



# The 75<sup>th</sup> EAAP Annual Meeting

1/5 September 2024 - Florence, Italy



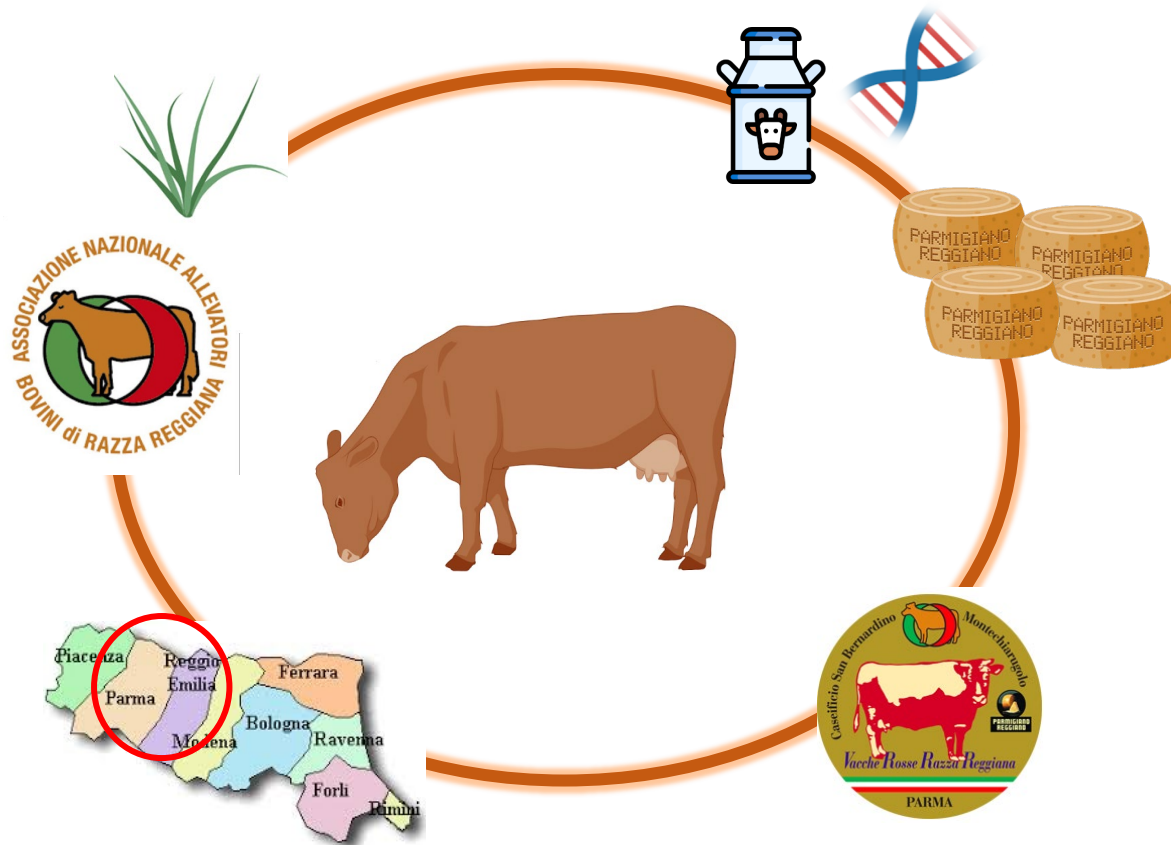
## Environmental impact and productivity of Reggiana dairy herds fed hay or fresh forage

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Pitino R.<sup>1</sup>, Righi F.<sup>1</sup>

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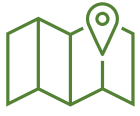
## *Red Feeding for Cheese*

The project was founded by Consorzio Agrario di Parma and developed in collaboration with:

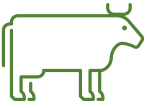
- Consorzio Vacche Rosse;
- Associazione Nazionale Allevatori Bovini di Razza Reggiana.

**Aim: Evaluate how the administration of hay or green forage can affect productivity and environmental impact of the herd**

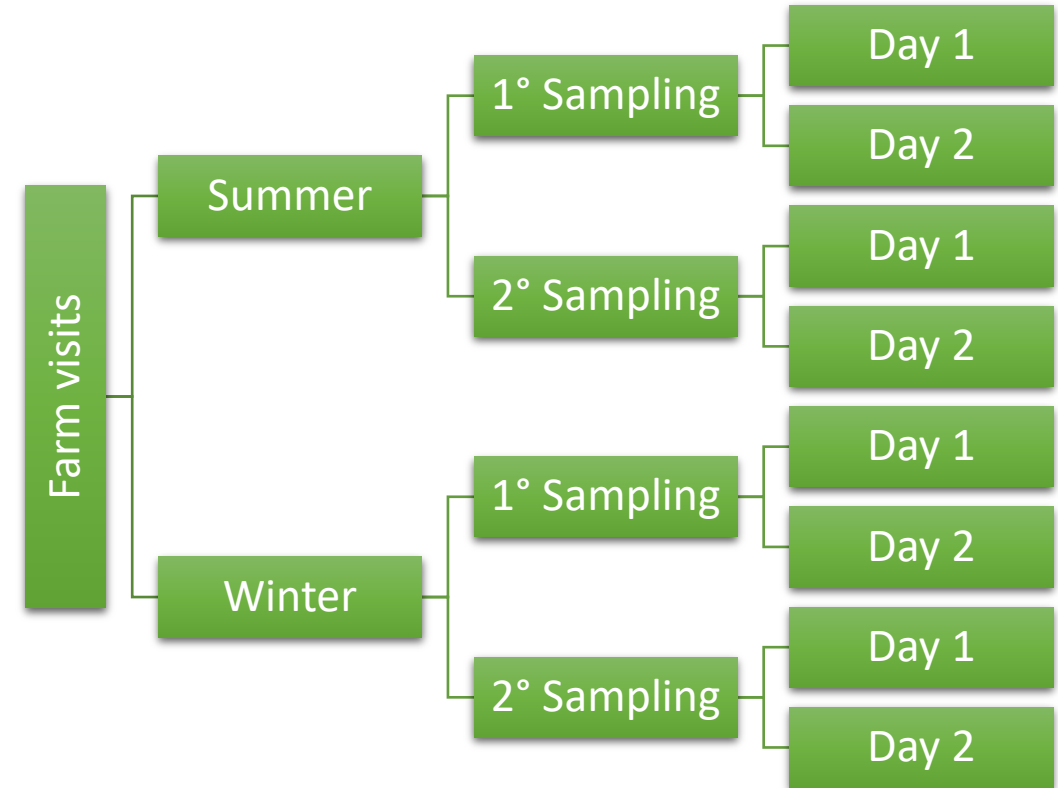
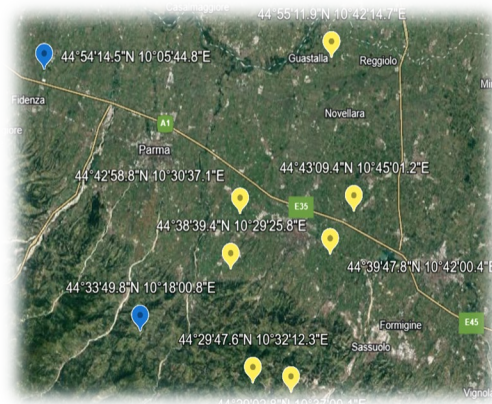




9 farms distributed within the Parmigiano Reggiano production area



75 ± 38 lactating Reggiana cows  
BW: 592 ± 40 kg





## First visit

Data collected:

- **Herd characteristics** (numerosity, parity, BCS and heart-girth circumference)
- **Rearing and housing facilities**
- **Productivity and milk quality**

### Day 1

- ✓ Sampling and weighing of:
  - Hay
  - Fresh forages (summer)
  - Concentrates
- ✓ Acquisition of information about feedstuff ingredients and composition
- ✓ Temperature Humidity Index (THI) data collection

### Day 2

- ✓ Sampling and weighing diet residue;
- ✓ Calculate feed intake data;
- ✓ Collection of 2 bulk milk samples: evening and morning;
- ✓ Mass fecal sampling (30% of the herd) and pH detection.



Feed

+

Milk

+

THI

+

BCS

- Dry Matter;
- Crude Protein;
- Ether Extract;
- Ash;
- Starch;
- Fiber Fractions;
- Digestibility (uNDF).

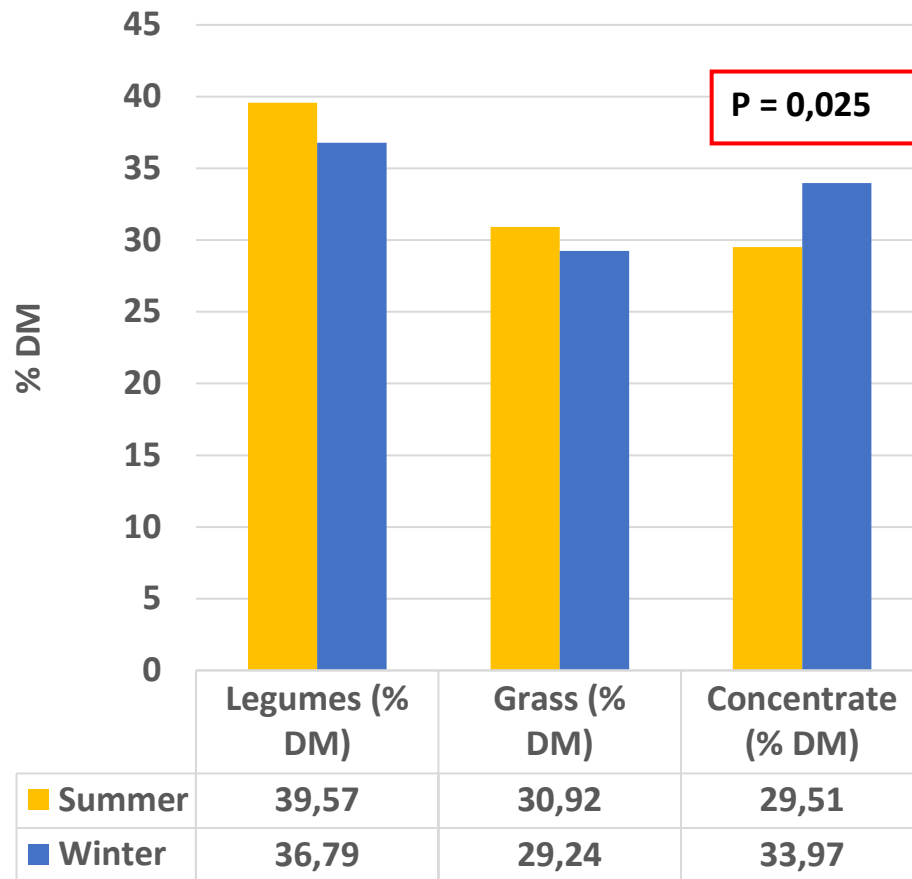
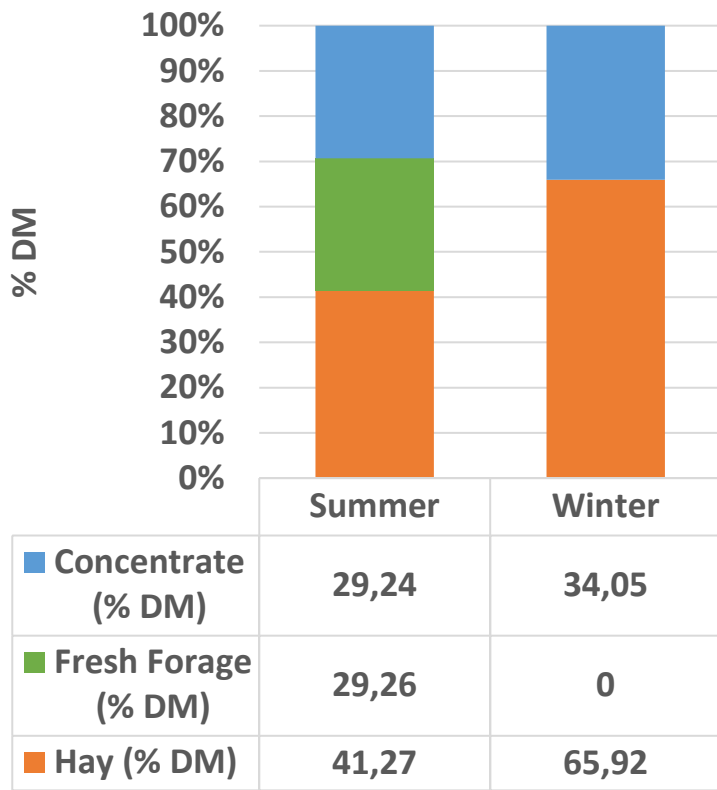
- Quality characteristics
- Rheological characteristics

Dynamic Software

**NDS** PROFESSIONAL  
Powered by **RUMIN**  
NUTRITIONAL DYNAMIC SYSTEMS

Estimation of the overall diet chemical composition:

- Production parameters;
- Greenhouse gas emission parameters.



| (%DM)         | Summer Average | Winter Average | Sig.  |
|---------------|----------------|----------------|-------|
| Crude Protein | 14.21          | 14.70          | 0.247 |
| RDP           | 9.53           | 9.81           | 0.438 |
| RUP           | 4.69           | 4.94           | 0.054 |
| aNDFom        | 42.93          | 41.27          | 0.491 |
| peNDF         | 7.16           | 6.82           | 0.028 |
| ADF           | 28.08          | 27.52          | 0.607 |
| ADL           | 5.33           | 5.64           | 0.235 |
| Sugar         | 7.88           | 6.43           | 0.013 |
| Starch        | 13.99          | 15.54          | 0.023 |
| EE            | 2.41           | 2.47           | 0.609 |



**Temperature Humidity Index (THI)**

**Summer**

**76.9**

**Winter**

**54.1**

**P = 0.043**



|             | Summer<br>Mean | Winter<br>Mean | SEM   | Sig.  |
|-------------|----------------|----------------|-------|-------|
| DMI (kg DM) | 22.14          | 21.09          | 0.492 | 0.102 |
| MY (kg)     | 19.36          | 19.50          | 0.351 | 0.723 |
| ECM (kg)    | 17.804         | 17.956         | 0.602 | 0.899 |
| NUE         | 23.512         | 24.93          | 1.696 | 0.684 |

**Poster session: 90**

**Poster number: 36**

**Title: Effect of diet and  
season on Reggiana dairy  
cattle milk production and  
quality**



|                              | Summer<br>Mean | Winter<br>Mean | Sig.  | Holstein |
|------------------------------|----------------|----------------|-------|----------|
| CH <sub>4</sub> (g/kg milk)  | 23.69          | 21.94          | 0.513 | 16.7*    |
| CH <sub>4</sub> (g/d)        | 444.537        | 434.446        | 0.762 | 501.05*  |
| CO <sub>2</sub> (kg/d)       | 13.130         | 12.623         | 0.623 | 14.23*   |
| CO <sub>2</sub> (kg/kg milk) | 0.690          | 0.650          | 0.567 | 0.470*   |
| NH <sub>3</sub> (g/d)        | 112.313        | 125.259        | 0.683 | 142.45*  |

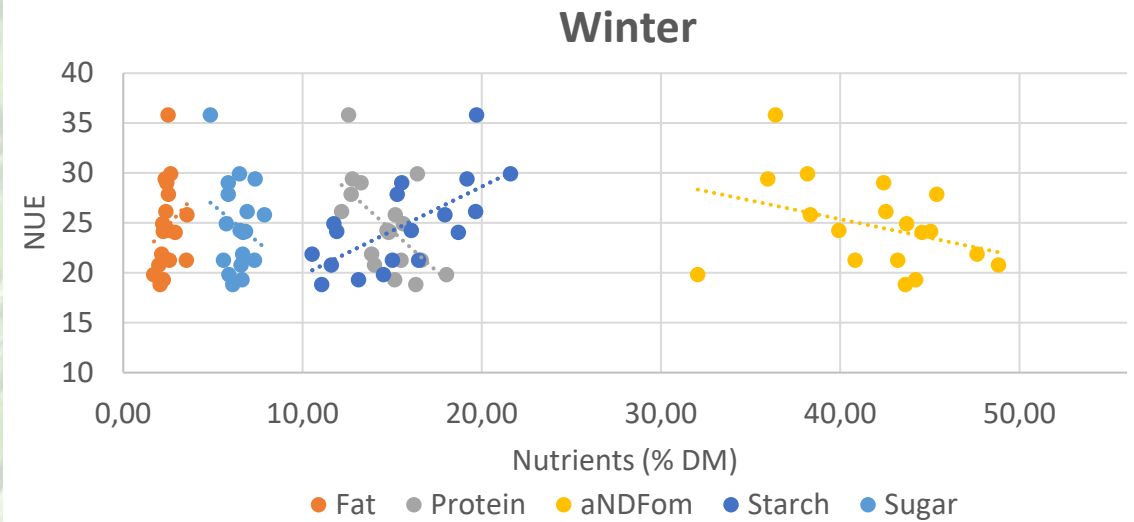
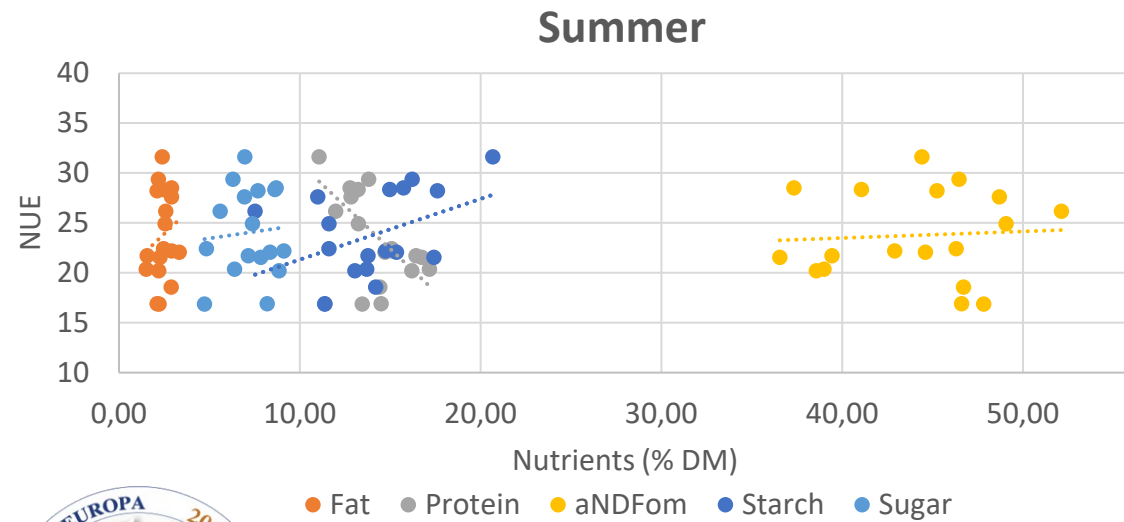
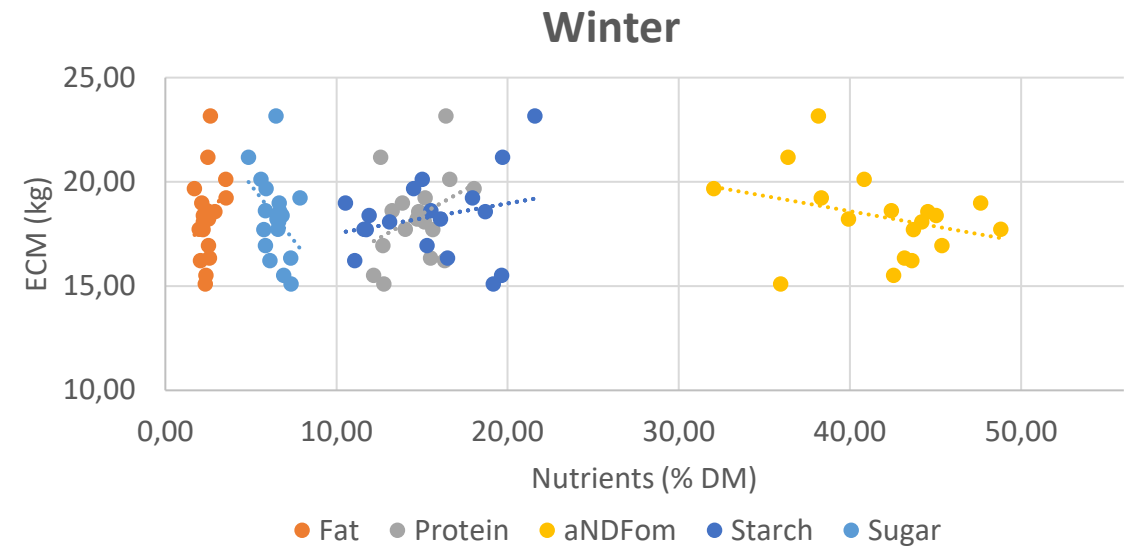
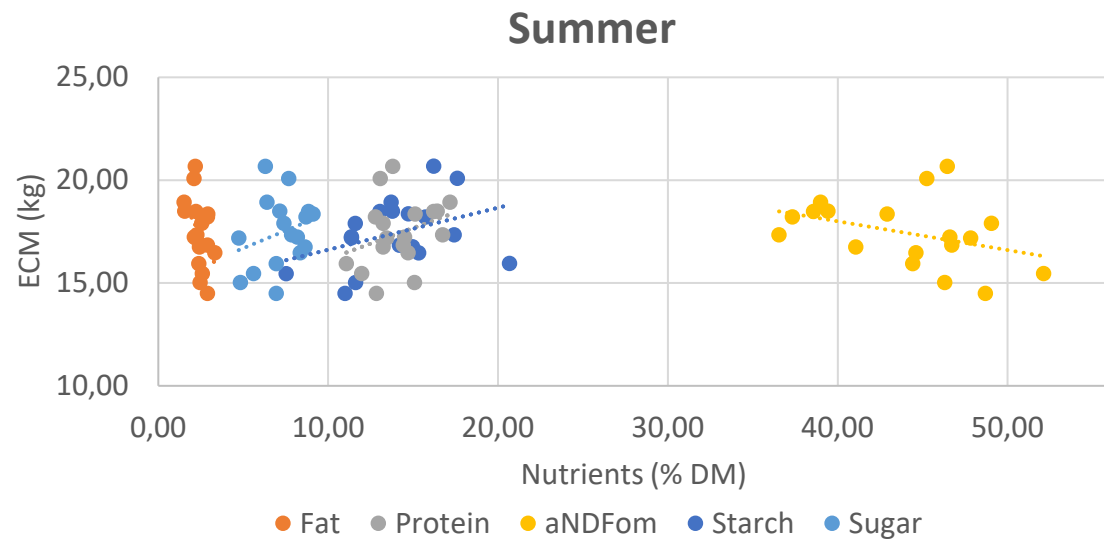
\*Indicative milk yield: 34.42 kg



Results: Environmental parameters

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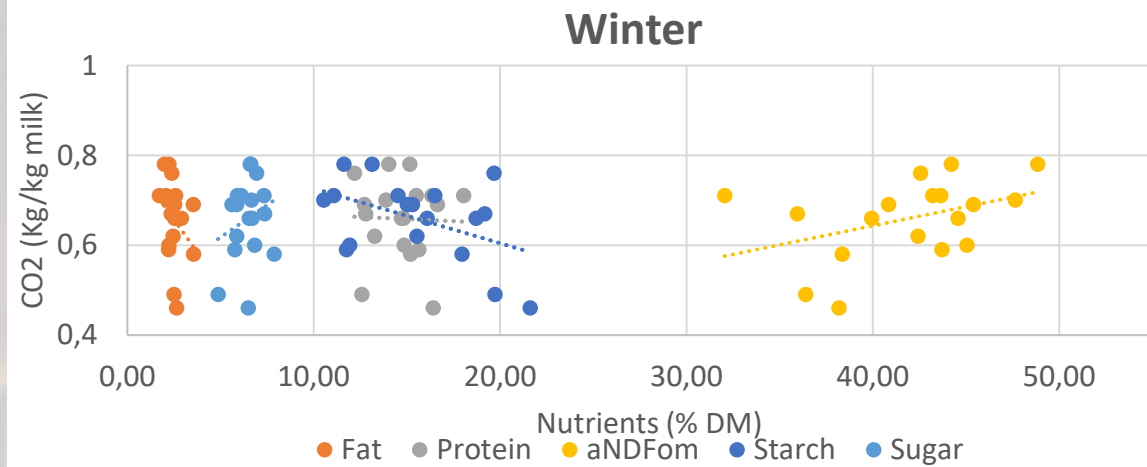
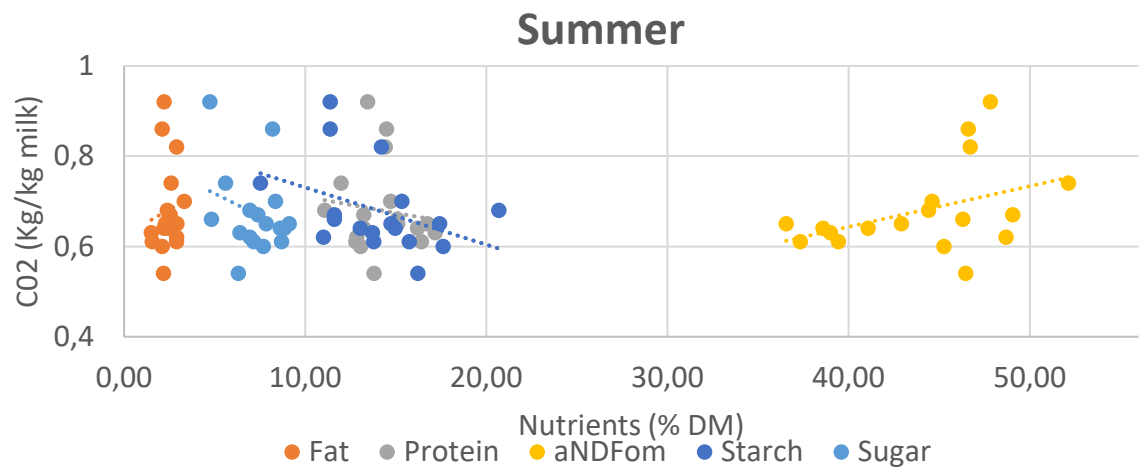
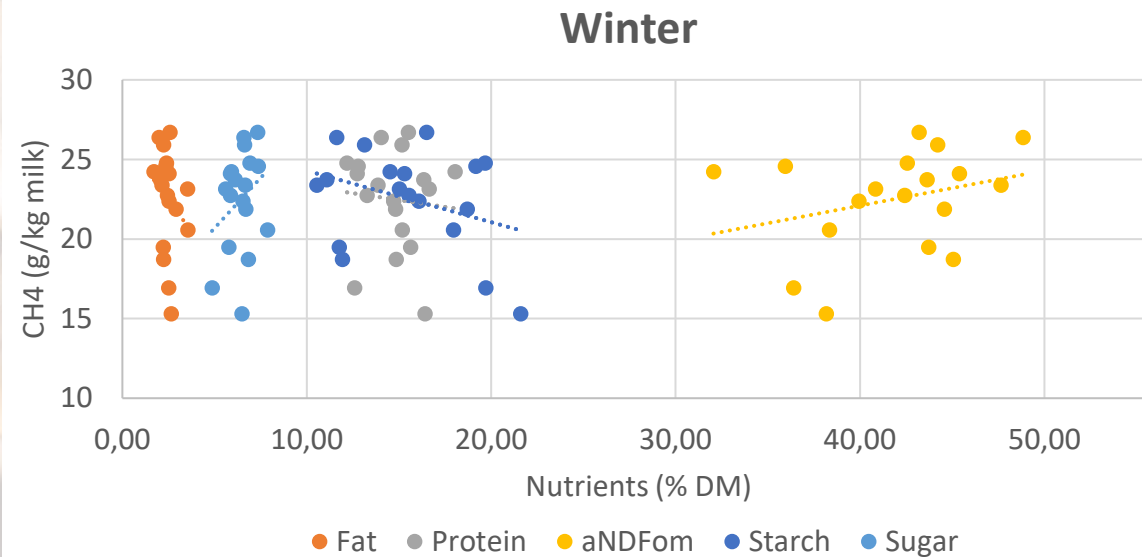
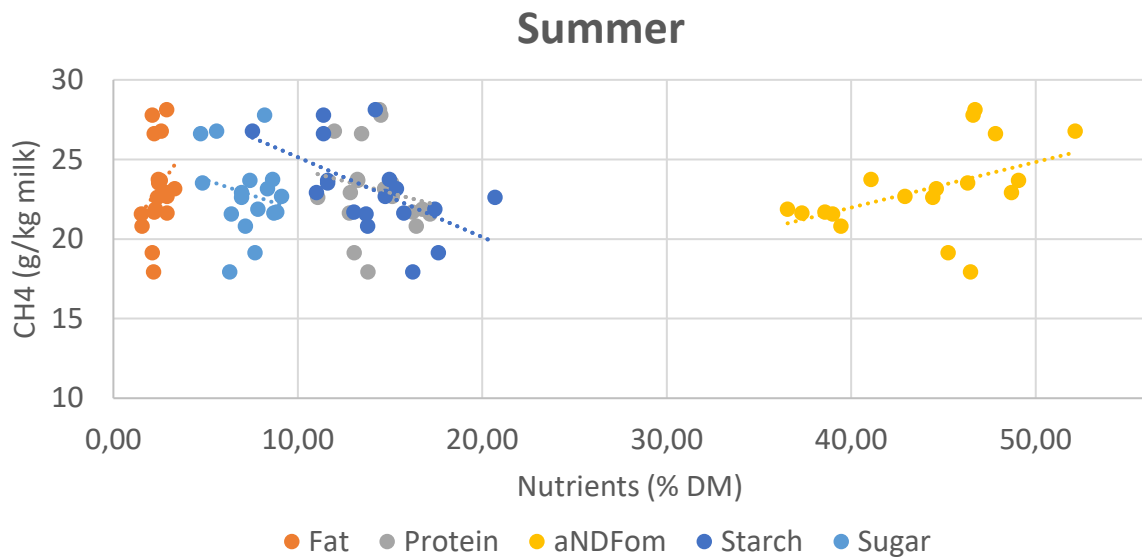




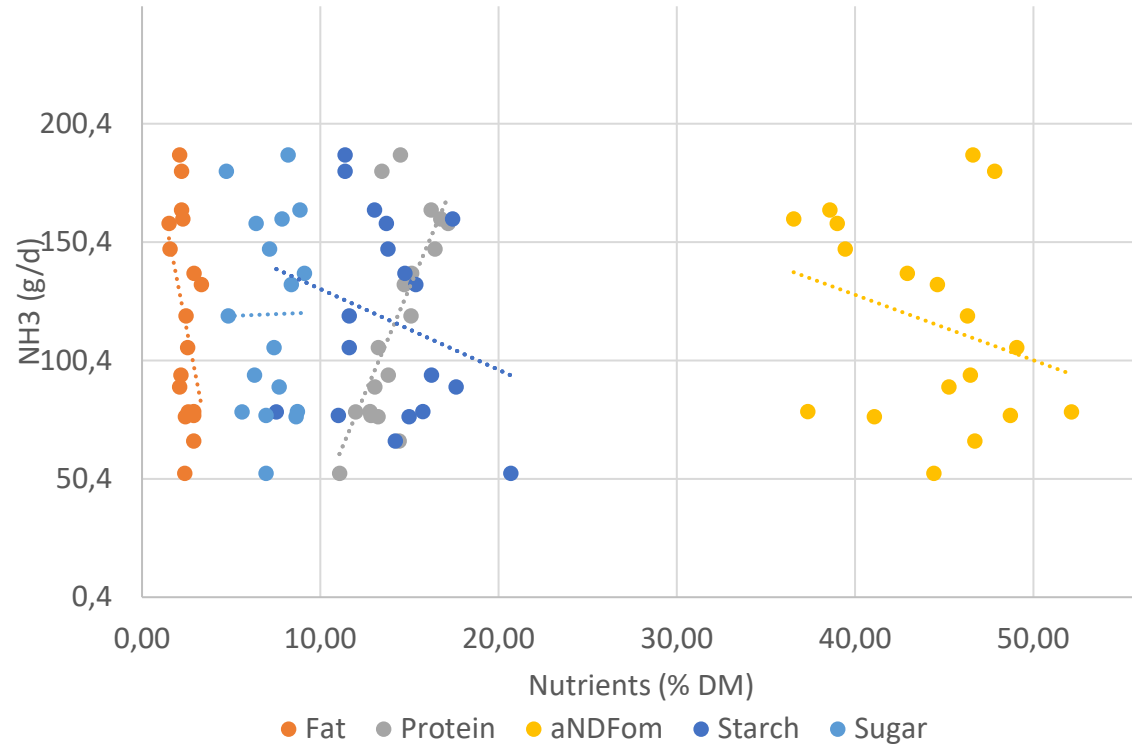
Results: Productive parameters

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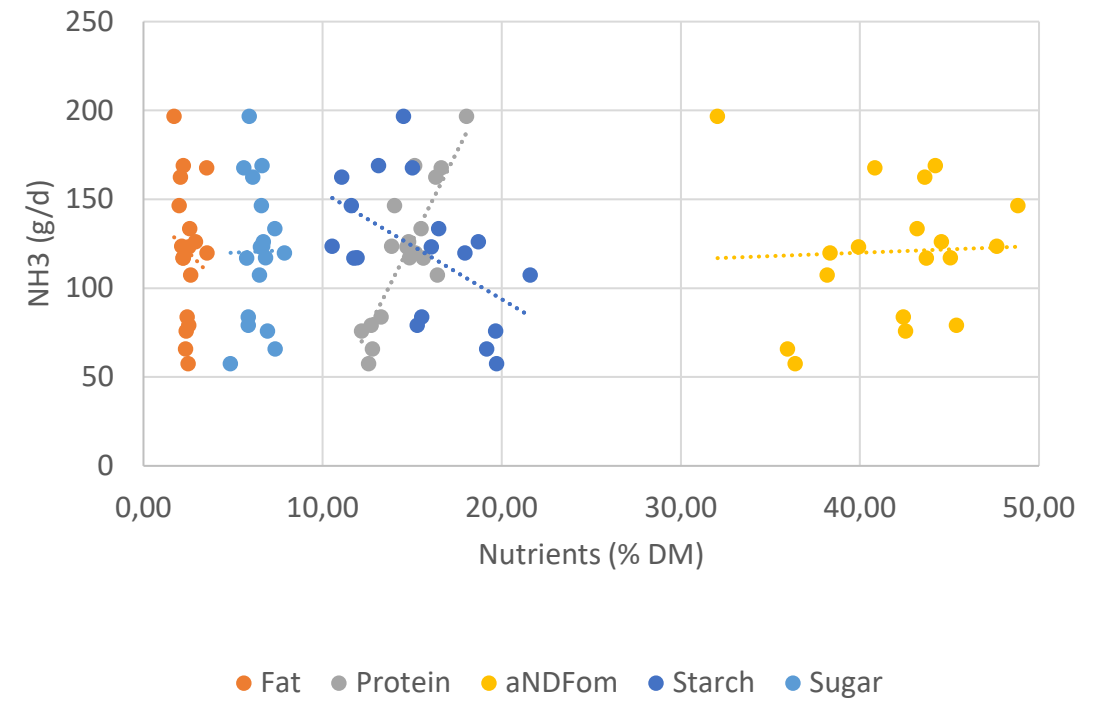




### Summer



### Winter





Replacing the energy component during the summer by using green forages does not affect the production parameters.

Reggiana is rather hardy and less productive animal, and therefore less susceptible to heat stress.



The replacement of a proportion of hay with fresh forages did not affect negatively the estimated gas emissions.





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**Thank you for your attention!**

