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Traditional Varieties for Local Markets: A Sustainable Proposal for Agricultural SMEs

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Abstract: Agricultural activity has changed significantly in recent years. There is a clear trend towards monoculture and the replacement of traditional crops for others which are more productive and achieve better economic results. These factors have two fundamental consequences: on the one hand, the abandonment of agricultural activity, with the subsequent loss of rurality; on the other hand, a negative effect on the maintenance of biodiversity, because traditional varieties disappear. In this context, this paper analyses the situation of consumers and farmers of a traditional crop in the southeast of Spain: the tomato. In order to understand the current situation and the forecasted future, a choice experiment was conducted on 217 tomato consumers. Furthermore, 40 tomato farmers of this area underwent an in-depth interview. On the one hand, analysis of the consumer study established a potential segment of the population that prefers traditional varieties due to their high organoleptic properties. Meanwhile, the farmer study revealed a segment of this population that is willing to produce these types of crops. Therefore, the possibility that a certain sector of producers cultivates traditional varieties is suggested, and for these varieties to be aimed at a market niche that values them positively, making the activity of Small and Medium Enterprises (agricultural SMEs) profitable. This would improve the sustainability of the rural territory and would strengthen the preservation of genetic heritage.

Keywords: tomato; choice experiment; consumer behavior; rural development; Mediterranean crops

1. Introduction

The crisis of modern conventional agriculture is global, affecting the most advanced economies as well as those from developing countries. The current agricultural system applies capital and technology intensively in order to be highly productive and competitive, which entails a series of economic, social, and environmental issues [1].

The economic issues directly affect farmers. Food prices have remained stagnant for a long period of time, whereas the costs of the products produced have increased significantly [2]. This has prevented farmers with less resources from competing in this new market. In Spain, there has been a very significant decrease in the number of agricultural holdings, down from 3,000,000 in 1962 to 945,024 in 2016. However, agricultural land has not decreased in the same proportion, down from 44.6 million hectares in 1962 to 30.0 in 2016. Therefore, there has been a concentration of agricultural holdings, and thus, a decrease in the number of small holdings [3].

The social issues are linked to the depopulation of rural areas. Industrialisation, implemented in the 19th century, has progressively decreased the needs for human labour in the agricultural sector, as well as the duration of all agricultural procedures [4]. Due to this hurdle, in Spain, like in the rest of the world, there has been a mass rural exodus from the countryside to urban areas. In 1960, 43.4%

of the Spanish population lived in towns with less than 10,000 inhabitants (80% of the national territory), a figure which has fallen to 19.9% in 2017 [5]. Today, the activity of the rural population tends to cease being agricultural and instead diversifies, turning the rural economy into a service economy [6].

Lastly, conventional agriculture entails a series of environmental issues, causing serious damage to the ecosystems such as soil degradation, water pollution, or the loss of biodiversity. Hybrid variety crops have proliferated around the world in recent decades with the objective of solving the productivity issues of traditional agricultural varieties, which lack the organoleptic properties that consumers want. These hybrid varieties have replaced traditional ones, which has entailed an extraordinary loss of genetic diversity due to the disuse of traditional varieties [1,7].

These issues can be seen in Spanish agriculture, which are greatly impacted by horticultural crops. The tomato stands out among them, as it is the horticultural crop with the most extensive surface (60,852 cultivated hectares) as well as the one that contributes the most to the production value of Spanish horticultural crops (almost 25% of the total horticultural crop value) [8].

In this context, it is of interest to study alternatives that promote the sustainability of the territory by increasing the economic activity of rural areas, as well as preventing the significant loss of biodiversity in these areas. The alternative proposed in this paper is to considerer local and traditional species and varieties, because they cover a wide genetic diversity that can help mitigate the current genetic erosion within agricultural diversity, in line with SDG 15 (Sustainable Development Goals), "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss" [9,10].

To do so, this article sets two main objectives: on the one hand, to detect and define the profile of potential traditional variety consumer segments; on the other hand, to determine the level of acceptance that tomato producers assign to a new and genetically improved traditional variety, and to analyse the importance that they give the various properties of this new traditional variety.

In order to achieve these objectives, consumers were surveyed by way of a choice experiment and several questions that make it possible to find and characterise segments. Meanwhile, tomato producers were interviewed in order to assess the acceptance of the cultivation of traditional varieties improved by way of marker-assisted selection and backcrossing.

2. Literature Review

2.1. Tomato Cultivation in Spain in the Framework of Conventional Agriculture

Tomatoes are a crop that originated in Mexico and was brought to Europe by Spaniards in the 16th century. Currently, tomatoes are one of the most consumed vegetables in the world, as they can be eaten fresh or following a wide variety of forms of processing [11]. In fact, worldwide tomato production increases every year, reaching 182.3 million tonnes in 2017 (the economic data in this section refers to 2017, the last year with available data). China is the main producer, followed by India, with both accounting for 44% of the worldwide production. Spain, with a production of 5.2 million tonnes, ranks eighth in the world, and second on a European level behind Italy [12]. The production of fresh tomatoes in Spain is concentrated in the southeast of the country, specifically in the provinces of Almería and Murcia, with 1,008,867 and 228,780 tonnes, respectively. Production in the Community of Extremadura is also noteworthy, although a majority of its produce is destined for the canning industry (Figure 1) [8,13].

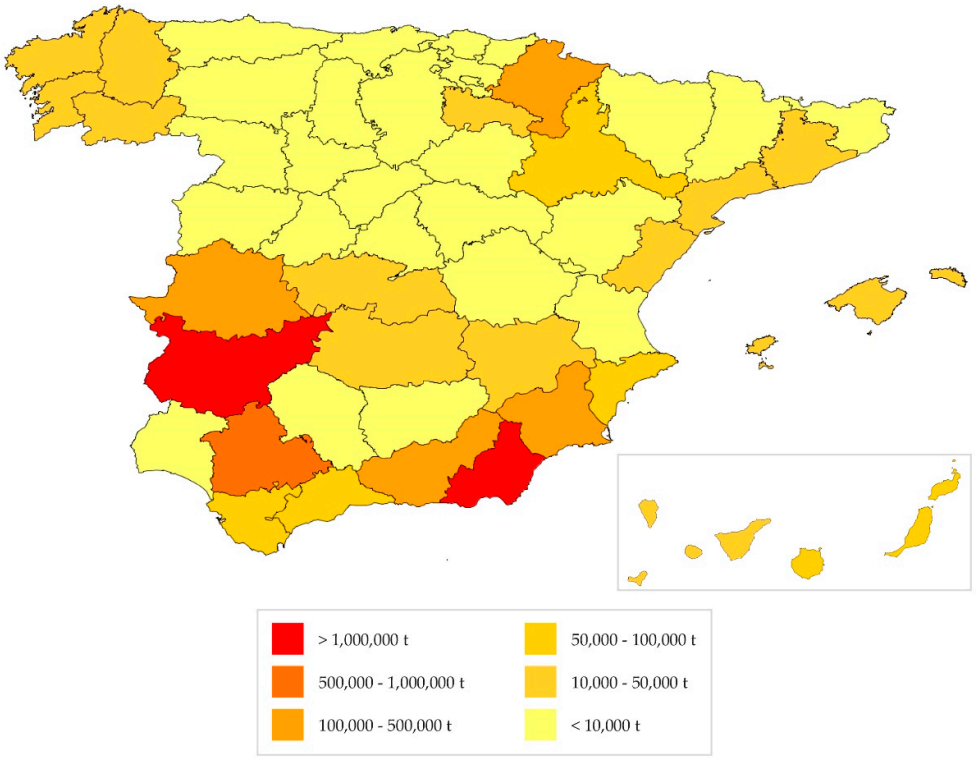

Figure 1. Map of Spain depicting tomato production in 2017 on a provincial level.

Regarding commerce, around 16% of all tomatoes produced in Spain (around 0.81 million tonnes) are exported, despite the strong competition of tomatoes from third countries such as Mexico, Morocco, or Turkey, which compete with very low prices (the average price of Turkish tomatoes on the foreign market is €0.498 per kilo, and Moroccan tomatoes cost €0.989 per kilo, whereas Spanish tomatoes cost €1.280 per kilo). This fact has caused Spanish exports to decrease every year since 2011 [12,14]. However, the product's low resistance to storage and handling makes some countries from northern Europe continue to import Spanish tomatoes (Germany (0.22 million tonnes), France (0.11 million tonnes), and the United Kingdom (0.10 million tonnes)). Regarding the internal market, which receives 84% of the tomato production, there are also imports, mainly from Turkey and Morocco, who it is difficult to compete with in price [15,16].

These figures clearly show the strong competition that the Spanish tomato faces in the markets, making it necessary to analyse product differentiation proposals that are appealing to the markets and which contribute to decreasing the current issues of conventional agriculture.

2.2. Market Possibilities for Traditional Varieties that Have Been Genetically Improved.

Tomato varieties cultivated in a traditional way have not only adapted to the territory, but they also have heightened organoleptic quality and nutritional value, attributes that are highly regarded by consumers [17,18]. Hence, they may represent an appropriate option for differentiation which is compatible with the preservation of the traditional genetic material, as they have been obtained following a lengthy process of selection and improvement, as well as having significant genetic diversity and great heterogeneity with a majority of agronomic and morphological traits. However, these varieties suffer from lower productivity and resistance to diseases than the hybrid tomatoes that are currently cultivated.

The Miguel Hernández University has conducted a programme to improve traditional tomato varieties with public funding, the main goal of which was to insert resistance genes into traditional varieties, making them more productive and allowing them to compete with commercial hybrids. The breeding programme was conducted with classic techniques. In other words, genetic engineering

techniques were not used. The process was carried out using marker-assisted backcrossing and natural selection, similarly as has been done traditionally by farmers [19].

This research focuses on the specific case of "De la Pera" tomatoes, a variety that has excellent organoleptic properties, but low resistance to virus diseases, despite its adaptation to the cultivation area. Once the varieties have been improved, it is important to ascertain whether they would be accepted in the markets, so that farmers from rural areas may consider growing traditional varieties while making a profit [20–22].

There are many factors that influence decisions to buy food other than the price, such as the best organoleptic properties or attributes linked to sustainability, local origin, or organic cultivation. A broad sector of consumers, mainly from developed countries, would be willing to pay a higher price for the same product if it offers added qualities that improve its quality of life. Types of food with the highest quality (more nutritive and with better sensory properties) are increasingly demanded by market consumers. The consumption of local products, with the same origin as the consumer, stimulates regional economy, and also represents a short commercialisation channel, meaning it has a low carbon footprint. Organic production offers foods while having less of an impact on the environment [23–26]. In the case of tomatoes, the intrinsic attributes (colour, taste, smell) are greatly influential on the consumer, even more than extrinsic factors. However, organic labelling (extrinsic attribute) can positively influence the organoleptic perception of consumers [27–29]. In this context, in this project we have focused on the local market to offer these improved varieties of a broadly recognised product in the area of cultivation. The exterior market was ruled out initially as it is more complex: competition from other countries and the preference of consumers for native products. This local preference can be due to many factors, chief amongst them being the consumer's ethnocentrism and the growing concern over pollution due to transportation [30,31].

In developing the research, we want to verify the following hypotheses:

Hypothesis 1 (H1). *There is a tomato consumer segment that prefers traditional varieties to hybrid varieties.*

Hypothesis 2 (H2). *There is a producer segment willing to cultivate an improved traditional variety.*

Hypothesis 3 (H3). *Cultivating traditional varieties is a suitable alternative for the sustainability of the territory's agricultural activity.*

3. Materials and Methods

3.1. Determine the Acceptance and the Most Influential Variables in the Consumer's Purchasing Decisions.

The research was conducted at the facilities of the Miguel Hernández University of the towns of Orihuela and Elche (Alicante province) in July 2017. The study was carried out with 217 people, evenly distributed in 3 different sessions. Convenience sampling was used to select participants, which is why the results cannot be generalised for the whole population [32]. The characteristics are shown in Table 1.

Table 1. Technical card of the experimental survey.

People	217 People, Buyers of Salad Tomato
Gender	60/40% F/M
Geographical location	2 medium-sized towns and 1 rural village in the Levante region of Spain
Experiment location	Universidad Miguel Hernández facilities
Recruitment method	Convenience

Analysis method	Choice experiment (4 attributes), one of them related to two lines within the specific traditional "De la Pera" variety: "breeding" and "not breeding"
Data collection	Questionnaire

The information was obtained from a survey which includes a choice experiment. This technique is based on the idea that goods or services can be described by the attributes that they include, and which consumers make purchasing decisions based on [33,34]. The purpose of the choice experiment was to determine the relative importance of the different attributes and their weight on the choice of purchase.

Choice experiments arose from conjoint analyses, are consistent with the random utility theory, and are useful as a method for eliciting passive use values [35]. The basic assumption of the random utility theory is based on the premise that individuals act rationally, selecting the alternative that yields the highest utility. Consequently, the probability of selecting a given alternative will be higher if the utility provided by such alternative is the highest among the different choices [36].

Choice experiments are also called stated preference methods, and they refer to situations where choices are observed in hypothetical situations. These types of methods have the advantage that they can allow the analyst to model the demand for new products with new attributes for which there is no real preference history, as with our current research. Our product consists of two tomato "variants": bred and nonbred.

The stated preference methods always require an experimental design. The design starts with the identification of the attributes and their levels, which allows us to define the products considering their most important characteristics and dimensions for the consumers in their decision-making process [37,38].

The attributes and levels of importance included in this experiment were chosen in accordance with the literature and the criteria of the researchers (Table 2): type of tomato (bred/not bred), origin (local/foreign) [39,40], cultivation system (organic/conventional), and price (low/medium/high) [41,42].

Table 2. Attributes and levels in the experiment.

Attributes	**Levels**		
Type	Breeding lines		Non-breeding lines
Origin	Local		Foreign
Cultivation system	Conventional		Organic
Price	Low	Medium	High

After that, it was necessary to carry out the choice set design. Specifically, we started by generating a full factorial design for four attributes, three of them with two levels and one of them, the price, with three levels (2 × 2 × 2 × 3). As the set of options to be assessed by the participants was excessive, we reduced the number of choice sets with a fractional factorial design. The design and the subsequent analysis were performed with the JMP statistics program (SAS Institute, Cary, NC, USA). The final choice design was made up of eight choice sets with two alternative tomatoes (alternative A and alternative B) of the "De la Pera" variety and a third option representing the nonbuying option (Table 3).

□ **Table 3.** Choice set example.

	OPTION A		**OPTION B**			
1	Type: 387 Origin: Local System: Conventional Prize: 3.50 €	☐	Type: 542 Origin: No local System: Organic Prize: 3.00 €	☐	**None of them**	☐

As well as the choice experiment, the questionnaire included a question where participants had to reveal their purchase preferences regarding a series of tomato attributes. This was conducted by way of a semantic differential scale (Figure 2).

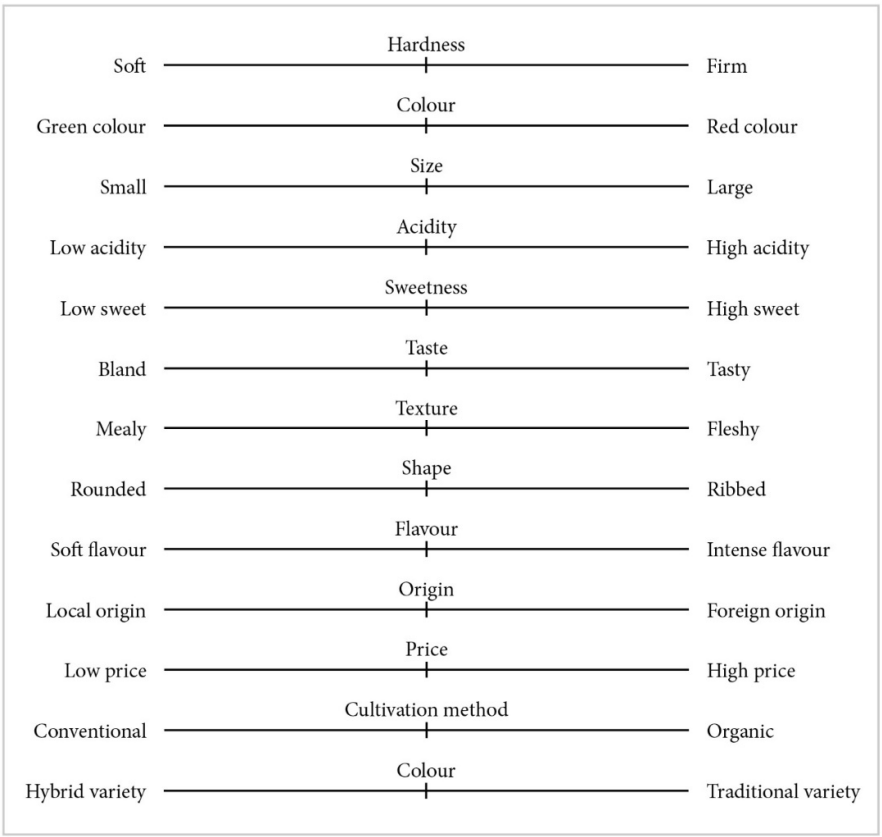

Figure 2. Scale used to measure the fresh tomato purchasing preferences.

Among the considered attributes was the type of variety, with the choices being "hybrid" and "traditional." This variable was used to segment consumers between those who prefer traditional varieties and those who prefer hybrid varieties.

A cluster analysis considering tomato variety preferences (hybrid or traditional) as the grouping variable was conducted in order to determine potential consumer segments. These preferences were disclosed by the consumers in the question on valued attributes. Once the segments were identified, consumers were characterised using the remaining variables to determine appropriate commercial strategies.

The survey also included the scale proposed by Steptoe [43] to measure the underlying food selection motives: the food choice questionnaire, as well as other questions, to compile the sample population's purchasing habits and sociodemographic data.

3.2. Determine the Variables that Influence the Cultivation Decisions of Farmers and the Socioeconomic Impact on Rural Areas

As the southeast of Spain is the main region regarding the production of fresh tomatoes in the country, the research focused on this area. To obtain the information, interviews were conducted with a structured questionnaire on 40 farmers of the area (Table 4). Probability samples have a well-founded theoretical basis, but the requirements pertaining to random selection must be met in order to obtain them, which is not easy [44]. As there is no tomato producer census, a probability sample was not chosen, and the sample is therefore not random. Producer contact information was obtained from a database that the Miguel Hernández University has, as well as from other sources such as the

CAERM (Committee of Ecological Agriculture of the Murcia Region), some companies of the sector, and from the interviewees themselves.

The data was compiled between November 2017 and February 2018. The interviews were conducted two different ways: in person and by telephone. The interviews had an approximate duration of 15 to 25 min. Most questions were open-ended, but the interviewer had optional answers to help the interviewee if necessary. Some of the questions were quite straight forward, as they addressed the farmer and their holding's socioeconomic data. The ones that took longer were the ones that inquired about traditional variety election criteria.

Table 4. Characteristics of the interviewed producers.

	Less than 5 ha	**between 5 and 40 ha**	**over 40 ha**	**Average**
Frequency (%)	67.5	20.0	12.5	-
Size of the average holding (ha)	1.61	11.25	295.60	40.29
Average area of cultivated tomatoes (ha)	0.34	3.85	125.00	16.62
Cultivation system (%)				
Greenhouse	29.6	50.0	20.0	32.5
Outdoors	66.7	25.0	20.0	52.5
Greenhouse and outdoors	3.7	12.5	20.0	7.5
Greenhouse with mulch	0.0	0.0	40.0	5.0
Outdoors with mulch	0.0	12.5	0.0	2.5
Cultivation method (%)				
Ecological	66.7	12.5	20.0	50.0
Integrated	7.4	0.0	40.0	10.0
Conventional	25.9	87.5	40.0	40.0

With the method used, an in-depth interview, the interviewer creates an environment where interviewees can express themselves freely. To do so, it is vital to make questions in a way that makes it possible to obtain the most relevant information for the interests of the research, while getting to know the producers enough to understand what they want to say [45,46].

The questionnaire used to conduct the interviews was produced by analysing the one employed in article [47], adapting it to the specific objectives of the research, and consulting experts in crop production and genetic engineering. The questionnaire had 30 questions and was divided into three main blocks. The first comprised a series of simple questions on the distribution of the soil, the cultivation and farming systems, the number and type of workers employed, etc., in order to characterise the holding. The second block included questions linked to the cultivation of tomatoes, such as the reasons for cultivating or not cultivating traditional varieties, or the level of acceptance of a hypothetical new variety with various improvements in its attributes. Lastly, the third block was based on a series of sociodemographic questions about the farmer, which are necessary in order to segment the interviewed population.

Once the answers were compiled, the variables included were classified and interpreted, so that the answers obtained could be classified into categories. Afterwards, they were analysed using the IBM SPSS Statistics v.25 program (IBM, Armonk, NY, USA).

4. Results and Discussion

4.1. Experiments with Consumers

4.1.1. Consumer Characterisation and Segmentation

The data confirms that tomatoes are one of the most consumed agricultural products: 46.9% of the studied population consume tomatoes on a daily basis, and only 1% do so on rare occasions. These figures are similar to those obtained in other projects.

Our results show that the attributes that are most highly valued by consumers when purchasing tomatoes are: flavour (tasty and intense), texture (meaty), origin (local), hardness (firm), colour (red), sweetness (medium–high) and acidity (medium–low). Other attributes such as the price, size, or shape of the tomatoes are less important for the consumers. Some authors [48–50] coincide with our results, as they show that consumers are very aware of the intrinsic parameters when purchasing tomatoes. Furthermore, consumers are interested in the origin of the tomato (variety or cultivation), as they believe it is the main factor that determines the organoleptic properties of the fruit, more so than the cultivation method used by the producer (ecological or conventional). However, other authors [51,52] differ from the aforementioned results, as they state that consumers give more importance to the price, the cultivation method, or the seals of quality, instead of their organoleptic properties.

In order to detect potential consumers, a segmentation of consumers was conducted according to their preferred type of tomato variety, establishing two clearly differentiated segments. Segment 1 (hereinafter, S1) is comprised of 57.3% of the consumers, who prefer traditional varieties. Segment 2 (hereinafter, S2) represents 43.7% of the studied population, who choose hybrid varieties.

In order to obtain the profile of both segments, significant differences were sought between them regarding tomato purchasing attributes and their levels, general purchasing attitudes, places of purchase, and sociodemographic characteristics.

Regarding purchase attributes, differences were found in the taste, origin, sweetness, acidity, and price attributes. On the one hand, S1 stands out over S2 for giving more importance to intrinsic attributes of the fruit such as the taste, sweetness, and acidity. Furthermore, S1 also gives greater value to the origin of the fruits. On the other hand, S2 only gives more importance than S1 to the price of the products (Figure 3).

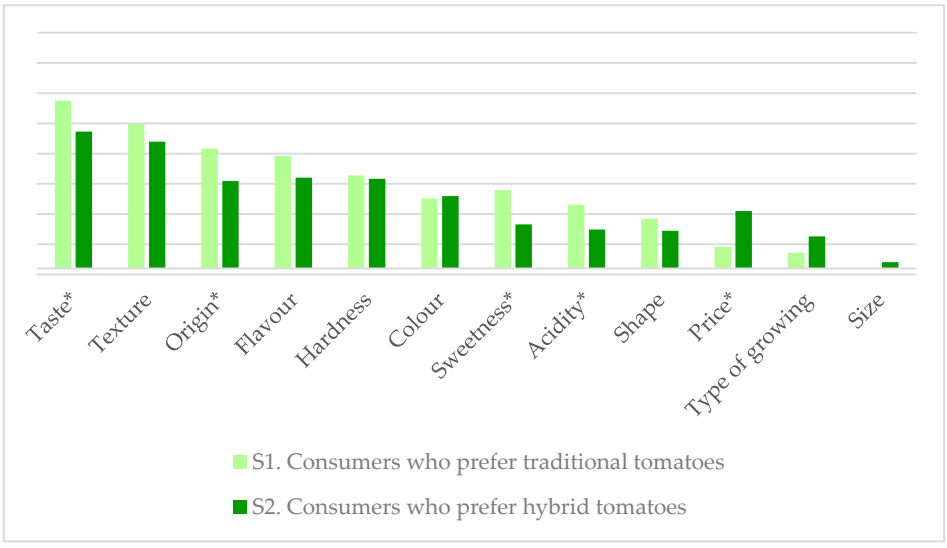

Figure 3. Purchasing preferences regarding tomato attributes. * Significant differences between segments.

Regarding the attribute levels, S1 especially values that tomatoes are of a local origin and tasty (high sweetness and low acidity). The origin of the product is an appealing quality for this sector of the population, as supporting the local economy by purchasing products from the region makes them feel good [53]. On the other hand, S2 stands out because of the importance it gives prices compared to S1 (Figure 4).

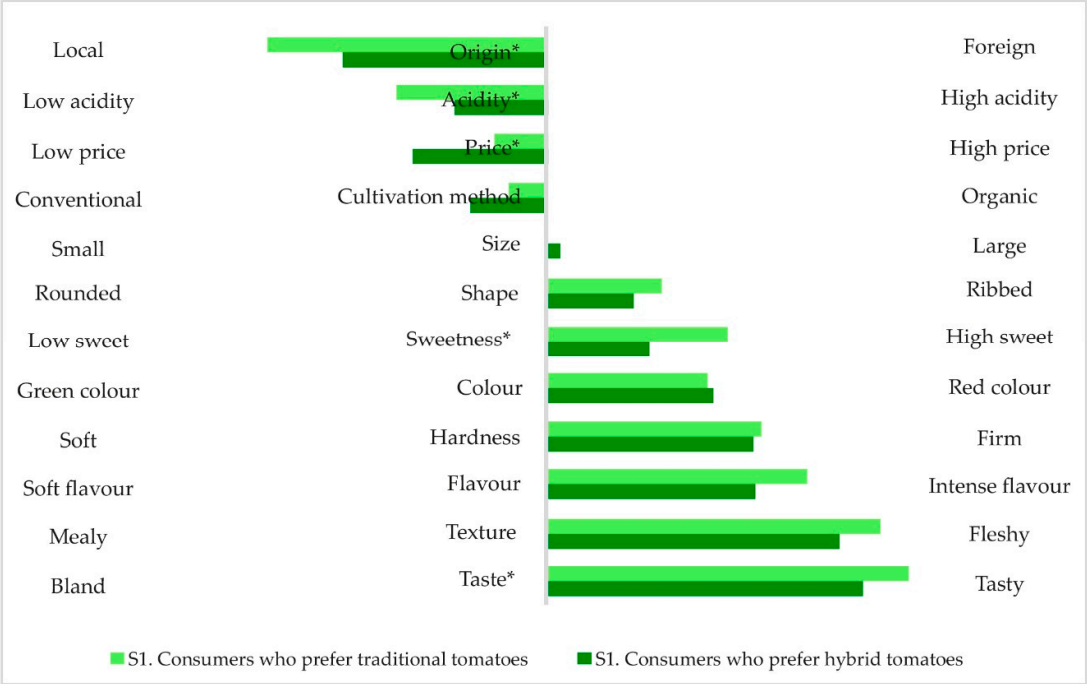

Figure 4. Purchasing preference levels regarding tomato attributes. * Significant differences between segments.

Regarding the purchasing attributes of food, the scale proposed by Steptoe and his group [43] was used, and a factorial analysis was conducted with the results obtained in order to decrease the initial number of variables (18), summarising them in 7 main factors. The explained variance of these factors is 62.2%, the KMO coefficient is 0.664 and Barlett's test of Sphericity is significant. The value of the factors is shown in Table 5.

Table 5. Rotated component matrix of purchasing behaviors.

	F1	F2	F3	F4	F5	F6	F7
Good taste	0.732	−0.016	0.025	0.032	−0.015	−0.149	−0.039
Pleasant texture	0.684	0.124	−0.053	−0.048	0.301	0.121	0.042
Looks nice	0.650	−0.103	−0.117	0.137	0.049	0.377	0.158
Smells nice	0.643	0.232	0.097	0.190	−0.048	0.141	0.007
Clearly marked origin	0.153	0.831	0.079	0.149	0.074	0.071	−0.171
Friendly country	−0.094	0.720	−0.123	−0.040	0.174	0.176	0.282
Environmentally friendly packaging	0.166	0.715	0.356	0.116	−0.039	−0.124	0.001
Nutrients	−0.003	0.028	0.821	−0.054	−0.042	0.061	−0.006
Healthy	0.033	0.018	0.769	0.200	0.182	−0.056	−0.124
No artificial ingredients	−0.056	0.328	0.628	0.016	0.132	0.023	0.312
Feel good	0.176	0.084	0.073	0.907	0.038	−0.018	−0.020
Cheers me up	0.046	0.096	0.049	0.888	0.049	0.144	0.096
Usual meal	0.039	0.015	−0.032	0.053	0.835	−0.036	0.040
Childhood meal	0.230	0.289	0.145	−0.108	0.615	0.029	−0.018

Weight control	−0.078	−0.073	0.362	0.337	0.607	0.231	0.030
Easy to prepare	−0.025	0.123	0.013	0.234	0.045	0.840	−0.138
Convenient	0.243	0.006	0.038	−0.094	0.031	0.736	0.207
Cheap	0.080	0.018	0.024	0.072	0.023	0.048	0.931
Explained variance (%)	11.47	11.27	11.10	10.81	9.09	8.80	6.62

Notes: F1: Sensory appeal; F2: Ethical concern; F3: Health and natural content; F4: Mood; F5: Familiarity and weight control; F6: Convenience; F7: Price. The cells with green in the background indicate which variables have been grouped for each F group. Figure 5 shows a representation of F groups.

The analysis of the results obtained for these factors in both segments shows that in two factors there are significant differences among segments (Figure 5). On the one hand, S1 values much more positively "familiarity," whereas they disregard "convenience." In Spain, the consumption of traditional foods is driven by familiarity, naturalness, and the general attitude towards those types of foods [54]. On the other hand, S2 gives great importance to "convenience" and negatively qualify the "familiarity" factor.

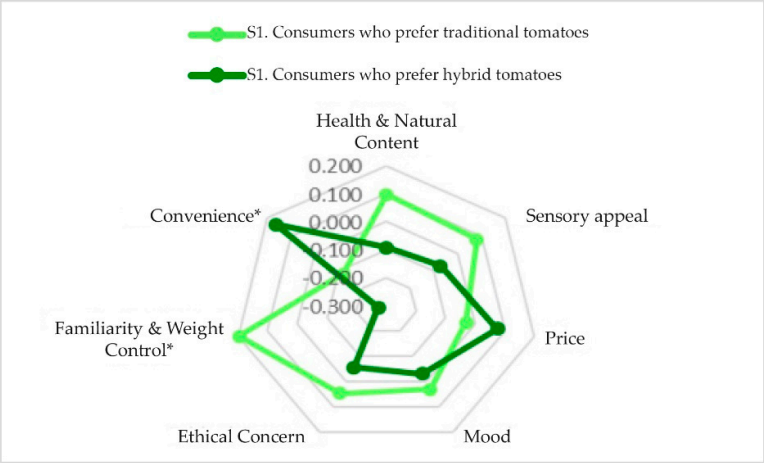

Figure 5. Assessment of the purchasing attributes of consumers. * Significant differences between segments.

The purchasing spots frequented by S1 are greengrocers, open-air markets, and supermarkets and hypermarkets. However, S2 only uses department stores and, on some occasions, retail sellers that offer discounts. On the one hand, at greengrocers and open-air markets, one can easily find products of local origin which also have better organoleptic properties. On the other hand, department stores offer consumers greater variety and flexibility, as they can do all their shopping in a single place. Furthermore, products can be found at better prices, even if their sensory properties are less appealing [55–57].

Regarding the socioeconomic characteristics (Table 6), figures show that there are no significant differences between segments as regards gender, the number of household members, the presence of children in the household, and the level of education. However, it is noteworthy that S1 has a lower percentage of youths than S2, as well as a higher percentage of consumers with children younger than 12. Regarding the level of income, S1 is characterised by having a higher level than S2.

Table 6. Socioeconomic characteristics of consumers.

	Segment 1	**Segment 2**	**Total**
Gender (%)			
Male	37.3	41.1	38.9
Female	62.7	58.9	61.1
Age* (%)			

From 18 to 24 years old	9.2	15.6	12.0
From 25 to 34 years old	13.4	23.3	17.7
From 35 to 49 years old	51.3	35.6	44.5
From 50 to 64 years old	26.1	25.6	25.8
Household members (%)			
1 member	8.4	10.0	9.1
2 members	20.2	23.3	21.5
3 members	20.2	25.6	22.5
4 members	41.2	33.3	37.8
Presence of children at home * (%)	53.0	37.8	46.4
Presence of under-12s at home * (%)	77.4	68.6	74.2
Presence of teens at home * (%)	33.9	54.3	41.2
Presence of youths (%)	9.7	5.7	8.2
Level of studies (%)			
Primary school	3.4	1.1	2.4
Secondary school	16.8	11.1	14.4
University	79.8	87.8	83.3
Household income ** (%)			
<€1000	5.0	12.5	8.2
€1000–€1999	23.5	25.0	24.2
€2000–€3499	27.7	22.7	25.6
€3500–€4999	16.8	12.5	15.0
€5000–€6999	1.7	9.1	4.8
More than €7000	7.6	3.4	5.8
I don't know	5.9	6.8	6.3
I don't want to answer	11.8	8.0	10.1

Notes: * and ** indicate significance at the 5 and 10% levels, respectively.

4.1.2. Results of the Choice Experiments

The results of the choice experiments are shown by segment in Table 7. S1 mainly values the type of tomato they eat, with the price and origin of the product also being important variables for this segment. S2 believes the price is the most important attribute. In both cases, the type of cultivation (ecological/conventional) is the least important attribute.

Table 7. Model estimates of the tomato attributes.

Attribute levels	Segment 1		Segment 2	
	Log Worth *	*p*-value	Log Worth *	*p*-value
Price	10.42	0.0000	12.129	0.0000
Origin	9.086	0.0000	5.549	0.0000
Type of tomato	12.628	0.0000	3.115	0.0008
Cultivation method	3.585	0.0000	2.264	0.0055

Notes: * Log Worth is defined as -log10 (*p*-value). This transformation adjusts *p*-values to provide an appropriate scale for graphing. A value that exceeds 2 is significant at the 0.01 level.

Regarding the levels of the attributes, the results show that, in both segments, improved varieties (flavour), ecological cultivation, and lower prices are the highest valued. The main differences lie in the importance of these levels. S1 assigns greater value to the improved varieties, and slightly more to the local origin, than S2. The value given to ecological cultivation is also slightly greater in S1. Lastly, lower prices are valued by both segments, but more by S2, whereas medium prices have a negative effect for both segments (Table 8).

Table 8. Parameter estimates of the levels of the tomato attributes.

Attribute Levels	Segment 1		Segment 2	
	Estimation	Standard Error	Estimation	Standard Error
Improved	0.2632	0.0368 **	0.1457	0.0439 **
Local origin	0.2215	0.0368 **	0.2021	0.0440 **
Conventional cultivation method	−0.1332	0.0369 **	−0.1216	0.0443 **
Low price	0.3349	0.0592 *	0.4286	0.0697 *
Medium price	−0.0586	0.0722 *	−0.0637	0.0834 *

Notes: * Significant attributes with standard error <0.05, ** Significant attributes with standard error <0.10.

In summary, we have detected a potential segment of consumers at whom the improved traditional varieties can be aimed. This segment (S1) gives greater importance to an intense flavour, local origin, sweetness, and low acidity in tomatoes. However, and even though they prefer low prices, they give this level less importance, meaning that they would be more willing to pay more for a tomato. They show a higher frequency of purchase in greengrocer shops and open markets, which suggests a greater search for local products or direct contact with the producer. In general, they have higher income and a larger percentage of members of this group are middle-aged people (35–49 years of age). Having a greater percentage of people with higher income would explain the lesser importance of the price.

The results of the choice experiment are consistent with the previous results. S1 gives more importance to the improved variety and local origin, and less to low prices.

4.2. Surveyed Producers

4.2.1. Characterisation of the Holdings

The results show a fairly comprehensive image of tomato producers in southeast Spain, as the sampling was conducted considering all types of farmers: small (<5 ha), medium (5–40 ha) and major (>40 ha).

There are 24.3% of farmers who exclusively cultivate tomatoes in their fields. This fact is exacerbated in small and medium farmers, whereas this is not the case in major producers. The rest also have plantations of fruits and other vegetables. In general, small farmers combine vegetable crops, whereas those with larger fields have plantations of fruit trees (Table 9).

Table 9. Distribution of holdings by crops (%).

Crops *	Less than 5 ha	between 5 and 40 ha	over 40 ha	Total
Only tomatoes	25.9	33.3	0.0	24.3
Tomatoes and other vegetables	44.4	16.7	25.0	37.8
Tomatoes and fruit trees	3.8	0.0	50.0	8.2
Tomatoes, other vegetables, and fruit trees	25.9	50.0	25.0	29.7

* Significant differences between segments.

The main reasons that push producers to cultivate tomatoes are: profitability (28.9%), tradition (26.3%), and the fact that it is a local crop (26.3%). Firstly, tomatoes are a traditional crop in southeast Spain. A majority of farmers know about or are specialised in this type of cultivated product, which makes it easier for them to manage. Furthermore, in being a traditional crop, there are varieties that adapt to the area's weather and soil conditions [58]. Secondly, tomatoes turn out to be a profitable product for all the area's farmers. However, there are major differences regarding the benefits declared depending on the type of farmer: small ones obtain €1128/ha compared to the €15,064/ha that major farmers make.

The Mediterranean climate enables the cultivation of tomatoes all year round in different cultivation systems. In southeast Spain, the harvesting periods of tomatoes cultivated under netting are supplemental to the harvesting periods of tomatoes in greenhouses (short, double, or long cycle) [59,60]. Therefore, there are farmers specialised in one type of harvesting and others who combine several harvesting periods every year. As many as 60.0% of interviewed tomato producers cultivate them in a greenhouse, whereas 25.0% do so outdoors. The tendency to cultivate outdoors is fostered by small and medium farmers, as a greenhouse is an infrastructure that requires a large initial investment and requires significant benefits year after year in order to pay it back and turn a profit, which is unpredictable taking into account that tomato producers operate in a global competitive market [61,62]. Another aspect that separates farmers is the method used for agricultural production. Ecological cultivation is a method that is used by farmers more and more every year, thus increasing both its cultivation area and its production in Spain. In fact, 42.1% of interviewed tomato producers do so following ecological regulation, and 15.8% conduct integrated production. However, the trend of ecological production is mainly driven by small farmers (57.1%), as a majority of farmers with larger fields prefer to continue using the conventional method and, in some cases, integrated control [63].

The average age of producers was 45.95, and they had an average experience of 21.80 years as farmers. In southeast Spain, agriculture has survived as a tradition, but the new generations have abandoned the fields for other sectors that are better paid, causing the sector to age. Agricultural companies chose to recruit migrant labour, who took the jobs that the native population rejected [64]. Major producers devote their entire workday to agriculture. In other words, agriculture is their profession, and a majority of them are owners of the holdings they work on. Furthermore, they said that 100% of their income comes from agriculture. However, 21.1% of small and medium producers have it as a part-time commitment, 34.2% are lessees, and only 57.3% of their income comes from agriculture. Smallholding is an aspect linked to part-time agriculture and, therefore, to the de-professionalisation of the sector. The leasing of holdings is a reflection of trying to reach the size necessary to take advantage of the economies of scale, but a professional producer who is fully dedicated to the activity is also necessary [65,66]. In any case, 86.5% of farmers said they will continue with their work in the field, major and medium producers due to economic reasons (because they carry out a profitable activity), and small farmers for personal reasons (mainly to keep up the tradition).

4.2.2. Acceptance of Traditional Varieties

The selection of the type of variety is one of the fundamental dilemmas that a producer must address, and a fundamental objective of this project is to analyse the level of use and likelihood of acceptance of cultivating traditional varieties of tomatoes.

As many as 50% of the small and medium farmers interviewed only use traditional varieties. They choose them for the following reasons: consumers prefer them (45.8%), they are efficient (37.5%), and they contribute towards creating biodiversity (20.8%). The impoverishment of the organoleptic quality of the new tomato varieties, due to the objectives set for the current improved varieties, has positioned traditional varieties in a market niche that seeks to recover the organoleptic quality and external appearance of traditional tomatoes [18,67]. However, 75.0% of major farmers only cultivate hybrid varieties, and 25.0% combine traditional and hybrid varieties. They all agree that traditional varieties have low efficiency and low resistance to diseases. The traditional variety most chosen by farmers is "Muchamiel" (40%). Furthermore, the "De la Pera," "Flor de Baladre," and "Valenciano" varieties are also used. Meanwhile, the most used hybrid variety is "Cherry" (20%). Other commercial hybrids used are: "Raf," "Anairis," "Boludo," "Canario," "Dumas," and "Cordeil," among others. It is worth noting that from an in-depth analysis of their answers one can surmise that, in many cases, producers do not know the difference between traditional varieties and commercial hybrids.

At this point, farmers were asked to value the level of importance of a series of properties that a new and improved variety similar to "De la Pera"/"Muchamiel" would have, obtained through a

process of natural selection (Table 10). This variety would have heightened resistance to certain issues such as virus diseases or splitting, although it would entail certain handicaps such as a less intense flavour than the original traditional variety or the impossibility of preserving seeds from one year to the next.

Table 10. Importance given to the properties of a new and improved variety and level of acceptance.

	Less than 5 ha	between 5 and 40 ha	over 40 ha	Total
Resistance to virus	8.40	9.71	10.00	8.76
Absence of splitting	8.40	9.29	10.00	8.71
Good post-harvest preservation	7.56	8.57	8.50	7.82
Even fruit setting	7.00	8.14	9.33	7.43
Good preservation in the plant	7.32	8.14	5.00	7.29
Good size	6.76	8.86	7.33	7.23
Production between 3 and 5 kg/plant	7.48	5.71	6.67	7.06
Less intense flavour than the original	6.92	7.71	6.00	7.00
Nonpreservation of seeds	6.56	6.43	3.33	6.26
Less resemblance to the traditional shape	6.04	5.29	3.33	5.66
Level of acceptance	7.24	7.29	4.67	7.03

In general, farmers highlight the following properties: resistance to virus, absence of splitting, good post-harvest preservation, and even fruit-setting. All these attributes are aspects that improve the management of the crop; in other words, it highlights that farmers would rather cultivate a variety that is more manageable rather than a variety that is very productive but suffers from diseases, preservation issues, and fruit damage, such as splitting.

The differences can be seen in properties such as, for example, the "good preservation of the plant." This property is more important for small farmers than major farmers, possibly due to the former usually making use of ecological cultivation for their crops and, in being able to use a limited amount of chemical products, the preservation of the fruits in the plant is an essential quality for them.

It is important to stress the difference in importance given by major and small farmers to the possibility of preserving seeds from one year to the next. Whereas this property lacks importance for the former, small and medium producers value this point significantly, as for them, the preservation and exchange of seeds can represent an interesting source of products.

The "traditional" shape is also more important for small producers than for major producers (being of intermediate importance for medium producers). This is due to small producers being more accustomed to working with traditional varieties, and they value this attribute, whereas major producers select rounder and more homogeneous shapes.

Lastly, they were asked to state the level of general acceptance of said variety on a scale of 1 to 10. The variety was accepted (>7 points) by small and medium farmers. These said that the absence of the main virus diseases in the variety would facilitate the development of the crop and, as it would have similar organoleptic properties as the mentioned traditional varieties, there would be a market niche to approach. However, major producers did not accept the hypothetical variety (<5 points). They said that the efficiency of the variety was very low, and that it would not achieve an acceptable production that would allow the holding to be profitable.

5. Conclusions

The current situation of agricultural producers is strongly conditioned by the profits of their activity. On the one hand, this situation leads to the abandonment of agriculture, because people look for more lucrative activities. On the other hand, this involves a change towards products that make it possible to obtain greater profits [68,69]. In the Mediterranean area, major and highly specialised holdings with specific crops (cucumbers, tomatoes, peppers…) are proliferating, whereas small and medium ones seek crops that allow them to survive, such as table grapes or broccoli [70,71]. All of

this represents the abandonment of the cultivation of traditional varieties, whose preservation is essential to slow down the loss of biodiversity and preserve phylogenetic resources [72].

With this initial situation, the study of consumers has identified two clearly differentiated market segments: consumers of traditional tomatoes (S1), and those who prefer commercial hybrids (S2). Therefore, we can confirm H1: there is a tomato consumer segment that prefers traditional varieties rather than hybrid varieties. This sector is characterised by giving greater importance to the organoleptic properties of a tomato than to its price, meaning that they are more willing to pay a higher price for this type of product. Likewise, this segment also values positively the local origin of the production and buys more frequently in greengrocer shops and open markets.

Meanwhile, research on tomato producers has identified three types of holdings according to their size: small (<5 ha), medium (5–40 ha) and major (>40 ha). The objectives of the major holdings focus on obtaining financial profits and, following general criteria, high-quality fruit (evenness and post-harvest preservation). However, owners of small and medium holdings are more concerned about the resistance of crops, the fruit's organoleptic properties, and the positive assessment of the consumer. Likewise, obtaining these segments allows us to accept H2: there is a producer segment willing to cultivate an improved traditional variety. Small and medium farmers approve cultivating this product, which would preserve the excellent organoleptic properties of a tomato, an attribute that is highly regarded by S1 of consumers, while making it easier for them to carry out their activity (plants with resistance to viruses).

Therefore, it seems appropriate to propose the cultivation of improved traditional varieties to small and medium farmers, as they would find in the local market a segment of consumers who value them positively (S1). Regarding the marketing strategy, a good place to start would be to provide information at local points of sale, as they are the preferred place of purchase of the target segment. This information could materialise as printed advertising or as sales promotions aimed at both the end consumer and the distributor. Likewise, news items or technical reports could be generated and disseminated through different digital marketing tools on websites that specialise in local products. This would make it so that the work of small and medium farmers is profitable, preventing an abandonment of this activity and improving the territorial and economical sustainability of the rural world. Therefore, H3 is accepted: the cultivation of traditional varieties is a suitable alternative for the sustainability of the territory's agricultural activity.

Meanwhile, major farmers are encouraged to cultivate very productive hybrid varieties, and to base their competitive strategy on the price, as there is an S2 segment of consumers who prefer hybrid varieties and assigns particular importance to low prices.

Furthermore, the cultivation of these traditional varieties aimed at local markets would make it possible to achieve a triple objective: contribute to the sustainability of rural communities, satisfy the demands of consumers regarding the protection of flavour and the environment, and help the health authorities find ways to promote the consumption of fruit and vegetables.

However, this study has some methodological limitations. On the one hand, the consumer study was conducted following a convenience sampling method, which implies that the results cannot be generalised for the whole population. Furthermore, the producer study could not be conducted with a random sampling, as there is no tomato producer census from where to select participants, and even though all segments were well represented, the obtained sample was not exhaustive. These limitations entail that this is an exploratory study. However, this research has shown that there is a market niche for the traditional tomato varieties, which are highly regarded by a certain segment of the population. This suggests that work can continue to be done in this line of research in order to consolidate the obtained results. Furthermore, few papers of this type have been published and, given that the results obtained in this study are optimal for the sustainability of the territory and the preservation of genetic heritage, we propose conducting new research on traditional varieties of other products spread across different geographical areas.

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