Scientific Papers. Series B, Horticulture. Vol. LXVIII, No. 1, 2024
Print ISSN 2285-5653, CD-ROM ISSN 2285-5661, Online ISSN 2286-1580, ISSN-L 2285-5653

CITIZENS AND URBAN HORTICULTURE RELATIONSHIP AFTER COVID-19 PANDEMIC: FACTS FROM ROMANIA, GREECE AND CYPRUS

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Abstract

Cities are facing both social and environmental challenges that affect food chain, public health, and social cohesion broadly. Terms such as "Mediterranean Diet", "Urban horticulture", "Organic Farming", "Edible Landscaping" took significant position in everyday life without being sure that we could understand sufficiently their meaning. The pandemic period highlighted how useful tools these would be if we could use them correctly both in planning and development of urban green areas. Urban landscaping and especially gardening and farming connected strongly with social, economic, agricultural, nutritional, environmental, and beautifying parameters through research field in the context of a Doctoral Thesis which took place in Romania, Greece, and Cyprus with main tool a specific questionnaire. The quantitative analysis of the responses is based on a set of 302 variables and aims to elicit information with reference to the knowledge, perception, and experiences of the respondents regarding urban horticulture.
The results of the analysis proved that the opinion of the great majority of respondents from Romania, Greece and Cyprus about urban horticulture is positive, with different percentages but for the same reasons.

Key words*: environmental challenges, pandemic Covid-19, social impact, urban horticulture.*

INTRODUCTION

Following a prolonged period of economic and health crises, all social groups living in large cities require uninterrupted access to fresh and nutritious food is a widely accepted fact. (Macnea et al., 2021). In addition, studies have shown that the pandemic has had an impact on food purchasing habits, diets, and food-related behaviours and practices (Hassen et al., 2023). Thus, new initiatives and practices that existed in the past but were not continued due to lifestyle changes came to the fore. The emergence of citizen movements related to urban gardening with a common goal, are solving the problems of urbanization and economic crisis by using different ways and tools. Urban gardening through the actions of movements can contribute to solving the problems of modern societies (Maknea & Tzortzi, 2019) while it seems to be very favorable both for social inclusion and for the reduction of inequalities between the sexes, as the 65 % of urban farmers are women (Orsini et al., 2013). A study by Nicola et al. (2020) has highlighted the value of urban vegetable gardens and their potential contribution during a Pandemic. The study also identified barriers to accessing community gardens, which were further highlighted by the Covid-19 pandemic. The authors' proposal is to be making immediate use of courtyards and balconies. Research in India has yielded similar results in mitigating the effects of the food crisis that arose during the pandemic. Urban kitchen gardening practices, such as rooftop farming, have been suggested (Kaur et al., 2024). It is a fact that developing countries have been the most affected by the pandemic (Dasgupta & Robinson, 2022). Urban agriculture can be an alternative solution to address the high demand for food in urban areas (Mishra & Pattnaik, 2021). Research findings on the impact of the COVID-19 crisis in Bosnia-Herzegovina

indicate potential for the development of urban agriculture. The study suggests that citizens should support the urban agriculture movement to address food supply challenges and mitigate environmental issues related to food consumption in urban areas (Nikolić et al., 2022).

MATERIALS AND METHODS

To guarantee a comprehensive approach to urban gardening, a qualitative and quantitative research methodology has been selected that concentrates on city citizens. In addition to the experimental section, which is restricted to plants, it is also essential to investigate the impact of urban gardening on society. Consequently, we created a social survey using a questionnaire that maintains the respondents' interest by providing the required information. The aim of the questionnaire was to gather information on the opinions and attitudes of urban dwellers in Romania, Greece, and Cyprus towards urban gardening and co-cultivation. The aim of the questionnaire is to collect information on the opinions and attitudes of urban dwellers in Romania, Greece and Cyprus towards urban gardening and co-cultivation. In order to ensure a comprehensive data collection, a questionnaire was designed and distributed in three languages: Romanian, Greek and English. Various 'snowball' samples were used in the study (Parker et al., 2019). The sampling unit comprised the populations of Thessaloniki, Bucharest, and Paphos. Different methods were employed to reach the urban population in each country, including Facebook, email, WhatsApp, Viber, etc. and relevant articles published on local websites. The questionnaire was distributed to a diverse range of individuals. The study included participants who read daily news, are participating in groups- such as the Union of Romanian Greeks and environmentalists- and are active citizens in everyday life. There were no specific criteria set for participant selection, as the main objective was to gather data on the general population's knowledge and opinions about urban gardening and the cultivation of edible plants in each country. Difficulties were encountered during data collection as the number of responses received was low compared to the number of questionnaires distributed, despite the distribution period being only 5 months. The factors influencing this non-response vary. In general, questionnaires that require direct contact with respondents yield the highest response rates, while internet, telephone and mail questionnaires have low response rates (Suskie, 1996).

Online surveys are a cost-effective and efficient method for questionnaire design, data collection, storage, and visualization. However, a major drawback is that many potential participants may lack the necessary computer or internet skills to complete the survey using tools such as Google Forms. Additionally, the small screen size of mobile phones can limit the duration of the questionnaire and the quality of responses to open-ended questions (Nayak & Narayan, 2019).

The research questionnaire was anonymous, which facilitated the study. It was developed based on data from the literature review and qualitative research conducted between September and December 2022. During this period, a small sample of the population (20 persons) tested the questionnaire to determine completion time and participant comprehension. This was done to avoid difficulty in understand questions.

Regarding structure, a Likert scale was not used due to evidence that online survey participants tend to choose the middle option, resulting in answers that do not reflect reality (Schwab, 2021).

The questionnaire consisted of 26 closed-ended or multiple-choice questions, including yes/no questions. The format followed a simple question-and-answer method to attract research participants.

The questionnaire comprises four sections: demographics, gardening knowledge and views on urban gardening, personal relationship with gardening, and growing in the city.

Section 1 comprises five closed questions that accept only one answer and pertain to demographics, primarily targeting urban residents.

Section 2 solicits opinions on urban gardening, which effectively promotes it. This section employs a mix of yes/no and open-ended

questions to allow respondents to answer freely without being influenced or confused by suggested responses. This increases the chances of them getting a more realistic picture of their knowledge of urban gardening and plant production. In this way, the results will significantly contribute to the research objective. This section is essential as it attempts to highlight the potential knowledge gap in this area.

Section 3 is designated for urban growers exclusively and comprises of six questions. The initial question in this section is closed and categorizes the respondents into two groups: those who have participated in urban gardening at least once and those who have not had the chance to participate, have not been given the opportunity, or are simply not interested. Respondents from the first group are required to answer five specific questions, while those from the second group are asked to answer the final section, which contains general questions. Five out of the six questions in this section are multiple choice, as they are intended for respondents with adequate knowledge of the subject.

Section 4 is the final section and presents respondents' opinions on urban development. This section is open to all citizens. Three out of the 9 questions are multiple-choice and cover the advantages of urban gardening and co-culture, as well as the role of urban agriculture. The following four questions address two fundamental issues. It is evident that the pandemic has brought to light both the negative aspects of cities and some solutions related to urbanization. Of the four questions, two are closed and two are open-ended. This allows respondents to express their opinions based on their experiences during the pandemic. The penultimate question aims to gather data on city dwellers' views on the future of urban gardening. The answer structure is multiple choice, enabling the formation of a complete sentence based on the results, whether optimistic or pessimistic. The final question on the questionnaire is open-ended, allowing respondents to provide justification for their opinions if they choose to do so.

The sample labelled as 'snowflake' was chosen because the research topic concerns all urban citizens without exception. This method refers to a sampling technique in which the researcher selects a small population of individuals, which then grows and expands like a 'snowball' (Baltar & Brunet, 2012).

RESULTS AND DISCUSSIONS

The results of the questionnaires were processed using statistical software (SPSS-Statistical Package for the Social Sciences) and presented in tables and graphs. The demographic characteristics of the 301 participants are presented below.

The statistical analysis shows that 74.1% of the participants are from Romania, 23.6% are from Greece, 1.3% from Cyprus and the remaining 1% are from other countries such as the USA and Germany.

According to the responses, 57.1% of the participants identified as female, while 42.9% identified as male.

None of the participants were under the age of 20. The majority of participants (SD=1.22) were in the age groups of 40-50 (28.9%) and 50-60 (28.6%), with the lowest participation rate among those over 60 (11.2%).

The research analysed citizens' perceptions of urban gardening in three countries. The survey results indicate that 47.9% of respondents from Greece and 61.4% from Romania were women, while no female respondents were recorded from Cyprus.

The age group with the highest response rate in Romania was 40-50 years old (33.6%), while in Greece it was 50-60 years old (52.9%). In Cyprus, the participants only covered the age groups of 30-40 years (50%) and 50-60 years (50%).

The questionnaire respondents were predominantly urban residents, with 78.9% from Greece, 70.0% from Romania, and 50.0% from Cyprus. Among the Greek respondents, 50.7% reside in gardenless apartments, while 26.8% live in houses with a private yard. Similarly, in Romania, most respondents live in houses with a private garden (40.4%) or in gardenless apartments (39.0%). In Romania, the majority of respondents live in houses with a private garden (40.4%) or in apartments without a garden (39.0%). Meanwhile, the majority of Cypriots live in a house with a

private yard (50.0%), or in an apartment building with (25%) or without (25%) a garden. In terms of citizens' awareness of urban gardening, 66.2% of Greek respondents reported familiarity with this activity. In Romania, 52.9% of respondents answered positively, while in Cyprus, the figure was 75.0%. Additionally, 12.7% of Greeks and 19.7% of Romanians did not provide an answer (Figure 1).

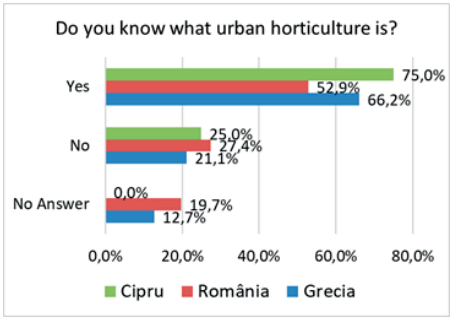

Figure 1. Results regarding the question "urban horticulture"

To gather citizens' personal opinions without being influenced by multiple-choice answers, the questionnaire included a free-response question. The responses were then categorized and quantified. The statistical analysis of the data yielded nine groups of responses, each representing the results of one country. Among Greeks, Romanians, and Cypriots, 19.7%, 8.5%, and 25%, respectively, defined urban gardening as developing in urban areas, with the highest percentage being in Cyprus. The responses to the question 'How would you define urban gardening?' can be conceptually grouped. 19.7% of Greeks and 25% of Cypriots mentioned the term 'Nutritional goal'. Additionally, 11.3% of Greeks, 16.1% of Romanians, and 25% of Cypriots mentioned 'psychological goal', 'study, learning and self-improvement goal (personal development)', 'environmental goal', 'urban biomass', 'limited space', and 'development in urban areas'. It should be noted that percentages below 10% have not been mentioned. Among respondents who were not familiar with urban gardening but provided their perception of it, only 11.3% of Greeks, 16.1% of Romanians, and 25% of Cypriots chose “growing in urban areas” as the first conceptual category. The remaining responses from these groups have percentages below 10%.

The main inquiry was whether the respondents were familiar with intercropping. The highest percentage of positive responses was recorded in Greece (49.3%), while the corresponding percentage for Romanians was 29.6% and for Cypriots, 75%. A significant percentage of Romanian respondents (50.7%) stated that they were not aware of co-culture, while 19.7% did not provide an answer (Figure 2).

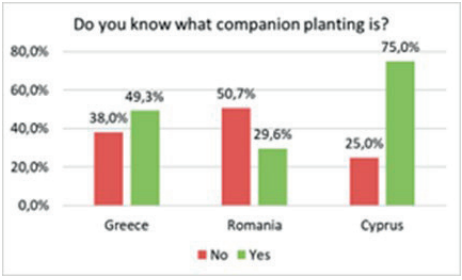

Figure 2. Results regarding the question of whether one knows what «co-cultivation» is

Participants who responded positively were asked to provide their interpretation of co-cultivation. The resulting responses were grouped into five conceptual categories to quantify the results. The category with the highest level of response was 'growing different plants in the same area', with agreement from 39.4% of Greeks, 20.2% of Romanians, and 50% of Cypriots. The four remaining categories were formed by grouping similar responses. Both the Greek and Cypriot sides received 15.5% of responses regarding 'cooperative-community gardening', with 25% of Cypriot responses in agreement. Other responses included 'combined farming with livestock' and 'biodiversity and environmental protection'. It is important to note that any unreported percentages were below 10%.

In the section on urban gardening, we asked how many city dwellers engage in cultivation. The results showed that 70.4% of Greeks, 46.4% of Romanians, and 100% of Cypriots are involved in farming. Furthermore, 14.1% of Romanians expressed an interest in learning about urban farming techniques. Those who answered positively were then asked to identify the types of plants they grow in the city. Ornamental plants were the most frequently

cultivated in Greece (64.8%), Romania (57.8%), and Cyprus (100%). Aromatic medicinal plants were the secondary choice, with response rates of 34.1%, 59.2%, and 75% in Romania, Greece, and Cyprus, respectively. Vegetables were the third preferred option, with the highest percentage of choice by the Greeks (32.4%), while the Romanians showed a lower percentage of preference (17.5%). Finally, only 4.5% of the Romanian respondents confirmed that they do not engage in any form of cultivation (Figure 3).

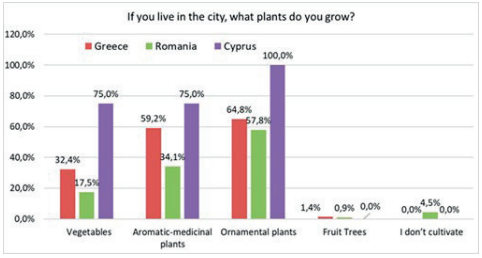

Figure 3. Results for the question about urban growers, what plants do they grow

The balcony and backyard are popular locations for growing plants, with the highest rates in Greece (64.8%) and Romania (44.4%), respectively. However, in Cyprus, growing plants on balconies is not a popular option. Only 1.4% of Greeks grow plants in their apartments, and none of the Romanians or Cypriots do. Response rates for growing plants in private and public spaces are below 10% (Figure 4).

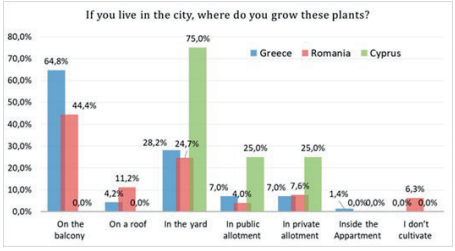

Figure 4. Results on the question about the cultivation of medicinal and aromatic plants

In an attempt to understand why aromatic medicinal plants are grown in urban areas, participants were asked to choose 5 out of 6 possible answers. The results showed that Greeks prefer these plants for their aroma (50.7%), Romanians for their appearance (39.9%), and Cypriots for their various beneficial elements (50%). In Romania, 19.3% of people do not cultivate aromatic medicinal plants, while in Greece the figure is 12.7%. In Cyprus, the percentage is lower at 4.5-5.6%, which is attributed to a lack of availability or knowledge about these plants.

In Greece, 43.7% of respondents grow each plant separately. 28.2% grow different aromatic plants together, 22.5% grow different ornamental plants together, and 12.7% grow different vegetables together. The combination of herbs and vegetables is rare in Greece, with only 1.4% of respondents using this arrangement. In Romania and Cyprus, none of the respondents reported growing herbs and vegetables together. In Romania, similar to Greece, most respondents (37.2%) cultivate each type of plant separately. Only 18.4% grow different aromatic plants together, and 21.5% grow different ornamental plants together.

The survey results indicate that relaxation is the most commonly cited benefit of urban gardening among Greeks, Romanians, and Cypriots, with rates of 74.6%, 73.5%, and 75%, respectively. The second most frequently mentioned benefit is decorating with plants that have green leaves, with percentages of 69.0% and 58.5% among Greeks and Romanians, respectively. All other benefits received lower rates (below 25%).

In terms of intercropping, both Greeks and Romanians selected the variety that provided the greatest benefit, with 52.1% and 69.5% respectively. The results indicate similarity in the choices made by the two groups, albeit with different percentages. Additionally, Greeks placed value on landscaping, while Romanians did not. All participants from different countries agreed that urban gardening has a positive impact on addressing the environmental crisis, urban development, and environmental protection. In Romania, the highest percentage of respondents (78.8%) believe that urban gardening helps educate both children and adults. Additionally, the majority of Greeks (71.8%) and all Cypriots (100.0%) share this belief.

The COVID-19 pandemic has led to an increased interest in urban gardening among respondents in Romania (80.3%), Greece

(64.3%), and Cyprus (100%). This increase is attributed to the availability of time, with 25.4% of Greeks and 36.3% of Romanians confirming this reasoning. Additionally, 50% of Cypriots surveyed attribute the increase in gardening to isolation. Romanian participants reported that relaxation and stress relief had a significant impact (31.8%) on increasing employment in urban agriculture during the pandemic.

For the widespread adoption of urban gardening, proper development of public spaces is essential. This requires a strong desire from residents. The survey collected data on citizens interested in acquiring agricultural land in their neighbourhoods. The results show that 84.8% of Romanian respondents would like to have vegetable gardens in public spaces for various reasons. These factors include psychological well-being (24.2%), access to healthy food (18.4%), environmental concerns (13.0%), socialization and education (7.6%), and aesthetic reasons (8.1%). Similarly, Greek respondents expressed a preference for vegetable gardens (87.1%) due to environmental reasons (19.7%), aesthetic reasons (16.9%), and psychological well-being (15.5%), as well as economic, social, and health reasons (11.3%). All respondents from Cyprus considered vegetable gardens necessary for aesthetic (25%) and educational (50%) purposes. Only a minority of respondents from Greece (4.2%) and Romania (4.0%) believe that creating gardens in public spaces is unfeasible. A small percentage of Greeks (2.8%) and Romanians (0.9%) perceive the environment as overpopulated. Furthermore, only a small percentage of Greeks (1.4%) and Romanians (2.7%) have access to cultivated areas for personal use. Additionally, a small percentage of Greeks (1.4%) and Romanians (0.9%) do not have time to tend to vegetable gardens. However, 66.2% of Greeks, 43% of Romanians, and 50% of Cypriots believe that the local government should establish an institutional framework for vegetable gardens. According to the survey, 49.3% of Greeks, 46.2% of Romanians, and 25.0% of Cypriots believe that the local government should create organized, social, peri-urban vegetable gardens. Additionally, 59.2% of Greeks, 54.3% of Romanians, and 50.0% of Cypriots believe that vegetable gardens should be created around residential complexes.

The survey results indicate that a majority of Greeks (74.6%), Romanians (65.9%), and Cypriots (75.0%) believe that urban gardening should be included in municipal urban planning. Additionally, a significant percentage of Greeks (49.3%), Romanians (45.3%), and Cypriots (75.0%) prefer renting private spaces for urban gardening. Meanwhile, the majority of Greeks (56.3%), Romanians (52.0%), and half of Cypriots (50.0%) prefer using public state spaces.

The study found that a majority of Greeks (74.1%) and Romanians (81.1%) are optimistic about the future of urban gardening, while only 33.3% of Cypriots share this sentiment. Additionally, a minority of Greeks (16.7%) and Romanians (12.6%) believe that urban gardening could have a future under certain conditions, compared to a majority of Cypriots (75.0%).

Concerning the future of urban gardening, the highest percentages of opinion indicate that it benefits human psychology (16.9% of Greeks and 15.2% of Romanians), the environment (15.5% of Greeks and 17.5% of Romanians), financial issues (14.1% of Greeks and 3.1% of Romanians), and dealing with a food crisis (7.0% of Greeks, 8.1% of Romanians and 25.0% of Cypriots).

Finally, 7.0% of Greek respondents and 5.4% of Romanian respondents believe that government support is essential for the future of sustainable horticulture.

CONCLUSIONS

This experiment aimed to investigate the use of intercropping in urban gardening as an environmentally friendly management plan to promote diversity. A total of 302 residents from Greece, Romania, and Cyprus participated. However, the conclusions drawn from the results in Cyprus cannot be considered representative due to the low participation rate (1.3%) and the absence of female participants. In Greece, the majority of participants are men aged between 50-60 years old, whereas in Romania, the majority are women aged between 40-50 years old. The participants are predominantly city dwellers, with almost all

living in either apartments without a garden (39-50%) or houses with a private yard (26-40%).

Although most participants claim to understand the concept of urban gardening, their interpretations do not significantly differ. The general consensus is that urban gardening is associated with limited spaces, experiences, environment, education, self-improvement, psychology, and nutrition. However, there are differing opinions regarding co-culture. The third part of the questionnaire reveals that a significant proportion of residents in all participating countries cultivate plants in urban areas. A comparison of the percentages of urban dwellers and urban growers shows that while 70.9% of Romanians live in urban areas, only 46.4% grow plants. The corresponding percentages among Greeks do not differ significantly nor among Cypriots. The results indicate that participants who cultivate in Romanian cities are familiar with the concept of urban gardening, while those in Greek and Cypriot cities are not. Additionally, it was found that urban growers in all participating countries prefer ornamental plants, followed by aromatic medicinal plants and then vegetables. Based on the response rates, Greeks show a 4% difference between their first and second preferences. After comparing data of those who live in apartments (with or without a garden), it can be concluded that all Greeks who live in apartments grow plants on their balconies, while 10% fewer Romanians who live in apartments do the same. Additionally, Cypriots who live in a house with a yard use it for their crops. Although aromatic herbs are not the most popular, they remain popular in Greece due to their taste, nutritional value, and aesthetic appeal when used in tea. Accordingly, in Cyprus, these plants are considered beneficial and beautiful and are often used for making tea. In Romania, the majority of participants choose them mainly for their appearance, with their nutritional properties and taste being secondary considerations.

The study confirms the purpose of this work by demonstrating how the basic concepts of urban gardening are included in the organization of planting and cultivation. It can be concluded that the method of organizing monoculture in each pot is used more in all countries. Only 1.4% of the Greek participants co-cultivate aromatic herbs with vegetables.

Finally, the study explores the social and economic aspects of urban gardening. The aim of this project is to expand citizens' understanding of the Mediterranean diet, urban gardening, and how they can improve their quality of life in the Balkan and Mediterranean regions. This will be achieved by exploring the correlation between these topics and the practices of monasteries (Thymakis, 2022). The text discusses the possibility of including historical and botanical gardens in a type of garden based on the ecology of the rural landscape using traditional varieties, such as the 'Greek Garden' model (Thymakis & Tzortzi, 2021), as explored by Athanasiadou & Thymakis (2019) and Thymakis (2023). The survey results indicate that urban gardening is believed to contribute to education, development, and environmental protection by the majority of participants. Additionally, it offers benefits such as relaxation, decoration, and nutritional security. Similar conclusions were obtained from a corresponding study in Italy, with the same sample size. During the pandemic, 32.3% of residents engaged in urban gardening, stating that this activity correlated with a reduction in psychopathological discomfort caused by COVID-19 (Theodorou et al., 2021). In another survey, 52.24% of respondents reported high levels of satisfaction with their lives due to their engagement in urban gardening (Harding et al., 2022).

It can be concluded that employment rates in Urban Agriculture increased during the pandemic in all participating countries due to the availability of free time and psychological factors. Participants from all countries shared the desire to create open spaces near their homes to grow edible plants for various reasons, including psychological, health, environmental, aesthetic, and economic factors. Those who choose not to create a vegetable garden may find it impossible to implement, lack access to private space, or have concerns about pollution. The involvement of each Municipality and Prefecture is widely accepted as necessary for achieving these vegetable gardens, with their inclusion in urban planning. A notable aspect is the consensus among all participants on the critical role that local

government should play. Both Greeks and Romanians expressed optimism about the future of urban gardening and its potential to positively impact human mental health and the environment. The Greeks also emphasized the economic benefits of urban gardening.

In conclusion, the analysis found that a large majority of respondents from Romania, Greece, and Cyprus have a positive opinion of urban gardening. Although the percentages differ, the reasons are the same. The research aims to interpret the perceptions of each group represented by a specific number of participants. However, the questionnaire did not receive the expected number of responses, so the conclusions can only be considered indicative. The responses to the open-ended questions indicate that urban gardening is a multifaceted and varied topic, which supports the initial hypothesis of the paper.

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