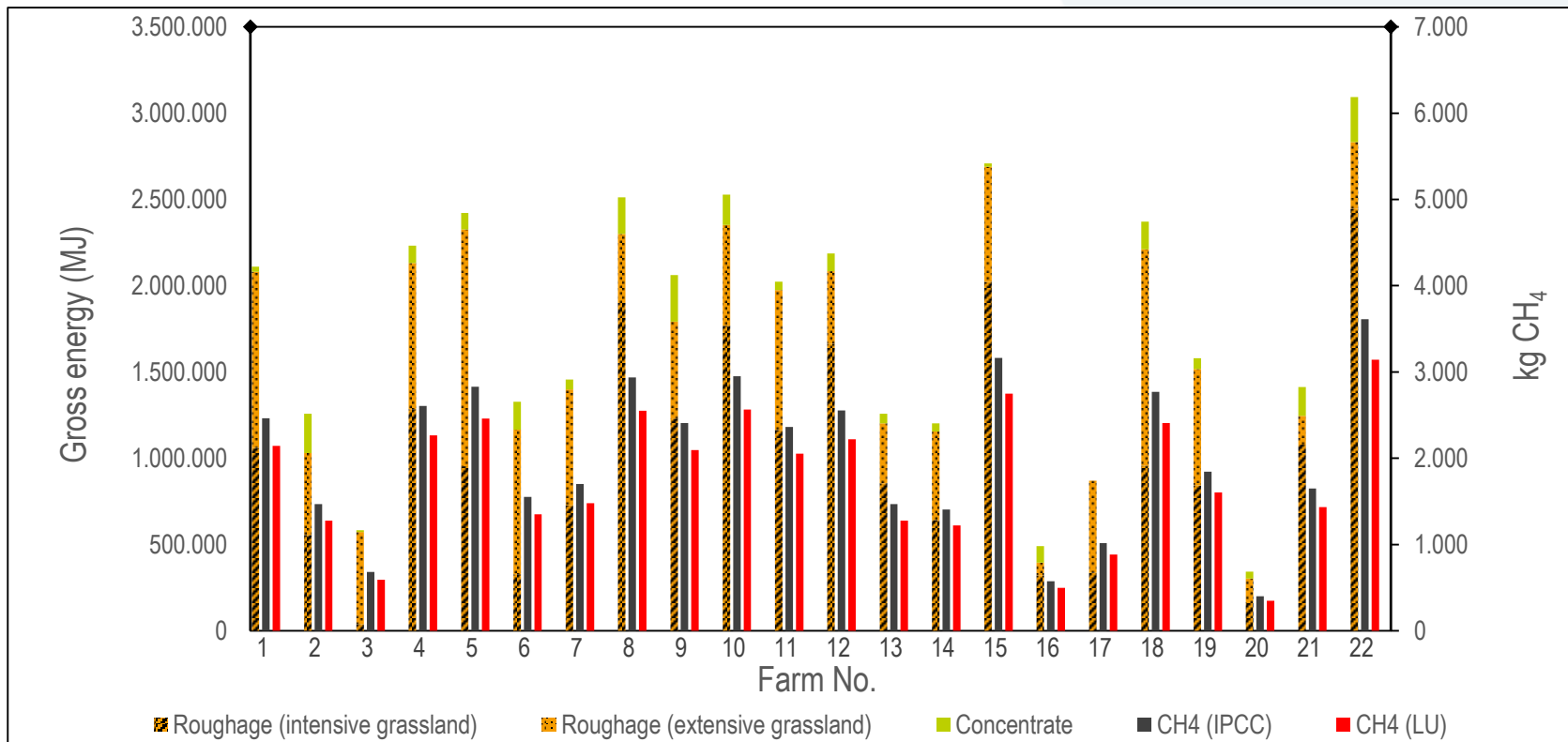


## CH<sub>4</sub> emissions related to feed intake and milk yield



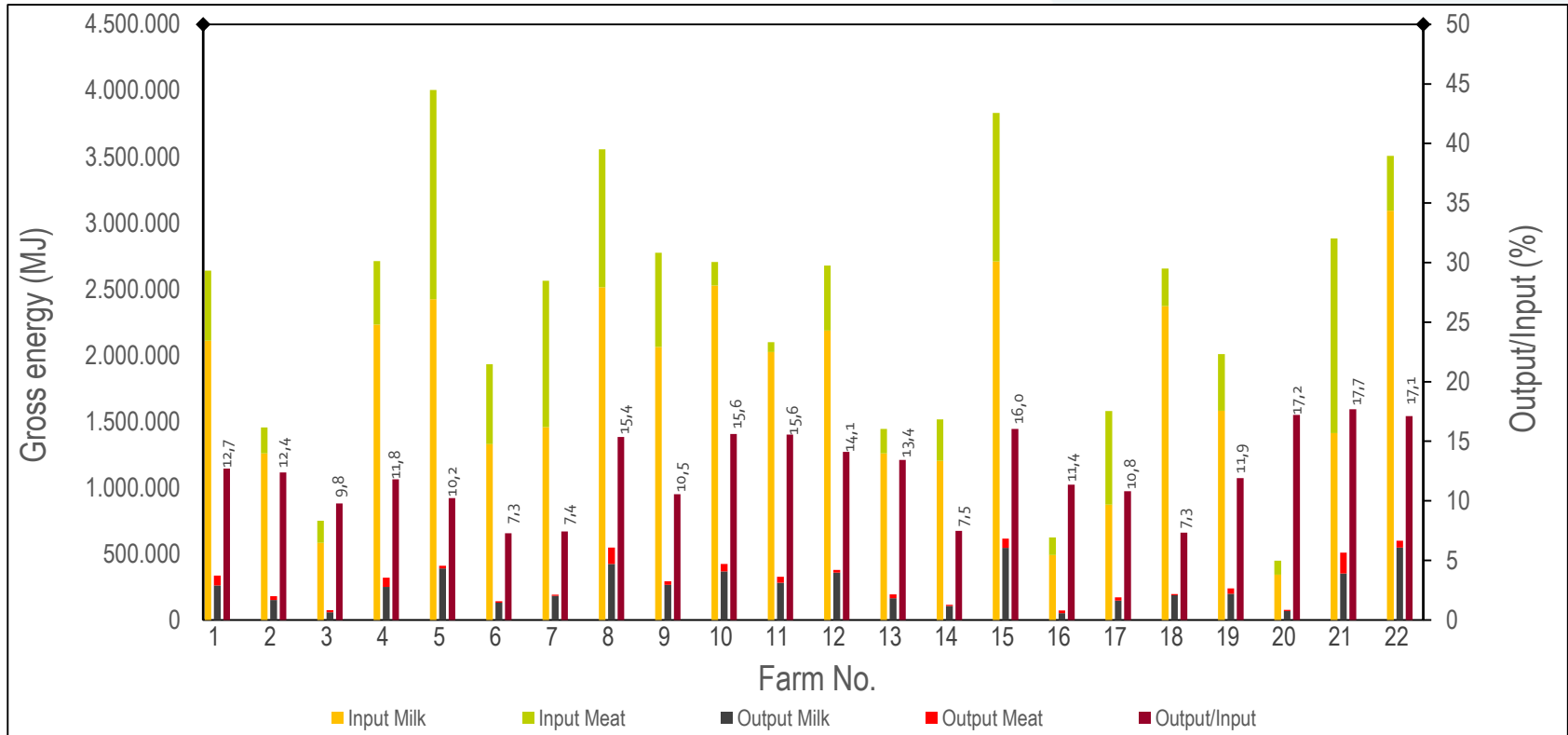


## Feed use and CH<sub>4</sub> emissions of farms in CS region Lungau



**Experiment resulted in lower CH<sub>4</sub> emissions than IPCC calculations**

## Energy balance of farms in CS region Lungau



**Food output/Input ratio  $\approx$  Methane output/inoput ratio**

## Conclusions

- Lower concentrates input in the CS region Lungau lowered CH<sub>4</sub> emissions per day and had no effect on CH<sub>4</sub> emissions per kg ECM
- Farms with high share of extensive grassland showed a tendency for a more unfavourable Gross energy output/Gross energy input ratio
- The same can be expected for the Gross energy output/Methane output ratio
- High forage quality and low levels of concentrates in ruminant feeding seems to be a good methane-mitigating strategy for milk production in the CS region Lungau