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## BALANCING FOOD HERITAGE, HEALTHY DIETS AND PLANETARY RESOURCES

UTAD - VILA REAL, (PT)

# BOOK OF PROCEEDINGS

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Universidade de Trás-os-Montes e Alto Douro (UTAD)  
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## Convergences and divergences between Italian consumers' preferences for mountain food products and the standards of the mountain label

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Keywords: Mountain food products, wine, beef, Italy, consumer preferences.

**Abstract.** As part of the European rural development strategy, the European Union created Regulation (EU) 1151/2012 and its Delegated Act 665/2014, establishing the quality scheme for mountain products. This scheme has a threefold objective: (a) to add value to mountain products; (b) to sustain mountain farming; (c) to increase transparency for consumers regarding the origin of mountain food products. The growing interest of consumers for products from mountain areas could constitute an excellent opportunity to support localized agri-food systems in these areas. However, for this labelling scheme to be most likely to succeed (and for the above objectives to be achieved), the quality standards of the European regulation must meet the expectations of European consumers. Given that the European literature on consumer interest in mountain products is not numerous, this study seeks to fill this gap in the following way. Firstly, we explore the opinion of European consumers about beef and wine produced in mountain areas and their opinion about the new European regulation for mountain products. Secondly, we identify consumers' preferences regarding mountain beef and wine, and contrast the results with the EU regulation on mountain food products. This study uses qualitative (observations, focus group and semi-structured interviews) and quantitative methods (best-worst scaling method, latent class analysis). Data were collected in Italy between December 2018 and February 2020. For the quantitative research, the study used an online consumer panel (n = 1943). In summary, the results indicated that the European regulation does not support the interest of consumers in healthier and environmentally friendly products (including respect for animal welfare). In addition, consumers tend not to agree with the mountain area definition and support the inclusion of wines among the products suitable to use the mountain label. These gaps may negatively influence the acceptance of the mountain labels by consumers and diminish its usefulness.

### Introduction

Mountain areas are important from different perspectives. Covering approximately one-fifth of the earth's surface, they are hotspots of biodiversity, provide most of the planet's drinking water, and are home to almost half of the species diversity (Zisensis et al., 2010). They are home to 13% of the world's population (FAO, 2015). In Europe, this percentage reaches 22% (NORDREGIO, 2004). Despite their importance, mountain areas face several challenges. Mountain communities are among the most vulnerable in the world (FAO, 2013). Economic dynamics and the misuse of environmental resources have aggravated the situation of these communities, damaging the fragile mountain ecosystem and leading their populations to abandon the countryside and migrate to other areas (FAO, 2015; Santini et al., 2013; Theurillat & Guisan, 2001).

Since the 1970s, the European Commission has set up policies to promote the development of mountain

areas. Based on different approaches, these policies have aimed at providing conditions to, among others, increase agricultural production, compensate mountain farmers for higher production costs, and valorise the local resources. As part of the European rural development strategy, the European Union has set up the Regulation (EU) 1151/2012 and its Delegated Act 665/2014. These legal instruments have a threefold purpose: (a) add value to mountain products; (b) sustain mountain farming; (c) enhance transparency for consumers regarding the mountain origin of food products. To achieve these objectives, the Regulation and the delegated act define the food products that can use the mountain label as well as establish the minimum quality standards that must be met by producers. The rules for certifying mountain beef include, among other things, the location of processing plants, the origin of feed for cattle and the minimum time animals must spend in a mountain area before being slaughtered. Although EU legislation encompasses different foods of animal and plant origin, wine is not included in the European rules,

despite the importance of this product for many mountain areas in several EU countries.

The literature on consumer interest in mountain products does not allow us to see whether the new quality scheme will have the desired effects. Studies on mountain food products from a consumer's perspective are still very scarce. For instance, there are no studies analysing consumer views on the rules of the European Regulation on mountain products and whether these rules meet consumers' expectations. Moreover, to the best we know, there are no studies that instigated consumer interest in wines produced in mountain areas. Empirical studies with consumers from Italy are rare, although mountains cover a large part of its territory. In this respect, we found only three studies on consumer opinion regarding mountain dairy products.

Considering these gaps, we propose the following research questions 1) Is there a gap between consumer interest and expectations concerning mountain food products and the rules of the mountain labelling scheme? 2) What are the most important mountain food product attributes for consumers? 3. What are consumers' opinions on the labelling scheme for mountain products?

Against this background, the purpose of this study is twofold. First, we seek to understand how mountain origin influences consumer perceptions concerning agri-food products. That is, we seek to identify the attributes that consumers associate with food products produced in mountain areas. Second, we investigate the convergences and divergences between consumers' expectations concerning mountain food products and the rules of the mountain labelling scheme (Regulation (EU) 1151/2012 and its Delegated Act 665/2014).

### Methods and sources

This study used a combination of qualitative and quantitative empirical methods, grouped into two working packages (WP): WP 1 – Qualitative research, and WP 2 - Quantitative research.

In the WP 1, we research how consumers describe mountain food products and mountain areas. In other words, we tried to identify the terms Italian consumers associate with beef, livestock farming, wine and viticulture in mountain areas. The decision to begin the research using qualitative approaches is motivated by the inexistence of prior research on these products and productive systems from the consumer perspective. Thus, we dived into different social and geographical contexts to identify the quality attributes associated with the mentioned products and agricultural activities. Further, we also collect consumer opinions on the rules of the labelling scheme. More specifically, we asked their opinion item  $j$ , while  $\varepsilon_{ij}$  is the random component utility. In BWS, each component  $V(2)$  and  $\varepsilon(3)$  is a result of the difference between the best and the worst items. Louviere et al. (2015) suggest a multinomial logit model to explain the probability that an individual  $n$

about the rules for certifying beef produced in mountain areas and whether they agreed or not agree with the exclusion of wines from the mountain labelling scheme.

In this first phase (WP 1) we used three methods for data collection: observation (Pope & Mays, 2006), focus groups (Kitzinger, 2006) and semi-structured interviews (Adams, 2015). We used the observations as a starting point to develop the focus group roadmap as well as the questions for the semi-structured interviews. We constantly compared the results of the data collection by these three methods during the inductive analysis to build more robust conclusions and control the theoretical saturation (Bowen, 2008; Guest et al., 2006). In total, we carried out three observations, two focus groups and 34 interviews. The sample of this part of the study was composed of Italian consumers over 18 years old from Lombardy, Tuscany, Trentino and South Tyrol that live in rural or urban areas, mountain or non-mountain areas, and are consumers of wine and/or beef. We collected the data between December 2018 and May 2019.

In WP 2, the main objective was to elicit consumer preferences for the mountain food product attributes found in WP 1 - and compare the results with the rules of the mountain labelling scheme. Such a procedure allowed the identification of the most preferred by Italian consumers. To achieve the above-mentioned objective, we carried out two surveys with Italian consumers. One dealt with attribute importance in mountain wine/viticulture and the other with beef/livestock farming. In both cases we used the best-worst scaling approach. This method, a kind of experiment of choice (Mühlbacher et al., 2016), was created by Louviere & Woodworth (1990) based on the method of paired comparisons (Finn & Louviere, 1992; Thurstone, 1927) and the McFadden's studies on economic choice theory (McFadden, 1986). The best-worst scaling model is designed to measure individual's relative preferences in relation to a set of items. Individuals are asked to choose the best (or most important) and the worst (or least important) item among a set of items. The main idea is that the individual's decision is the result of a comparison of differential utilities in a set of items – in this study, the items are the mountain food attributes identified in the WP 1 activities. Like in the theory of random utility (McFadden, 1974), in BWS individual's utility is a latent dimension composed of an observable component ( $V$ ) and an unobservable or random component ( $\varepsilon$ ) (Krucien, 2015):

$$U_{ij} = V_{ij} + \varepsilon_{ij}$$

$U_{ij}$  is the utility an individual  $i$  is assumed to obtain from alternative  $j$  in a specific set of items.  $V_{ij}$  is the observable component of utility, held by individual  $i$  for

chooses item  $j$  as best and  $j'$  as worst among a set of items ( $J$ ):

$$P = \frac{\exp(\beta_n X'_{nj} - \beta_n X'_{nj'})}{\sum_{j \neq j'} \exp(\beta_n X'_{nj} - \beta_n X'_{nj'})}$$

In equation above, the item selected as best is coded as 1. The item not selected by the individual is coded as 0. And the item marked as worst is coded as -1.  $X'_{nj}$  is the observable explaining variable. The parameter  $\beta_n$  is the individual-specific preference of an individual  $n$ .

The results of the BWS model provided an importance score which represents the utility of each item for each individual – thus revealing the most important attributes according to the preferences of the survey participants. It allowed to further analyse preference heterogeneity using latent class analysis (Vermunt & Magidson, 2002). To characterize the segments and test for differences among them, one-way Analysis of Variance (ANOVA) with posthoc tests (Tukey and Tamhane) and cross-tabulation with chi-square and standardized residuals were carried out. The analyses were performed using IBM SPSS Statistics 25 and Sawtooth Lighthouse Studio.

The best-worst model was chosen for this research because of its ease of understanding for the survey participants and its appropriateness to answer the outlined research questions.

We collected the data through the application of two self-administered online surveys to an Italian consumer panel. The questionnaire was designed using Sawtooth Lighthouse Studio (version 9.8.1) (Sawtooth Software, 2019) and the link was sent to the respondents by the consumer panel provider. The data collection took place between January and May 2020. In addition to the quotas for gender and age, to improve data validity some ex-ante filters were applied to screen out speeders as well as those who didn't fulfil the requirements such as participants under 18 years old and/or people that don't consume beef or wine (Aust et al., 2013). The final sample sizes were 970 and 973 respectively for the beef and wine studies.

### Theoretical framework and operational concepts

For consumers, mountain food products hold different attributes (Matscher & Schermer, 2009), that is, distinct dimensions of quality and risk. Quality refers to a perception of certainty about positive expectations, while risk consists of the perception of uncertainty, anticipation about possible negative consequences that may arise from a choice (Volle, 1995).

There is no consensus in the literature as to the number and dimensions in which quality and risk can

be broken down (Fandos & Flavián, 2006). For Aurier & Sirieix (2016), food quality can be split into five dimensions: taste and pleasure, health, convenience, social and symbolic, and ethical. On the other side of the coin, these authors name seven dimensions of risk (Aurier & Sirieix, 2016): functional or performance, physical, financial, waste of time, social, psychological, and ethical.

All dimensions of quality and risk that are present in food products are what Lancaster (1966) called good characteristics, meaning something that gives utility to the consumer. Steenkamp (1990), in turn, calls these characteristics "quality attributes" and defines them as the functional and psychological benefits the product provides – or that the consumer perceives as being provided by the product. Generally, these quality attributes can be classified into three categories (Nelson, 1970; Darby & Karni, 1973): search attributes, experience attributes, and credence attributes.

Search attributes are food characteristics that consumers can verify before purchasing. Examples are price, color, labels, and packaging. Experience attributes are those characteristics that can be verified only after the consumption of the product. Flavor, juiciness, texture, convenience in preparation and consumption are some examples of experience attributes. Credence attributes are the type of quality attributes that are very hard for consumers to verify, even after consuming the product or using it for a long time. Most ethical dimensions of quality belong to this category, such as animal welfare, ecological sustainability, social and economic equity but also the origin.

In this vein, the mountain label can be classified as a search or credence attribute. At the same time, the mountain origin - indicated by the mountain label - can evoke different dimensions of quality and risk for consumers: produced in an environmentally friendly way, produced without artificial ingredients, produced according to higher animal welfare standards, produced by smallholders etc.

Taking these dimensions into account is fundamental, as the existence of a gap between consumers interests and expectations and the European regulations may negatively affect the acceptance of the mountain label (Connelly et al., 2011) and may call into question its usefulness (Busenitz et al., 2005; Sanders & Boivie, 2004). In such a situation, a market failure may arise due to uncertainty about what a product represents and its quality. The label may be applied both to products that hold the attributes desired by consumers and to products that simply

follow the current quality system specifications for mountain products without fulfilling consumer expectations (Akerlof, 1970).

### Results

The results of the qualitative research (WP 1) can be divided into four areas. The first concerns consumers' perceptions on mountain food products and mountain areas. Consumers don't tend to have a homogeneous view of mountain areas. In other words, different mountain areas may have different reputations (because of its location, history, etc.), what may influence consumers' perceptions regarding mountain food products coming from these areas. For instance, some participants of the focus groups affirmed that European mountain products are safer and trustworthy compared to other mountain areas. In the same way, consumers' perceptions about mountain food products are not homogeneous. Consumers who live or lived in mountain areas tend to have a more realistic vision of mountain areas and their products. They know better how the products are elaborated, and are aware of the negative impacts mountain farming can cause to the environment. On the other hand, consumers from outside mountain areas have less knowledge of the current mountain farming practices. These consumers tend to have a more

environmental grounds. On the one hand, producing all the animal feed needed could cause damage to the mountain environment. On the other hand, importing animal feed could generate more carbon emissions. In both cases, consumers suggested opting for either grazing/hay rearing or increasing the percentage of locally produced feedstuff. With respect to wine from mountain areas, as the legislation does not include it among the products that can bear the mountain label, the question was whether consumers think it is reasonable to include such a product in the European Regulation for mountain products. Some participants sustained that there are already too much labels and wine shouldn't be considered a mountain product. Others affirmed that all mountain food products should be protected by the EU regulation, and the more information for consumers, the better for consumers.

In the quantitative research, we used the attributes identified in the previous phase to build a ranking

idealized image of mountain areas and the products from these areas.

The second area is related to the attributes consumers associate with wine and beef produced in mountain areas. We identified eight attributes for wine and wine production in mountain areas: (a) delicate aromas and flavors of wines, (b) vineyards located in terraces and high altitudes, (c) less additives used in the winemaking process, (d) use of local grape varieties, (e) production less mechanized or intensive in manual labor, (f) volume production limited, (g) production contributes to preserve the mountain environment, (h) grapes from small farms. And nine attributes for beef and beef production: (a) animals grass/hay fed only, (b) antibiotic-free/less-medicine, (c) local/autochthonous breed only, (d) animals free-range raised, (e) animals raised in small farms, (f) animals born and raised in mountain areas, (g) animals that live longer, (h) production supports the local economy, (i) production contributes to preserve the mountain environment.

Regarding the rules of the European regulation on mountain products, consumers tend to reject the definition of the mountain area. This definition is based on the concept of region, encompassing not only the high parts of the mountain but also its valleys and lowlands. For the participants of the qualitative research, the definition of mountain areas should include only the higher altitudes. Concerning animal feed, opinion is not unanimous, but there is a tendency to reject the European regulation rule on

using the best-worst scaling method. Tables 1 and 2 show a summary of the results for the two samples:

**Table 1.** Ranking and Aggregate Average Importance Score of Beef Production Attributes in Mountain Areas (Sample Level)

Item (Attribute)	Rank	Importance Score (0 to 100)
Wines with less additives	1	24.45
Viticulture contributes to preserve the mountain environment	2	21.69
Autochthonous grape variety	3	20.96
Delicate flavours and aromas	4	8.17
Small farms	5	7.30
Manual labour intensive	6	6.70
High altitudes and terraces	7	5.62
Limited production	8	5.11



**Table 2.** Ranking and Aggregate Average Importance Score of Beef Production Attributes in Mountain Areas (Sample Level)

Item (Attribute)	Rank	Importance Score (0 to 100)
Animals free-range raised	1	22.18
Less medicines	2	21.55
Animals grass/hay fed only	3	19.07
Local/Autochthonous breed only	4	8.26
Production supports the local economy	5	7.75
Production contributes to preserve the mountain environment	6	7.49
Animals born and raised in mountain areas	7	6.07
Animals raised in small farms	8	4.33
Animals that live longer	9	3.24

In the case of wine, the results indicate a prevalence of three attributes that may be associated with health (less additives), sustainability (Viticulture contributes to preserve the mountain environment) and typicity/terroir (autochthonous grape variety). Together they add up to more than 60% of the total importance score. Some characteristics related to mountain viticulture and mountain areas such as the mountain landscape (altitudes and terraces), the intensive need of manual labor, limited production and production in small farms are less relevant at the sample level. Survey participants showed a tendency to be in favour of including wines among the products authorised to use the mountain label (4.13 on a 5-point Likert scale question).

The results of the mountain beef survey indicate a prevalence of three attributes: animals free-range raised, use of less medicine, and animals grass/hay fed. The three attributes together add up to more than 60% of the importance score (PS), meaning that these three attributes are 1.5 times more important than the sum of the other six attributes.

## Conclusions

In summary, the qualitative and quantitative researches demonstrate that consumers are in favor of including wines in the mountain labelling scheme, consumer preferences diverge from the quality standards of the mountain labelling scheme, and this divergence may reduce the effectiveness of the European Regulation.

Although the new EU regulation represents a relevant step towards the institutionalization of mountain food product market in Europe, the quality scheme for mountain products seems to need some

improvements to make it more likely to achieve its intended effects. The improvements should include the adoption of environmental sustainability-related and animal welfare-related rules for all product categories suitable for using the mountain label. Policymakers should also evaluate the creation of a single logotype for the mountain label to be applied by all European countries, and the inclusion of the geographical name of the mountain region from where the product originates.

As regards wine and wine production in mountain areas, we suggest policymakers include wines in the list of products suitable for using the mountain label, as well as establish rules and measures to favour sustainable viticulture systems, including the use of autochthonous grape varieties to promote agrobiodiversity and attract consumers interested in local/terroir products;

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