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**Ana VELIMIROVIĆ¹, Zoran JOVOVIĆ¹,
Siniša BERJAN², Hamid EL BILALI³**

CONSUMER PERCEPTIONS AND MARKET POTENTIAL FOR REINTRODUCTION OF TRADITIONAL WHEAT VARIETIES IN MONTENEGRO

SUMMARY

Local and organic food purchase is frequently associated with consumer motivation to protect environmental, animal, and human health and support local communities and cultural traditions. Crop genetic resources, particularly traditional varieties, have been significantly eroded by the introduction of modern, high-yielding varieties in the last half of the 20th century. This was particularly relevant for staple crops, which include wheat. Omitting the understanding of why the genetic erosion of agricultural crops occurred, through this study we gave an insight into consumer preferences for traditional products and local wheat varieties. The random survey examined 1178 different profiles and their consuming habits with the aim of assessing their preferences and the possibility of reintroduction of wheat landraces in Montenegro. Public opinion polls confirmed the negative perception on genetically modified organisms (GMOs), pesticides, and intensive production, as 90.2% of the consumers would prefer to have their own production, consider as safer alternative compared to conventional production. It is promising that 94.5% of the respondents would rather buy bread produced from a local wheat variety than from a modern, imported variety, while 88.8% of the respondents would pay a higher price for flour, bread, and other products from local varieties. If engaged in agricultural production, respondents rated production using traditional plant varieties very positively, aiming to produce authentic, local products (78.5%). Such attitudes open the possibility of reintroduction of traditional wheat varieties on the market

¹Ana Velimirović (corresponding author: ana.velimirovic@hotmail.com), Zoran Jovović, Biotechnical Faculty, University of Montenegro, MONTENEGRO

²Siniša Berjan, Faculty of Agriculture, University of East Sarajevo, BOSNIA AND HERZEGOVINA;

³Hamid El Bilali, International Centre for Advanced Mediterranean Agronomic Studies – Mediterranean Agronomic Institute of Bari (CIHEAM-Bari), Via Ceglie 9, 70010 Valenzano (Bari), ITALY

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and encourage policy revision in order to pay more attention to traditional wheat varieties.

Keywords: wheat, traditional varieties, traditional products, consumers, survey

INTRODUCTION

The choice of food is fundamentally determined by social and cultural influences that lead to differences in the usual consumption of certain foods (Sobal 2009, Chen and Antonelli 2020). These influences are subject to changes accompanied by improving living standards, lifestyle changes and market offers (Jevšnik *et al.*, 2008). Many studies indicate the risks of excessive use of pesticides and pest resistance, genetically modified organisms (GMOs), food-borne diseases, and environmental pollution, to which a certain number of consumers attach importance, and, for these reasons, they increasingly turn to healthy and safe food with specific nutritional requirements (Paull, 2015, Wunderlich *et al.*, 2015; Botelho *et al.*, 2016, Bilali *et al.*, 2020).

Landraces are dynamic populations of agricultural plants characterized by historical origin and traditional cultivation systems (Carrosio, 2005, Jovovic *et al.*, 2011, Velimirović *et al.*, 2023). Their production is maintained by continuous multiplication through generations in a given set of climatic, soil and agricultural conditions (Villa *et al.* 2005, Zeven 1998). Such linkage between landraces and the environment enabled the development of specific phenotypic and adaptive characteristics, and in the last decades, landraces received more attention as potential sources for breeding (Starr *et al.* 2015, Fratianni *et al.* 2020). They are often linked to specific and unique organoleptic characteristics preferred by the consumers (Frankin *et al.*, 2023).

The reintroduction of traditional varieties has gained considerable attention in the search for healthy, safe, sustainable, and culturally meaningful food options (Johansson *et al.*, 2021). Traditional crop varieties, including wheat traditional varieties, are addressing the growing consumer demand for products that not only satisfy nutritional needs but also resonate with cultural heritage and sustainable practices (Dwivedi *et al.*, 2016, Doncic *et al.*, 2019, Orsini *et al.* 2020). Montenegro, as a country of rich agricultural tradition and biodiversity, with a growing market demand for healthy food choices, stands as an ideal candidate to explore the potential of traditional wheat varieties in meeting these demands.

The aim of this scientific paper is to understand the consumers' perception regarding traditional wheat varieties and to assess the level of interest in their increased utilization. The expansion of internet users has notably enhanced the accessibility of vast pool of potential survey participants, facilitating the implementation of diverse online evaluations (Sills *et al.*, 2002). Use of this methodology for market analysis can give valuable insights into consumers' willingness to pay premium prices for conventional products, as well as their curiosity regarding novel products sourced from genetic resources (Conto *et al.*, 2016). Thus, this study employs an online survey to engage with the Montenegrin

population, dealing with their preferences, attitudes, and expectations concerning traditional wheat varieties and derived products. Our hypothesis posits that, in light of the growing emphasis on health-conscious dietary choices, there exists significant untapped potential in Montenegro for the production and trade of products derived from traditional wheat varieties. While comprehensive demographic and preference data were collected, limited insight of the interplay between demographic factors and consumer preferences, such as observed age, education, and occupation-based differences was obtained. These interactions can elucidate the dynamics shaping consumer choices and provide more targeted insights for food producers, marketers, and policymakers aiming to align their strategies with the diverse demands of consumers.

MATERIAL AND METHODS

A voluntary self-administered online survey was designed using the online survey platform Survio to facilitate distribution and data collection. It was conducted in the period from February 24 to April 4, 2020, targeting the population residing in Montenegro. A non-probability convenience sampling method was employed to disseminate the survey through various online channels, including social media, email, and relevant websites.

The survey questionnaire contained a variety of question types, including multiple-choice questions, Likert scale questions, and open-ended questions. The questionnaire was divided into three parts: an introductory part with demographic information, a part related to the attitude toward conventional and genetically modified food, and a third part related to traditional products and varieties.

Quantitative data from multiple-choice and Likert scale questions were analysed using the Statistical Package for Social Sciences (SPSS), while qualitative data from open-ended questions were subjected to content analysis.

RESULTS AND DISCUSSION

Out of a total of 3014 visits, 1178 questionnaires were successfully completed, resulting in an overall completion rate of 39.1%. This completion rate indicates a moderately successful engagement with the survey respondents. Females represented a notable majority of the respondents, accounting for 60.61% of the total, while males make up 39.39% (Figure 1). The age distribution was relatively balanced across the various age groups. The largest age group falls within the 35-44 category, constituting nearly 30% of the respondents. This is followed by the 25-34 age group at 28.10% and the 18-24 age group at 23.43%. Older age groups, 45-54 and 55 and over, have fewer participants at 13.92% and 5.18%, respectively. Occupation indicates the economic status of respondents, and it is an important driver in purchase decision-making (Puddephatt *et al.*, 2020). The occupation data indicates that the majority of the respondents are engaged in full-time or part-time jobs, representing 69.86% of the total. Students make up 16.21% of the participants, while 11.38% report being unemployed. A smaller percentage, 2.55%, identifies as retired individuals. The majority of the

respondents have attained at least a high school education (57.30% have completed university, and 29.50% have finished high school). A smaller portion holds advanced degrees, with 11.60% reporting a Master's or Doctor of Science. A very small percentage, 0.80%, reported having either no formal education or only elementary school education.

Food safety concerns and values attributed to organic food affect positively the attitude towards organic food (Lazaroiu *et al.*, 2019, Le-Anh and Nguyen-To 2020). When making food choices between two extremes: “I prefer to buy food produced traditionally or organically, with minimal use of artificial fertilizers and pesticides” marked with one and “I prefer to buy food from conventional production/food produced with the use of artificial fertilizers and pesticides” marked with five on a Likert scale, 43.5% of the respondents chose traditional production methods, 27.1% moderately preferred these products, and 23.3% were neutral. Food from conventional production was chosen by only 1.4%, and 4.8% of the respondents showed a moderate tendency to buy these products (Table 1). The average rating of respondents' preferences was 1.93, which indicates that the majority prefers to buy food produced in a traditional way or organic food compared to food from conventional production (Lazaroiu, *et al.*, 2019).

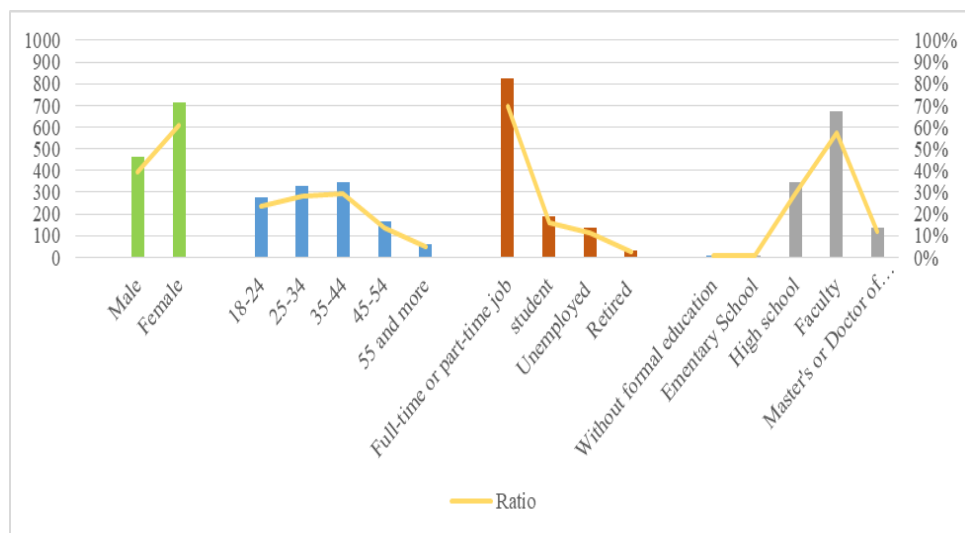


Figure 1. Profile of the respondents

Source: Survey, 2020

Education has a strong effect on the likelihood of buying organic products, as well as income (Dimitri and Dettmann 2012). Our findings indicate that the average score when choosing food is the highest among respondents aged 18-24, while it is the lowest among respondents over 55 years old (1.73 on a scale from 1 to 5). Respondents with a higher level of education gave lower ratings

compared to those with a lower level of education. Slight differences are observed between the unemployed, who gave the highest average score (2.16), and pensioners (1.86), who prefer to buy food produced in a traditional way or organic food (Figure 2).

Table 1. Ratings of respondents' preferences when choosing food

	1	2	3	4	5	
I prefer to buy food produced traditionally or organically, with minimal use of artificial fertilizers and pesticides	512 43.5%	319 27.1%	274 23.3%	56 4.8%	17 1.4%	I prefer to buy food from conventional production/food produced with the use of artificial fertilizers and pesticides

Source: Survey, 2020

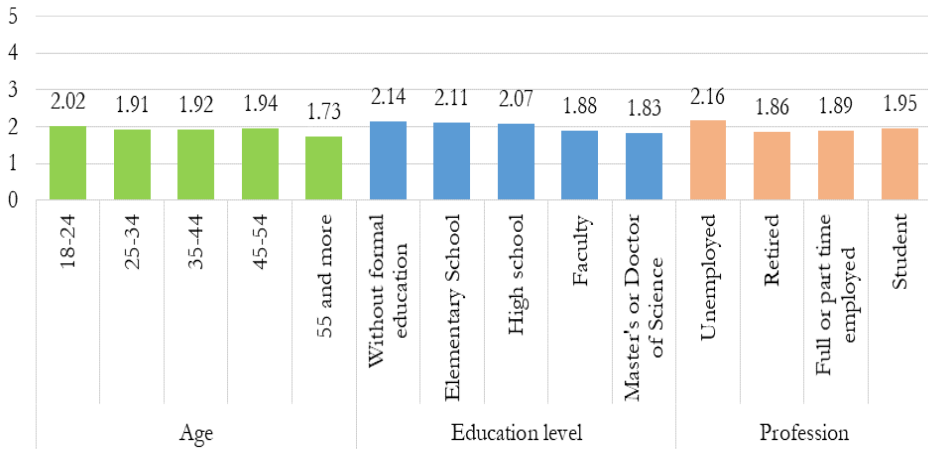


Figure 2. Average ratings of respondents' preferences in different categories when choosing traditionally produced/organic food and food from conventional production; Source: Survey, 2020

Consumers often associate better flavour and taste with old plant varieties of numerous crops found on the market (Sinesio *et al.*, 2021). Indeed, there is an increased interest in breeding communities to improve the sensory characteristics of modern varieties using traditional ones. Respondents who once consumed products from local varieties, singled out the taste as an important characteristic of this group of products in the largest percentage (79%), while slightly more than half of the respondents (56%) marked smell as a special characteristic. The non-sensory attributes of food products, such as health benefits, are often associated with organic and traditional food (Ditlevsen *et al.*, 2019). Every second respondent marked the nutrition value of the product as a special characteristic, while 44.5% of the respondents see health benefits (treatment of diseases, traditional recipes for colds, digestive diseases, etc.) as a special characteristic of products produced from local varieties (Figure 3).

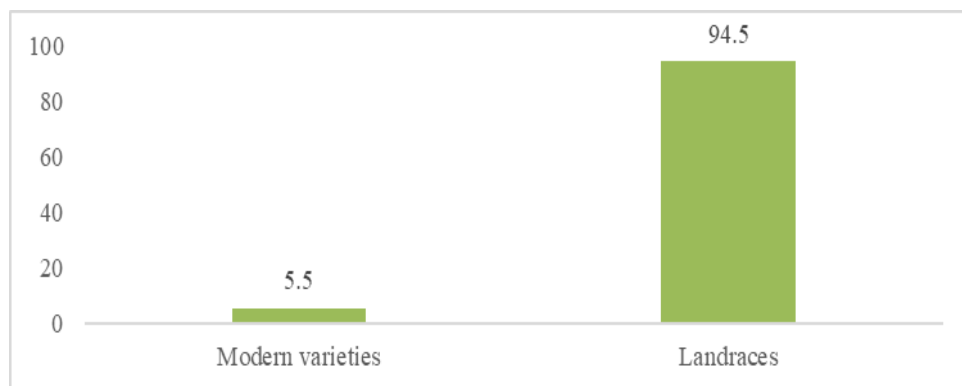


Figure 3. Distinctive properties of products from local varieties.

Source: Survey, 2020

Men more often indicated taste and smell as special characteristics of products from local varieties compared to women (81.3% and 59.4% vs. 77.5% and 53.7%), while women gave greater priority to nutrition and health benefits (52% and 47% versus 47.5% and 40.6%).

Traditional food products are an integral part of culture, identity, and heritage (Guerrero *et al.*, 2009). European consumers are willing to exchange the higher cost and longer preparation time associated with traditional food in favour of the distinctive taste, quality, visual appeal, nutritional value, health benefits, and safety offered by traditional food products (Almli *et al.*, 2011). Of the total number of respondents, as many as 94.5% stated that they would rather buy bread made from a local variety of wheat than from a modern, imported variety. Observed by the level of education, respondents with lower education gave greater importance to modern, imported varieties of wheat compared to those with higher education. Of the total number of respondents without formal education, 28.6% answered that they would rather buy bread from modern imported varieties of wheat compared to local varieties, while the percentage of respondents with completed elementary school was at the level of 22.2%. The number of respondents with higher education who would prefer to buy bread made from modern imported wheat varieties was significantly lower (4.7% of respondents with a university degree and 2.4% of the respondents with a master's degree and/or doctorate). There are differences in the answers observed from the point of view of work engagement. Of the total number of unemployed respondents, 88.4% would prefer to buy bread produced from a local variety of wheat, while a slightly lower percentage was recorded among the group of pensioners (90.5%). Out of the total number of employees, 96.3% would rather buy bread from the local wheat variety.

The smallest percentage of respondents would pay 75% more for flour, bread and other products from local varieties than the price of conventional products, while 11.2% are not ready to allocate a larger amount of money for their purchase. As much as 18.9% of respondents would pay twice the price, 31.2% would pay 25%

more, and 34.4% would be willing to pay 50% more than the price of conventional products (Figure 4).

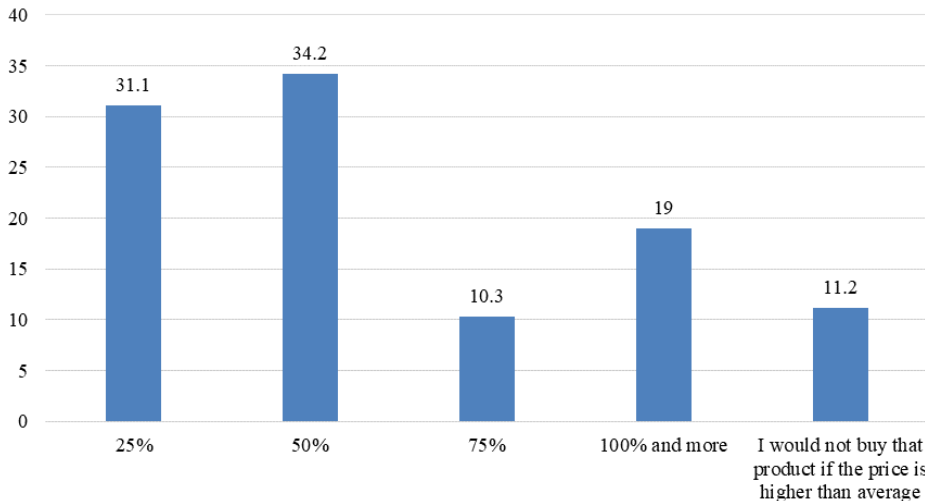


Figure 4. Willingness of the respondents to pay higher price for bread produced from traditional wheat variety; Source: Survey, 2020

Out of the total number of respondents who would not buy a product whose price is higher than the average, respondents older than 45 have a larger share. Also, this attitude is significantly more present among pensioners (33.3%), compared to other categories of the population. Although the majority of consumers consider traditional food products cheaper, the willingness to pay higher prices is confirmed throughout diverse markets (Pieniak *et al.*, 2009, Stolz *et al.*, 2011).

CONCLUSIONS

Understanding consumers' demands is essential for food producers, marketers, and policymakers to align their strategies and promote traditional and local food options. Our results suggest a notable preference toward organically and traditionally produced foods overall. The main determinants for such choices revealed in our study are occupation, education and age. Occupation is crucial in purchase decision-making, suggesting that the economic status of respondents plays a significant role in shaping their food choices. Education levels influenced food preferences, with respondents having lower levels of education expressing a higher preference for traditional or organic food. Conversely, those with higher education levels tend to have lower ratings for these preferences. Younger respondents (aged 18-24) express the highest average preference score for traditional and organic food, while older respondents over 55 show the lowest preference. Taste and smell and health benefits are highlighted as crucial characteristics of products from local varieties. The sensory traits, preferred by

the male population, and health benefits preferred by females, are important findings for market-oriented production and appeal to the producers. A substantial majority of respondents express a strong preference and willingness to pay more for bread made from a local variety of wheat over modern, imported varieties, reflecting a strong connection to locally sourced products and highlighting the potential for supporting local agriculture.

While this study provides valuable insights into consumer preferences for traditional and organic food products, there are certain limitations that should be considered in future research. The predominantly female and relatively younger respondent profile could introduce bias. In-depth interviews or focus group discussions, could uncover deeper insights into the underlying motivations driving consumer preferences for traditional and organic food. Thus, future research will strengthen the applicability of the complex interplay between demographics and food choices.

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