REVISTA BRASILEIRA DE FRUTICULTURA
Published by the Brazilian Society of Fruit Crops
ISSN 0100-2945

Economy - Original Article - Edited by: David Ferreira Lopes Santos

Consumer preferences and willingness to pay for new seedless lemon varieties in Turkey

Osman Sedat Subaşı[1*], Hasan Çelen[1], Deniz Aksoy[1], Osman Uysal[2]

[1] Alata Horticultural Research Institute, Mersin, Türkiye.
[2] Malatya Turgut Ozal University, Dept. of Agricultural Economics, Malatya, Türkiye.
*Corresponding author: *sedatsbs@gmail.com*

Abstract: It is crucial for the sustainability of research that the varieties obtained due to the various development activities carried out with public financing are put on the market correctly. This study it is aim to analyze the factors affecting consumer preferences and willingness to pay for lemons and newly developed seedless lemons throughout Turkey. The ordered probit model was estimated using online questionnaires from 566 consumers. There is a positive relationship between the monthly income, occupation, place of residence, age, and the dependent variable. It was determined that the variables of education and the number of family members were not statistically significant. It has been determined that 54.9% of consumers will not pay extra for seedless lemons, and 33.9% are willing to pay up to 10% more. In addition, it has been determined that subjects such as "juiciness" and "freshness" are more critical among consumers' lemon purchasing criteria, while the number of seeds is less critical. It has been concluded that most consumers will prefer seedless lemons in the consumption of table lemons, but they will not be willing to pay more.

Index terms: seedless lemon, consumer preference, willingness to pay, Turkey

Preferências do consumidor e disposição a pagar por novas variedades de limão sem sementes na Turquia

Resumo: É imprescindível para a sustentabilidade da pesquisa que as variantes obtidas, devido às diversas atividades de desenvolvimento realizadas com financiamento público, sejam colocadas no mercado corretamente. O propósito deste estudo é analisar os fatores que afetam as preferências do consumidor e a disposição de pagar por limões e limões sem sementes recém-desenvolvidos em toda a Turquia. O modelo probit ordenado foi estimado usando questionários online de 566 consumidores. Há uma relação positiva entre a renda mensal, a ocupação, o local de residência, a idade e a variável dependente. Foi constatado que as variáveis de edu-

Rev. Bras. Frutic., v.46, e-345 DOI: *https://dx.doi.org/10.1590/0100-29452024345*
Received 27 Apr, 2023 ● Accepted 23 Oct, 2023 ● Published Mar/Apr, 2024. Jaboticabal - SP - Brazil.

cação e o número de membros da família não eram estatisticamente significativos. Foi determinado que 54,9% dos consumidores não pagarão a mais por limões sem sementes, e 33,9% estão dispostos a pagar até 10% a mais. Além disso, foi definido que assuntos como "suculência" e "frescor" são mais importantes entre os critérios de compra de limão dos consumidores, enquanto o número de sementes é menos importante. Concluiu-se que a maioria dos consumidores preferirá limões sem sementes no consumo de limões de mesa, mas não estará disposta a pagar mais.

Termos para indexação: limão sem sementes, preferência do consumidor, disposição a pagar, Turquia

Introduction

The fresh fruit and vegetable sector is one of the essential sub-sectors that provides the production and consumption of foods containing vegetable carbohydrates, proteins, and vitamins, which are the basic needs of humanity (DEMİR, 2015). Citrus fruits, which are beneficial to human health with their vitamin C content, are processed as raw materials for jam, fruit juice, fresh consumption and even cosmetic products (AKGÜN, 2006). Lemon is a citrus species, including varieties with a high economic value that can be grown in subtropical climates. Due to its geographical location, Turkey has an advantageous position in lemon production and foreign trade, and the Mediterranean Region of Turkey mainly contributes significantly to the country's economy with said production and foreign trade.

20.04 million tons of lemons are produced on 1.22 million hectares of land globally. Because international statistics are kept as the sum of lemon and lime production, accurate assessment poses a problem. Limes are primarily grown in semitropical and tropical regions where lemons are not grown. Turkey ranks 6th in the world regarding lemon production area and quantity. In addition, it ranks 5th in the world with 242.7 million USD in lemon exports. (FAOSTAT, 2022). In Turkey, 1.2 million tons of lemons are produced on 46 thousand hectares of land.

Agricultural policies from the past have aimed to provide a healthy and balanced diet for the country's population, protect the environment and biological diversity, ensure sustainable economic development, produce highly competitive products, and improve the agricultural infrastructure. As a result of the agricultural policies implemented at the global and national levels, world citrus production is witnessing a dramatic dynamism in variety breeding. It is seen that the R&D studies carried out in different countries of the world are mainly carried out by focusing on the development of new varieties (BUDAK et al., 2015). Increasing seedlessness demands in citrus fruits have also become desirable in lemon species. After introducing seedless lemon varieties to the market, it is predicted that these varieties will soon have an important place in production and export.

Non-commercialization or suboptimal commercialization of a new variety reduces the benefits of such cultivar development activities (AKHUNDJANOV et al., 2018). The commercialization of new varieties is a complex set of variables. The decision from a single window leads to sustainable commercialization and, therefore, to the debate about whether the investments made for developing new varieties are used for the proper purposes. It is vital for the sustainability of research that the varieties obtained due to the various development activities carried out with public financing are put on the market correctly. For the commercialization of the varieties to be carried out correctly and in a way that ensures the sustainability

of the research, the expectations and reactions of the consumers, as well as the reasonable goals of the breeders, should be measured with appropriate methodology (FORSYTHE et al., 2021). As a result of the breeding programs of Alata Horticultural Research Institute affiliated with the General Directorate of Agricultural Research and Policies of the Ministry of Agriculture and Forestry in Turkey, the attitudes and behaviors of consumers towards the seedless varieties obtained by mutation breeding from the Kütdiken lemon variety, which has an important share in lemon production and export, is a matter of curiosity.

Many studies have been conducted to examine purchasing behaviors and willingness to pay for many agricultural products in the world, such as products grown with different cultivation methods (organic, etc.), consumer perception of products with different characteristics (local, functional, GMO, and antioxidant level, etc.). Boccaletti and Nardella (2000) examined Italian consumers' willingness to pay for pesticide-free fresh fruit and vegetables. BROWN (2003) investigated the factors that affect consumers' purchasing decisions for local products. Yue and Tong (2009) examined consumers' preferences and willingness to pay for organic tomatoes with different characteristics in Minnesota. In the study of ŞAHİN and MİRAN (2014), consumers' level of trust in local agricultural products and their purchasing tendencies were investigated. Toklu (2016) investigated the perceptions of consumers on local honey with geographical indications. Aidou and Ceylan (2018) examined consumers' willingness to pay for the most preferred local tomato variety grown in the Republic of Benin.

On the other hand, Joya et al. (2021) examined consumers' willingness to pay for tomatoes' food safety features. However, a limited number of studies have examined consumer preferences for newly developed products. Meyerding et al. (2018) interviewed 503 consumers to determine consumer preferences for superfood ingredients in different bread and found that consumers value bread that serves a functional purpose through superfood ingredients such as flaxseed or chia. Akhundjanov et al. (2018) examined the limitations of contracts that can be used to license new varieties introduced to the market by breeders and made recommendations in their study on the commercialization of new plant varieties. Arianti et al. (2019) investigated the consumer perception of newly developed pepper varieties and which pepper varieties were purchased within the shape and size criteria framework.

Consumers have demands for new products focused on healthy nutrition. This research will be able to contribute to researchers and academics working on lemons to focus their studies on consumer preferences. In particular, designing breeding programs within this framework that usually last for many years will positively impact the products' marketing. On the other hand, agricultural enterprises grow crops in line with market demands by selecting appropriate varieties for their new garden facilities.

This study is aims to determine the willingness to pay and the factors affecting consumer preferences for seedless lemon varieties, developed due to breeding programs in Turkey (UZUN et al., 2008) and have a few examples worldwide. It contributes to determining consumer perception of seedless lemons and planning lemon breeding programs within consumer expectations.

Materials and Methods

Sampling method

In the research, the convenience sampling method, was used in terms of essential constraints such as labor, time, cost, and the Covid-19 pandemic to reach the entire world. Convenience sampling is a non-random sampling method in which the researcher's

judgment determines the sample selected from the population. Convenience sampling collects data from the population in the easiest, fastest, and most economical way (ZIKMUND, 1997: MALHOTRA, 2004: AAKER et al., 2007). In this study, the convenience sampling method was preferred because the data needed to be collected, quickly, fastest, and most economical under the Covid-19 pandemic conditions. Kinnear and Taylor (1996) stated that the use of the convenience sampling method in practice is 53%. They stated that the convenience sampling method was used in approximately 90% of the studies conducted in Turkey (HAŞILOĞLU et al., 2015). An online questionnaire collected the research data from 566 consumers from 7 geographical regions of Turkey with a convenience sampling method.

Data collecting

A questionnaire was developed to determine consumers' lemon consumption preferences, and a questionnaire technique was used to collect information from primary sources. In the online questionnaire form, there were questions to determine the socio-economic characteristics of the respondent, their lemon consumption preferences, and the factors affecting their preferences. In addition, there were questions about the preference for new seedless lemon varieties and their willingness to pay more for the new varieties. To determine the factors affecting the lemon preferences of the respondents, statements according to the 5-point Likert scale (strongly agree, agree, no idea, disagree, strongly disagree) were included. The prepared questionnaires were uploaded to *surveymonkey.com*, and the data collection process was carried out between 01.02.2021 and 01.04.2021. Single entries to the survey were accepted, and more than one survey entry with the same IP number was blocked.

Analysis of data

In the study, arithmetic means, frequency, and percentage distributions were used for the data belonging to the socio-demographic structure.

Response options used to determine whether consumers overpay for products occur in ordinal form because they are a certain percentage of the average price. In determining the factors affecting consumers' willingness to pay, The Ordered Probit Model, which has a wide area of use in the literature, was used in modeling the ordinal compiled answers. The probit model is a regression model with unobservable (hidden) variables, like the two-result probit model (MADDALA, 1983; LONG, 1997; YAYAR, 2016).

The study analyzed consumers' willingness to overpay for seedless lemons according to socio-economic and demographic factors. The empirical model and variables were determined as follows:

$$WTPi = \alpha\ 0 + \alpha\ 1\ AGEi + \alpha\ 2\ EDUi + \alpha\ 3\ INCOMEi + \alpha\ 4\ OCCUPi + \alpha\ 5\ NOFMi + LIVAREAi + \varepsilon i$$

Specified in the equation:

AGEi = age of consumers

EDUi = education level of consumers

INCOMEi = monthly income of consumers

OCCUPi = occupation of consumers

NORMi = number of family members

LIVAREAi = living area of consumers

Results and Discussion

Socio-economic characteristics of consumers

Within the research scope, the consumers' socio-economic characteristics were determined. When considered in terms of geographical regions, it is seen that 25.44% of consumers are located in the Mediterranean region. It can be stated that the fact that lemon is the most critical producer region and that lemon has a vital role in Mediterranean cuisine has increased interest of the consum-

ers to work in this region. Consumers followed the Mediterranean region in South East Anatolia with 14.13%, Marmara with 13.96%, and East Anatolia with 12.54% (Figure 1). It has been determined that the places where the consumers live are the metropolitan centers with 37.99%, provinces with 26.33%, and the districts with 30.39%. Based on these results, an urban consumer structure was included in the study (Figure 2).

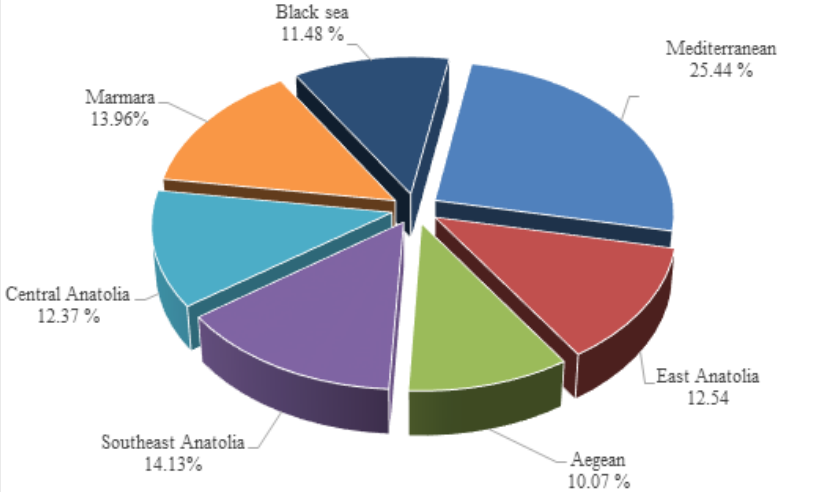

Figure 1. Distribution of respondents by region (%).

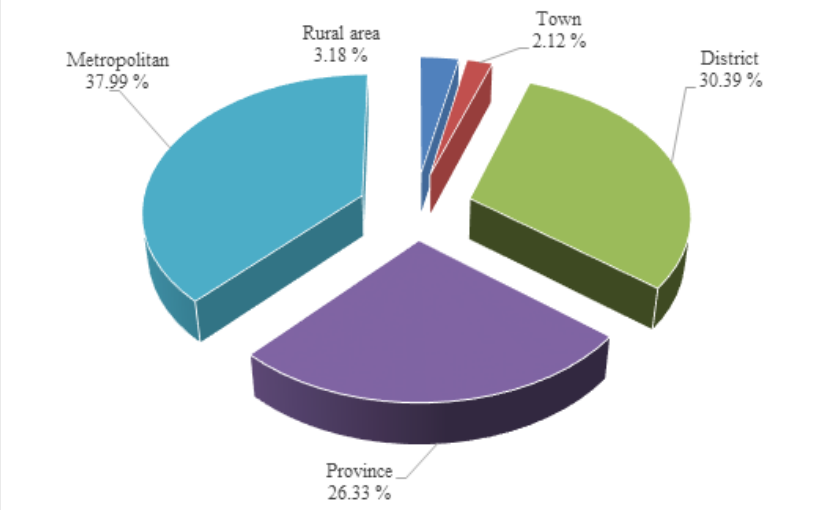

Figure 2. Distribution of respondents by living area (%).

The distribution of consumers by age group shows that the 31-45 age group is 43.64%. It has been determined that the rate of consumers in the 46-60 age range is 31.98%, and the 18-30 age range is 21.20%. The rate of consumers over the age of 61 was 3.18%. The average age was determined as 40.02 years.

Regarding education level, 53.18% of the consumers are university, 32.51% are postgraduate, and 11.31% are high school graduates. The rate of primary and secondary school graduates was 3.00%. The high level of education of the consumers participating in the study indicates that the sensitivity to the online study is related to the education level. When the family is evaluated in terms of the number of members, it is seen that the elementary family structure of 34.45%, 4 people, and 24,03%, 3 people is predominant.

In terms of the occupation of consumers, it is seen that 56.01% of them are public employees, and 12.37% of them are private-sector employees. Self-employed, retired house-

wives, and students formed other occupational groups. When consumers are evaluated in terms of household income, it is seen that those with 6001 - 9000 TL/month income take first place with 25.09%. It is seen that those with 3001 - 6000 TL/month income have a rate of 19.61%, and those with 9001 - 12000 TL/month income have a rate of 19.08%. The group with an income of 0 - 3000 TL/month constituted the consumer group with the lowest share of 8.30% (Table 1).

Table 1. Socio-economic characteristics of consumers.

Characteristics	Groups	Frequency	%
Age	18-30	120	21.20
	31-45	247	43.64
	46-60	181	31.98
	61+	18	3.18
	Total	566	100.00
Education status	Literate	0	0.00
	Primary - Secondary	17	3.00
	High school	64	11.31
	Vocational school	0	0.00
	University	301	53.18
	Postgraduate	184	32.51
	Total	566	100.00
Number of family members	1 people	47	8.30
	2 people	80	14.13
	3 people	136	24.03
	4 people	195	34.45
	5 people	71	12.54
	6 people	28	4.95
	7 people	9	1.59
	Total	566	100.00
Occupation	Unemployed	7	1.24
	Housewife	26	4.59
	Private sector emp.	70	12.37
	Public emp.	317	56.01
	Self-employed	36	6.36
	Retired	34	6.01
	Student	67	11. 84
	Others	9	1.59
	Total	566	100.00
Household income (Turkish Liras/ month)	0 - 3000 TL/month	47	8.30
	3001 - 6000 TL/month	111	19.61
	6001 - 9000TL/month	142	25.09
	9001 - 12000 TL/month	108	19.08
	12001- 15000 TL/month	93	16.43
	15000 TL/month +	65	11.48
	Total	566	100.00

Consumers' lemon usage habits and purchasing behaviors

In Turkish cuisine, lemon is widely consumed in many foods and beverages. First of all, it was determined that consumers mostly use lemon in salads (35%), meals (22%), and soups (20%). In addition to these, other (tea, alcoholic and non-alcoholic beverages, etc.) are used at lower rates.

It has been determined that the first choice of consumers in terms of lemon purchasing places in the district bazaar (45%). The market/supermarket (35%) and greengrocer/ grocery stores (20%). Regarding the purchasing method, it was determined that it was purchased by weighing (48%) according to the amount of need. It has been observed that purchasing with pre-packaged (27%) and purchasing by pieces (25%) are preferred at very close rates.

It is known that lemon consumption is generally more in the winter months. According to the seasons, the lemon consumption of consumers has been examined and given in Table 2. It is observed that 32.33% of consumers consume lemons in the range of 1.01-2 kg/month, mainly in the spring months. Similarly, 29.86% and 29.33% of consumers consumed 1.01-2 kg/month of lemon in the summer and autumn months. In the winter months, it was observed that 28.62% of the consumers increased their consumption by 2.01 - 3 kg/month. According to TURKSTAT data, per capita, lemon consumption was 6.1 kg/year in the 2018/2019 season (RTMAF, 2020). According to the results obtained within the scope of the study, the average consumption amount in the 2020/21 period was determined as 7.97 kg/year. This increase in consumption is thought to be due to the Covid-19 pandemic.

It was examined how the consumption of lemons will change in the future, and it was stated that most of them (67%) would not change the amount of lemon consumption in the future, while 32% of them will increase the amount of consumption. The rate

of those who say that their lemon consumption will decrease is only 1%.

In this study, carried out during the Covid-19 pandemic that shook the world, lemon consumption was also questioned regarding its contents and health benefits. It has been stated that 45% of consumers experienced an increase in lemon consumption during the pandemic period, while 54% did not experience a change in consumption.

Table 2. Lemon consumption considering the seasons (kg/monthly).

Consumption quantity (kg/monthly)	Spring		Summer		Autumn		Winter	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
0-1 kg/m.	150	26.50	132	23.32	104	18.37	85	15.02
1,01-2 kg/m.	183	32.33	169	29.86	166	29.33	110	19.43
2,01-3 kg/m.	135	23.85	145	25.62	155	27.39	162	28.62
3,0-4 kg/m.	61	10.78	72	12.72	93	16.43	115	20.32
4,01 kg/m. +	37	6.54	48	8.48	48	8.48	94	16.61
TOTAL	**566**	**100.00**	**566**	**100.00**	**566**	**100.00**	**566**	**100.00**

Criteria that affect consumers' choice of purchasing lemons

21 criteria that may be effective in consumers' choice to buy lemons were examined. The level of participation in the criteria determined by the Likert scale was questioned, and the results are given in Figure 3. According to the results obtained, consumers must consider the criterion when purchasing lemons as "Juiciness," "Freshness," "Health Effects," "Color," and other criteria that follow the "Juiciness" criterion. "Number of the seed of the fruit," on the other hand, was not a very important issue for consumers and was ranked 18th out of 21 criteria.

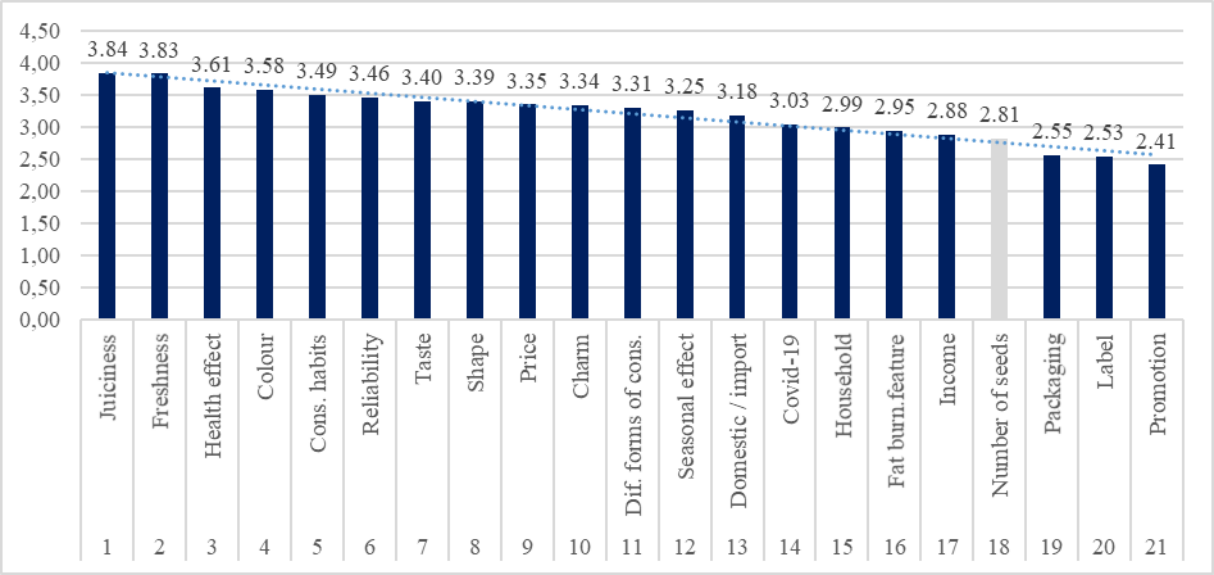

Figure 3 - Criteria that affect consumers' choice of purchasing lemons.

Consumers' preference for seedless lemons

Consumers were questioned about lemon preference when all features of lemons with seeds and seedless lemons were the same. It was observed that 60% of the consumers would prefer seedless lemons, while 26% answered: "it makes no difference." 14% of the consumers stated that they preferred lemon with seeds. While purchasing lemons, 59% of consumers said they would prefer seedless ones, while 28% stated they had no idea

about them. 13% of the consumer group stated that they would not prefer seedless lemons. As the reason for not choosing, it is suggested that the product is not natural, it may be GMO, etc.

Results of Ordered Probit Model Analysis

In order to determine the willingness of consumers to buy seedless lemons, 5 parameters, consumers' age (4 groups), educational status (5 groups), number of family members (7 groups), occupation (8 groups), and household income (6 groups) were used as the determining variables (Table 1). In the study, the dependent variable was the willingness of consumers to buy seedless lemons, and the independent variables were age, education, monthly income, occupation, number of family members, and place of residence (Table 3).

Table 3. Model variables and descriptive statistics.

Variables	Definition of Variables	Mean	Standard Deviation
WTP	Consumer willingness to pay extra for seedless lemons (none=0; %10 =1; %20 =2; %30 =3; %40 + =4)	0.5954	0.7852
AGE	Age of consumers (year)	40.0247	11.6051
EDU	Level of education (Literate=1; Primary-Secondary=2; High school=3; Vacational school=4 University=5; Postgraduate=6)	5.0088	1.0244
INCOME	Average monthly income (0-3000 TL/m=1; 3001-6000 TL/m=2; 6001-9000 TL/m=3; 9001-12000 TL/m=4; 12001-15000 TL/m=5; 15001 TL/m. + = 6)	3.5018	1.4703
OCCUP	Occupation (Unemployed=1; Housewife=2; Private sector emp.=3; Public emp.=4; Self-employed=5; Retired=6; Student=7; Others=8)	4.3498	1.3868
NOFM	Number of family members (people)	3.5000	1.3313
LIVAREA	Living area (Rural area=1; Town;2; District=3; Province=4; Metropolitan=5)	3.9382	1.0260

The factors affecting the dependent variable were analyzed with the Ordered Probit Model. The results obtained are shown in Table 4.

Table 4. Results of Ordered Probit Model Analysis.

Variables	Wald Chi-Square	df	Sig.
EDU	3.127	3	0.372
INCOME	11.490	5	0.042
OCCUP	14.028	7	0.051
LIVAREA	22.607	4	0.000
AGE	9.523	1	0.002
NORM	1.225	1	0.268

In the study, it was determined that there is a positive relationship between willingness to pay for seedless lemons, which is the dependent variable, monthly income (INCOME), occupation (*OCCUP*), living area (*LIVAREA*), and age (*AGE*). It was determined that the variables of education (*EDU*) and the number of family members (*NOFM*) were not statistically significant (Table 4).

Breeding studies are carried out to ensure food safety and sustainability in many agricultural products. Lemon breeding and cultivating programs generally focus on obtaining high yield, seedless and storage-friendly varieties. It is not known exactly what kind of market reaction there will be for the varieties with these newly developed features. Within the theoretical framework, this study will provide ideas on what marketing strategies can be applied regarding the demand for new seedless lemons.

Conclusion

This study it is aims to determine the factors affecting the willingness of consumers to pay more when purchasing lemons and seedless lemons. The factors affecting consumer preferences were determined by using ordered probit regression analysis. Among the variables in the model, there is a positive relationship between the monthly income, occupation, living area, and age variables and the de-

pendent variable. It was determined that the variables of education and the number of family members were not statistically significant. It has been determined that 54.9% of consumers will not pay extra for seedless lemons, and 33.9% are willing to pay up to 10% more.

As a result of the study, it was observed that the willingness to pay for seedless lemons increased as the income level increased. The fact that high-income groups pay more for seedless lemons has been evaluated as necessary for a marketing approach that should be applied to this consumer group.

Consumer preference for seedless consumption was determined by the consumption of table lemon, a critical product group among citrus fruits. Determining consumers' approach to the newly developed products has also provided an idea about the breeding programs to the breeders working on this subject. With the increase in the market share of seedless lemons, it will be possible to observe the change in the perceptions and willingness of consumers to pay in the coming periods.

Different from the results of this study on table lemon consumption for the domestic market, different consumer preferences can be seen in Turkey's important export markets. In this context, it is thought that there will be more willingness to pay for seedless lemon varieties in both the export markets and the lemon processing industry than in the domestic market. Commercializing strategies specific to consumer groups will be more efficient than commercializing all the new varieties with the same traditional methods. Public discussions about public institutions' commercialization methods and different suggestions are made (AKHUNDJANOV et al., 2020). Therefore, new varieties of public institutions should be commercialized with a multilateral analysis appropriate to each variety's potential, considering the breeder's goals and consumer expectations and the effective use of public resources.

Acknowledgements

The Republic of Turkey Ministry of Agriculture and Forestry, the General Directorate of Agricultural Research and Policies, and the Alata Horticultural Research Institute funded the project.

References

AAKER, D.A.; KUMAR, V.; DAY, G.S. **Marketing research**. 9th ed. Danvers: John Wiley & Sons, 2007. Disponivel em: *https://books.google.com.tr/books/about/Marketing_Research*, Acesso em: 10 jul. 2022.

AIDOU, M.; CEYLAN, R.F. Factors affecting local tomato preference in comparison with imported tomato in Benin Republic. **Journal of Economics, Management and Trade**, West Begal, v.21, n.5, p. 1-9. 2018. *https://doi.org/10.9734/JEMT/2018/42098*

AKGÜN, C. **Citrus sector profile report**. Temmuz: Republic of Turkey Ministry of Custom and Trade Undersecretariat of Foreign Trade, 2006. p. 2-10. Disponível em: *https://www.yumpu.com/tr/document/view/23585041/turuncgiller-sektor-profili-2006-ito* Acesso em: 10 jan. 2022.

AKHUNDJANOV, S.B.; GALLARDO, R.K.; McCLUSKEY, J.J.; RICKARD, B.J. Commercialization of a demand-enhancing innovation: The release of a new apple variety by a public university. **Economic Modelling**, Amsterdam, v.86, p.88-100, 2020. *https://doi.org/10.1016/j.econmod.2019.06.004*

AKHUNDJANOV, S.B.; GALLARDO, R.K.; McCLUSKEY, J.J.; RICKARD, B.J. Commercialization mechanisms for new plant varieties. *In*: CARAYANNIS, E.G. (ed.). **Innovation, technology, and knowledge management**. Washington: Springer, 2018. p.379-90. *https://doi.org/10.1007/978-3-319-67958-7_18*.

ARIANTI, N.N.; GANEFIANTI, D.W.; SUTRAWATI, M. Consumer preferences on chili new varieties of Bengkulu University. **Jurnal Agrisep. Kajian Masalah Sosial Ekonomi Pertanian dan Agribisnis**, Bengkulu, v.18, p.331-42, 2019. *https://doi.org/10.31186/jagrisep.18.2.331-342*

BOCCALETTI, S.; NARDELLA, M. Consumer willingness to pay for pesticide-free fresh fruit and vegetables in Italy. **The International Food and Agribusiness Management Review**, College Station, v.3, n.3, p.297-310, 2000. *https://doi.org/10.1016/S1096-7508(01)00049-0*

BROWN, C. Consumers' preferences for locally produced food: a study in southeast Missouri. **American Journal of Alternative Agriculture**, Greenbelt, v.18, n.4, p.213-24, 2003. *https://doi.org/10.1079/AJAA200353.*

BUDAK, D.B. et al. **Examining the export structure of citrus fruits in terms of target countries and evaluating the effects of export supports on international competitiveness**. Mersin: National Citrus Conseil, 2015. p.192. Disponível em: *http://utk.org.tr/index.php/bilgi-bankasi/raporlar*. Acesso em: 2021 maio 28.

DEMİR, Ü. **Fresh fruit and vegetable sector report of TR63 region**. Dogaka: Eastern Mediterranean Development Agency, 2015. 106 p.

FAOSTAT - Food and Agriculture Organization of the United Nations. **Crops and livestock products stats**. Roma, 2022. Disponível em: *https://www.fao.org/faostat/en/#data*. Acesso em: 15 jun. 2022.

FORSYTHE, L,; TUFAN, H.; BOUNIOL, A.; KLEIHM U.; FLIEDEL, G. An interdisciplinary and participatory methodology to improve user acceptability of root, tuber and banana varieties. **International Journal Food Science Technology**, Osney Mead, v.56, p.1115-23, 2021. *https://doi.org/10.1111/ijfs.14680*

HARZER, T.S. **Value creation through mass customization: an empirical analysis of the requisite strategic capabilities**. 2013. Tese (Doutorado) - Hochschulbibliothek der Rheinisch-Westfälischen Technischen Hochschule, Aachen, 2013. Disponível em: *http://publications.rwth-aachen.de/record/229868/files/4614.pdf*

HAŞILOĞLU, S.B.; BARAN, T.; OGUSHAN, A. A study of potential problems in marketing research: convenience sampling and frequency expressed scale items. **Pamukkale Journal of Business and Informatics Management**, Pamukkale, v.2, n.1, p.19-28, 2015. Disponível em: *https://dergipark.org.tr/en/pub/pibyd/issue/35465/394010* Acesso em: 10 out. 2022

JOYA, K.; RAMLI, N.N.; SHAMSUDIN, M.N.; KAMARULZAMAN, N.H. Consumers' willingness to pay for food safety attributes of tomato. **British Food Journal**, Bradford, v.124, n.3, 2022. *https://doi.org/10.1108/BFJ-02-2021-0164*

KINNEAR, T.C.; TAYLOR, J.R. **Marketing research**: an applied approach. 5.ed. New York: McGraw Hill, 1996.

LONG, J.S. **Regression models for categorical and limited dependent variables**. London: SAGE Publications, 1997. Disponível em: *https://jslsoc.sitehost.iu.edu/files_research/rm4cldv/sage1997/rm4cldv_toc.pdf*. Acesso em: 15 jun. 2022

MADDALA, G.S. **Limited-dependent and qualitative variables in econometrics**. New York: Cambridge University Press, 1983. Disponível em: *https://books.google.com*. Acesso em: 10 jul. 2022.

MALHOTRA, N.K. **Marketing research: an applied orientation**. 4.ed. New Jersey: Pearson Prentice Hall, 2004. Disponível em: *http://hdl.handle.net/10536/DRO/DU:30010407*. Acesso em: 12 jul. 2022.

MEYERDING, S.G.H,; KÜRZDORFER, A.; GASSLER, B. Consumer preferences for superfood ingredients the case of bread in Germany. **Sustainability**, Basel, v.10, n.2, p.4667, 2018. *https://doi.org/10.3390/su10124667*

RTMAF. **Agricultural products market**: lemon. Montreal: Ministry of Agriculture and Forestry, 2020. (Strategy Development, 4).

ŞAHİN, A.N.; MİRAN, B. An analysıs of consumer choices of local agricultural products in the city of İzmir: An implementatıon o analytic network process. In: NATIONAL AGRICULTURAL ECONOMICS CONGRESS, 11., 2014. Samsum. **Proceedings** [...]. p.1369-77. Disponível em: *https://tarekoder.org/2014samsun/243-251.pdf*. Acesso em: 20 abr. 2022.

TOKLU, I.T. **Do consumers want to pay more for geographical indications**? A research on Artvin honey. Blacksea Research Winter, 2016. v.52, p.171-90. Disponível em: *https://dergipark.org.tr/en/pub/karadearas/issue/68251/1064922*. Acesso em: 10 abr. 2022.

UZUN, A.; OSMAN, G.; GUCER, K.; UBEYIT, S. 'Alata', 'Gulsen', and 'Uzun' seedless lemons and 'Eylul' Early-maturing lemon. **HortScience**, Alexandria, v.43, n.6, p.1920-1, 2008. *https://doi.org/10.21273/HORTSCI.43.6.1920*

WERTENBROICH, K.; SKIERA, B. Measuring consumer willingness to pay at the point of purchase. **Journal of Marketing Research**, Chicago, v.39, n.2, p.228-41, 2002. *https://doi.org/10.1509/jmkr.39.2.228.19086*

YAYAR, R. Identifying the factors affecting the willingness to pay for environmentally friendly products: Empirical evidence from Turkey. In: INTERNATIONAL CONFERENCE ON EURAISAN ECONOMIES, 2016, Kaposvár. Proceedings [...]. Kaposvár, 2016. p.527-32. *https://doi.org/10.36880/C07.01627*

YUE, C.; TONG, C. Consumer preferences and willingness to pay for existing and new apple varieties: evidence from apple tasting choice experiments. HortTechnology, Alexandria, v.21, n.3, p.8, 2009. *https://doi.org/10.21273/HORTTECH.21.3.376*

ZIKMUND, W.G. **Business research methods**. 5.ed. Orlando: The Dryden Press, 1997 Disponível em: *https://www.worldcat.org/title/business-research-methods/oclc/880577400*. Acesso em: 25 maio 2022