Economia agro-alimentare /
Food Economy
An International Journal on Agricultural and Food Systems
Vol. 27, Iss. 2, Art. 6, pp. 163-193 - ISSNe 1972-4802
DOI: 10.3280/ecag2025oa18773

The implementation of EU Optional Quality Term "Mountain Products" in Italy: Challenges and opportunities for the food sector in rural mountain areas

Sara Bispini[*,a], **Riccardo Ievoli**[b], **Mauro Conti**[c], **Angelo Belliggiano**[a]

[a] University of Molise, Italy
[b] University of Ferrara, Italy
[b] University of Calabria, Italy

Abstract

The Optional Quality Term (OQT) "Mountain Product" aims to promote mountain food products. This term can be beneficial for the economy of mountain regions, as it allows them to distinguish their products and can protect consumers from fraud, counterfeiting or agro-piracy. This study has two main objectives: to assess how farms that have adopted the label perceive their limitations and to analyse the reasons for these limitations and provide policy recommendations to strengthen the use of OQT. The study involves a survey of agri-food companies that have adopted the label, with data collected through a questionnaire. Although existing research indicates that consumers generally prefer mountain products and perceive them as higher quality, producers report that consumer awareness of the OQT is still low. It appears essential to improve communication with both producers and consumers on the economic, social and environmental benefits of the 'mountain product' label. Producers need support to integrate the label into their business strategies, while consumers should be informed about the ethical and social responsibility linked to the OQT.

Article info

Type:
Article
Submitted:
02/11/2024
Accepted:
26/06/2025
Available online:
08/08/2025

JEL codes:
O18, Q13, Q18

Keywords:
Optional Quality Term
Mountain Products
Rural development
Food products
Food differentiation practice

* *Corresponding author*: Sara Bispini - Department of Agricultural, Environmental and Food Sciences - University of Molise, Campobasso, Italy. E-mail: sara.bispini@gmail.com.

Introduction

Mountain areas cover 36% of the European surface area, host 13% of its population and 18% of farms (Euromontana, 2024), constituting an important resource reservoir for human activities (Bonadonna *et al*., 2022), ensuring the provision of ecosystem services and public goods for downstream areas (Moretti *et al*., 2023; Gupta *et al*., 2021) and, in general, of positive externalities (Bentivoglio *et al*., 2019a; McMorran *et al*., 2015).

Mountain agriculture contributes to the production of public goods and ecosystem services with small farms (Zuliani *et al*., 2018) that, compared to the lowland ones, present lower yields and a lack of economic sustainability (Mazzocchi *et al*., 2021a). The cause should be found in the environmental and climatic constraints of the mountain areas themselves (Zuliani *et al*., 2018; Tebby *et al*., 2010), which lead to higher production costs, as well as in the lack of a shared strategy and in structural barriers that hinder access to markets. In fact, in the 2014-2020 EAFRD programming, on which this contribution is focused, in the Regulation (EU) No 1305/2013, art. 32, it is said that mountain areas are characterised by "a considerable limitation of the possibilities for using the land and by a considerable increase in production costs, due to (a) the existence of very difficult climatic conditions due to altitude, resulting in a significantly shortened growing season; (b) the existence over the greater part of the territory of steep slopes making mechanisation impossible or requiring the use of very expensive special equipment, or a combination of the two factors". In addition to climatic and orographic specifics, mountain areas are increasingly subject to endogenous and exogenous threats, such as demographic dynamics and climate change (Scotti *et al*., 2023; Gupta *et al*., 2021; Wyss *et al*., 2022), which undermine their resilience. According to the recent report of the EU CAP Network (Competitive and resilient mountain areas, 2024), mountain areas are subject to a multiplicity of challenges, ranging from economics (high production costs and challenging conditions; lack of information and advisory services; barriers to access the agricultural markets; abandonment of agricultural activities; over-tourism), to social (ageing; education; lack

of specialised expertise), to environment (climate change; environmental degradation), and governance (lack of common and long-term strategy; infrastructures). Opportunities could be found in diversified incomes resulting from the development of new technologies in the field of ICT (Committee of the Regions, 2003). Furthermore, among the economic opportunities for mountain areas, the EU CAP Network report (2024) mentions mountain products (MPs), as their quality is being progressively recognised by consumers and their market share is growing, asserting that a stronger certification system could be an opportunity to strengthen consumers' trust.

In literature, there are many studies concerning the reaction of mountain communities to challenges and how they implement actions to strengthen their resilience (Ingty, 2017; Gupta *et al.*, 2021; Schneiderbauer *et al.*, 2021; Stotten *et al.*, 2021; Scotti *et al.*, 2023). Among these, a fair number of contributions (among others, Martins *et al.*, 2017; Mazzocchi *et al.*, 2021a; McMorran *et al.*, 2015) focuses on the opportunities offered by the Option Quality Term (OQT) Mountain Product designed by European Commission in 2012 adopting Regulation No. 11151/2012, and the Delegated Regulation No. 665/2014.

Although the OQT was established only in 2012, in 2005 Euromontana[1] presented to the European Parliament the European Charter for Mountain Quality Food Products, signed by 69 members from 12 European countries. The Charter focuses on promoting sustainable development in mountain areas regarding agriculture and food products and it is aimed at: a) Promoting the acknowledgment of the significance of developing mountain food products for both mountain regions and the entire European population; b) Specifying the fundamental principles that define mountain food products; c) Identifying the specific types of quality products that should be supported in their development; d) Determining the types of projects or initiatives that should receive support to further the objectives of the Charter (Euromontana, 2016). Finally, in 2012, the EU Commission settled out the so-called "Quality Package", whose aim is to overcome the market failure and reduce the risks of asymmetric information, creating food policies to protect the denomination of specific food products (Staffolani *et al.*, 2022; Mazzocchi *et al.*, 2021a). Among the "Quality Package", the EU Regulation No. 1151/2012 provides for the creation of the new optional Quality Terms "Mountain Product" and "Products from Island Farming", and the criteria for their use were then established in the Delegated Regulation 665/2014.

The OQT is aimed at agri-food products (milk and dairy products, eggs, meat products, honey, and plants, excluding spirit drinks, flavoured wines,

1. The European association for mountains.

or vine products), except for wine vinegars, due to the specific regulations and requirements governing these categories of products. According to EU Regulation 1151/2012, both raw materials and animal feed should come essentially from mountain areas. This regulation also sets the rules for the production processes of mountain products, specifying that they must take place within mountain areas, as referred to in Article 18(1) of Regulation (EC) No 1257/1999. According to Delegated Regulation 665/2014, Member States can adopt a derogation for the distance from mountain areas (maximum 30 km), that is, defining the number of kilometres of distance from areas considered to be 'mountain' in which the production of mountain products can take place. In addition, the Delegated Regulation calls on the Member States to monitor the use of OQT, set up a control scheme, define procedures for farmers, and allow them to adopt it. Furthermore, Member States can decide to design and use a national logo.

An Euromontana study on the implementation of the OQT (*Implementation of the EU Optional Quality Term "mountain product". Where do we stand in the different Member States?),* referring to the adoption of the OQT at national level, states that there are three types of Member States: the ones which are directly applying the EU regulation (Austria), the ones which are in the process of adapting their national laws to the EU regulation (France, Germany, Italy, Romania, Slovenia, Czech Republic, Bulgaria, Croatia) and those which have not yet adapted their national laws (Portugal, Spain, UK/Scotland, Greece, Cyprus, Slovakia, Poland, Finland and Sweden) (Euromontana, 2020).

This paper focuses on the second group, analysing and interpreting the Italian case, to understand how European regulations have been adapted and how it deals with the term through the adoption of rules and derogations relating to its use, as well as the control and support system provided. This contribution, therefore, aims to pursue three specific objectives: a) to explore the perception of the limits of the term experimented by farmers and producers that have adopted it; b) to analyse the limitations regarding the diffusion and/or implementation of OQT, and c) to analyse the causes of these limits to provide useful policy guidelines to strengthen the adoption of OQT by mountains operators (farmers and processors) by enhancing mountain products exploiting their potential for mountain economies. To this end, the paper proposes an analysis of the literature on the certification of mountain products, followed by a focus on Italian legislation, since, as specified above, the proposed case study concerns the Italian situation. The Materials and Methods section presents the methods of the survey conducted on the universe of Italian firms using OQT. Then, a multinomial (logistic) regression analysis was carried out to focus on the limits in the implementation of OQT. The analysis revealed, above all, territorial and sectoral limits and/or

differences, which has suggested a repositioning or new orientations of the policies aimed at enhancing the value of mountain products.

1. Background

Analysing academic literature, the interest in the mountain product term, although begins to grow, it would still seem to neglect this important form of product differentiation, perhaps also due to the refractoriness shown by mountain farmers and food processors and/or due to delays in implementing the regulation by most member countries.

There is instead wide evidence in the literature that the economy of mountain areas can benefit from the introduction of OQT (Zanchini *et al.*, 2023; Mazzochi *et al.*, 2021a; Martins *et al.*, 2017). This brings benefits both in business terms, which are directly reflected in the territory and its economy, and in terms of consumption.

The adoption of the mountain term can protect consumers from fraud, counterfeiting or agropiracy (Cagnina *et al.*, 2018), supporting the local economies of rural mountain communities (Bonadonna *et al.*, 2017), and protecting also the uniqueness related to the areas of origin, traditional knowledge and practices they embed (Bassi *et al.*, 2022; Bonadonna *et al.*, 2015; Zanchini *et al.*, 2023). The increase and consolidation of the demand for mountain products can therefore contribute significantly to the reduction of unemployment in those areas, stemming the phenomena of depopulation, exacerbated by youth migration, to the extent that the unexpressed market potential of mountain products can be unlocked through the OQT, which could increase the added value generated by farms (Staffolani *et al.*, 2022; Mazzocchi *et al.*, 2021b; Martins *et al.*, 2017; Zuliani *et al.*, 2018).

The maintenance of mountain agriculture and entrepreneurship would allow the production of ecosystem services, of which lowland communities can also benefit. At the same time, the promotion of the OQT and the subsequent increase in demand can mainly lead to two types of consequences for the territory. The first one is related to the benefits that the label could bring: an improved demand for mountain food products could support and incentive farmers and producers and contribute to the development of the areas, ensuring local production and delivery of mountain foodstuffs (Zanchini *et al.*, 2023; Mazzochi *et al.*, 2021a; Martins *et al.*, 2017). The second one, instead, is related to the risk that a huge increase can negatively affect natural resources, for example, through intensive management of grassland.

Looking at them from the consumer side, mountain products have specific characteristics that make them attractive for consumers, who perceive their

quality and are willing to pay for it. In the common imagination, mountain regions are linked to positive images of green valleys, clear waters, purity, authenticity, unspoiled nature, and well-being (McMorran *et al.*, 2015; Stiletto *et al.*, 2023; Mazzocchi *et al.*, 2021a). These characteristics are also included in foodstuffs produced in these areas, which, from the consumers' view, gain attribute 'quality'. Hence, consumers appreciate the mountain product as it represents all the elements they desire in mountain food products: taste, nutritional excellence, safety, attractive flavours, diversity, and high-quality ingredients. Moreover, it captures their personal motivations and positive associations linked to consuming mountain foods, including health benefits and enjoyable aspects (Bassi *et al.*, 2021). Furthermore, the mountain product is perceived as "place embedded", as it is easier to purchase in local artisan shops and mountain farms than in speciality shops and urban supermarkets. When assessing consumers' willingness to pay for mountain products, it emerged that consumers are effectively willing to pay a premium price for such products, the purchase of which is influenced by a series of variables (Bonadonna *et al.*, 2016; Zanchinj *et al.*, 2023) such as, for example, the sensory and organoleptic characteristics of the products, the mood and positive thoughts associated with the mountain as a place of production (Staffolani *et al.*, 2022; Bonadonna *et al.*, 2016), as well as the attention to animal welfare and the territorial valorisation (Mazzocchi *et al.*, 2021a).

A crucial role is also played by mountain agriculture, which, although exposed to higher costs due to the extreme conditions, guarantees a high-quality finished product, thanks also to processing methods and certain physical characteristics of the area. Despite the challenges, mountain agriculture is still able to penetrate niche markets (as mountain products are considered to be) and short supply chains (Oostindië *et al.*, 2010; De Rubertis *et al.*, 2024; Bonadonna *et al.*, 2022), bringing higher profit margins for producers and contributing to the development of the region (Zanchini et al, 2023).

Despite the positive aspects and benefits that mountain products can bring to mountain areas and consumers, the term shows some weaknesses. The main ones are related to the lack of communication of the label and to its improper use. In some cases, products are marketed as 'mountain' that do not comply with EU legislation in this regard, taking advantage of the positive image of mountain areas and all their characteristics. This can lead to adverse selection risks, which devalue authentically mountainous products and value those obtained from less extreme areas, reducing the potential market advantage of mountain products (Akerlof, 1970). In most surveys conducted, farmers complain that even if consumers perceive a positive image of mountain products (Bonadonna *et al.*, 2017; Mazzocchi *et al.*, 2021a), there is a low level of knowledge about the OQT and the

characteristics of products (Bentivoglio *et al.*, 2019b). To overcome the problem and exploit the label's potential, it should be communicated in a widespread manner, aiming at fostering consumers' awareness. On the other hand, institutions can act strengthening the importance of the origin of agri-food products in the collective imagination (Bonadonna *et al.*, 2022). In addition, it emerges that the derogation to a maximum distance limit of 30 km for transformation phases constitutes a weakness for the mountain products, as it allows transformation outside the mountain area (Bonadonna *et al.*, 2017): this is not in line with most producers' philosophy, according to which all activities must be carried out in mountain areas. These differences lead one to consider the OQT as an excellent alternative in policies of qualification and strategic differentiation of agro-alimentary products where other quality certifications are not available or in cases where they do not effectively reflect the specific characteristics of the territory, as in the case of Caciocavallo cheese in some Apennines regions (Moretti *et al.*, 2023).

1.1. *The Optional Quality Term Mountain Product in Italy*

In Italy, EU Regulation 1152/2012 has been implemented by Decree of the Ministry of Agriculture, Food and Forestry (now Ministry of Agriculture, Food Sovereignty and Forestry) No. 57167/2017, through which the EU Regulation has been adapted to national law and conditions of the use of the OQT, derogations, the national logo (Figure 1) and control schemes have been established. Subsequently, with the adoption of the Ministerial Decree of 20 July 2018, guidelines for animal feeding and conditions for the use of logos were established.

Figure 1 - Italian logo for OQT 'mountain product'

Source: Ministry of Agriculture, Food Sovereignty and Forests.

Italy has established a 30 km derogation for all activities outlined in Delegated Regulation; with regard to controls, it is established that producers are controlled only after they started to use the OQT (by the Department of Central Inspection for the Protection of Quality and Suppression of Fraud in agri-food products or ICQRF), and they have to ensure the traceability of both raw materials and animal feed used. Monitoring and control are assigned to the Regions, which are responsible for the authorisation for use. Producers must apply for authorisation to use the OQT by filling out a form with the region in which they intend to carry out their activity. Then, each Region should fill and update a list of producers using the OQT and send it to the Ministry every six months, to be published on the official website (Scaglioni *et al*., 2024).

2. Materials and Methods

Data collection of this work is to be included in the framework of the Horizon 2020 project Mountain Valorisation Through Interconnectedness And Green Growth project (MOVING), in particular in the analysis that AREPO (Association des régions européennes des produits d'origine), in collaboration with Euromontana and Highclere Consulting (HCC), carried out on the implementation of the EU OQT 'mountain product' (Scaglioni *et al*., 2024). The survey has been carried out through the administration of a questionnaire in Italy, Romania and France, but significant responses were only obtained from Italy and Romania, as both have regional (Italy) and national (Romania) databases through which a list of producers to contact can be traced. In France, on the other hand, having no register or list, it was almost impossible to contact the operators.

To achieve the research objectives, this paper refers to the Italian situation, so it exclusively takes into account the replies recorded for Italian producers.

The questionnaire is divided into five main sections:

A. Contact details, aimed at obtaining information on the location (region) of the producers.
B. Data on registered users, aimed at obtaining information on the type of activity, number of animals, UAA and product categories, as well as on the use of quality schemes and the value of production.
C. Knowledge of the OQT 'mountain product' aimed at investigating knowledge and motivation to join the scheme.
D. Access to the scheme, aimed at evaluating any kind of costs, controls and assistance.
E. Evaluation of the practice. In this section, operators were asked what the major obstacles were in the promotion and distribution of mountain

products and to provide recommendations on how to improve these aspects. Among others, they were asked what could be improved in general about the OQT, whether it is necessary to proceed with the promotion of mountain products through territorial promotion policies and, finally, to provide suggestions to the public administration. The answers to these questions were open-ended and optional, and so it was possible to create clusters into which these answers could be merged.

Therefore, the survey was conducted on the universe of Italian agri-food business that have adopted the OQT and are enrolled in the regional registers managed by MASAF (Italian Ministry of Agriculture, Food Sovereignty and Forestry). The questionnaire, which included both multiple-choice questions and open-ended answers, made it possible, on the one hand, to collect information about the structure of the farms involved, the type of production, etc., and, on the other hand, to give farmers and producers the opportunity to express their opinion on the subject.

Producers were reached by certified e-mail in April and May 2023. The questionnaire was sent to the whole list of producers, amounting to 1202, but it was completed by only 150 of them, corresponding to an acceptable coverage of 10% of the universe surveyed.

The data were first analysed through a descriptive analysis, aimed at investigating the location of the companies, the type of production and product, and the volume of production and revenue obtained with the OQT. The first qualitative analysis conducted, even if it allows the achievement of the established objectives, shows its limits, which can be seen, for example, in the interpretation of the producers' answers (difficulty in creating clusters based on open answers) or in the absence of specific quantitative data relating to mountain agriculture. This led to the choice of a quantitative statistical analysis to understand the limitations experienced by the operators (section E of the questionnaire) and the dependence of these limits on a series of variables and conditions investigated in the questionnaire. To this aim, a multinomial regression model with a polytomous response variable was used (Agresti, 2013).

The model allows the assessment of the probability that a specific variable causes a specific limit to appear. In this regard, 4 classes of limits are organised after the first descriptive analysis (1. costs and logistics; 2. low product valorisation; 3. poor brand recognition by consumers; 4. weak communication and promotion by Public Administrations). The independent variables considered are listed in Table 1 below and deal with the geographical area where the business is located, type of activity, membership of Geographical Indications, type of product, value and percentage of production obtained using the OQT.

Table 1 - Variables and characters

Variables	Characters
Geographical area[2]	South & Islands
	Centre
	North-west
	North-east
Type of activity	Primary production
	In-farm processing
	Off-farm processing
Adhesion to a GI	Yes
	No
Product category	Fresh meat and meat products
	Milk, cheese and other dairy products
	Other products of animal origin
	Fruit, vegetables and cereals, fresh or processed
	Honey and other bee products
	Bread, pastry, cakes, confectionery, biscuits and other bakery products
	Fresh fish and fish products
	Other
Value of production using the OQT	0-10.000€
	11.000-20.000€
	21.000-30.000€
	31.000-40.000€
	41.000-50.000€
	51.000-60.000€
	61.000-70.000€
	71.000-80.000€
	81.000-90.000€
	91.000-100.000€
	>100.000€
Share of production obtained using the OQT	Integral (100%)
	Relevant (99-50%)
	Partial (<50%)

Source: Own elaboration.

2. South & Islands: Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna. Centre: Toscana, Umbria, Marche, Lazio. North-west: Piemonte, Valle d'Aosta, Lombardia, Liguria. North-east: Autonomous Provinces (P.A.) of Trento and Bolzano, Veneto, Friuli Venezia Giulia, Emilia Romagna.

3. Results

The results were first analysed about the number of holdings in a given territory, the type of production and the profits from the use of the OQT, in an attempt to understand the farmers' and producers' actual possibility of deriving greater value from their production through its use.

According to the database available on the Ministry website, in Italy there are (early 2023) 1202 farms using the OQT (Table 2), allocated in 16 out of 20 regions (surprisingly, it is not used in Molise, Campania and Umbria, but also in Puglia).

Table 2 - Regional distribution of OQT adoption

	Farms and processing companies using the OQT	**Completed questionnaires returned**	**Survey coverage**
Piemonte	462	58	12,55%
Basilicata	181	5	2,76%
Emilia-Romagna	142	22	15,49%
Abruzzo	80	4	5,00%
Lombardia	77	15	19,48%
Friuli-Venezia Giulia	72	7	9,72%
Veneto	60	10	16,67%
Toscana	52	8	15,38%
Valle d'Aosta	18	7	38,89%
P.A. Trento	13	4	30,77%
Sardegna	10	3	30,00%
Calabria	9	2	22,22%
Marche	6	1	16,67%
Sicilia	6	1	16,67%
Lazio	5	0	0,00%
Liguria	5	3	60,00%
P.A. Bolzano	4	–	–
Campania	–	–	–
Molise	–	–	–
Puglia	–	–	–
Umbria	–	–	–
	1202	150	12,48%

Source: MASAF, ISTAT, and own elaboration.

The Region with the highest number of farms using the OQT among the total number of farms is Piemonte, with a percentage of 0.98%, followed by Valle d'Aosta (0.73%). While for Valle d'Aosta this percentage is explained by the small number of farms in the region, for Piemonte region a higher incidence is observed, due, on the one hand, to the size of the mountain territory, which covers more than 40% of the entire surface area, and, on the other, to the measures and initiatives promoted by the Region. Indeed, with its 2014-2020 Rural Development Program (RDP), Piemonte has sought to favour, to qualify its mountain productions, the diffusion and use of the mountain product indication by providing a series of bonuses for the use of the OQT. Specifically, these are Measure 4 - Investments, Sub-measure 4.1 - Support for investments in agricultural holdings and Measure 6 - Young diversification, Sub-measure 6.1 - Start-up premiums for young farmers. It should also be noted that the same farm can apply for the use of OQT for more than one production chain (Bonadonna *et al*., 2020). The specific attention paid by Piemonte to the differentiation of mountain agri-food products, although the incidence of mountain territory is significantly lower than that of other regions (such as Molise and Umbria), denotes a broader and more inclusive vision, more attentive to the strategic potential of rural mountain areas whose development cannot but be centered on the valorisation of agri-food production through product differentiation strategies.

To assess the strategic value attributed by the companies to the OQT, the sample has been stratified based on the following three variables:

1. Ranges of revenues obtained from production with the OQT (Table 3);
2. Type of production (primary production, on-farm processing, off-farm processing);
3. Percentage of production itself obtained using the OQT (integral = 100% of production using OQT; relevant = 99-51% of production using OQT; partial = <50% of production using OQT).

A preliminary descriptive analysis was therefore conducted by considering the variables simultaneously:

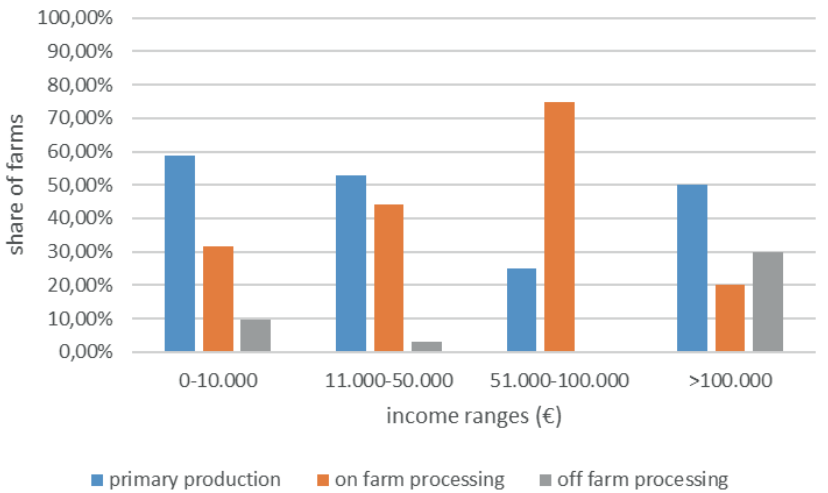
- Type of production and income ranges (Figure 2);
- Income ranges based on the percentage of production obtained using the OQT and divided by type of production (Figure 3).

Table 3 - Percentage of farms that use OQT by income range obtained from it

Revenue Ranges (€)	Share of Farms
0-10.000	56,76%
11.000-50.000	30,63%
51.000-100.000	3,60%
>100.000	9,01%

Source: Own elaboration.

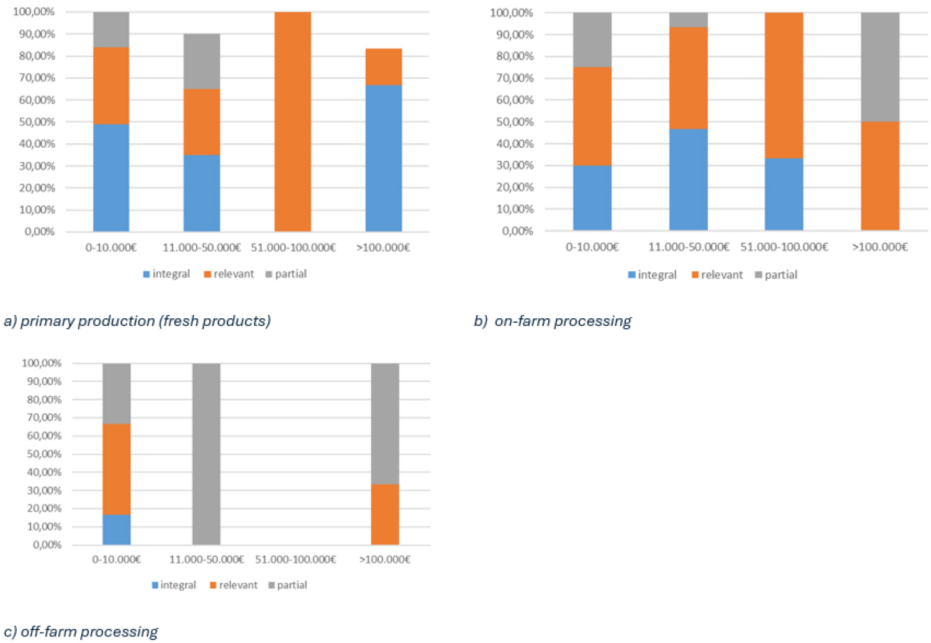
Figure 2 - Type of production by income ranges



Source: Own elaboration.

A strong polarization of farms (56,76%) in the 0-10,000 € band can be seen in Table 3 and Figure 2. Concerning the production type, on the other hand, 59% of the businesses in the first revenue band are engaged exclusively in primary activities, while the remaining 40% are in processing activities. Such distribution is also surprisingly confirmed for companies belonging to the higher revenue classes, with 52,94% of companies in the € 11,000-50,000 range and 50% of those with over € 100,000 in turnover, thus registering an apparent greater rigidity of processors to the adoption of the OQT. Despite the higher value of processed products, the difference could be attributable to both the greater organisational complexity of the processors and their lower presence in the sample and the MASAF lists.

Figure 3 - Revenue classes obtained using OQT analysed by type of production



Source: Own elaboration.

In Figure 3, for each type of production activity (primary production, on-farm processing and off-farm processing), the type of production (full, relevant or partial, according to the percentage obtained with OQT) is related to the level of income from the same production as OQT.

Concerning primary production, it is observed that as income increases, the share of farms with partial production decreases. In the case of on-farm processing, as income increases, the number of holdings with a significant share (between 51% and 99%) of TQO production increases, while the share of holdings with full TQO production decreases. For off-farm processing, there is greater heterogeneity between the different income brackets. Overall, what emerges from Figure 3 is a general tendency for the share of production with OQT to decrease as income increases.

Because of the low percentage of farms using the OQT (Table 2) and given the relative procedural simplicity of using it and the apparent lower costs compared to other forms of quality certification, as well as a whole series of benefits for producers and mountain territories, the question of its low use was raised. To this end, the answers given by the farmers and processors in

the second part of the questionnaire, aimed at investigating the limitations of using the OQT itself, were analysed.

The limitations of the application and use of the OQT were investigated both in terms of costs incurred by producers (Table 4 below) and in terms of communication with final consumers and public administrations (sections D and E of the questionnaire). Despite the opportunity of the low costs related to the term adoption, there is still a percentage of farmers who consider the practice expensive, in fact 15% of respondents still claim to have incurred higher costs in connection with the implementation of the OQT, most of which can be found in administrative and control costs. These types of costs could refer to the traceability requirements that, according to Ministerial Decree 57167/2017, must be ensured at every stage of production, processing and marketing.

Table 4 - Interpretation of higher costs of OQT

Costs categories	**% Responses (more than one answer was possible)**
Administrative costs	50%
Control costs	32%
Adaptation of production processes	27%
Adaptation of company structures	9%

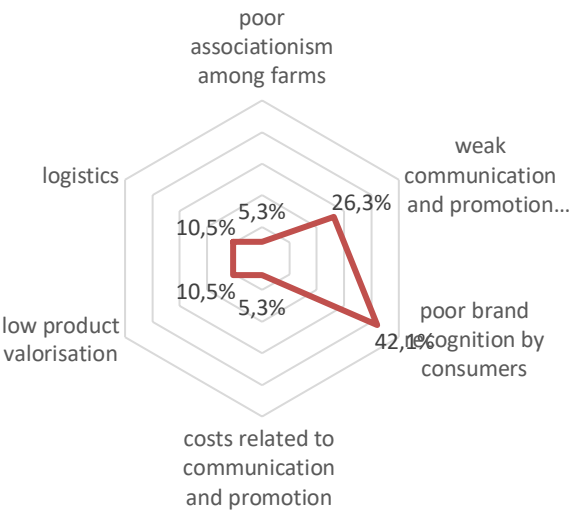
Source: Own elaboration.

As shown in Figure 4 below, the most frequently appearing obstacle is the lack of brand recognition by the consumer, associated with low consumer awareness. In addition, producers complain about the lack of brand promotion, the effect of which can be seen precisely in the lack of consumers' awareness and brand recognition.

The major limitations complained of by producers are to be found in the lack of knowledge of the OQT caused by insufficient information and/or misinformation (both of consumers and the producers themselves). Moreover, other producers complain about the limited tourist visibility of some mountain territories, accompanied by an insufficient institutional promotion of the 'Mountain Product' brand, as well as by the lack of technical support to companies in the design/adoption phase of the OQT. Most producers also denounced greater competitiveness of lower quality products, whose origin is consciously misrepresented by producers and/or distributors with little transparency, as well as the absence of alternative markets capable of

intercepting and distributing these products in selected circuits, and prices that are still scarcely remunerative.

Figure 4 - Main limits regarding promotion and distribution (marketing) of mountain products



Source: Own elaboration.

Many operators, to overcome the lacks mentioned above, are being faced with higher advertising and promotion costs. Consequently, a key role is played by the public administration, whose lack of support is lamented by producers. Finally, logistics, due to the conditions of mountain areas, seems to be an obstacle to the distribution of mountain products in markets far from their area. The recommendations provided to improve the promotion and distribution of mountain product all converge in the direction of enhancing and improving promotion: in fact, producers suggest a series of measures, ranging from TV advertising spots, to the organization of dedicated fairs and events, to massive information campaigns, to the creation of a specific website that brings together all products (as of today, there is only a list of companies adopting OQT for each region on the Ministry website). 77% of respondents agree that it would be appropriate to encourage adherence to the scheme of the OQT through territorial promotional policies; 80% of them agree that territorial promotional policies should include promotional campaigns, local market events, advertising and so on.

The limitations encountered by operators in the application of OQT were therefore subjected to further statistical analysis, through a multinomial regression model, as described in the Materials and Methods Section.

In doing so, the six limits identified in Figure 4 (1. Poor associationism among farms; 2. Weak communication and promotion by Public Administrations; 3. Poor brand recognition by consumers; 4. Costs related to communication and promotion; 5. Low product valorisation; 6. Logistics) have been grouped into four categories to streamline the analysis (1.costs and logistics (4;6); 2.low product valorisation; 3.poor brand recognition by consumers; 4.weak communication and promotion by Public Administrations).

Multinomial (logistic) regression allowed us to verify and evaluate the impact of specific variables on certain limitations. The results can be found in Table 5 below, in which only significant variables (p value < 0,1) are reported for the sake of brevity (see Appendix for the complete output of the model in Table 7). The model is estimated through the *VGAM* package in R Studio (see, e.g., Yee, 2010), and we also present the average marginal effects (computed through the 150 observations) alongside the usual estimates of the relative log-odds. The complete table of averaged marginal effects is depicted in the Appendix (Table 8).

Table 5 - Multinomial regression model

Variable	Estimate	Average marginal effect	Std. Error	z value	p value
Area North-East:4	–2,930	–0,284	1,467	–1,994	0,04574 (*)
Activity_primary production:2	–2,121	–0,136	1,212	–1,749	0,08021 (°)
Activity_primary production:3	–1,852	–0,198	0,935	–1,980	0,04767 (*)
Adhesion_PDO_ PGI_other: Yes:4	1,278	0,144	0,700	1,826	0,06782 (°)
Product.categoryE:4	2,324	–0,375	1,397	1,664	0,09618 (°)
Product.categoryF:4	4,695	0,691	2,268	2,070	0,03844 (*)
PERC:2	0,020	0,001	0,100	2,103	0,03549 (*)
PERC:3	0,013	0,001	0,007	1,871	0,06130 (°)

Source: Own elaboration.
"°": p-value <0,1; "*": p-value <0,05.
(For Product.categoryE:4: This relationship is the weakest: in fact, the coefficient is positive but the average marginal effect is negative. The p-value is approximately 0.1, which could explain the existence of the limit).

Table 5 shows how the possible limits are related to five significant variables (1. Geographical area, 2. Type of activity (primary production), 3. Adhesion to PDO and/or PGI, 4. Product category (E = honey and other beehive products; F = bread, pastries, cakes, sweets, biscuits and other baked goods), 5. Percentage of production realized using the OQT. The number following the name of the variable indicates the probability of the variable identifying the limit associated with that specific number. For instance, Area North-East:4 means that we are going to investigate the probability that the variable Area: North-East identifies limit 4, i.e. weak communication and promotion by Public Administrations.

Table 6 - Significant variables for the occurrence of the limits considered

Variables/Limits	**1. costs and logistics**	**2. low products valorisation**	**3. poor brand recognition**	**4. weak communication and promotion by PA**
Adhesion to PDO and/or PGI				X
Product category: honey and other beehive products				X
Product category: bread, pastries, cakes, sweets, biscuits and other baked goods				X
Percentage of production using the OQT		X	X	

Source: Own elaboration.

As shown in Table 6, which offers a summary of results obtained through the multinomial regression. Observing the data reported in Tables 5 and 6, a lower propensity (recognisable in the negative sign of the estimate) to encounter limits 2 (low product valorisation), 3 (poor brand recognition) and 4 (weak communication and promotion by PA) respectively in the case of primary production activities and in the case of location of the companies in north-eastern Italy can be seen.

The limitations of 'low product valorisation' and 'poor brand recognition' seem to be experienced less by those who carry out primary activities using OQT and by those who produce high quantities using the same OQT.

The "weak communication and promotion by Public Administration" limit is also related to the type of product, specifically "honey and other beehive products" and "bread, pastries, cakes, sweets, biscuits and other baked goods". This limit is also associated with the variable "membership of PDO and PGI schemes", as well as with the higher percentage of production using the OQT.

4. Discussion

The first evidence that emerges from the survey is the low correlation between the mountainous areas of some regions and the number of operators using OQT (Table 2). This phenomenon, although more evident in southern Italy, is also widespread in the north. In the south, in fact, except for Basilicata (which has 181 users of the OQT), the rest of the regions, even those with extensive mountainous areas (such as Molise and Campania), count very few, if any, users.

Moreover, even when observing the number of farms using the OQT in the north, as for example, Valle d'Aosta and the autonomous provinces of Trento and Bolzano, it emerges that even if these are regions with 100% mountainous territory, they have very low numbers in relation to the use of the OQT.

Specifically, the limitation regarding the role of the public administration in promoting the term is less likely to occur if the operator user is located in the north-east geographical area, probably because the policies adopted by the Regions (RDP) belonging to that area contain more specific measures. As stated in the AREPO report (Scaglioni *et al.*, 2024), the regions of the north-east (Veneto, Emilia-Romagna, Friuli-Venezia Giulia) have made available on their website a page entirely dedicated to mountain products, providing practical information on how to use them, as well as explanatory videos and brochures. Moreover, as can be seen from Table 7 in the Appendix, the variable Geographical area: north-west, although with a non-significant p-value, also shows a negative sign about the occurrence of all 4 limits investigated, which is not the case for the variable Geographical area: south and islands, thus marking the difference between north and south.

According to AREPO (Scaglioni *et al.*, 2024), especially in the north, this can be attributed to the presence of other regional-type labels and/or claims that are more recognised by consumers and receive more support from local administrations. Indeed, some studies (Stiletto *et al.*, 2023; McMorran *et al.*, 2015; Menozzi *et al.*, 2022) have found that the presence of multiple labels related to the product's provenance (e.g. mountain product + PDO) can be confusing to consumers, who are willing to pay less for quality attributes.

At the same time, the presence of multiple labels leads to higher costs for producers, who might benefit from using fewer quality terms (Stiletto *et al.*, 2023).

The second category of limits relates, on the one hand, to consumer information and awareness (poor brand recognition) and, on the other, to the low product valorisation due to poor communication and/or support in promoting it. Producers highlight key issues, including insufficient knowledge of OQT due to limited tourist visibility in some mountain areas, weak promotion of the 'Mountain Product' term, and lack of technical support. They also face unfair competition from misrepresented lower-quality products, limited market access, and unprofitable pricing. This evidence suggests a lack of attention and/or a progressive threat of disaffection to the OQT caused by the sub-optimal value that the conventional market continues to recognise to these products, justifying the scarce recourse to the instrument especially by processors.

However, as shown in Table 5, there are some limitations that are less likely to occur if associated with a particular variable.

The variable type of activity, regarding primary production, has a negative sign and, therefore, a low probability of reaching the limit related to poor communication and promotion of the public administration: the farmer, upstream in the chain, may not have direct contact with the final consumer and, therefore, not receive feedback on the products. At the same time, he may also not receive feedback from the intermediaries in the chain or the processors and thus does not really perceive the issue.

Furthermore, there is a tendency to be less critical of the limitations related to the low valorisation of the product and the low degree of recognition of the OQT by the consumer when the product in question comes from primary production. Primary production considering the distance that generally separates them from the consumer, unlike production on and off the farm, allows natural characteristics to be preserved, and direct traceability ensures its origin (Bentivoglio *et al.*, 2020; Martins *et al.*, 2017; Bentivoglio *et al.*, 2019b).

While the literature shows that the average consumer expresses a preference for mountain products, recognising in them attributes of higher quality, operators complain of a lack of consumers' awareness of OQT (Bentivoglio *et al.*, 2019b; Bassi *et al.*, 2021). The literature review revealed a lack of communication and promotion of the OQT (McMorran *et al.*, 2015; Stiletto *et al.*, 2023; Martins *et al.*, 2017; Bonadonna *et al.*, 2017), which was empirically found in the questionnaire: consumers recognise the quality of the mountain product itself, but not the scheme, as they are not familiar with the OQT logo and, as a result, they are unaware of the rules underlying the adoption of the OQT itself and the requirements that raw materials

and production must meet for the product to be considered "mountain". According to AREPO (Scaglioni *et al*., 2024), this challenge extends its impact throughout the entire supply chain, exacerbating the competition with lower-quality products. Thus, if consumers show a certain willingness to pay for products for which they recognize the mountain origin and all the qualities and peculiarities that come with it, but if they are unable to recognize the OQT logo, they may not show the same willingness to pay because they do not understand the message of food safety and guarantee that is underlying the OQT itself (Stiletto *et al*., 2023; Bonadonna *et al*., 2022; Bentivoglio *et al*., 2020).

The limitation related to the lack of support from the public administration appears to be related to the simultaneous adoption of geographical indications, such as PDO and PGI. In fact, in this regard, from scientific literature it emerges that (Menozzi *et al*., 2022; Stiletto and Trestini, 2023) the OQT has no negative overlap with the Organic label, as they are intended to provide different information. The consumer is willing to pay a certain premium price. His willingness to pay, on the other hand, decreases when a third label, the PDO label, is added to these two labels. With this label, production costs increase, which also leads to an increase in the final price of the product, which, however, is not recognised by the consumer.

Another variable that leads to the finding of the limit related to communication and support from the public administration is that related to the category of bee products. Mountain beekeeping is a niche sector, often practiced by small family-owned producers with limited production and representing a small percentage of total Italian agricultural production. This is compounded by a weakness in the construction of a strong narrative around these products.

Conclusions

The study proposed an analysis of producers' and processors' points of view on the OQT. Results show a territorial disparity between northern and southern Italy in terms of support from Public Administrations: the north, as also witnessed by AREPO (Scaglioni *et al*., 2024), regional administrations (Emilia-Romagna, Piemonte, Veneto, Lombardia, Friuli Venezia Giulia) implement communication and/or promotion policies for the OQT. The significant differences highlighted indicate that public intervention can play a decisive role in promoting OQT, both for producers and consumers, enabling greater awareness and knowledge, even if operators do not complain of excessive costs or obligations and recognise the value and potential of the OQT use in terms of competitive advantage. However, they

complain of a lack of logo-consumer communication: consumers recognise the product from mountain areas as being of quality and different from other products, but find it difficult to associate the logo with it. It is therefore crucial to enhance information to both producers and consumers on the economic, social and ecological potential of the Mountain Product label. While operators will have to be accompanied, above all, in the phase of integrating the mountain label into business strategies, consumers will have to be informed about the ethical and social responsibility implications of the OQT. Only a more effective flow of information will make the market more transparent, adding value to mountain products and stimulating the construction of new relationships between farmers and processors, capable of increasing the resilience of mountain economies and helping to stem the devastating depopulation phenomenon.

Since one of the purposes of this study is to offer guidelines to policy makers for a greater valorisation of mountain products, it was found that, in its report, AREPO (Scaglioni *et al.*, 2024) provides a list of policy recommendations at EU, national, regional and local levels. At EU level, it is asked to policy makers to design specific measures for mountain products, as well as to deploy promotion strategies and encourage member states to include mountain product legislation in their own legislation. At the national level, there are always calls for action on initiatives to promote OQT and, in addition, on controls to prevent its inappropriate use. Member States are also asked to re-evaluate the derogations granted, as they themselves can be causes of competition between actors operating in the mountains and those who take advantage of the derogations to operate outside those areas (Fernández-Barcala, 2016; Messer *et al.*, 2008). The theme of promotion is present at the local level, and it is here that the need for local policies converges exclusively on this theme, outlining the need for the provision of promotional materials, the organization of dedicated fairs and events, as well as dedicated spaces within local markets (Casati, 2006; Canavari *et al.*, 2010).

Nevertheless, results are in line with the very recent EU CAP Network report (2024), in which research needs about marketing for mountain products and willingness to pay for them emerge. It is recognised that producers do not have the necessary skills and knowledge to understand the behaviour of consumers who, at the same time, are unable to recognize the value of OQT. Therefore, policy and decision makers should grant producers of appropriate tools to understand these phenomena by transferring research results to them and providing them with training in communication and marketing. At the same time, specific policies should be designed also for consumers, enhancing targeted promotion campaigns and other initiatives aimed at boosting their awareness.

Acknowledgements

The authors would like to thank Giulia Scaglioni (AREPO) and Guillaume Corradino (Euromontana) for their work in the data collection phase and for their valuable advice in reviewing the work.

Funding

This research was funded under the MOVING project (Mountain Valorisation through Interconnectedness and Green growth – www.moving-h2020.eu) as part of the Horizon 2020 Programme.

References

Agresti, A. (2013). *Categorical data analysis*. John Wiley & Sons.

Akerlof, G. A. (1970); The Market for "Lemons": Quality Uncertainty and the Market Mechanism, *The Quarterly Journal of Economics*, *84*(3), August, 488-500. Doi: 10.2307/1879431.

Bassi, I., Carzedda, M., Grassetti, L., Iseppi, L., & Nassivera, F. (2021). Consumer attitudes towards the mountain product label: Implications for mountain development. *J. Mt. Sci.*, *18*(9), 2255-2272. Doi: 10.1007/s11629-020-6616-z.

Bassi, I., Carzedda, M., Gori, E., & Iseppi L. (2022). Rasch analysis of consumer attitudes towards the mountain product label. *Agricultural and Food Economics*, 10, 13. Doi: 10.1186/s40100-022-00218-.

Bentivoglio, D., Savini, S., Finco, A. *et al.* (2019a). Quality and origin of mountain food products: the new European label as a strategy for sustainable development. *Journal of Mountain Science*, *16*(2). Doi: 10.1007/s11629-018-4962-x.

Bentivoglio, D., Bucci, G., & Finco, A. (2019b). Farmers' general image and attitudes to traditional mountain food labelled: a SWOT analysis. *Quality-Access to Success*, *20*(S2).

Bentivoglio, D., Bucci, G., & Staffolani, G. (2020). Valorizzazione del latte «Prodotto di montagna»: un'analisi esplorativa sulle scelte di acquisto dei consumatori. *Italian Review of Agricultural Economics*, *75*(2), 77-88. Doi: 10.13128/rea-12071.

Bonadonna, A., Duglio, S., Bollani, L., & Peira, G. (2022). Mountain Food Products: A Cluster Analysis Based on Young Consumers' Perceptions. *Sustainability*, *14*, 12511. Doi: 10.3390/su141912511.

Bonadonna, A., Peira, G., & Varese, E. (2015). The European Optional Quality Term "Mountain Product": Hypothetical Application in the Production Chain of a Traditional Dairy Product. *Quality Access to Success*, *16*(144).

Bonadonna, A. (2016). What Does the Optional Quality Term "Mountain Product" Involve? The Biellese Mountain (North West Italy) Farmers' Opinions. *Mediterranean Journal of Social Sciences*, *7*(1). Doi: 10.5901/mjss.2016.v7n1p18.

Bonadonna, A., Peira, G., Giachino, C., & Molinaro, L. (2017). Traditional Cheese Production and an EU Labeling Scheme: The Alpine Cheese Producers' Opinion. *Agriculture*, *7*, 65; doi: 10.3390/agriculture7080065.

Bonadonna, A., Peira, G., & Brocardo, R. (a cura di) (2020). Il "Prodotto di montagna" in Piemonte. *Indagine sull'utilizzo dell'indicazione facoltativa di qualità*. Università degli Studi di Torino - Dipartimento di Management e Regione Piemonte - Direzione Agricoltura e cibo.

Cagnina, M. R., Cosmina, M., Gallenti, G., Marangon, F., Nassivera, F., & Troiano, S. (2018). The role of information in consumers' behavior: A survey on the counterfeit food products. *Economia Agro-Alimentare*, *20*(2), 221-231.

Canavari, M., Pignatti, E., Spadoni, R., & van Sprundel, G. (2010). Nuove dinamiche nel commercio dei prodotti agroalimentari: resistenze all'adozione dell'e-commerce nelle relazioni B2B. *Economia Agro-Alimentare*, 03. Doi: 10.3280/ECAG2009-003006.

Casati, D. (2006). Il ruolo della specificità per la valorizzazione dei prodotti agroalimentari. *Economia Agro-Alimentare*, 01.

Commission Delegated Regulation (EU) No 665/2014 of 11 March 2014 supplementing Regulation (EU) No 1151/2012 of the European Parliament and of the Council with regard to conditions of use of the optional quality term 'mountain product'.

Decreto del Ministro delle politiche agricole, alimentari e forestali del 26 luglio 2017, n. 51167 recante disposizioni nazionali per l'attuazione del regolamento (UE) n. 1151/12 e del regolamento delegato (UE) n. 665/2014 sulle condizioni d'utilizzo dell'indicazione facoltativa di qualità "prodotto di montagna".

Decreto di modifica del decreto del Ministro delle politiche agricole, alimentari e forestali del 26 luglio 2017, n. 51167 recante disposizioni nazionali per l'attuazione del regolamento (UE) n. 1151/12 e del regolamento delegato (UE) n. 665/2014 sulle condizioni d'utilizzo dell'indicazione facoltativa di qualità "prodotto di montagna".

Decreto del Ministro delle politiche agricole, alimentari e forestali del 2 agosto 2018 sull'Istituzione del logo identificativo per l'indicazione facoltativa di qualità "prodotto di montagna" in attuazione del Decreto Ministeriale 26 luglio 2017 n. 57167.

Decreto del Ministro delle politiche agricole, alimentari e forestali del 20 luglio 2018 che definisce le linee guida sulla verifica di quanto disposto dall'art. 2, comma 3 del decreto ministeriale n. 57167 del 26/07/2017 concernente disposizioni nazionali per l'attuazione del regolamento (UE) n. 1151/2012 e del regolamento delegato (UE) n. 665/2014 sulle condizioni di utilizzo dell'indicazione facoltativa di qualità "prodotto di montagna" in merito all'origine degli alimenti destinati all'alimentazione animale.

EU CAP Network Focus Group (2024). Competitive and resilient mountain areas; Innovation & Knowledge Exchange | EIP-AGRI. -- https://eu-cap-network.ec.europa.eu/publications/eu-cap-network-focus-group-competitive-and-resilient-mountain-areas_en#section--resources.

Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural

Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005.

EU REGULATION No 1151/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 November 2012 on quality schemes for agricultural products and foodstuffs.

Euromontana (2016). Carta Europea Dei Prodotti Agroalimentari Di Qualità Della Montagna, versione 2016. Bruxelles (Belgium).

Euromontana (2020). Implementation of the EU Optional Quality Term "mountain product". Where do we stand in the different Member States? Bruxelles (Belgium).

Fernández-Barcala, M., González-Díaz, M., & Raynaud E. (2016). Contrasting the governance of supply chains with and without geographical indications: complementarity between levels. *Supply Chain Management*, *22*(4), 305-320. Doi: 10.1108/SCM-05-2016-0161.

Gupta, H., Nishi, M., & Gasparatos, A. (2021). Community based responses for tackling environmental and socioeconomic change and impacts in mountain social-ecological systems. *Ambio*, *51*, 1123-1142. Doi: 10.1007/s13280-021-01651-6.

Ingty, T. (2017). High Mountain communities and climate change adaptation, traditional ecological knowledge, and institutions. *Clim. Chang.*, *145*, 41-55. Doi: 10.1007/s10584-017-2080-3.

Martins, N., & Ferreira C.F.R., I. (2017). Mountain food products: A broad spectrum of market potential to be exploited. *Trends in Food Science & Technology*, *67*, 12-18.

Mazzocchi, C., & Sali, G. (2021a). Supporting mountain agriculture through "mountain product" label: a choice experiment approach. *Environment, Development and Sustainability*, *24*, 701-723. Doi: 10.1007/s10668-021-01464-3.

Mazzocchi, C., Orsi, L., & Sali, G. (2021b). Consumers' Attitudes for Sustainable Mountain Cheese. *Sustainability*, *13*, 1743. Doi: 10.3390/su13041743.

McMorran, R., Santini, F., Guri, F., Gomez y Paloma, S., Martin, P., Olivier Beucherie, O., Monticelli, C., Rouby, A., Delphine Vitrolles, D., & Cloye, G. (2015). A mountain food label for Europe?. *Journal of Alpine Research*. Doi: 10.4000/rga.2654.

Messer, K. D., Kaiser, H. M., & Schulze, W. D. (2008). The problem of free riding in voluntary generic advertising: Parallelism and possible solutions from the lab. *American Journal of Agricultural Economics*, *90*(2), 540-552. Doi: 10.1111/j.1467-8276.2007.01114.x.

Menozzi, D., Yeh, C.-H., Cozzi, E., & Arfini, F. (2022). Consumer Preferences for Cheese Products with Quality Labels: The Case of Parmigiano Reggiano and Comté. *Animals*, *12*, 1299. Doi: 10.3390/ani12101299.

Moretti, M., Belliggiano, A., Grando, S., Felici, F., Scotti, I., Ievoli, C., Blackstock, K., Delgado-Serrano, M. M., & Brunori, G. (2023). Characterizing value chains' contribution to resilient and sustainable development in European mountain areas. *Journal of Rural Studies*, *100*, 103022. Doi: 10.1016/j.jrurstud.2023.103022.

Oostindië, H., van der Ploeg, J. D., Broekhuizen, R. V., Ventura, F., & Milone, P. (2010). The central role of nested markets in rural development in Europe. *Riv. Econ. Agrar.*, *65*, 191-224.

Scaglioni, G., & Rogazan, C. (2024). Analysis of the implementation of the EU optional quality term "mountain product" - Final report; Mountain Valorisation Through Interconnectedness and Green Growth. -- www.moving-h2020.eu.

Schneiderbauer, S., Fontanella Pisa, P., Delves, J. L., Pedoth, L., Rufat, S., Erschbame, M., Thaler, T., Carnelli, F., & Granados-Chahin, S. (2021). Risk perception of climate change and natural hazards in global mountain regions: A critical review. *Sci. Total Environ.*, *784*, 146957. Doi: 10.1016/j.scitotenv.2021.146957.

Scotti, I., Ievoli, C., Bindi, L., Bispini, S., & Belliggiano, A. (2023). FacingClimate Vulnerability in Mountain Areas: The Role of Rural Actors' Agency and Situated Knowledge Production. *Sustainability*, *15*, 15877. Doi: 10.3390/su152215877.

Staffolani, G., Bentivoglio, D., & Finco, A. (2022). Consumers' Purchasing Determinants Towards Mountain Food Products. *Sustainability*, *14*, 8282. Doi: 10.3390/su14148282.

Stiletto, A., & Trestini, S. (2023). When less isn't more and more isn't less: is there an overlap between "protected designation of origin", "mountain product" and "organic" in Italy?. *British Food Journal*, *12*(13), 45-60. Doi: 10.1108/BFJ 02 2022 0107.

Stotten, R., Ambrosi, L., Tasser, E., & Leitinger, G. (2021). Social-ecological resilience in remote mountain communities: Toward a novel framework for an interdisciplinary investigation. *Ecol. Soc.*, *26*, 29. Doi: 10.5751/ES-12580-260329.

Tebby, C., Giraud, G., & Amblard, C. (2010). *Determinants of interest in mountain food products: A European cross country study*, *9th European IFSA Symposium*, 4-7 July 2010, Vienna (Austria).

Yee, T. W. (2010). The VGAM package for categorical data analysis. *Journal of Statistical Software*, *32*, 1-34.

Wyss, R., Luthe, T., Pedoth, L., Schneiderbauer, S., Adler, C., Apple, M., Acosta, E.E., Fitzpatrick, H., Haider, J., Ikizer, G. *et al.* (2022). Mountain resilience: A systematic literature review and paths to the future. *Mt. Res. Dev.*, *42*, A23-A36; doi: 10.1659/MRD-JOURNAL-D-21-00044.1.

Zanchini, R., Di Vita, G., Panzone, L., & Brun, F. (2023). What Is the Value of a "Mountain Product" Claim? A Ranking Conjoint Experiment on Goat's Milk Yoghurt. *Foods*, *12*, 2059. Doi: 10.3390/foods12102059.

Zuliani, A., Esbjerg, L., Grunert, K. G., & Bovolenta, S. (2018). Animal Welfare and Mountain Products from Traditional Dairy Farms: How Do Consumers Perceive Complexity?. *Animals*, *8*, 207; doi: 10.3390/ani8110207.

Appendix

Table 7 - Full Output of the Multinomial Regression Model

Variables	Estimate	Std. Error	z value	p value
(Intercept):1	–17,102	1734,813	–0,010	0,9921
(Intercept):2	–0,492	1,779	–0,277	0,7820
(Intercept):3	–17,405	1655,028	–0,011	0,9916
(Intercept):4	–1,720	1,616	–1,065	0,2871
Area South & Islands:1	–0,903	1,668	–0,541	0,5882
Area South & Islands:2	–0,745	1,737	–0,429	0,6680
Area South & Islands:3	0,572	1,285	0,445	0,6562
Area South & Islands:4	–0,381	1,284	–0,296	0,7669
Area North-East:1	–0,112	1,304	–0,086	0,9318
Area North-East:2	0,931	1,403	–0,664	0,5068
Area North-East:3	–0,257	1,111	–0,231	0,8172
Area North-East:4	–2,930	1,467	–1,998	0,0457
Area North-West:1	–1,444	1,345	–1,074	0,2827
Area North-West:2	–0,591	1,345	–0,439	0,6604
Area North-West:3	–0,273	1,092	–0,250	0,8027
Area North-West:4	–0,604	1,086	–0,556	0,5783
Activity_on farm processing:1	1,013	1,354	0,748	0,4544
Activity_on farm processing:2	–1,958	1,249	–1,568	0,1168
Activity_on farm processing:3	–1,154	0,977	–1,181	0,2377
Activity_on farm processing:4	–0,224	1,033	–0,217	0,8281
Activity_primary production:1	0,140	1,318	0,107	0,9152
Activity_primary production:2	–2,121	1,213	–1,749	0,0802
Activity_primary production:3	–1,852	0,935	–1,980	0,0477
Activity_primary production:4	–1,020	0,968	–1,054	0,2917
adhesion_PDO_PGI_other:Yes:1	0,232	0,835	0,278	0,7808
adhesion_PDO_PGI_other:Yes:2	–0,624	0,922	–0,676	0,4989
adhesion_PDO_PGI_other:Yes:3	–0,202	0,685	–0,294	0,7684
adhesion_PDO_PGI_other:Yes:4	1,278	0,700	1,826	0,0678
product.categoryB:1	16,272	1734,812	0,009	0,9925
product.categoryB:2	0,304	1,376	0,221	0,8251
product.categoryB:3	16,603	1655,027	0,010	0,9920

Variables	**Estimate**	**Std. Error**	**z value**	**p value**
product.categoryB:4	1,471	1,343	1,095	0,2734
product.categoryC:1	16,015	1734,812	0,009	0,9926
product.categoryC:2	1,914	1,405	1,362	0,1732
product.categoryC:3	17,931	1655,027	0,011	0,9914
product.categoryC:4	2,110	1,397	1,511	0,1308
product.categoryD:1	15,885	1734,812	0,009	0,9927
product.categoryD:2	–0,454	1,361	–0,333	0,7389
product.categoryD:3	17,014	1655,027	0,010	0,9918
product.categoryD:4	0,902	1,302	0,693	0,4885
product.categoryE:1	16,450	1734,812	0,009	0,9924
product.categoryE:2	1,083	1,426	0,759	0,4477
product.categoryE:3	17,626	1655,027	0,011	0,9915
product.categoryE:4	2,325	1,397	1,664	0,0962
product.categoryF:1	–0,144	3034,022	0,000	1,0000
product.categoryF:2	–16,019	2389,705	–0,007	0,9947
product.categoryF:3	0,286	2990,925	0,000	0,9999
product.categoryF:4	4,695	2,268	2,070	0,0384
VALUE:1	–0,096	0,128	–0,747	0,4551
VALUE:2	–0,137	0,160	–0,857	0,3916
VALUE:3	0,097	0,085	1,149	0,2506
VALUE:4	0,068	0,095	0,719	0,4723
PERC:1	0,002	0,008	0,250	0,8022
PERC:2	0,020	0,010	2,103	0,0355
PERC:3	0,014	0,007	1,871	0,0613
PERC:4	0,000	0,008	–0,002	0,9986
Sample size: n=150				
Max Log-Likelihood: –187,15; Max Log-Likelihood Null Model = –216,58				
McFadden's R^2 = 0,136; Nagerleke's R^2 = 0,344				

Source: Own elaboration.

Table 8 - Averaged Marginal effects for the five categories

Variables	**0**	**1**	**2**	**3**	**4**
Intercept	2,230	–1,096	0,574	–2,138	0,430
AreaME	0,051	–0,080	–0,067	0,131	–0,036
AreaNE	0,228	0,033	–0,039	0,062	–0,284
AreaNO	0,147	–0,108	–0,024	0,020	–0,035
Activity: on farm processing	0,138	0,135	–0,157	–0,138	0,022
Activity: primary production	0,283	0,083	–0,136	–0,198	–0,032
adhesion_PDO_PGI_other:Yes	–0,040	0,019	–0,071	–0,052	0,144
product.category: B	–2,109	1,045	–0,560	2,049	–0,426
product.category: C	–2,303	0,972	–0,451	2,194	–0,412
product.category: D	–2,058	1,016	–0,627	2,150	–0,481
product.category: E	–2,276	1,023	–0,527	2,155	–0,375
product.category: F	0,415	0,103	–1,520	0,311	0,691
VALUE	–0,001	–0,010	–0,015	0,018	0,007
PERC	–0,002	0,000	0,001	0,001	–0,001

Source: Own elaboration.

Sara Bispini
Department of Agricultural, Environmental and Food Sciences, University of Molise, Via De Sanctis sc – 86100 Campobasso, Italy
E-mail: s.bispini@unimol.it
She holds a degree in Business Economics (2021) and PhD in Agricultural Technologies and Biotechnologies (2025), in the field of Agricultural and Food Economics and Rural Appraisal. She is a research fellow at University of Molise since 2024. Her research interests include Alternative Food Networks, Mountain areas and Rural development, Geographical Indications, and assessment of the contribution of agri-food supply chains to territorial regeneration processes.

Riccardo Ievoli
Department of Chemical, Pharmaceutical and Agricultural Sciences, University of Ferrara, Via Luigi Borsari, 76 – 44121 Ferrara, Italy
E-mail: riccardo.ievoli@unife.it
He holds a degree in Statistical Sciences (University of Naples Federico II, 2015) and a PhD in Statistics (Alma Mater University of Bologna, 2019). Junior Research Assistant (RTD-a) at the University of Ferrara since 2022, his current research interests include network analysis in sports, resampling methods under non-standard data (e.g., integer time series), construction of composite indices, and statistical application in the field of biomedical data.

Mauro Conti
Department of Political and Social Sciences, Centre for Rural Development Studies, Università della Calabria, Via P. Bucci cubo 0B – 87036 Arcavacata di Rende (CS), Italy
E-mail: mauro.conti@unical.it
He holds a PhD (2020) in Politics, Culture and Development (Department of Sociology and Political Science, University of Calabria) and Development Studies (International Institute of Social Studies (ISS) – Erasmus University of Rotterdam). He is a researcher and works as a consultant on family farming and public policies at FAO. His current research interests focus on global governance of agriculture, rural and territorial development policies, economics of agricultural and food markets and social innovation in rural areas.

Angelo Belliggiano
Department of Agricultural, Environmental and Food Sciences, University of Molise, Via de Sanctis III Polifunzionale – 86100, Campobasso, Italy
E-mail: belliggi@unimol.it
He holds a degree in Agricultural Sciences from the University of Bari (1991). Following a two-year research fellowship of the National Research Council (CNR) in the Economics of the Agri-food System, he served as a Tenured Researcher in Agricultural Economics at the University of Molise from 1996 to 2002, and has been an Associate Professor in Agricultural Economics at the same institution since November 2002. Since April 2014, he has been President of both the First

Cycle (Bachelor's) and Master's Degree Programmes in Agricultural Sciences and Technologies at the University of Molise. Additionally, he has served as National President of the Italian Committee of Degree Courses in Agricultural Sciences since July 2023. His current research interests focus on the economics of agricultural and food markets, rural development policies, social innovation in rural and marginal areas, and strategies for community capacity building in rural areas, including the diversification of farms into tourism.