



Milena Povoło

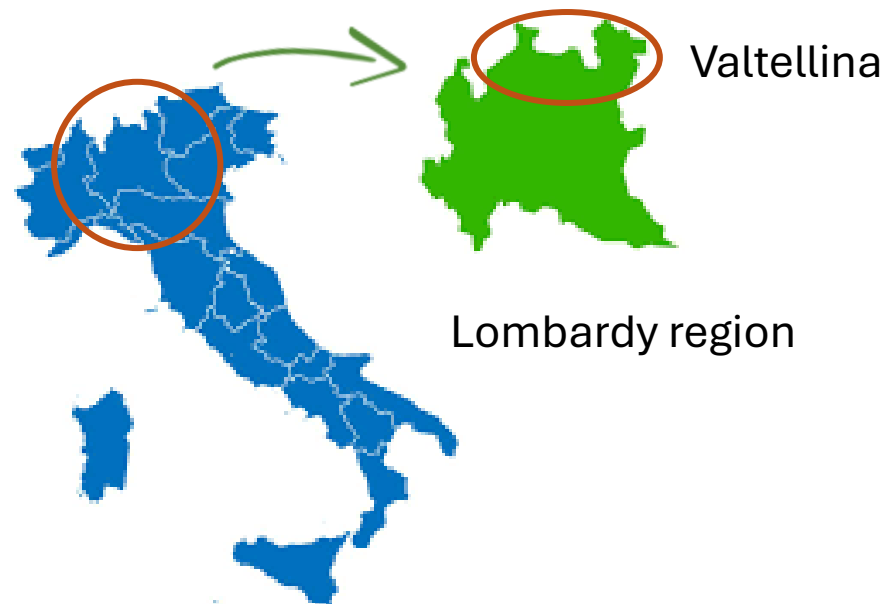


Milena Brasca



Selene Erini

Bitto and Valtellina Casera PDO, innovating while respecting tradition





Since 1995, the Consortium for the Protection of Valtellina Casera and Bitto cheeses has focused on innovation, tradition, quality and environmental, economic and social sustainability.

Both PDOs have been involved in projects co-financed by the European Agricultural Fund for Rural Development.

Bitto



PASCOLIAMO project

Protection of pastures and animal welfare and monitoring of the Bitto dairy supply chain in upper Valchiavenna for sustainable quality production

Valtellina Casera



SIMCA project

Innovative solutions for the improvement of production practices of the Valtellina Casera PDO



PSR
2014 2020
LOMBARDIA
L'INNOVAZIONE
METTERADICI



Regione
Lombardia

characteristics of the two cheeses

Bitto

- ✓ Made from raw cow's milk in the province of Sondrio and neighboring territories of some municipalities in the provinces of Bergamo and Lecco.
- ✓ Animals must be fed only on pasture grass, with a maximum integration of 3kg/cow/day of concentrate.
- ✓ A maximum of 10% goat's milk may be added.
- ✓ The milk must be processed on site within an hour of milking.
- ✓ Whole milk is coagulated with calf rennet, and after cutting to rice-grain size, the curd is heated between 48 and 52°C; extraction, salting (dry or in brine) and ripening (minimum 70 days) follow.
- ✓ Semi-hard cheese.



Valtellina Casera

- ✓ Made from cow's milk in the province of Sondrio, processed in dairies located throughout the territory
- ✓ Semi-fat, semi-cooked, semi-hard cheese.
- ✓ Partially skimmed milk is coagulated with calf rennet, and after cutting to maize-grain size, the curd is heated between 40 and 45°C; extraction, salting (dry or in brine) and ripening (minimum 70 days) follow.





objectives

Expand the study of soil and vegetation of three mountain huts in Upper Valchiavenna (about 1800 m high)

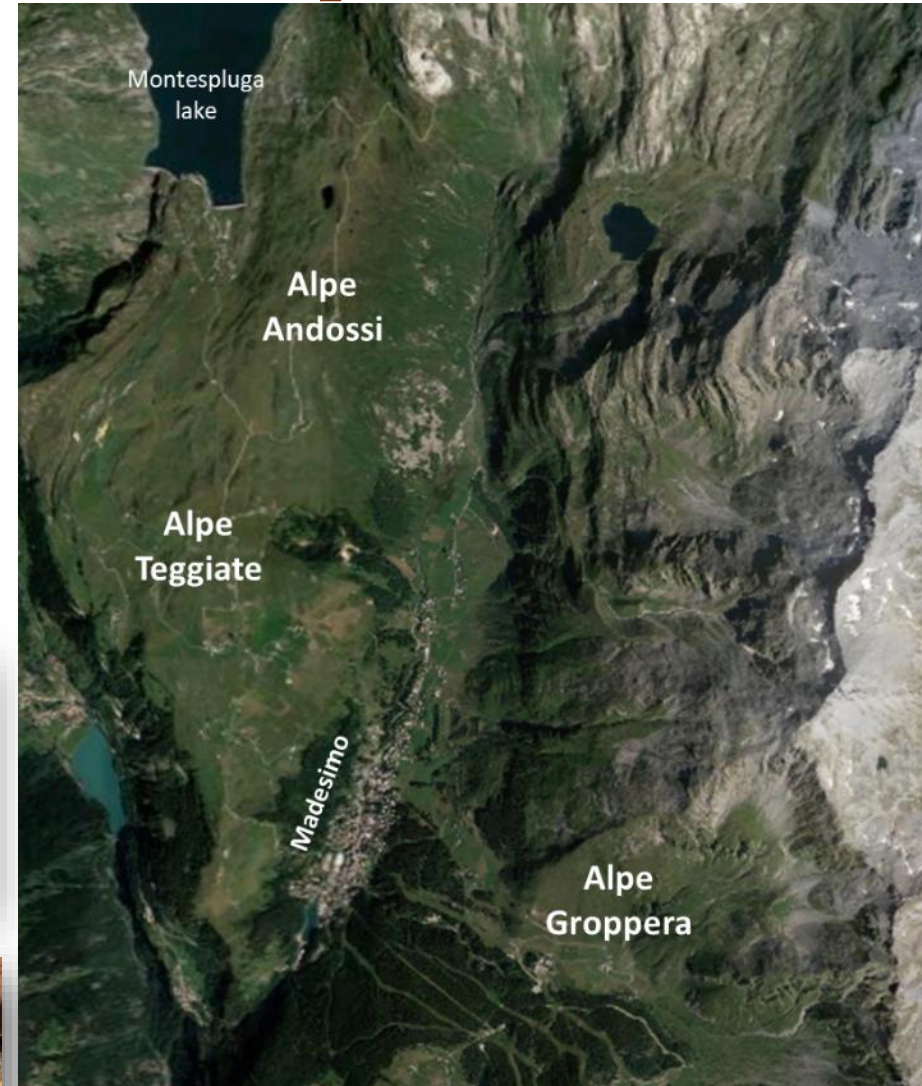
Expand monitoring of pastures and animal behavior

Focus research on milk origin markers, their variability during the season and their suitability as product quality parameters

Provide opportunities for economic development and attract new entrepreneurs into the sector



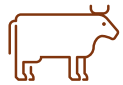
Spluga pass  Switzerland



Highlights



Detailed **maps** of soil and vegetation of three mountain huts in Upper Valchiavenna



Data on **animal behavior** in different pastures



Identification of molecules **marker** of milk origin and of the season variability (e.g. **3-carene**)



Bitto cheese: presence of compounds **marker** of vegetation quality during summer period (e.g. **β -caryophyllene**)



Valtellina Casera



objectives



Provide technical, scientific and operational data for feasible modification of the PDO production rules



Support producers in the adoption of zootechnical and cheesemaking practices useful for the qualitative improvement of Valtellina Casera PDO



Identify solutions to meet some current market demands



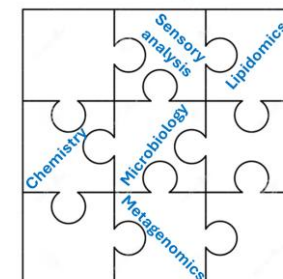
Investigate the influence of some production process variables on the quality and sensory characteristics of the cheese



Influence of some variables on cheese quality attributes

- Raw Milk and Pasteurized Milk
- Use of autochthonous and protective cultures
- Curd pressing times (traditional slow - modern fast)
- Ripening temperature (8 °C – 12 °C)
- Parallelepiped shape (only for cheese intended for further processing, slicing, dicing etc.)
- Cattle breeds (Brown - multirace)
- Expansion of feed production area
- Residual lactose content

Multimomics approach





Valtellina Casera

Highlights

- ▶ The use of **starter is key determinant** of the overall quality of Valtellina Casera.
- ▶ The **autochthonous starter provided positive traits**, especially when ripening took place at temperatures above 8 °C
- ▶ The addition of a **protective culture** to the starter proved effective in counteracting the development of butyric clostridia responsible of late blowing during cheese aging. This approach produced a highly regarded cheese.
- ▶ Cheese from raw milk is characterized by greater intensity of taste and aroma descriptors, differently cheese from pasteurized milk is more appreciated in appearance and connoted by a sweeter taste
- ▶ The **cattle breed, parallelepiped shape, and faster mechanized pressing** do not significantly change the cheese's compositional and quality characteristics
- ▶ The **core microbiota** of Valtellina Casera was identified, and it was evidenced that it is **naturally lactose-free cheese**

Final remarks



Bitto

- ✓ greater knowledge of the complex Alpine ecosystems is essential for their protection and for the valorization of the products that derive from them
- ✓ identification of potential markers in cheese of floristic composition of the pasture and its evolution during the mountain grazing period. This result is promising for the traceability of cheese



Valtellina Casera

- ✓ the results obtained can bring both economic and environmental benefits thanks to the optimization of the process
- ✓ new producers can be encouraged to enter an increasingly profitable PDO supply chain

The entire territory will be able to benefit from the valorization of the DOP and become attractive for young breeders, future investors and gastronomic tourists.



**Thanks
for
your attention**