scientifically valid consumer research. Aim of this study was to set up a labelling scheme to inform about healthy promoting nutrients and environmental sustainability of meat and milk obtained by extensive farming. In our case study, three farms were selected from the Apennine context (Umbria region) with similar marketing strategies (direct sales/long channels) and farming system (extensive). At a first step, a survey was conducted to map the perception of farmers about the added values of their products. Subsequently, the labelling scheme was conceptualized, and a multi-level system approach was adopted in order to transparently show that there are different production and quality standards for a food product. The labelling issues key issues were scientifically validated as follows: (i) health promoting nutrients (e.g. polyunsaturated fatty acids, n-6/n-3 fatty acids ratio, precursors of conjugated linoleic acid) were determined from meat and milk samples according to validated procedures; (ii) sustainable aspects were assessed estimating soil erosion patterns with the Revised Universal Soil Loss Equation (RUSLE), the territorial bipotential (BTC) and coexistence with wildlife (ascertaining the presence of wolves and other wild ungulates). As a final step, we proposed different graphic-text multi-level labels to be used packaging designed to minimize information overload and to emphasize the qualitative characteristics listed above. Further research is needed to focus on the effectiveness of the marketing communication around the labeling scheme proposed, also in order to identify what tools and forms of communication could be more relevant to consumers.

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Characterization of mountain cheese from cows fed Alpine pasture grass by fatty acids composition and multivariate analysis

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Fatty acids (FA) profile of dairy products is related to the livestock production system and to dietary regimen supplied to animals in the farm. Consumers perceive mountain cheese as more healthy and 'natural', is associated with a non-intensive production system linked to local/artisanal traditions. In this study, cheese samples from cows fed Alpine pasture grass collected in two Italian farms were characterized by means of multivariate analysis performed on feedstuffs composition and cheese FA profile. Farm A was characterized by the exclusive employment of grazing in Alpine pastures set at 2000 m asl. In farm B cows were fed daily-cut fresh grass harvested in an alpine valley set at 1300 m asl during the day and supplied with a mix of hay and concentrates during the night, in the ratio grass/mixed ration 65/35. Feedstuffs and cheese samples were collected once a week from July to September. Chemical and FA composition of feedstuffs were analysed by standardized methods. The FA profile of cheese was analysed by GC-FID. Samples collected from different farms were compared by means of non-parametric tests and then Principal Component Analysis was performed based on correlations.

FA profile of the diet consisting exclusively of Alpine pasture grass (farm A) showed a higher content of α-linolenic acid and lower content of linoleic acid compared to the diet in farm B. Cheese collected in farm A showed a FA profile enriched in odd and branched chain FA $(4.40 \pm 0.20\%)$, MUFA $(34.05 \pm 1.08\%)$ and cis9trans11 CLA $(1.49 \pm 0.07\%)$, positively correlated to the amount of NDF, ADF, palmitoleic acid and α-linolenic acid in the feedstuffs. Cheese collected in farm B showed a FA profile enriched in n-6 FA $(3.18 \pm 0.15\%)$, mainly linoleic acid $(2.81 \pm 0.14\%)$, and SFA $(67.40 \pm 0.87\%)$, particularly the medium chain lauric $(4.03 \pm 0.15\%)$, myristic $(12.16 \pm 0.29\%)$ and palmitic acid $(29.60 \pm 1.23\%)$, positively correlated to the amount of stearic, oleic and linoleic acid and negatively correlated to the amount of NDF in the ration.

Differences were detected among cheese samples collected in farms where cows were fed exclusively Alpine pasture grass or integrated with forage and concentrates. However, all cheese samples analysed were characterized by a high nutritional quality FA profile due to the bovine consumption of fresh grass, thus supporting consumers' appreciation toward mountain products.

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Nutritional profile of Ager cheese selection

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