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Landscaping with Fruits: Citizens' Perceptions toward Urban Horticulture and Design of Urban Gardens

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Abstract: Urban horticulture represents a sustainable way of dealing with the challenges of modern cities, including urbanization processes, population growth tendencies, a lack of green areas, environmental pollution and food insecurity. This study aimed to (1) investigate the perceptions of citizens of Novi Sad municipality, Republic of Serbia, toward urban horticulture and (2) assess plant materials appropriate for cultivation in urban gardens and suggest urban spaces completely designed with the use of various forms of edible fruit species, including roses. The same questionnaire was administered with a four-year time gap, in 2019 and again in 2023, before and after the coronavirus pandemic. To investigate plant materials suitable for urban gardening, relevant articles in Google Scholar, Scopus and Web of Science platforms were searched. The questionnaires' results showed significant differences between the two years concerning respondents' attitudes toward urban horticulture's impact on food safety, socialization and personal health and development, which could have been influenced by the pandemic. Vegetables were grown by most respondents, commonly in household yards and gardens. The main motivations for participating in community urban gardens were to grow food for their own consumption and to make charitable contributions, followed by the motivation 'to socialize and relax'. Exemplary designs of an urban pocket, kindergarten yard and atrium courtyard are presented, providing insights into numerous possibilities for landscaping with fruits.

Keywords: food production; fruit species; questionnaire; roses; survey; sustainability; urban horticulture; urban design; urban garden



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1. Introduction

Food security has been seen as the fulfillment of the entire population's needs at all times regarding physical and economic access to sufficient, safe and nutritious food that will enable them to live active and healthy lives [1]. It is conditioned by the food system's success, comprising a wide range of activities from production to consumption, whose individual aspects, paradoxically, pose serious environmental threats [2]. The current trend of population growth has led to an estimate that, by 2030, about 60% of the world population will live in urban areas [3]. Urban agriculture could substantially influence global food production through the exploration of new locations for cultivation, with at least 100 million people actively engaged in this form of gardening worldwide [4]. Concomitantly with advocating a more sustainable approach to food production, urban horticultural activities are being performed in a number of urban spaces, including private home gardens, public community gardens, allotment gardens, gardens within schools and universities and rooftop gardens, as well as small spaces such as balconies and spaces that occupy larger areas, such as urban farms [5].

Although practiced since cities' emergence, the production of food in some contemporary dense and high-rise-filled urban areas is not always residents' first-choice activity [6].

Throughout history, every rapid and large-scale initiative that resulted in an increase in city dwellers' engagement in the maintenance of urban gardens has been related to the increased need for fresh food in times of crisis, including poor living standards in periods during and after wars, financial crises and, most recently, the pandemic waves in 2020 and 2021 [7]. In countries with low living standards, urban agriculture is generally practiced in order to provide nutritionally adequate and safe food while at the same time generating self-employment opportunities, direct revenues or savings, which contribute to greater social stability [8]. Even when food security is not endangered, the reasons for urban gardening are numerous. Urban horticulture is associated with a number of benefits to individuals, society and the environment. According to Lovell [9], urban horticulture provides a wide range of functions, thus contributing to food production, energy conservation, waste management, biodiversity conservation, microclimate control, the greening of urban areas, economic improvement, community socialization, residents' health and well-being, cultural heritage and education. Many studies have shown that food is certainly not the only and, for many participants, not the main motivation to become involved in agricultural activities in urban conditions. The multifunctionality of urban gardens was confirmed by Pourias et al. [10]. They found that the motivation of gardeners to participate in urban collective gardens, in addition to the amount of produced food and its quality, is closely linked to opportunities to socialize with others, to improve their physical and mental health, to expand their knowledge and skills, to enjoy their leisure time, to make contact with nature and escape city life, and to make an impact on the urban landscape. Freeman et al. [11] found that people also valued their private gardens because of the process of 'creating' the space over time, as an expression of ownership and identity, and that gardens were seen as a means for learning to care about life and respecting nature. In a study conducted by Chalmin-Pui et al. [12], the results indicated that most people engaged in home gardening for pleasure and joy, while Church et al. [13] found that regardless of the motivations for growing their own food, gardening practitioners were happier than those who were not engaged in this activity. According to Goldstein et al. [14], the practice of producing food in urban areas significantly affects environmental impacts on urban food demand, concurrently influencing environmental issues such as runoff attenuation, urban heat island mitigation and carbon sequestration, while Scheromm [15] concluded that the existence of collective gardens and the residents who take care of them bring the agricultural and urban worlds together, contributing to the achievement of many sustainability goals [16].

Developed, industrialized countries are experiencing an increasing interest in urban horticulture, resulting in increases in the number of locations for food-growing purposes, their diversity and the number of participants enrolling in waiting lists to join a garden—as in Paris, Montreal and New York [10]. Although urban gardening practices and possibilities for food growing in urban conditions in countries of Southeast Europe have been studied in recent years [17–27], research on urban horticultural practices and spaces suitable for this form of food production in the Republic of Serbia is still limited. Djokić et al. [28] studied the character and history of urban gardens and gardening practices in Belgrade, the capital of Serbia, questioning the further development of the investigated urban spaces from aspects of regulation, legislation and design improvement. There is no adequate legislation in Serbia that would recognize urban gardening as a type of green area use, although some initial steps toward the regulation of collective urban gardens have been made [29]. Čepić et al. [29] studied the motivations of citizens to participate in urban gardening in three municipalities of Belgrade. Their results showed the high interest of respondents in this form of activity, but individual plots were preferred over shared gardens. Access to healthy and fresh food, followed by recreation and light physical activity, proved to be the most important motivation to garden. During the assessment of urban pockets in Novi Sad, the second-largest city in Serbia, Narandžić and Ljubojević [30] identified spaces suitable for urban gardening purposes. To the authors' knowledge, similar studies in Novi Sad, except for studies on urban soil quality in terms of edible plant cultivation [31,32]

and plant materials suitable for urban gardens [33], have not been conducted. Despite the presence of different informal spaces of unknown ownership and wild gardens in the urban environment of Novi Sad, where the growing of edible plants by city residents was observed, in addition to food production in private household gardens and spaces between buildings, research is lacking on the areas that they occupy; their number, ownership and locations; gardeners' characteristics; and the types of plants grown. Also, there are no studies on citizens' perceptions of urban horticulture, nor their willingness to produce food for their own needs or to participate in collective gardens.

This study aimed to investigate what the citizens of Novi Sad municipality consider to be the benefits of urban gardening, from the aspects of its relation to the environment, food security and the economy, socialization and society, human well-being and opportunities to learn and play, and to evaluate their familiarity with, participation in and motivation for urban gardening. The pilot study was conducted in 2019 and 2023 to observe whether their attitudes had changed over time due to the occurrence of the COVID-19 pandemic.

The second part of the study aimed to show how edible species—fruits, including roses—could be incorporated into the urban space by suggesting three different types of urban gardens. The plant materials suitable for edible landscaping purposes have been investigated.

2. Materials and Methods

The questionnaire was administered with a four-year time gap, in 2019 and 2023, in order to observe changes in the public's awareness of urban horticulture over time—their familiarity with the term and potential benefits of activities included in this form of food production, their involvement in food production, the choice of edible plants and spaces for growing purposes, their willingness to expand their knowledge on that topic and their motivation to eventually participate in urban gardening at the community level. As a study area, the City of Novi Sad was selected (longitude 19°50' E, latitude 45°19' N), the capital of the Autonomous Province of Vojvodina and the second-largest city in the Republic of Serbia. The municipality of Novi Sad occupies an area of 699 km² with its 16 settlements [34,35]. According to the Statistical Office of the Republic of Serbia [36], the population estimate in the City of Novi Sad in 2021 was 363,789, with a constant increasing trend. Urban community gardens are not present in the city area, and research on private urban gardens and allotment gardens has not been conducted to the authors' knowledge. Therefore, there are no data on citizens' involvement in urban gardening, although spaces suitable for this type of activity were investigated by Narandžić and Ljubojević [30].

An online questionnaire was adopted to collect data, as it is one of the most straightforward methods that allows participants to freely reply, is less expensive and, in a short period of time, can be made available to a large number of people [37]. The first survey was conducted between 10 April and 10 June 2019, while the second was carried out between 7 February and 7 April 2023. The questionnaire was formed and distributed on social networks using the Google Forms platform via a link and emails sent by members of the research group. The link was accessible by computers and mobile phone devices. Also, to expand the sample of respondents, hard copies of the same questionnaire were distributed during different sessions held in the City of Novi Sad, enabling part of the population who do not have access to the internet to participate in the survey. All respondents were volunteers who had been previously informed that their answers would be used for research purposes only, thus protecting respondents' confidentiality. Participants who gave incomplete responses or skipped answering particular questions were excluded from the research during data cleaning (eight respondents in 2019 and five respondents in 2023). After data cleaning, the final number of respondents in 2019 was 333, while in 2023, 217 respondents were included in the study, making a total of 550 participants.

The questionnaire's form was structured and consisted of 14 questions: 9 close-ended multiple-choice questions, 4 multiple-answer multiple-choice questions with an additional 'other' answer option and comment field, and 1 question comprising 21 statements with

a four-point Likert scale for each statement (1—disagree; 2—not sure; 3—partly agree; 4—agree). The questions were grouped into five segments: five questions were asked to gather information on demographic characteristics (gender, age, occupation, education, place of residence); two questions were asked to find out respondents' familiarity with the term urban horticulture and how they found out about it; 21 statements within one question aimed to provide insight into personal attitudes toward food production, gardening activities and urban gardens; three questions were about growing food in urban conditions, the plants that are grown and the spaces in which production occur; and three questions were asked to investigate respondents' interest in learning about opportunities that urban horticulture offers and their willingness to participate in workshops on that topic and in the maintenance of an urban garden in the immediate vicinity of their place of residence, without monetary compensation. Statements were divided into five sets, which were related to the impact of activities encompassed by urban horticulture/gardening. These included four statements regarding the impact on the environment, four statements related to the impact on food safety and the economy, four statements regarding the impact on social relations and society, five statements related to the impact on personal health and development, and four statements with regard to the impact on learning and play activities. With regard to places in which food-provisioning activities are performed, answers included both household yards and gardens. To avoid misunderstandings arising from the different terminology used for similar spaces in different cultures, definitions for both terms in the context of this study are given. The term 'yard' is considered an area immediately adjacent to the house that, depending on its position in relation to the entrance to the household area, could be seen as the front yard, side yard or backyard; it is often partially surfaced, with or without an area where plants are grown. On the other hand, the term 'garden' represents an area within the yard or within walking distance from the family home, mainly with open soil, where different plants are cultivated, mostly edibles. For the full questionnaire, see Appendix A, Table A1.

Data analysis was completed in MATLAB software, version 7.8 (R2009a). This also included sample reduction, which allowed us to draw conclusions about part of the population with certain characteristics and test whether those characteristics affect opinions about various questions concerning urban horticulture. A non-parametric Chi-square homogeneity test and Mann–Whitney test were performed to test the distributions of two independent samples at levels of significance of $\alpha = 0.01$ and $\alpha = 0.05$. Also, a correspondence analysis was performed to explore the relationship between categories with regard to responses to multiple-choice questions.

When assessing plant materials suitable for urban horticulture by searching for relevant articles in Google Scholar, Scopus and Web of Science platforms, different search strings for crop characteristics were used, including the following keywords: 'fruit' (different species), 'cultivar', 'low vigor', 'compact', 'columnar', 'dwarf', 'disease', 'pest', 'resistant', 'tolerant' etc. The investigation was oriented toward temperate fruit species, including pome, stone, berry and nut fruits. The search was conducted exclusively in English.

The proposed designs of three urban spaces—urban pocket, kindergarten yard and atrium courtyard—were established on the basis of several principles. Plant materials were planned to provide a diversity of species, plant sizes and growth forms, textures, colors and scents, forming an attractive space that engages all senses. The cultivars were chosen with the aim of enabling fruit harvesting throughout the season. The vegetation was used as a buffer from urban environmental threats, as a protective layer from insolation and as a visual and physical barrier within the space. The plants were planned to be planted directly in the soil or in different forms of containers, enabling the utilization of species with specific growth requirements. In order to protect children and enable a safe and healthy space within the kindergarten yard, thornless cultivars were chosen. Where applicable, cultivars resistant or tolerant to the main diseases and pests were proposed, while rootstocks were chosen to attain the size-controlling effect on scions. The proposed urban gardens were designed according to principles of design such as balance, rhythm, repetition, emphasis,

proportion, contrast and harmony in order to attain both the optimal functionality and high esthetic value of the space.

3. Results and Discussion

3.1. Investigation of Citizens' Familiarity with Food Production in Urban Conditions and Its Benefits—Survey Results

For surveys conducted in 2019 and 2023, the sample populations consisted of 87.69% and 69.12% women, respectively (Table 1). A higher rate of questionnaires filled out by women in comparison to the number of male respondents was also obtained by other authors [13,38], indicating the possibility that women are more open to participating in surveys. However, this by no means indicates that women are more involved in urban food production. The demographics with regard to the age, occupation and education of respondents are shown in Table 1.

Table 1. The structure of the sample and the familiarity with urban horticulture for different respondent categories in both investigated years.

		Total Share of Respondents per Category (%) *		Chi-Square Test **		Familiarity with the Term Urban Horticulture (%) *			
						2019		2023	
		2019	2023	$\alpha = 0.01$	$\alpha = 0.05$	Familiar	Not Familiar	Familiar	Not Familiar
Gender	Male	12.31	30.88	Yes	Yes	8.41	3.90	20.74	10.14
	Female	87.69	69.12			57.66	30.03	50.69	18.43
Age	<25	17.12	10.60	No	No	12.61	4.50	6.91	3.69
	25–40	56.46	59.91			34.53	21.92	40.09	19.82
	41–65	26.42	28.57			18.92	7.51	23.50	5.07
	>65	0	0.92			0	0	0.92	0
Occupation	Pupil/Student	16.52	8.29	No	Yes	11.11	5.41	5.07	3.22
	Employed	67.87	78.34			44.74	23.12	56.22	22.12
	Unemployed	14.71	10.60			9.31	5.40	7.37	3.23
	Retired	0.90	2.76			0.90	0	2.76	0
Education	Elementary school	1.80	0.92	Yes	Yes	1.20	0.60	0	0.92
	High school	26.43	22.58			18.02	8.41	17.97	4.61
	Bachelor studies	40.84	34.56			27.63	13.21	20.28	14.29
	Master studies	23.12	27.19			14.11	9.01	19.35	7.83
	Doctoral studies	7.81	0			5.11	2.70	0	0
Place of residence	Rural	19.22	18.89	No	No	14.71	4.50	13.36	5.53
	Urban	80.78	81.11			51.35	29.43	58.06	23.04

* The percentages represent the share of respondents within the category in relation to the sample population ($n = 333$ in 2019, $n = 217$ in 2023). ** At the level of significance α , the null hypothesis that the corresponding category has the same distribution in both years has been rejected. Note: At levels of significance $\alpha = 0.01$ and $\alpha = 0.05$, tests were performed to determine whether there was a significant difference in the sample structure between the years 2019 and 2023. The tests were performed using the Chi-square homogeneity test.

Concerning age, the lowest number of participants were older than 65 years and retired in both years, which is presumably related to the inability of the older generation to access the questionnaire online, not to less engagement in urban horticulture by respondents within this age category. Our assumption is in line with the findings of Čepić et al. [29], who found that older citizens in Belgrade (Serbia) seemed more willing to engage in collective urban gardening, considering that they have more free time and possess the necessary skills to garden. The highest number of respondents in both years belonged to the age category between 25 and 40 years (56.46% in 2019 and 59.91% in 2023), followed by respondents from 41 to 65 years old (26.42% in 2019 and 28.57% in 2023). In terms of occupation, respondents were predominantly employed, with a share of 67.87% in 2019 and 78.34% in 2023 in relation to the total sample population. The highest number of respondents had finished bachelor studies, followed by high school graduates and respondents with a master's degree. The sample distribution with regard to the place of residence was consistent in both years of

the questionnaire's administration, with around 80% of participants living in the city and the remaining respondents living in rural settlements.

The survey showed that in relation to the total number of respondents, 66.06% in 2019 (220 respondents) and 71.43% in 2023 (155 respondents) were familiar with the term 'urban horticulture' in its modern perception, referring to the growing of plants in an urban environment with the aim of producing food. In both years, more than 50% of individuals in the sample population familiar with the term were females. In 2019 and 2023, 73.68% and 65.21% of respondents younger than 25 years, respectively, were familiar with the investigated activity. Of the total number of 25–40-year-old respondents, 61.17% in the first year and 66.92% in the second year were familiar with the term. The results obtained for the third age group, where 71.59% in 2019 and 82.25% in 2023 positively answered the asked question, indicated that survey participants 41–65 years old were to the greatest extent aware of urban horticulture in 2023, followed by the first age group in 2019. With regard to occupation and education, the highest share of respondents familiar with urban agriculture in 2019 was recorded among the 'pupil/student', 'high school' and 'bachelor studies' categories, while in 2023, 'employed', 'high school' and 'master studies' categories dominated (values above 70% in relation to the number of residents in that occupation/education category). It is interesting that in 2019, 76.56% of respondents from rural settlements were familiar with urban horticulture, while urban residents reached a share of 63.57% in relation to the total number of respondents in this category. In 2023, the situation had changed slightly, with 70.73% of respondents from rural and 72.59% of respondents from urban settlements being aware of the term. Dunnett and Qasim [39] found that younger adults were less involved in gardening than adults older than 35 years. This is, to some extent, in line with our results, showing that respondents from 41 to 65 years old were more familiar with the term urban horticulture than those aged 25 to 40 years (significant difference at the level of significance $\alpha = 0.05$). Similar findings were obtained by Church et al. [13], who found a significant increase in food growing with the increase in respondents' age, where the largest number of respondents who grew their food were older than 65 years. However, the same authors did not find a strong influence of the respondent's gender and education on engagement in this form of activity. Our results corroborate these findings regarding the influence of gender and education on the respondent's familiarity with urban horticulture.

For each structural category (gender, age, occupation, etc.), tests were performed to determine whether there was a significant difference between subcategories with respect to respondents' familiarity with the term urban horticulture. In order to test these differences, the Mann–Whitney test for large samples ($\alpha = 0.05$) was performed. The tests were conducted in pairs for each pair of subcategories having a large enough sample size, and in the cases where there were significant differences, one-sided tests were performed in order to test whether respondents in a certain category were more familiar with urban horticulture than those in the other one. Subcategories with only a few sampled respondents were excluded from the analysis since small sample sizes cannot give reliable test results. The conducted Mann–Whitney test showed that the only significant difference within categories was between the two age groups, as stated above. In the same manner, the Mann–Whitney test was conducted to test whether respondents in a certain category tended to express a greater desire to learn about urban horticulture than those in the other one. At the level of significance $\alpha = 0.05$, it was confirmed that there were no significant differences within the gender, age, occupation and education categories. However, the place of residence did significantly influence respondents' willingness to expand their knowledge, where survey participants living in urban settlements expressed a greater desire to learn about urban horticulture. As presented in Table 2, more than 60% of respondents in both 2019 and 2023 (61.56% and 66.82%, respectively) who wanted to learn more about the opportunities that urban horticulture provides belonged to the 'urban' category regarding the place of residence.

Table 2. The share of respondents who expressed their willingness to learn more about urban horticulture for different categories in both investigated years.

		2019		2023	
		Wants to Learn (%) *	Does Not Want to Learn (%)	Wants to Learn (%)	Does Not Want to Learn (%)
Gender	Male	9.91	2.40	23.04	7.83
	Female	65.16	22.52	54.38	14.75
Age	<25	12.31	4.80	7.83	2.76
	25–40	40.24	16.22	46.08	13.82
	41–65	22.52	3.90	22.58	5.99
	>65	0	0	0.92	0
Occupation	Pupil/Student	12.31	4.20	6.45	1.84
	Employed	50.45	17.42	60.83	17.51
	Unemployed	11.71	3.00	7.83	2.76
	Retired	0.60	0.30	2.30	0.46
Education	Elementary school	1.20	0.60	0.46	0.46
	High school	21.02	5.40	16.59	5.99
	Bachelor studies	28.23	12.61	25.35	9.22
	Master studies	19.22	3.90	22.12	5.07
	Doctoral studies	5.40	2.40	0	0
Place of residence	Rural	13.51	5.71	10.60	8.29
	Urban	61.56	19.22	66.82	14.29

* The percentages represent the share of respondents within the category in relation to the sample population ($n = 333$ in 2019, $n = 217$ in 2023).

The largest number of respondents familiar with urban horticulture found out about this form of activity on the internet—about 42% in both surveys (Figure 1). In 2019, 12.61% of survey participants had learned about urban horticulture from social sources—family members, neighbors or friends—as well as from television or radio shows. The second survey's results showed an increase in the number of respondents who became familiar with the term through social interaction (23.50%) and via television/radio (15.67%). The source of information for the lowest number of respondents was printed publications, while under 'other', the respondents indicated that they had found out about urban horticulture during their education. These findings are partially in accordance with the study conducted by Pollard et al. [40], in which online sources, family and friends were highly rated responses, while, in contrast to our results, almost 80% learned about food gardening from books. Contingency tables with the corresponding residuals show that responses varied with regard to population age, occupation and education, as well as regarding the year of investigation (see Supplement, Tables S1–S3). In 2019, respondents in the youngest part of the population (<25 years old) were more likely to find out about the term from family members, neighbors or friends, while respondents who were 41 to 65 years old were more likely to be informed via the internet. Interestingly, in the year after the pandemic, adults from the category 41–65 years old were mostly informed through social interactions and from newspapers/journals. The respondents within the 25–40-year-old category were more likely to be unfamiliar with the term than other categories of respondents in both years. Most employed respondents found out about urban horticulture via the internet in both years and were also less likely to be informed about it via social contacts. Regarding education, social interaction was most likely the source of information within the 'high school' category, while respondents with a faculty degree were more likely to find out about urban horticulture via internet sources in both 2019 and 2023.

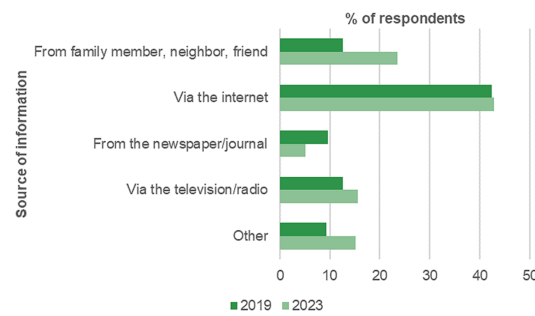


Figure 1. The respondents' responses to the question, 'How did you find out about the mentioned term (urban horticulture)?'.

City residents' answers to the question 'Do you or someone in your immediate environment engage in food production to meet your own needs, in urban conditions?' are presented in Table 3. All retired respondents answered positively to this question in both years, although their number was insufficient to make an assumption. The results show that the highest number of residents who live in the city and who personally grow or whose family members grow plants for their own consumption, with regard to occupation, belonged to the 'pupil/student' and 'unemployed' categories. In terms of education, the groups of respondents who finished high school and had a bachelor's degree gave the most affirmative answers in 2019, while in the second survey, the highest share within the category was recorded for 'doctoral studies' and 'high school' categories (disregarding only one respondent within the first group). Such results do not indicate a strong connection between education and food-producing activities, corroborating the findings of Church et al. [13], but rather point to other factors determining respondents' involvement in urban horticulture, such as experience in agricultural practices or having the time and space to grow edibles [41]. A limitation of this question is that we do not know exactly who in the household was involved in food production, since the question referred to the respondents themselves but also to their family members. Because of this, it was not valid to perform tests that could provide answers to questions like 'Whether the unemployed are more inclined to grow their own food than the employed respondents?' or 'Whether the respondents with lower education are more inclined to engage in food production for their own needs than respondents with higher education?'.

Table 3. The number of respondents who live in the city per occupation and education category, followed by the share of those who garden or whose family members garden to produce food and those who do not garden within categories.

		2019			2023		
		Total Number of Respondents	Produce Food (%) *	Do Not Produce Food (%)	Total Number of Respondents	Produce Food (%)	Do Not Produce Food (%)
Occupation	Pupil/Student	45	64.44	35.56	11	54.54	45.46
	Employed	185	52.43	47.57	144	53.47	46.53
	Unemployed	38	60.53	39.47	16	62.50	37.50
	Retired	1	100	0	5	100	0
Education	Elementary school	4	50	50	1	100	0
	High school	64	67.19	32.81	32	62.50	37.50
	Bachelor studies	106	60.38	39.62	64	56.25	43.75
	Master studies	70	42.86	57.14	49	44.90	55.10
	Doctoral studies	25	44	56	30	63.33	36.37

* The percentages represent the share of respondents within the category in relation to the total number of respondents belonging to a particular subcategory.

The respondents' perceptions toward the benefits of urban horticulture in terms of the mean level of agreement showed differences between both the individual statements and the impact categories (Table 4). The highest level of agreement for an individual statement

in 2019 (average value 3.78) was recorded for statements 4, regarding the impact of urban gardens' establishment on the revival and beautification of the urban environment, and 19, regarding the influence of gardening on the individual's connection with nature. In 2023, statement 19 was rated with the highest level of agreement (3.87). In both years, the average scores for statements within the 'Impact on learning and play activities' and 'Impact on environment' groups were the highest—3.63 and 3.60 in 2019 and 3.67 and 3.65 in 2023, respectively. The statements' average score for the 'Impact on social relations and society' was the lowest, with values of 3.25 in 2019 and 3.32 in 2023. The lowest rating in both 2019 and 2023 was given to statement 9—'Gardening encourages socialization with other people'—with means of 2.83 and 3.02, respectively. Such low scores indicate that the main form of urban gardening present in the investigated area is individual gardening in the privacy of people's own households due to the absence of allotment gardens in Novi Sad. For all other statements, the average level of agreement was 'partly agree' to 'agree'. These results indicate that, although almost completely based on food production in households' gardens, urban horticulture was highly valued among survey participants in both 2019 and 2023. This is no surprise, bearing in mind that food production in a more traditional context in Serbia, regarding mainly agricultural activities in households located in non-urban settlements, represents a valuable source of food that contributes greatly to food supplies throughout the year, enabling both fresh and stored products' consumption. For example, the overall vegetable production in yards and gardens in Serbia constitutes about 20% of open-field production [42]. The phenomenon of growing food in urban environments has thrived under different circumstances within different societies, where the history of allotment gardens dates back more than a hundred years [43]. In order to better understand the tendencies of the urban population in Novi Sad to engage in food-provisioning activities, further research should focus on changes affecting population demographics and urbanization processes that may increase residents' desire to return to nature through urban horticulture [33]. In order to test the hypothesis that the opinions of the population about the statements did not change over the four years, the Mann–Whitney and Chi-square homogeneity tests were used. Based on the two independent samples from the years 2019 and 2023, the aim of the two-sided Mann–Whitney test for large samples was to test the hypothesis that the distributions of the corresponding populations do not differ at the level of significance $\alpha = 0.05$. In other words, the 'significant' (abbreviation 'Sign.' used in Table 4) results show that the attitude of the population with respect to the chosen statement was not the same in the two years. In order to test the same hypothesis using the Chi-square test, the 2019 and 2023 populations were divided into four categories depending on their attitudes toward the corresponding statement, and the test was performed for levels of significance $\alpha = 0.01$ and $\alpha = 0.05$.

Table 4. The level of agreement with statements regarding urban horticulture benefits within sample populations in 2019 and 2023.

		Level of Agreement *				Difference in Means	Tests **		
		2019		2023			Mann-Whitney α = 0.05	Chi-Square α = 0.01	
		Mean	Median	Mean	Median				
Statement on Urban Horticulture		Mean	Median	Mean	Median				
Impact on environment									
1.	By producing food for my own needs, I contribute positively to the environment and improve the immediate living environment in the city.	3.64	4	3.72	4	−0.08			

Table 4. Cont.

Statement on Urban Horticulture		Level of Agreement *				Difference in Means	Tests **		
		2019		2023			Mann-Whitney α = 0.05	Chi-Square α = 0.01	α = 0.05
		Mean	Median	Mean	Median				
2.	By producing food for my own needs, I reduce my negative contribution to climate change.	3.34	4	3.43	4	−0.08			
3.	Gardening practicing indicates the fact that an individual respects and highly values nature as an integral part of his environment.	3.65	4	3.68	4	−0.02			
4.	The establishment of urban gardens encourages the revival of abandoned and neglected plots in the city and beautifies the environment.	3.78	4	3.76	4	0.02			
By category:		3.61		3.65		−0.04			
Impact on food safety and economy									
5.	The food I produce myself is healthier and safer than food bought in stores.	3.54	4	3.63	4	−0.09			
6.	By producing food for my own needs, I contribute to food sustainability in my city and/or beyond.	3.15	3	3.35	4	−0.19	Sign.		Sign.
7.	By producing food for my own needs, I save money.	3.34	3	3.45	4	−0.10			
8.	Urban horticulture provides access to a wider range of healthy, nutritious foods.	3.50	4	3.65	4	−0.15	Sign.	Sign.	Sign.
By category:		3.38		3.52		−0.13			
Impact on social relations and society									
9.	Gardening encourages socialization with other people.	2.83	3	3.02	3	−0.19	Sign.		
10.	The establishment of urban gardens increases the safety of previously abandoned locations and reduces the level of legal offenses and crimes.	3.36	4	3.35	4	0.01			
11.	The establishment of urban gardens increases the chances of employment for the urban population.	3.23	3	3.28	4	−0.04			
12.	The establishment of urban gardens connects people of different ages, genders, occupations, interests, financial situations and nations.	3.57	4	3.64	4	−0.08			
By category:		3.25		3.32		−0.075			
Impact on personal health and development									
13.	Gardening is a great opportunity for recreation/relaxation.	3.70	4	3.82	4	−0.12			
14.	Gardening encourages personal development and strengthens self-confidence.	3.36	4	3.54	4	−0.18	Sign.		
15.	Gardening improves the emotional status of an individual.	3.08	3	3.23	4	−0.15	Sign.		
16.	Gardening has a positive effect on a child’s development.	3.61	4	3.76	4	−0.15	Sign.		Sign.
17.	Gardening together with family members encourages communication and strengthens family ties.	3.51	4	3.61	4	−0.10			
By category:		3.45		3.59		−0.14			
Impact on learning and play activities									
18.	By producing food, I improve my gardening skills.	3.74	4	3.82	4	−0.09		Sign.	Sign.
19.	Gardening connects the individual with nature and enables observation of nature and understanding of natural processes.	3.78	4	3.87	4	−0.09			
20.	Gardening has an educational function.	3.75	4	3.82	4	−0.07			
21.	Urban gardens are an ideal place for children’s play.	3.24	3	3.18	3	0.06			
By category:		3.63		3.67		−0.045			

* Level-of-agreement scale: 1—disagree; 2—not sure; 3—partly agree; 4—agree. ** The ‘significant’ (abbreviation ‘Sign.’ used in the table) results show that the attitude of the population with respect to the chosen statement was not the same in the two years, according to the performed tests at the indicated level of significance α .

The performed tests indicated a change in general attitudes toward urban horticulture's impact on food safety, socialization and personal health and development, as well as on the improvement of gardening skills, over the four years. The most significant differences were found between the respondents' opinions with regard to the impact of urban horticulture on issues regarding food provisioning and the health and development of

individuals engaged in such activities. Those results were reflected in the highest mean differences per category. In 2023, respondents were more convinced that the food production for their own needs affects food sustainability and provides access to a wider range of healthy, nutritious food. This could be related to the experience of growing their own food at a time when they were working from home and the inability to participate in a large number of activities outside the household, as well as the reduced food supply in markets due to transportation problems, as also noticed by Chari et al. [44]. Similarly, Bhattarai and Adhikari [6] stated that since the coronavirus pandemic, people who lived in urban settlements have begun to realize that the delivery of food from distant areas is not always reliable, which indisputably affects the provision of different food products. The results are in line with the findings of Lindsay et al. [45], who found that the COVID outbreak had changed people's consumption practices and engagement in different activities not practiced before, such as bread baking, food growing and bicycle riding. The same authors concluded that the public's response to the pandemic demonstrated that consuming less was possible and that household food production could be enjoyable. Although rated with the lowest score in both years, the influence of gardening on socialization was more appreciated in 2023, presumably indicating the growing need to connect with others after home isolation during the pandemic and the recognized benefits of social interaction for human well-being [46]. Gross and Lane [47] found that the social dimension was an integral part of the engagement in urban gardening, especially for those at a younger age and adults reminiscing about their childhood. This included opportunities to use the garden as a space for social games and sports activities, enabling siblings' relationships to flourish, but also as a place to remember and commemorate past relationships and people. Regarding the positive impact on personal health and development, more respondents in 2023 valued gardening as an opportunity for recreational purposes and relaxation [48], as well as an activity that encourages personal development [49], strengthens self-confidence [50] and positively affects the emotional status of an individual [51] and a child's development [52].

In order to test the hypothesis that the place of residence does not affect one's opinion about statements on urban horticulture, the Mann–Whitney test for large samples was performed. The results confirmed the hypothesis, which showed that at the level of significance $\alpha = 0.05$, rural and urban residents had similar opinions on the investigated matter. The means for individual statements were also calculated to determine the difference between the means of populations living in rural and urban settlements (Table 5). The highest difference between means was found for the statements regarding the employment opportunities that urban horticulture provides, the influence of gardening on children's development and its educational function.

Compared to the respondents from the city, respondents from rural settlements agreed to a greater extent with the statement, 'The establishment of urban gardens increases the chances of employment for the urban population'. This could reflect the overall opinion of the rural population that agricultural activity such as urban horticulture could provide employment, since food production is one of the main job opportunities in rural areas [53]. The greater connection of rural residents to food production was also found by Ančić et al. [19], who recorded that food self-provisioning was more frequently practiced in rural areas and smaller settlements than in urban environments. Almost 80% of respondents who lived in the city agreed that 'Gardening has a positive effect on a child's development', about 10% more compared to rural residents. This could indicate the accentuated need of urban residents to provide safe and healthy spaces for their children, being aware of the negative consequences of growing up without a yard or a garden and a devastating lack of green spaces in the immediate vicinity of their homes, but also of the importance of open spaces during the restricted usage of indoor spaces [54–56]. According to Miller [52], children who participate in gardening activities communicate their knowledge of the world to others and convey and learn how to manage their emotions while developing valuable skills—self-confidence, initiative, science skills, etc. In a study conducted by Dunnett and Qasim [39], a fifth of respondents perceived gardens as an important aspect of creating

a safe environment for children because of their protective enclosure, which mitigates urban threats. The higher agreement of urban residents with the educational character of gardening in comparison to rural residents could be presumably due to urban residents' understanding of food production as a great opportunity to learn how to grow and maintain plants with the possibility of tasting their own products [10,57], rather than perceiving it as a work opportunity and the main source of the household's food supply in the case of some rural residents. Scheromm [15] agrees that, even if urban horticulture does not provide a realistic alternative for food production that completely meets the needs of residents, urban gardens do provide a valuable opportunity for environmental and agricultural education.

Table 5. The share of respondents within 'rural' and 'urban place of residence' categories per level of agreement with the investigated statements on urban horticulture—UH (total sample population $n = 550$).

Statement on UH No.	% of Respondents from Rural Settlements *					% of Respondents from the City					Difference in Means
	Disagree	Not sure	Partly Agree	Agree	Mean	Disagree	Not Sure	Partly Agree	Agree	Mean	
1	0	4.76	25.71	69.53	3.65	0.45	4.94	20.9	73.71	3.68	−0.03
2	1.9	12.38	27.62	58.09	3.42	3.15	14.16	25.39	57.3	3.37	0.05
3	0.95	2.86	27.62	68.57	3.64	1.35	3.6	21.8	73.25	3.67	−0.03
4	0	2.86	13.33	83.81	3.81	1.57	2.47	13.71	82.24	3.77	0.04
5	0.95	2.86	27.62	68.57	3.64	0.45	4.94	33.03	61.57	3.56	0.8
6	4.76	18.09	34.28	42.86	3.15	5.17	16.63	26.74	51.46	3.24	−0.09
7	2.86	4.76	41.9	52.58	3.4	2.47	9.43	35.51	52.58	3.38	0.02
8	1.9	6.67	23.81	67.62	3.57	0.67	6.07	30.34	62.92	3.55	0.02
9	4.76	25.71	49.52	20	2.85	7.41	24.49	37.08	31.01	2.92	−0.07
10	0.95	20.95	22.86	55.24	3.33	2.92	16.18	22.7	58.2	3.36	−0.04
11	1.9	14.29	26.67	57.14	3.39	3.15	19.55	29.66	47.64	3.22	0.17
12	1.9	5.71	22.86	69.52	3.6	0.67	8.09	22.02	69.21	3.6	0.00
13	0.95	0.95	18.09	80	3.77	0.67	2.47	19.32	77.53	3.74	0.03
14	1.9	12.38	28.57	57.14	3.41	2.02	11.01	28.09	58.88	3.44	−0.03
15	4.76	24.76	29.52	40.95	3.07	4.94	20.45	28.09	46.52	3.16	−0.09
16	0.95	10.48	20	68.57	3.56	0.45	7.19	14.83	77.53	3.69	−0.13
17	1.9	9.52	26.67	61.9	3.49	2.47	6.97	22.47	68.09	3.56	−0.08
18	2.86	0.95	17.14	79.05	3.72	0.45	3.37	13.48	82.7	3.78	−0.06
19	0	2.86	16.19	80.95	3.78	0.45	1.35	13.48	84.72	3.82	−0.04
20	0.95	1.9	24.76	72.38	3.69	0.22	2.02	15.28	82.47	3.8	−0.11
21	6.67	12.38	31.43	49.52	3.24	4.04	13.93	38.65	43.37	3.21	0.02

* The percentages within rural/urban places of residence groups were calculated in relation to the respective subtotals (105 and 445 respondents with rural and urban places of residence, respectively).

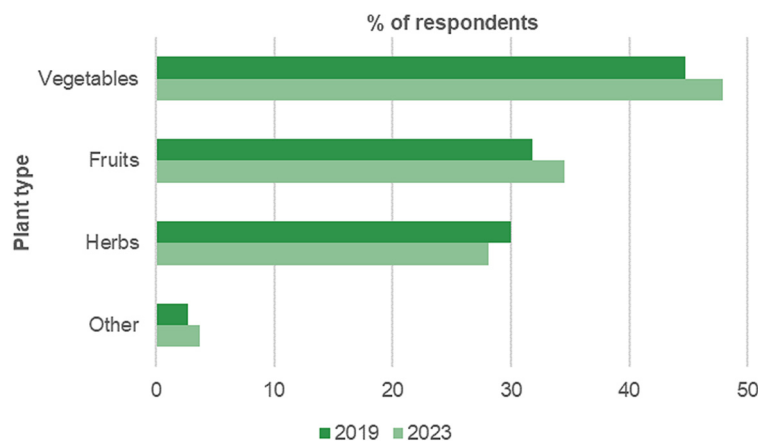
In both years of investigation, more than half of the survey's participants, although familiar with urban horticulture, were eager to learn something more about food production in cities (Table 6). About half of the participants who declared that they were not familiar with the subject of the research in 2019 wanted to acquire new knowledge, while that share in 2023 was higher. In general, people in 2023 were more interested in learning, but not in participating in workshops on that topic, with only 35.94% of respondents interested in such events. The lack of interest in participating in events related to urban horticulture promotion could be influenced by the reduced willingness to stay in crowded places due to the previously experienced risk of contagion during the pandemic [58].

Table 6. The willingness of residents to expand their knowledge on urban horticulture (UH).

Characteristic of Respondent	% of Respondents in 2019 (<i>n</i> = 333)	% of Respondents in 2023 (<i>n</i> = 217)
Familiar with UH and wants to learn more *	53.45	58.06
Not familiar with UH but wants to learn more **	21.62	19.35
Wants to learn more about UH and to participate in workshops ***	50.15	35.94

* Affirmative responses to questions 6 and 12. ** Negative response to question 6 and affirmative response to question 12. *** Affirmative responses to questions 12 and 13. To view the conducted questionnaire, please see Appendix A, Table A1.

The plants mostly grown in the urban environment were different vegetable crops—as answered by 44.74% and 47.93% of respondents in 2019 and 2023, respectively (Figure 2). The responses ‘fruits’ and ‘herbs’ were marked by around 30% of respondents, while ‘other’ responses included different flowering species (edible) and ornamentals, with one respondent particularly worried about safety issues regarding the production of food in the polluted urban environment. The cultivation of plants for the family’s own consumption most often took place in the household yard, which was selected by 34.23% and 38.25% of survey participants in 2019 and 2023, respectively (Figure 3). A private garden was marked by around 30% of respondents, while balconies were least but not negligibly used for food production. Under the category ‘other’, orchards, raised wooden garden beds in the spaces between multihouse buildings and apartment buildings’ hallways were recorded, as well as the growing of plants in pots in apartments and on window sills. Similar to responses about the plant type, some respondents marked more than one answer regarding the spaces in which the plants were grown. While investigating urban gardens in Paris and Montreal, Pourias et al. [10] found that vegetables and small fruits, aromatic herbs and flowers (including edible flower species) were mostly grown, while in larger gardens, pome and stone fruits and nuts were found. The diversity of plants in the garden was also valued, although some gardeners produced only one crop or range of crops, which is in accordance with our findings. Cruz-Cárdenas and Oleas [59] found that private urban gardens in their study mostly comprised ornamentals, followed by food and medicinal plants, while fruit trees were grown by about half of the investigated gardeners. Djokić et al. [28] found that in gardens located in urban areas, the cultivated plants were vegetables, herbs and flowers. The restricted growing of fruiting trees and bushes is indisputably related to the small dimensions of spaces, where ornamental species and recreational purposes become priorities [39], but it could also be related to the higher level of maintenance associated with fruit growing or having less knowledge of the cultivation practices needed for successful fruit production.

**Figure 2.** The respondents’ responses to the question, ‘Which plants do you grow?’.

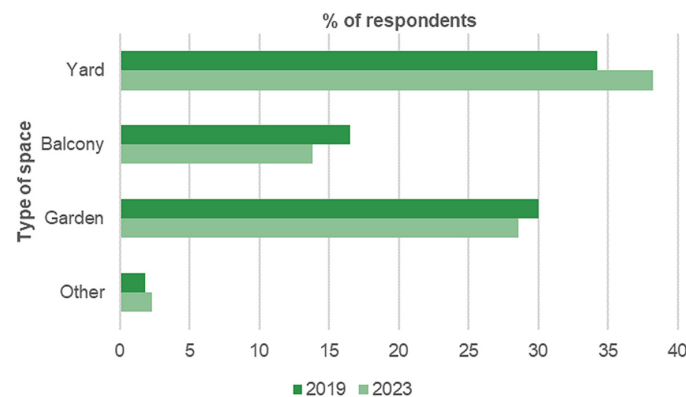


Figure 3. The respondents' responses to the question, 'Where does the food production take place?'.

When asked about their motivations to join urban gardens in the immediate vicinity of their homes without monetary compensation, some respondents marked more than one reason for participation, showing their strong willingness to engage in this sort of activity (Figure 4). With regard to the motives to participate, the highest number of responses in 2019 (32.13% of respondents) was recorded for the reason 'I would participate if the produced food is intended for humanitarian purposes', which reflects the social value of community gardens. In 2023, the largest number of respondents (36.41%) marked the answer regarding the food-provisioning urban horticulture dimension—'I would participate if it were possible for me to use produced food'—which was possibly influenced by the previously discussed pandemic-related issues. After possibilities to consume produced food, to make a charitable contribution and to socialize and relax (recreational dimension of community gardens), for some respondents, it was appealing to participate if all materials needed for gardening were provided (less than 20% of participants in both years). Less than 5% of respondents were not attracted to join a community garden in both years, while 28.53% in 2019 and 22.58% in 2023 said that they did not have time to engage in such activities. The responses regarding the motivations to engage in food production in urban gardens per respondent category are shown in Supplement, Tables S4–S6. The respondents from the second age group (25–40 years old) were most likely motivated by the possibility of using the produced food in both years, while for 41–65-year-old respondents, the main motivations to participate in urban gardens were 'to donate food' and 'to socialize and relax'. In 2019, respondents younger than 25 years were most likely to participate if all of the resources needed for production were provided, while after the pandemic, they were more likely to consider urban gardens as places for socialization and relaxation. The employed respondents were more likely to be motivated to join urban gardens 'to socialize and relax' rather than for other reasons in both years, but in 2023, they were more likely to respond that they did not have time for such activities. Regarding the unemployed, the respondents in 2019 were mostly motivated by the possibilities of using and donating the produced food, while after the pandemic, they were more likely to participate in urban gardens if all resources for production were provided. As expected, a lack of time as a reason to not engage in urban horticulture was mostly marked by employed respondents. The motivation 'to socialize and relax' was most likely to be valued by respondents with higher education (master's and doctoral degrees) in both years, while respondents within separate education categories were differently motivated by the possibilities of using and donating the produced food before and after the pandemic. Pollard et al. [40] found that motivations for home and community gardeners differ slightly, where production-, enjoyment- and health-related motives were the most significant for home gardeners, while social interaction was among the first three motives for community gardeners. According to Church et al. [13], an increase in 'growing your own food' in European countries was largely associated with poorer households and possibly economic hardship, with geographical aspects involved. The economic dimension of food production for one's own needs was also recognized in a

study by Wakefield et al. [60], where participants referred to improved food access and the cost-saving aspect of such practices. In their research on the food function of urban gardens, Pourias et al. [10] found that more than half of gardeners produced enough food to cover 50 to 100% of the needs for some fresh products during the season, greatly contributing to the household's food supply. In a survey conducted by Partalidou and Anthopoulou [61], 'the need to grow my own food' was the most important motive for gardening, which was associated with the physical need for fresh, healthy products. While investigating the motivations of small-scale gardeners, Turner [62] found that food safety and access to clean and safe vegetables that do not pose health risks were priority motives for gardening, rather than simply availability and access to large quantities of food. The 'sharing and giving' of produced food to others, primarily to adult children who do not live with their parents in the same household anymore and members of the extended family, followed by friends and colleagues, was observed as a strong motivation for gardening by Pourias et al. [10]. The gardeners who produce the largest quantities of food are not necessarily those who share the food to the largest extent, according to Pourias et al. [63]. Pollard et al. [40] found that 95% of participants in their survey shared, gifted or donated food, but only 36% of them purposefully grew extra food to share it with others. On their list of food recipients, giving the food to charities was in fifth place. Vitiello et al. [64] recorded that almost all of their community garden participants reported sharing their produce with those in need, while in their study of communal and private urban gardens, da Cunha et al. [65] noted that products from almost half of the gardens were donated.

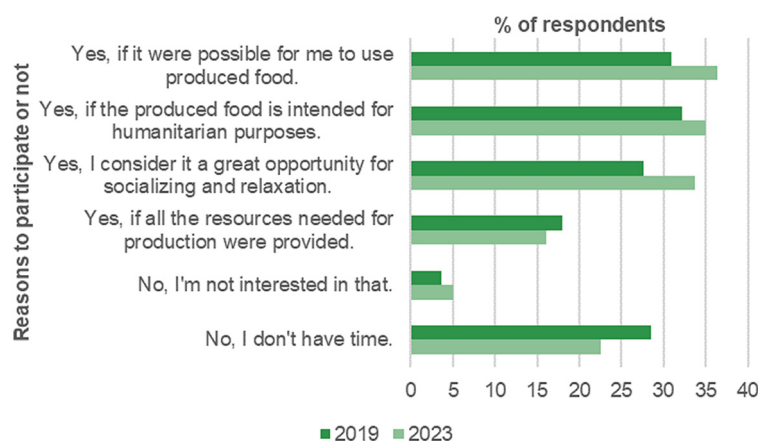


Figure 4. The respondents' responses to the question, 'Would you participate in maintaining an urban garden in your neighborhood/part of the city, without monetary compensation?'.

In order to prevent limitations that could arise from the selected form of the question, an option to add an opinion or motivation that was not listed by the authors was added to the questionnaire. However, no additional significant motivations were listed by survey participants, despite the wide range of motivations observed by other authors [12,57,66,67].

3.2. Urban Spaces' Designs with Fruit Species and Roses as Edible Alternatives to Inedible Ornamentals

Urban horticulture is integrated into the urban economic and ecological systems, where urban residents represent producers, directly affecting the urban environment and urban food system [68]. As a result of intensive urban population growth, interest in the development of innovative technologies and sustainable urban farming practices is constantly increasing [69]. Ju et al. [70] argued that for uncontrolled, ground-based outdoor food production in urban conditions, the main goals encompass ecosystem service provision and environmental damage reduction, rather than the achievement of higher productivity, while Ramaiah and Avtar [71] agreed that growing plants in cities, in spaces free from concrete pavement, could significantly mitigate the negative consequences of climate change. From the perspective of a gardener, food could be grown in both conventional and

unconventional ways, including variations between, where the first offers the possibility of growing almost any desired plant at the cost of unlimited resource exploitation—thus harming the environment—while the latter is based on the sustainable, thoughtful usage of plants and resource conservation [66,72]. Gardeners often choose varieties for their organoleptic characteristics, which provide them with tasty, fresh products, but they also value the opportunity to provide food with a known origin, without unnecessary chemicals applied during the process of production [10]. As our results and other studies discussed have shown, fruit species in urban gardening were present to a significantly smaller extent than vegetables, while opportunities for growing edible flower species in urban horticulture were recognized by only a few respondents.

Specific rootstocks' and cultivars' breeding objectives differ between separate groups of fruit species. However, the main fruit-breeding trends concern the simplification of orchard practices, the resistance or tolerance to negative biotic and abiotic influences, the expansion of production zones, the diversification of fruit traits, the achievement of greater health benefits and the consistently high quality of fruits—all with regard to the preservation of the environment [73]. Due to the numerous environmental issues related to fruit growing, including pesticide usage, uncontrolled water use and quality, biodiversity degradation, high energy consumption and the pollution of soil and air, integrated and organic approaches to fruit production emerged as sustainable methods for fruit production [74]. In terms of the growth habit of fruit plants for the purposes of urban horticulture, a gardener often chooses a plant to fit the garden, rather than for the improvement of production efficiency, which is the case in commercial production [75]. Various growth habits can be utilized even in small-sized urban gardens, including dwarf, compact, semi-dwarf, columnar, weeping and upright habits, as well as the combination of different growth habits in one plant—dwarf \times compact, columnar \times compact, dwarf \times columnar, and many more [76]. The vigorous growth of many cultivars does not represent an obstacle to their utilization, even in smaller spaces, due to the easily attainable size-controlling effect of adequate rootstocks' selection, which also improves the productivity and fruit quality of scions and adaptability to different pedo-climatic conditions and uncertain climate-change-induced meteorological events [77–80]. In this way, some old varieties can be preserved and used in urban conditions [81], while autochthonous germplasm can be utilized due to its valuable traits through its introduction to breeding programs with the purpose of enabling sustainable urban gardening [82,83]. The wide range of diseases and pests can severely impact food production, especially in home gardens where growers are not willing to use any chemicals that could harm the environment. On the contrary, some gardeners use inadequate doses of plant protection preparations, without thinking of possible soil contamination. Fruit breeding for resistance aims to provide cultivars resistant or tolerant to different diseases and pests occurring in fruits when plants are attacked by numerous causal agents—viruses and viroids, phytoplasmas, bacteria, fungi, etc. [84]. With the thoughtful selection of cultivars for the urban garden's design, individual and community fruit gardens will thrive in any condition, providing gardeners with a high number of tasteful, non-chemically treated fruits throughout the season.

The lack of space in the urban environment, which limits the usage of vigorous plants, the perennial character of which postpones the harvesting of first fruits from the garden and, in most cases, necessary pesticide usage in fruit production, indisputably affects growers' decisions regarding the choice of plant material [33,85]. Research on vigor, habit, productivity and adaptability to site conditions, as well as resistance to biotic stressors, leads to the selection of the most suitable and attractive rootstocks/cultivars for cultivation in numerous urban environments [86]. The investigation of the literature focused on plant materials suitable for growing in urban gardens, as explained in the Materials and Methods section, has provided insight into the wide range of cultivars characterized by low-to-moderate vigor, compact and/or columnar growth habits, resistance and/or tolerance to the main fruit diseases and pests, unfavorable growing conditions, etc.—traits of importance in urban horticulture. Some cultivars considered suitable for cultivation in urban gardens among

pome and stone fruits are the apple cultivars ‘Goldlane’ [87], ‘Monnlight’, ‘Smaragd’ [88], ‘Lilac’, ‘Magenta’ [89] and ‘Colonade’ [90]; the pear cultivars ‘Ivanino zlato’ [91], ‘Armida’, ‘Manon’ and ‘Uta’ [92]; the peach cultivars ‘Bolero’, ‘UF ONE’ [87] and ‘GulfAtlas’ [92]; the almond cultivars ‘Kester’ [93], ‘Carina’ and ‘Rhea’ [94]; the plum cultivars ‘Dwarf’ [95] and ‘Jojo’ [96]; the apricot cultivars ‘Apridwarf’ and ‘Aprimed’ [93]; and the sweet and sour cherry cultivars ‘Chelan’, ‘Ebony Pearl’ [97] and ‘Morina’ [98]. Berry fruits also offer a wide range of cultivars characterized by desired traits, including the raspberry cultivars ‘Valentina’ [99], ‘Glen Doll’ [100], ‘Autumn Treasure’ [101] and ‘Cascade Harvest’ [102]; the blackberry cultivars ‘Fruloche’ [87], ‘Sweetie pie’ [94] and ‘DrisBlackEighteen’ [89]; the blueberry cultivars ‘Augusta’ [87], ‘Cosmopolitan’ and ‘Lielogu’ [102]; the currant cultivars ‘Ben Chaska’ [102], ‘Stikine’ and ‘Tiben’ [89]; the gooseberry cultivar ‘Hinsel’ [87]; and the strawberry cultivars ‘Grandarosa’, ‘Linosa’, ‘Merced’ [93] and ‘Florida Brilliance’ [94]. Among nuts, some cultivars are considered adequate to grow in urban gardens, such as the Persian walnut cultivar ‘Sexton’ [100], the hazelnut cultivars ‘Sacajawea’ [100], ‘Dorris’ [92] and ‘Somerset’ [89], and the chestnut cultivar ‘Jianding Youli’ [89]. For more details and species, see Appendix B, Table A2.

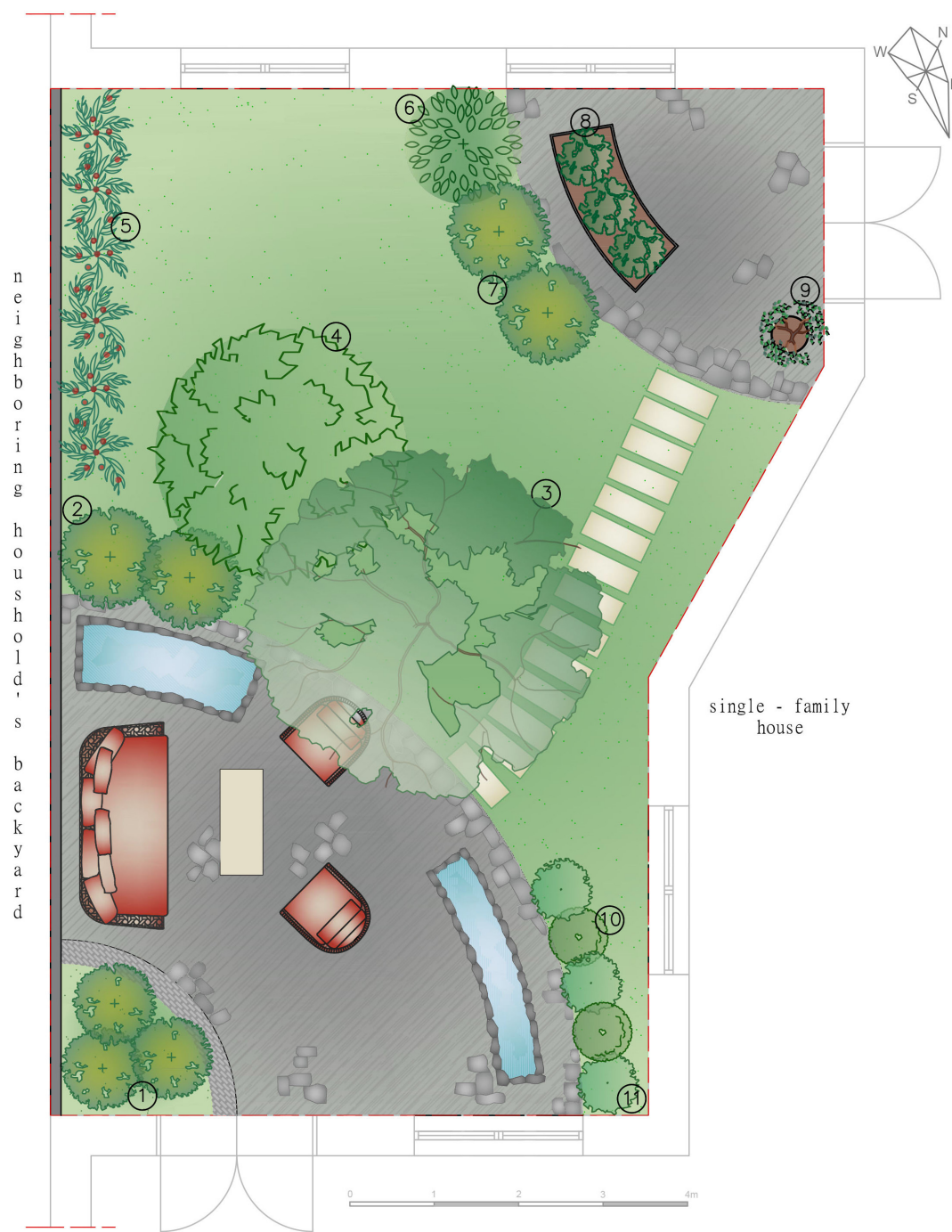
Besides the traditional fruit species, the genus *Rosa* sp. includes around 150–300 botanical species and thousands of hybrids and cultivars [103] that have the potential to be used in everyday nutrition. The ornamental value of roses has been recognized since the dawn of civilization, and today, they are used as cut flowers and garden or indoor pot plants [104]. Rose fruits are widely known as a valuable source of polyphenols and vitamin C, which exhibit various medicinal properties [105]. Although rose flowers have been used since ancient times as food ingredients and medical products, roses were mainly appreciated and recognized for their scent, aesthetic and decorative value. However, the edible aspect of rose cultivars is becoming more popular, because consumers are eager to try new flavors and to utilize the bioactive compounds in edible flowers [106]. People are changing their eating habits with the aim of achieving a healthier lifestyle, which has resulted in edible rose cultivars emerging as pioneers in both the food and nutraceutical industries due to the recognition of their valuable traits [107,108]. The growing of edible roses has been the object of various studies. Inter alia, De Morais et al. [109] evaluated the influence of different farming systems on the bioactive compounds, microbial diversity, aroma and color of edible red mini-roses (*Rosa chinensis* Jacq.); Butcaru and Stănică [110] investigated edible roses’ organic production, while the vegetative growth and production of three climbing edible roses (‘Crown Princess Margareta’, ‘Falstaff’ and ‘Brother Cadfael’) were assessed from the aspect of organic cultivation by Butcaru et al. [111]. In order to cultivate resistant and healthy garden roses that do not require chemical protection, the breeding of garden roses, next to fragrance, has been oriented toward disease resistance and extreme-condition tolerance [33]. Friedman et al. [112] investigated the yield, susceptibility to *Botrytis cinerea* and levels of antioxidants of 12 edible garden rose cultivars, concluding that the cultivars ‘English Sachet’, ‘Eterna’, ‘San Francisco’ and ‘Maxim’ exhibited the lowest sensitivity to disease. Rose material investigated by Božanić Tanjga et al. [113] included seven garden rose cultivars from the ‘Mella’ series, bred by the private breeding company ‘Pheno Geno Roses’. The results indicated the high potential of varieties from the ‘Mella’ collection for growing in urban conditions due to their attraction of a significant number of pollinators and their tolerance to the main disease-causing agents. In a study conducted by the same research group, Ljubojević et al. [33] further investigated those varieties, as well as varieties from eight other collections, in terms of disease resistance and added and aesthetic values. Prospective collection candidates that showed traits of importance for urban horticulture, including edible character and disease resistance to powdery mildew and/or black spot, included ‘Ruby Mella’ from the ‘Mella’ collection; ‘Dolce’, ‘Nadia Zerouali’ and ‘Jordi Roca’ from the ‘Edible’ collection; ‘Aromatic Aurora’, ‘White Aurora’, ‘Berry Bush Aurora’ and ‘Purple Aurora’ from the ‘Aurora’ collection (they are drought- and heat-resistant, have roots that can tolerate poor, heavy and saline soils and provide a plenitude of bright-orange edible hips); ‘Mina Frayla’, ‘Jelena Frayla’ and ‘Isidora Frayla’ from the ‘Frayla’ collection (most fragrant type); ‘Blush pixie’ from the ‘Pixie’ collection

(patio roses, suitable for container cultivation) and 'Blush Winterjewel' from the 'Winterjewel' collection (hardy to low winter temperatures, very healthy and reliable).

The possibilities for fruit species' utilization in the planning of different types of urban gardens have been explored through the design of three spaces—private, educational and public.

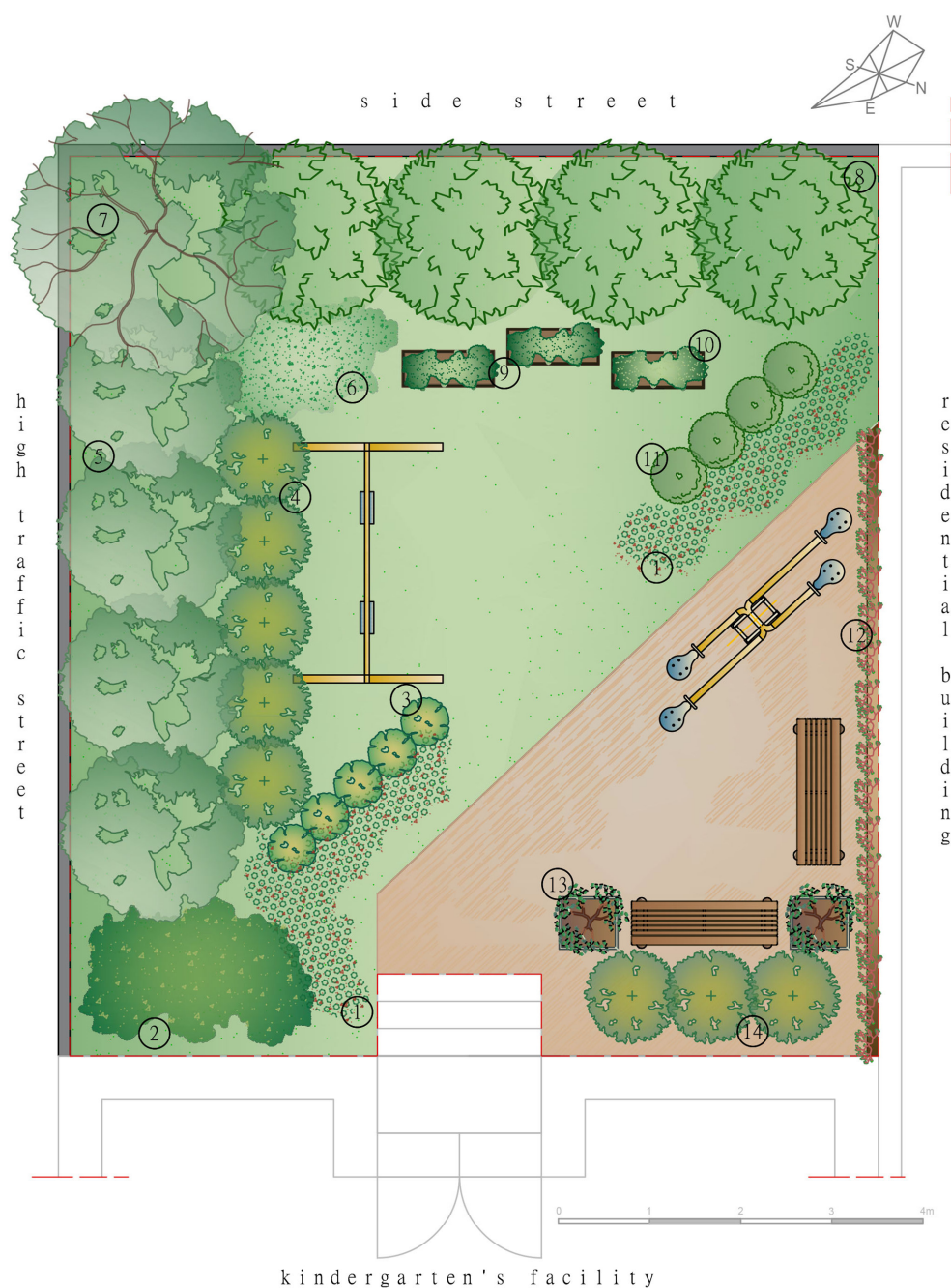
The urban garden shown in Figure 5 is a closed-type atrium courtyard, bordered on three sides by the walls of the house and on one side by a wall that separates the gardens of two neighboring houses. The paved areas at both exits from the house are connected by a path, which, like the planned vegetation, follows a circular pattern. The paved area positioned on the southwest side represents an area for the relaxation and gathering of household members, next to which are symbolically planted family apple trees, with varieties with different fruit colors and ripening times. In the southeastern corner of the garden, next to the paved area, it is planned to plant fruit species with a lower habit—currants and raspberries—thus leaving the sight from the window to the garden area clear, while the dynamics of the composition was achieved by alternating bushy raspberries and highly grafted currants. To attain an unobstructed view from the inside of the house from the northeastern side of the garden, an Asian pear, Nanking cherry and juniper with a horizontal–prostrate habit in planters and Buddha's hand in a pot are planned. In the central part of the yard, flowering Japanese quince bushes are planned, combined with plumcot and cherry trees. Next to the wall in the garden's northwest, disease-resistant edible roses, as well as a variety chosen for its high pollinator attraction ability, are recommended. Considering the small dimensions and closed character of the space, a properly raised lawn represents an important design component, providing a balanced composition. The element of water was introduced into the space in the form of water mirrors, which do not require much maintenance and increase the garden's attractiveness. Since this kind of garden is a valuable family space, the proposed design offers opportunities for numerous playing, learning and gardening activities.

The design of the kindergarten's fruit garden is presented in Figure 6. The garden is protected from the negative impacts of the high-traffic street on the southeast, as well as the medium-traffic street on the southwest, by the vertical layer formed with the use of sour and sweet cherry trees. On the northwest side, the garden is enclosed by a residential building, which is vertically greened with a kiwi vine. The garden is dominated by species and cultivars that do not require the use of chemical treatments, while for educational purposes, all types of fruit species are planned in the garden—pome, stone, berry and nut species, as well as citruses. Focus is placed on the variety of forms and colors throughout the growing season. The edible and sustainable context further encompasses the planting of local landrace of plum, chokeberry and corkscrew hazel shrubs, forming the middle layer of vegetation. A subtropical species—kumquat, for which children could care even during the winter months, when it is planned to be moved indoors—complements the seating space. Both kiwi and kumquat are ready to use, without peeling the skin, immediately after picking, which allows the children to enjoy a wide range of tastes right in the garden. The lowest vegetation layer consists of wild yellow strawberries, dwarf apple and apricot trees, blueberries and cranberries in high-raised planting beds. High-grafted black currant is also present in the design as a potted plant that adorns the northeast corner of the garden.



Plant material specification			
No	Species	Rootstock	Scion
1	<i>Malus × domestica</i>	M27	Eva, Williams' pride and GoldLane
2	<i>Chaenomeles japonica</i>	Self rooted	Texas Scarlet
3	<i>Prunus</i> sp.	Myrobalan	GoldStar Plumcot
4	<i>Prunus cerasus</i>	Gisela 5	NorthStar
5	<i>Rosa × hybrida</i>	Laxa	Barbie Mella and Marija Frajla
6	<i>Pyrus pyrifolia</i>	Pyrodwarf	Chojuro
7	<i>Prunus tomentosa</i>	Self rooted	Drilea
8	<i>Juniperus communis</i>	Self rooted	N/A
9	<i>Citrus medica</i> var. <i>sarcodactylis</i>	Citremon	N/A
10	<i>Ribes rubrum</i>	<i>R. aureum</i>	RedPoll and RedLake
11	<i>Ribes idaeus</i>	Self rooted	Polana and Polka

Figure 5. Design of completely enclosed atrium courtyard.

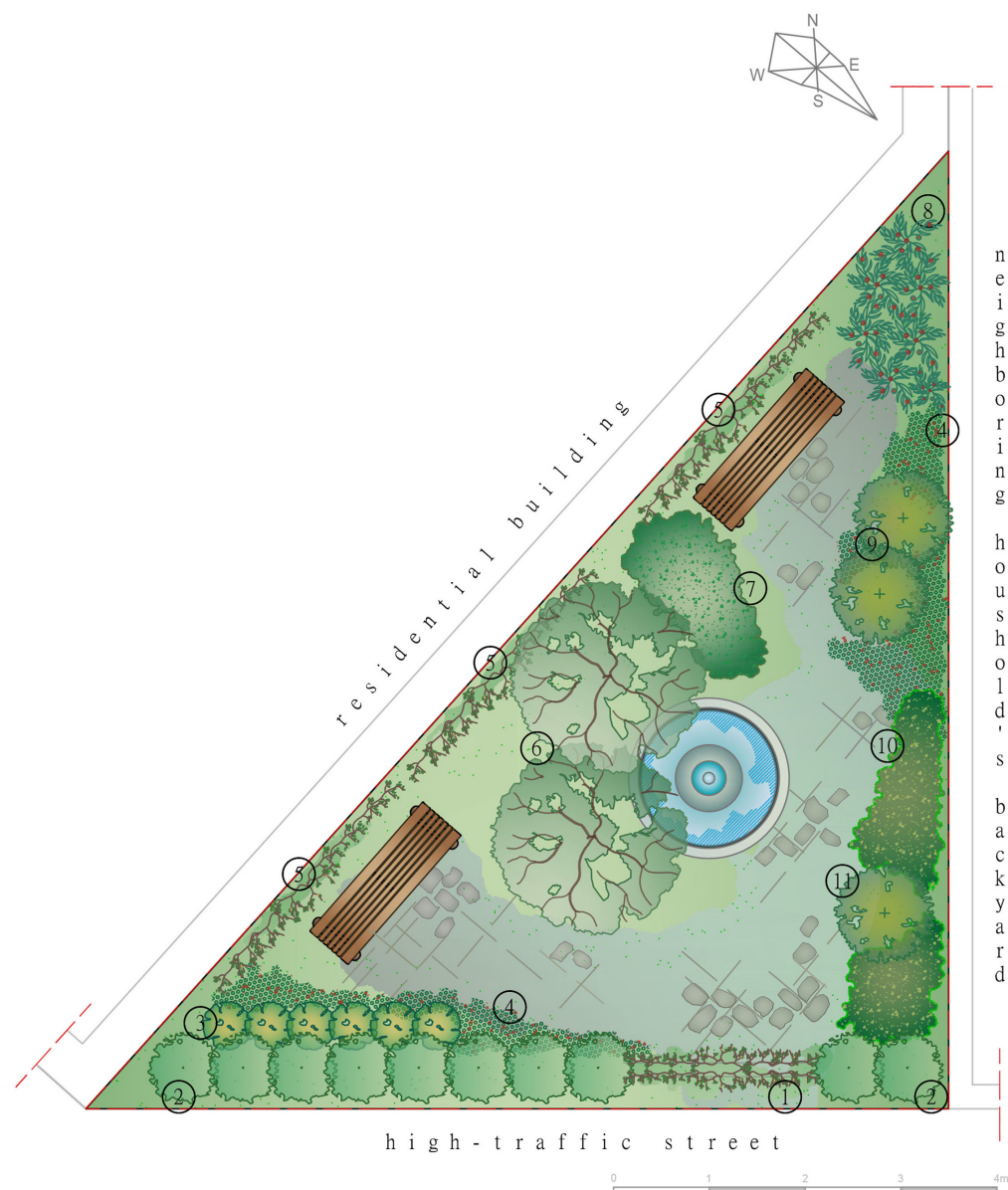


Plant material specification

No	Species	Rootstock	Scion
1	<i>Fragaria vesca</i>	Self rooted	Yellow Wonder
2	<i>Corylus avellana</i>	Self rooted	Contorta
3	<i>Malus × domestica</i>	M27	Mia and Sofija
4	<i>Aronia melanocarpa</i>	Self rooted	Nero and Viking
5	<i>Prunus cerasus</i>	Gisela 5	Meteor
6	<i>Prunus domestica</i>	Myrobalan	Local landrace
7	<i>Prunus avium</i>	Mahaleb	Csengodi
8	<i>Prunus avium</i>	Gisela 5	Lapins
9	<i>Vaccinium corymbosum</i>	Self rooted	Blue Crop and Duke
10	<i>Vaccinium vitis-idaea</i>	Self rooted	Red Pearl and Coral
11	<i>Prunus armeniaca</i>	Barrier	Titlon
12	<i>Actinidia arguta</i>	Self rooted	Issai
13	<i>Fortunella margarita</i>	Self rooted	Nagami
14	<i>Ribes nigrum</i>	<i>R. aureum</i>	Tiben, Tisel and Tines

Figure 6. Design of small kindergarten yard with learning and gardening opportunities.

The edible design of an urban pocket in Novi Sad is shown in Figure 7. The concept aims to transform an uninviting, neglected space located in a busy transit area into a quiet urban garden for leisure time and an escape from the urban hustle.



Plant material specification			
No	Species	Rootstock	Scion
1	<i>Malus × domestica</i>	M27	Waltz and Bolero
2	<i>Cornus mas</i>	Self rooted	Spring Glow and Spring Sun
3	<i>Prunus cerasus</i>	Gisela 5	Lara
4	<i>Fragaria vesca</i>	Self rooted	Regina
5	<i>Malus × domestica</i>	M27	Reka, Rewena and Rebella
6	<i>Prunus fruticosa</i>	<i>P. avium</i>	Globosa
7	<i>Ribes × nidigrolaria</i>	Self rooted	Jostabeere
8	<i>Rosa × hybrida</i>	Laxa	Eveline Wild and Pear
9	<i>Prunus persica</i>	GF677	Bonanza and Honey Babe
10	<i>Prunus besseyi</i>	Self rooted	N/A
11	<i>Prunus armeniaca</i>	Barrier	Dwarf Moorpark

Figure 7. Design of urban pocket located in dense urban environment near busy boulevard.

A dogwood hedge encloses the garden from the street side, with an entrance framed with columnar apple cultivars extending over the trellis. An appealing entrance in the dense green hedge invites passers-by to stop and spend some time in the garden, further discovering other interesting species and forms. The space inside the garden is divided into two areas, with the use of the high-grafted European ground cherry trees and the jostaberry bush forming a visual barrier in the central part of the garden, enabling a more private stay for several people at the same time, despite the small dimensions of the garden. Dwarf

and decorative forms dominate in the garden space, primarily due to a lack of space for the growing of more vigorous plants. Additionally, plant materials are selected in order to demonstrate that fruit species offer numerous possibilities for horizontal and vertical greening. Thus, wild strawberries are planned as ground cover instead of a lawn, while the next vegetation layer consists of dwarf forms of cherry, peach and apricot, complemented with sand cherry. Disease-resistant edible roses, with soft-peach-colored and gentle-pink petals, are planned to be located in the northern part of the garden. Along the wall of the residential building at the northwest garden edge, very decorative forms of cultivation are planned—Omega espalier and LePage of resistant apple varieties. The overall design is complemented by the soothing sound of water from the fountain in the central part of the garden.

4. Conclusions

Urban horticulture indisputably provides numerous benefits to both humans and the environment. The activities it encompasses offer valuable opportunities for citizens to contribute to the creation of sustainable and resilient settlements through food production practices strongly associated with human well-being on a myriad of levels. To investigate urban gardening preferences in Novi Sad, the second-largest city in Serbia, online and printed questionnaires were distributed in 2019 and 2023.

This study has shown that in the area of Novi Sad (Serbia), 69.35% of the respondents in 2019 and 67.63% in 2023 produced their own food (directly or by family members). The assessment of respondents' attitudes toward urban horticulture showed that the levels of agreement with statements on urban horticulture's impact on food safety, socialization and personal health and development were significantly different between the two surveys conducted in 2019 and 2023. Such results presumably indicate the impact of the coronavirus outbreak on respondents' perceptions due to the many consequences of isolation and the inability to engage in one's favorite activities, both individually and with others. Between the attitudes of respondents from rural settlements and citizens, the most significant differences were found to concern the employment opportunities provided by urban horticulture in cities, the influence of gardening on children's development and the educational character of gardening—all of which could be related to the different opportunities provided by these two types of living environments and the main reasons for engagement in food production in those environments. Low scores (around 3 on a 4-point scale) for the influence of urban gardening on socialization indicate that the main form of urban gardening present in the investigated area is individual gardening in the privacy of people's own households due to the absence of allotment gardens in Novi Sad. Nevertheless, survey participants were interested in engaging in community gardens mostly due to the possibility of consuming the produced food and donating the food to those in need. Fruit species were grown by less than 35% of respondents or their family members, while edible flowers were mentioned by only a few respondents. This accentuates the need to inform urban residents about the possibilities of fruit growing (including roses, often seen as non-standard fruit for ornamental purposes) in their gardens and yards and on balconies and roofs, as well as in different indoor spaces, through the three urban garden designs proposed in this article (private, educational and public). Fruit and rose breeding for the purposes of urban horticulture has resulted in a large number of cultivars suitable for urban gardens, enabling edible landscaping as a component of sustainable living. Future research should focus on the investigation of the number and character of gardens in the urban area, individual gardeners' motivations to grow their own food, and the number, quality and safety of foods produced in urban households of Novi Sad.

Supplementary Materials: The following supporting information can be downloaded at <https://www.mdpi.com/article/10.3390/horticulturae9101152/s1>: Table S1: Contingency table with corresponding residuals with regard to question number 7, in correlation to respondents' age in both years of investigation; Table S2: Contingency table with corresponding residuals with regard to question number 7, in correlation to the occupation of respondents in both years of investigation; Table S3: Contingency table with corresponding residuals with regard to question number 7, in correlation to the education of respondents in both years of investigation; Table S4: Contingency table with corresponding residuals with regard to question number 14, in correlation to respondents' age in both years of investigation; Table S5: Contingency table with corresponding residuals with regard to question number 14, in correlation to the occupation of respondents in both years of investigation; Table S6: Contingency table with corresponding residuals with regard to question number 14, in correlation to the education of respondents in both years of investigation.

Author Contributions: Conceptualization, M.L. and T.N.; methodology, M.L. and T.N.; formal analysis, T.N. and S.R.; investigation, T.N., M.L., M.G., M.P. and J.O.; data curation, T.N., S.R. and V.Š.; writing—original draft preparation, T.N.; writing—review and editing, M.L.; visualization, T.N. and M.G.; supervision, M.L.; project administration, M.L.; funding acquisition, M.L. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement: Not applicable.

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Appendix A

Table A1. The list of questions in the conducted questionnaires.

No.	Question	Possible Answers
1	Gender:	Female Male
2	Age:	<25 25–40 41–65 >65
3	Occupation:	Pupil/student Employed Unemployed Retiree
4	Education:	Elementary school High school Faculty—bachelor studies Faculty—master studies Faculty—doctoral studies
5	Place of residence:	Urban settlement Rural settlement
6	Are you familiar with the term urban horticulture?	Yes No

Table A1. Cont.

No.	Question	Possible Answers
7	How did you find out about the mentioned term?	I hear it now for the first time From family member, neighbor, friend Via the internet From the newspaper/journal Via the television/radio Other: (write your answer)
8	Explanation in the context of the study: Urban horticulture is the production of partially or fully edible plants in the city environment or suburbs, in collective city gardens or on private balconies, roofs, in yards, gardens, etc.	
	Impact on environment	
8-1	By producing food for my own needs, I contribute positively to the environment and improve the immediate living environment in the city.	1–4 scale *
8-2	By producing food for my own needs, I reduce my negative contribution to climate change.	1–4 scale
8-3	Gardening practicing indicates the fact that an individual respects and highly values nature as an integral part of his environment.	1–4 scale
8-4	The establishment of urban gardens encourages the revival of abandoned and neglected plots in the city and beautifies the environment.	1–4 scale
	Impact on food safety and economy	
8-5	The food I produce myself is healthier and safer than food bought in stores.	1–4 scale
8-6	By producing food for my own needs, I contribute to food sustainability in my city and/or beyond.	1–4 scale
8-7	By producing food for my own needs, I save money.	1–4 scale
8-8	Urban horticulture provides access to a wider range of healthy, nutritious foods.	1–4 scale
	Impact on social relations and society	
8-9	Gardening encourages socialization with other people.	1–4 scale
8-10	The establishment of urban gardens increases the safety of previously abandoned locations and reduces the level of legal offenses and crimes in that environment.	1–4 scale
8-11	The establishment of urban gardens increases the chances of employment for the urban population.	1–4 scale
8-12	The establishment of urban gardens connects people of different ages, genders, occupations, interests, financial situations and nations.	1–4 scale
	Impact on personal health and development	
8-13	Gardening is a great opportunity for recreation/relaxation.	1–4 scale
8-14	Gardening encourages personal development and strengthens self-confidence.	1–4 scale
8-15	Gardening improves the emotional status of an individual.	1–4 scale
8-16	Gardening has a positive effect on a child's development.	1–4 scale
8-17	Gardening together with family members encourages communication and strengthens family ties.	1–4 scale
	Impact on learning and play activities	
8-18	By producing food, I improve my gardening skills.	1–4 scale
8-19	Gardening connects the individual with nature and enables observation of nature and understanding of natural processes.	1–4 scale
8-20	Gardening has an educational function.	1–4 scale
8-21	Urban gardens are an ideal place for children's play.	1–4 scale
9	Do you or your family members engage in food production to meet your own needs, in urban conditions?	Yes (proceed to questions 10 and 11) No

Table A1. Cont.

No.	Question	Possible Answers
10	Which plants do you grow?	Vegetables Fruits Herbs Other: (write your answer)
11	Where does the food production take place?	Household yard Balcony Garden Other: (write your answer)
12	Are you interested in learning more about the possibilities which urban horticulture has to offer?	Yes No
13	Would you like to participate in workshops on this topic?	Yes (please leave your contact if you want to be informed about the workshops) No
14	Would you participate in maintaining an urban garden in your neighborhood/part of the city, without monetary compensation?	Yes, if it were possible for me to use produced food. Yes, if the produced food is intended for humanitarian purposes. Yes, I consider it a great opportunity for socializing and relaxation. Yes, if all the resources needed for production were provided (seeds, seedlings, etc.). No, I'm not interested in that. No, I don't have time. Other: (write your answer)

* Level-of-agreement scale: 1—disagree; 2—not sure; 3—partly agree; 4—agree.

Appendix B

Table A2. List of cultivars suitable for urban gardens among pome, stone, berry and nut fruit species.

Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Pome Fruits	
Apple cultivars 'Ariane'—apple scab (<i>Venturia inaequalis</i>)-resistant, some resistance to fire blight (<i>Erwinia amylovora</i>) and powdery mildew (<i>Podosphaera leucotricha</i>); 'Crimson Crisp'—moderate-to-low vigor, round habit, resistant to apple scab; 'Juliet'—moderately vigorous, gene for apple scab resistance, resistant to fire blight and powdery mildew; 'Rebella'—medium vigor, resistant to apple scab, powdery mildew, fire blight, <i>Pseudomonas syringae</i> , red spider mite; 'Sundance'—moderate vigor, resistant to apple scab, fire blight, cedar apple rust (<i>Gymnosporangium juniperi-virginianae</i>), moderately tolerant to powdery mildew	Clark and Finn, 2006 [99]
Apple cultivars 'Civg198'—moderate to low vigor, resistant to apple scab, very tolerant to mildew and aphids (<i>Aphis</i> L.); 'Nicoter'—medium vigor, good heat and drought tolerance	Finn and Clark, 2008 [100]
Apple cultivar 'Co-op 31'—moderately vigorous, immunity to apple scab, good resistance to fire blight, moderate resistance to powdery mildew	Clark and Finn, 2010 [101]
Apple cultivars 'Goldlane'—compact, columnar, resistant to apple scab; 'Moonlight'—compact, columnar, resistant to apple scab, tolerant to powdery mildew; 'Smaragd'—compact, columnar, low vigor, suitable as a potted tree	Finn and Clark, 2012 [87] Ognjanov, 2011 [88]
Apple cultivars 'JFS-KW207'—compact dwarf ornamental crab apple, resistant to fire blight and apple scab; 'Lurechild'—low vigor, hardy, resistant to apple scab; 'Mored'—moderate vigor, hardy, tolerant to powdery mildew and gloeosporium rot	Gašić et al., 2018 [92]

Table A2. Cont.

Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Apple cultivars ‘A 68-173’—columnar, tolerant to drought, tolerant to apple scab and powdery mildew; ‘CP 101’—low-moderate vigor, tolerant to brown marmorated stink bug (<i>Halyomorpha halys</i>) and fire blight	Gašić et al., 2020 [94]
Apple cultivars ‘Lilac’, ‘Magenta’—compact, columnar, weak to moderate vigor, resistant to apple scab	Karp and Gašić, 2022 [89]
Apple cultivars ‘Colmar’, ‘Colonade’—columnar, low vigor, resistant to apple scab; ‘Rustic’—scab- and powdery-mildew-resistant	Branište et al., 2013 [90]
Apple cultivar ‘MacExcel’—columnar, moderate vigor, hardy, tolerant to apple scab and resistant to powdery mildew	Khanizadeh et al., 2002 [114]
Apple cultivar ‘Poesia’—columnar, winter-hardy, resistant to apple scab	Korneeva et al., 2021 [115]
Pear cultivars ‘Paradox’, ‘Paradise’—tolerance to <i>Erwinia</i> and <i>Psylla</i> sp.	Branište et al., 2013 [90]
Pear cultivars ‘HW610’, ‘HW616’—medium vigor, cold-hardy, resistance to fire blight; ‘P448-2’—moderate vigor, fire blight tolerance, recommended for home gardens	Finn and Clark, 2008 [100]
Pear cultivar ‘Ivanino zlato’—recommended for organic and amateur growing in home gardens, resistant to all fungal diseases and pear flea (<i>Psylla pyri</i>), vigorous but precocious and highly productive with attractive fruits	Ognjanov et al., 2017 [91]
Pear cultivars ‘Armida’—compact semi-dwarf, resistant to spring frost, tolerant to pear scab (<i>Venturia pirina</i>) and powdery mildew; ‘CH201’—drooping habit, medium-weak growth, resistance to fire blight; ‘Manon’—flat pyramid, medium-dwarf growth, tolerant to scab and mildew; ‘Uta’—compact, low vigor, resistant to scab	Gašić et al., 2018 [92]
Pear cultivars ‘Moonglow’—upright, vigorous tree, dwarf or small tree, very resistant to fire blight; ‘Red Sensation Bartlett’—dwarf or small tree, rewarding additions to the landscape across the seasons; ‘Anjou’—upright, vigorous, dwarf or small tree, moderately resistant to fire blight	Internet source [116]
Quince cultivar ‘Leskovačka’—low vigor, high adaptability; ‘Hemus’, ‘Asenica’, ‘Triumph’—moderately vigorous, highly tolerant to fire blight	Radović et al., 2016 [117], Ljubojević et al., 2018 [118]
Quince cultivar ‘Serbian Gold’—small compact tree, good resistance to leaf blight (<i>Diplocarpon mespili</i>), relatively trouble-free, self-fertile, also worthy of planting in larger numbers	Internet source [119]
Hawthorn cultivar <i>Crataegus ambigua</i> ‘Meyer ex Becker’—small tree, useful landscaping plant, tolerates drought conditions and difficult sites, resistant to cedar apple rust	Internet source [120]
Hawthorn cultivar <i>Crataegus x media</i> ‘Punicea Flore Pleno’—highly ornamental and robust, small tree, wet-tolerant, chalk-tolerant	Internet source [119]
Hawthorn cultivars <i>Crataegus viridis</i> ‘Winter King’—small ornamental tree, for use against an evergreen background, noted for its disease resistance; <i>Crataegus laevigata</i> ‘Punicea’ (English Hawthorn)—small, low-branching deciduous tree, noted for its resistance to leaf spot	Internet source [116]
Medlar cultivars ‘Dutch’ and ‘Nottingham’—compact trees, self-fertile, ornamental habit	Internet source [121]
Medlar cultivar ‘Royal’—compact, small tree, very useful for smaller spaces, self-fertile	Internet source [119]
Rowan cultivars <i>Sorbus aucuparia</i> ‘Asplenifolia’—small, elegant tree, moderate growth, hardy, not affected by Ash disease (<i>Chalara fraxinea</i>); ‘Autumn Spire’—columnar rowan, compact, narrow, upright habit, moderate growth, hardy; ‘Sorbus cashmiriana’—moderate growth, hardy, small garden tree, not affected by Ash disease	Internet source [122]
Rowan cultivar <i>Sorbus hupehensis</i> ‘Pink Pagoda’—small garden tree, moderate growth, hardy	Internet source [116]
Rowan cultivar ‘Fastigiata’—columnar to narrowly conical; ‘Nana’—dwarf growth	Ljubojević et al., 2018 [118]

Table A2. Cont.

Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Common whitebeam cultivar ‘Quercoides’—dense, compact shrub	Fay and Rich, 2022 [123]
Stone Fruits	
Peach cultivars ‘Bolero’—moderate–vigorous spreading; leaves and fruit resistant to bacterial spot (<i>Xanthomonas arboricola</i> pv. <i>pruni</i>), medium chilling requirements; ‘Juliepretty’—medium to large, moderately vigorous, half-standing semi-spreading, winter-hardy, spring-frost-resistant; ‘UF ONE’—medium, moderately vigorous, semi-spreading, high leaf and fruit resistance to bacterial spot	Finn and Clark, 2012 [87]
Peach cultivar ‘Souvenirs’—large flowers, showy, resistant to bacterial spot, hardy with good flower bud survival with mid-winter lows of -17°C	Gašić and Preece, 2014 [102]
Peach cultivar ‘GulfAtlas’—medium size, moderate vigor, semi-spreading growth habit, light to medium dense, highly resistant to bacterial spot	Gašić et al., 2018 [92]
Nectarine cultivars ‘Cakepearl’—medium to high, vigorous, semi-spread and semi-upright, medium dense to dense, hardy, very frost resistant; ‘Cakeredal’—medium to high, vigorous, semi-spread and semi-upright, medium dense to dense, hardy, very frost resistant; ‘Nectardream’—medium, vigorous, semi-spread to semi-upright, hardy, very frost resistant; ‘Amore Sweet’—resistant to bacterial spot, hardy with good flower bud survival with mid-winter lows of -17°C ; ‘Nectarlove’—medium to high, vigorous, very productive, semi-spread and semi-upright, medium dense to dense, hardy, very frost resistant; ‘Nectarperf’—medium to high, vigorous, semi-spread and semi-upright, medium dense to dense, hardy, very frost resistant	Gašić and Preece, 2014 [102]
Nectarine cultivar ‘Nectabingo’—moderate vigor, semi-flared to semi-upright shape, cold-hardy	Gašić et al., 2016 [93]
Almond cultivar ‘Kester’—upright to spreading, moderate vigor, resistance to insects, alternaria leaf spot and scab, low susceptibility to noninfectious bud failure	Gašić et al., 2016 [93]
Almond cultivars ‘Capella’—upright to slightly open growth habit, tolerant to bacterial spot (<i>Xanthomonas arboricola</i> pv. <i>pruni</i>); ‘Carina’—slightly spreading, bearing primarily on spurs, tolerant to bacterial spot; ‘Maxima’—slightly spreading, tolerant to bacterial spot; ‘Rhea’—growth habit slightly open, tolerant to bacterial spot	Gašić et al., 2020 [94]
Plum cultivar ‘Dwarf’—very specific columnar shape of tree growth, tolerant to plum pox virus (<i>Potyvirus</i> sp.)	Novotná et al., 2021 [95]
Plum cultivar ‘Jojo’—very attractive small tree, first-ever plum tree variety fully resistant to plum pox virus	Stefanova et al., 2010 [96]
Plum cultivar ‘Topend’—medium strong, compact vigor, fruit and tree are tolerant to resistant to plum pox virus, low susceptibility to <i>Monilia</i> and rust (<i>Tranzschelia pruni-spinosae</i>), no fruit rot, no cracking, very good leaf and wood health	Mitre et al., 2015 [124], Internet source [125]
Plum cultivars ‘Narrabeen’, ‘Santa Rosa’, ‘Satsuma’, ‘Mariposa’—dwarfing trees, low maintenance, ideal for backyards, pots or tubs	Internet source [126]
Plumcot cultivar ‘Spring Satin TM ’—dwarf, small tree, tolerant to major plum diseases, like bacterial spot and bacterial canker	Internet source [126]
Apricot cultivars ‘Apridwarf’—low vigor, resistant to root-knot nematode (<i>Meloidogyne</i> spp.), high tolerance to root asphyxia, resistant to <i>Rosellinia necatrix</i> , sensitive to <i>Agrobacterium tumefaciens</i> ; ‘Aprimed’—medium vigor, resistant to root-knot nematode, tolerance to iron chlorosis, high tolerance to root asphyxia, resistant to <i>Phytophthora</i> , resistant to <i>Rosellinia necatrix</i>	Gašić et al., 2016 [93]
Apricot cultivars ‘Rafel’—vigorous, resistance to plum pox virus; ‘Belgida’—vigorous, resistance to plum pox virus	Martínez-Calvo et al., 2010 [127]
Apricot cultivar ‘Storey’s’—dwarf, low-maintenance tree ideal for backyards, pots or tubs	Internet source [126]

Table A2. Cont.

Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Sweet cherry cultivars ‘Chelan’—moderate-to-low vigor, rain-crack resistance, resistance to powdery mildew; ‘Ebony Pearl’—vigorous, hardy, good rain-cracking resistance, some resistance to bacterial canker (<i>Pseudomonas syringae</i>)	Long et al., 2007 [97]
Sweet cherry cultivars ‘Cavalier’—moderately vigorous with a slightly upright growth habit, good cold tolerance and disease resistance, fruits display good resistance to cracking; ‘Hedelfingen’—medium to large, hardy, good resistance to cracking and splitting	Internet source [128] Internet source [129]
Sweet cherry cultivar ‘Cristalina’—moderate vigor, medium resistance to cracking, splitting or cracking	Internet source [130]
Sweet cherry cultivar ‘Sweetheart’—medium-sized varietal, uniform, resistance to cracking, good resistance to brown rot (<i>Monilinia fructicola</i>)	Internet source [131]
Sour cherries ‘Meteor’—medium in size, very hardy, resistant to leaf spot (<i>Blumeriella jaapii</i>); ‘Northstar’—small tree, very hardy, claimed to be resistant to leaf spot	Internet source [128]
Sour cherry ‘Morina’—small tree, very ornamental, good suitability for canning and processing and is tolerant to brown rot caused by <i>Monilinia laxa</i>	Schuster, 2004 [98]
Sour cherry ‘English Morello’—small, hardy, self-fertile, very good disease resistance	Internet source [132]
Sour cherry ‘Fanal’—moderate–vigorous spreading, resistance to brown rot, very hardy (−20 °C)	Internet source [133]
Cornelian cherries ‘Elegant’—natural dwarf, highly ornamental, self-fertile, pest- and disease-free; ‘Redstone’—very small tree, a bit of a dwarf, pest- and disease-resistant cultivar; ‘Yantarny’—small tree, pest- and disease-free; ‘Red Star’—small tree, highly ornamental, pest- and disease-free; ‘Red Dawn’—small tree, easy-to-grow and disease-resistant cultivar; ‘Vavilovets’—small tree, pest- and disease-free	Internet source [134]
Berry Fruits	
Raspberry cultivars ‘Aita’—relatively high yield, moderate vigor, winter-hardy, resistant to anthracnose (<i>Elsinoe veneta</i>); ‘Georgia’—spineless, winter-hardy, field resistance to root rot (<i>Phytophthora fragariae</i> var. <i>rubi</i>); ‘Malling Minerva’—compact habit with spine-free easily managed canes, resistant to biotypes 1 through 4 of <i>Aphis idaei</i> , fairly resistant to cane diseases, moderately susceptible to root rot in glass house pot tests, has remained free of Raspberry bushy dwarf virus (RBDV) for 11 years; ‘Valentina’—new canes are tall and upright with few spines, resistant to biotypes 1 through 4 of <i>Aphis idaei</i> , appears to have field resistance to RBDV, resistant to root rot in glasshouse pot tests	Clark and Finn, 2006 [99]
Raspberry cultivars ‘Cascade Bounty’—very vigorous, very good field tolerance to root rot; ‘Glen Doll’—spine-free, upright, easily managed compact habit, resistant to biotypes 1 through 4 of the large raspberry aphid (<i>Amphorophora idaei</i>), good tolerance to spur blight (<i>Didymella applanata</i>) and cane botrytis (<i>Botrytis cinerea</i>)	Finn and Clark, 2008 [100]
Raspberry cultivars ‘Adele’—semi-spineless, upright canes, strong vigor, adapted to low winter chill conditions, resistant to RBDV; ‘Autumn Treasure’—spine-free, upright, resistant to biotypes 1–4 of the large raspberry aphid, highly resistant to phytophthora root rot, higher tolerance to verticillium wilt (<i>Verticillium dahliae</i>) than other primocane-fruiting cultivars; ‘K81-6’—vigorous, moderately spiny canes, resistant to late leaf rust (<i>Pucciniastrum americanum</i>); ‘Rudyberry’—resistant to North American large raspberry aphid (<i>Amphorophora agathonica</i>), some resistance to root rot, moderately susceptible to spur blight (<i>Didymella applanata</i>), cane botrytis and anthracnose	Clark and Finn, 2010 [101]

Table A2. Cont.

Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Raspberry cultivars ‘Cascade Gold’—vigorous, resistant to common strain of RBDV; ‘Glen Cally’—vigorous cane, spine-free, upright, gene A10 gives resistance to biotypes one through four of the European large raspberry aphid, susceptible to RBDV, very high field tolerance to root rot	Finn and Clark, 2012 [87]
Raspberry cultivars ‘Cascade Harvest’—upright canes, resistant to RBDV, tolerant to root rot; ‘NR7’—dwarfing canes, ornamental plant particularly suitable to home gardens and containerized patio planting, resistant to RBDV	Gašić and Preece, 2014 [102]
Raspberry cultivars ‘Glen Dee’—vigorous cane and good root vigor, resistant to main biotypes of European large raspberry aphid, remains free of RBDV for 5 years; ‘Julcsi’—vigor hard, upright growth habit, canes very tall, tolerant to RBDV	Gašić et al., 2018 [92]
Raspberry cultivars ‘BC92915’—vigorous, resistant to North American aphid (<i>Amphorophora agathonica</i>), moderate field tolerance to root rot; ‘Bountiful’—canes semi-upright, moderately resistant to yellow rust (<i>Phragmidium rubi-idaei</i>), moderately susceptible to powdery mildew (<i>Podosphaera aphanis</i> var. <i>aphanis</i>); ‘Imagine’—canes upright, with strong waxy coating, moderately resistant to yellow rust and powdery mildew; ‘Gleam’—upright growth habit, moderately resistant to yellow rust, moderately susceptible to powdery mildew; ‘NN08002’—vigorous, primocanes upright, may carry resistance to RBDV, moderate field tolerance to root rot	Karp and Gašić, 2022 [89]
Blackberry cultivar ‘Natchez’—erect to semi-erect; thornless, good vigor, moderately resistant to anthracnose	Finn and Clark, 2008 [100]
Blackberry cultivar ‘Fruloche’—thornless upright blackberry, suitable for home gardens, no particular susceptibility to pests or diseases	Finn and Clark, 2012 [87]
Blackberry cultivar ‘APF-190’—erect, thornless, vigorous, moderate resistance to anthracnose, cold-hardy	Gašić et al., 2016 [93]
Blackberry cultivars ‘APF-122’—erect, strongly primocane-fruiting, highly tolerant to powdery mildew, anthracnose, crown gall (<i>Agrobacterium tumefaciens</i>), and botrytis; ‘APF-236T’—thornless, erect growth habit, dwarf, columnar due to shortened internode length, cold-hardy; ‘Black Cascade’—thornless, dwarf to spreading growth habit, suitable for gardens; ‘Dris Black Sixteen’—high vigor, moderately susceptible to powdery mildew, moderately resistant to drought, high temperatures, and waterlogging; ‘Mizao’—thornless, high vigor, semi-upright growth habit, disease-resistant and has very good field tolerance to root rot	Gašić et al., 2018 [92]
Blackberry cultivars ‘Caddo’—thornless, erect growth habit, consistently high yield, cold-hardy; ‘Twilight’—vigorous, semi-erect growth habit, crown forming, less susceptible to UV and heat damage, susceptible to red berry mite (<i>Acalitus essigi</i>), cold hardiness very good; ‘Sweetie Pie’—thornless, upright to semi-upright growth habit, resistant to rosette disease (<i>Cercospora</i> spp.), recommended for home gardens	Gašić et al., 2020 [94]
Blackberry cultivars ‘A-2454T’—thornless, erect growth habit, cold-hardy, suitable for home gardens; ‘A-2491T’—thornless, erect growth habit, resistant to anthracnose, cold-hardy, recommended for home gardens; ‘DrisBlackEighteen’—thornless, semi-erect growth habit, resistant to fusarium wilt (<i>Fusarium oxysporum</i>), moderately resistant to powdery mildew, winter hardiness, moderate drought tolerance and heat tolerance; ‘DrisBlackTwentyTwo’—thornless, erect growth habit, resistant to fusarium wilt, moderately resistant to verticillium wilt and redberry mite (<i>Acalitus essigi</i>)	Karp and Gašić, 2022 [89]
Blueberry cultivars ‘DeSoto’—semi-dwarf, moderately spreading, medium vigor, providing insurance against late spring frosts; ‘Native Blue’—low-growing, compact, vigorous	Clark and Finn, 2006 [99]
Blueberry cultivar ‘Carteret’—very high productivity, very vigorous, upright, broad soil adaptation, flowers self-fertile, abundant pollen	Finn and Clark, 2008 [100]

Table A2. Cont.

Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Blueberry cultivars ‘Amatsubu-Boshi’—medium vigor, slightly upright, cold-hardy; ‘Celeste’—very vigorous, vase-shaped growth habit, self-fertile; adaptable to growing in different soil types, low chilling requirement; ‘Magna’—vase-shaped, grows well in a dry climate in well-drained sandy soils, low chilling requirement; ‘Ohtsubu-Boshi (Large Star)’—moderate productivity, vigorous, upright, medium in shape and growth, cold-hardy, high chilling requirement	Clark and Finn, 2010 [101]
Blueberry cultivars ‘Augusta’—vigorous, upright, high-yielding, resistant to anthracnose (<i>Gleosporium fructigenum</i>) and fire blight (<i>Erwinia amylovora</i>), moderately resistant to <i>Phomopsis</i> spp. and <i>Septoria albopunctata</i> ; ‘Azur’—vigorous, upright, productive, resistant to anthracnose, fire blight and <i>Phomopsis</i> spp., moderately resistant to <i>S. albopunctata</i> ; ‘Prod’—medium vigor, large spreading, resistant to <i>Phomopsis</i> spp., anthracnose, and fire blight, moderately resistant to <i>S. albopunctata</i> ; ‘Razz’—vigorous, upright and less willowy, good productivity, very good resistance to mummy berry blight (<i>Monilinia vaccinii-corymbosi</i>) and average resistance to fruit infection; ‘Sky Blue’—medium stature, semi-upright habit, medium to high yield, no noticeable susceptibility to cold damage or main fungal diseases; ‘Vital’—medium vigor, upright; productive, resistant to anthracnose, moderately resistant to <i>S. albopunctata</i> , <i>Phomopsis</i> spp. and <i>E. amylovora</i>	Finn and Clark, 2012 [87]
Blueberry cultivars ‘Cosmopolitan’—medium vigor, semi-upright growth, high-yielding, productive, requires very little pruning and management in the field and is suitable for home gardens; ‘Lielogu’—vigorous, upright, high-yielding, resistant to anthracnose and fire blight; ‘Overtime’—fairly upright, good tolerance to bacterial canker caused by <i>Pseudomonas syringae</i> ; ‘Salaspils Izturiga’—vigorous, upright, high-yielding, resistant to anthracnose and fire blight	Gašić and Preece, 2014 [102]
Blueberry cultivars ‘C00-09’—vigorous; upright to bushy growth habit, moderate resistance to root disease (<i>Phytophthora</i> spp.), good resistance to blueberry rust and to anthracnose fruit rot, suitable for home gardens; ‘DrisBlueSeven’—medium vigor, semi-erect, very low chilling requirement, high productivity, medium cold hardiness	Gašić et al., 2016 [93]
Blueberry cultivar ‘DrisBlueFourteen’—high vigor, semi-erect growth habit, good productivity, cold-hardy	Gašić et al., 2020 [94]
Cranberry cultivar ‘Grygleski’—vigorous vine, winter-hardy	Clark and Finn, 2010 [101]
Cranberry cultivar ‘BG’—vigorous, winter-hardy	Gašić and Preece, 2014 [102]
Currant cultivars ‘Ben Avon’—upright growing, vigorous; good resistance to mildew (<i>Sphaerotheca mors-uvae</i>), leaf spot (<i>Drepanopezizia ribis</i>), low susceptibility to leaf curling midge (<i>Dasyneura tetensi</i>), susceptible to gall mite (<i>Cecidophyopsis ribis</i>) and Black currant reversion virus; ‘Ben Dorian’—strong growing, upright, resistant to powdery mildew and leaf spot, low susceptibility to leaf curling midge	Finn and Clark, 2008 [100]
Currant cultivars ‘Blackcomb’—vigorous, resistance to powdery mildew and white pine blister rust (<i>Cronartium ribicola</i>); ‘Ores’—medium spreading habit, winter-hardy, resistant to powdery mildew and white pine blister rust, highly resistant to gall mite, moderately susceptible to leaf spot; ‘Ruben’—medium semi-upright, winter-hardy, resistant to powdery mildew and white pine blister rust, moderately susceptible to leaf spot, susceptible to gall mite	Finn and Clark, 2012 [87]
Currant cultivar ‘Ben Chaska’—compact, upright, cold-hardy, resistant to white pine blister rust, resistant to powdery mildew	Gašić and Preece, 2014 [102]
Currant cultivars ‘Gofert’—tall, winter-hardy, no noticeable disease or pest issues; ‘Nancy May’—compact, highly winter tolerant, no noticeable pest or disease issues; ‘Polares’—semi-upright habitat, good disease resistance and winter hardiness; ‘Stikine’—upright habitat, resistant to white pine blister rust and powdery mildew, frost-tolerant; ‘Tiben’—tall, resistant to powdery mildew and leaf spot, moderately resistant to white pine blister rust; ‘Tihope’—tall and slightly spreading, cold-hardy, highly resistant to white pine blister rust and powdery mildew	Karp and Gašić, 2022 [89]

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Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Gooseberry cultivar ‘Hinsel’—medium-to-strong growth, mostly upright with spreading branches, resistant to powdery mildew, moderately susceptible to leaf spot, suitable for home gardens	Finn and Clark, 2012 [87]
Mulberry cultivar ‘Trader’—spherical crown, very vigorous when young, extremely cold-hardy, resistant to spotted-wing drosophila (<i>Drosophila suzukii</i>)	Karp and Gašić, 2022 [89]
Kiwifruit cultivars ‘Cuiyu’—moderate vigor, tolerant to adverse conditions and diseases; ‘Emihoutao No 1’—very vigorous, tolerant to environmental stresses such as drought and waterlogging, cold-hardy, resistant to pests; ‘Ganmi No. 3’—very vigorous, adaptable and tolerant to unfavorable conditions; ‘Huayou’—vigorous, resistant to bacterial canker (<i>Pseudomonas syringae</i> pv. <i>actinidiae</i> Van Hall); ‘Moshan No. 4’—compact growth habit, medium vigor; resistant to pests and diseases; ‘Wuyhi No 3’—very vigorous and productive, tolerant to adverse conditions, well adapted to warmer climates; ‘Yumihoutao’—vigorous, precocious, productive, cold-resistant, disease-resistant, drought-tolerant	Finn and Clark, 2012 [87]
Kiwifruit cultivar ‘AC1536’—weak-to-medium vigor, winter-cold-tolerant;	Gašić et al., 2020 [94]
Kiwifruit cultivars ‘Tango’—moderate–vigorous vigor, good winterhardiness; ‘Zes008’—moderate size, medium vigor, tolerant to bacterial flower rot (<i>Pseudomonas syringae</i> pv. <i>actinidiae</i>)	Karp and Gašić, 2022 [89]
Strawberry cultivars ‘Tamir’—moderately vigorous, no chilling requirement for flowering, good field tolerance to powdery mildew (<i>Sphaerotheca macularis</i> sp. <i>fragariae</i>); ‘Stolo’—vigorous, upright habit, winter-hardy, resistant to root weevil (<i>Coleoptera: Curculionidae</i>), moderately tolerant to powdery mildew, some tolerance to strawberry virus complex transmitted by strawberry aphid (<i>Chaetosiphon fragaefoli</i>), tolerant to some soilborne organisms; ‘PS-4634’—vigorous, tolerant to two-spotted spider mite (<i>Tetranychus urticae</i>), aphids (<i>Aphis</i> L.) and flower thrips (<i>Frankliniella occidentalis</i>), moderately tolerant to botrytis fruit rot (<i>Botrytis cinerea</i>), powdery mildew and bacterial angular leaf spot (<i>Xanthomonas fragariae</i>), susceptible to verticillium wilt (<i>Verticillium dahliae</i>); ‘Nora’—moderately vigorous, tolerant to heavy soils, drought and temperature variations, tolerant to main soilborne pathogens, tolerant to powdery mildew and moderately susceptible to anthracnose (<i>Colletotrichum acutatum</i>) and bacterial angular leaf spot; ‘Aguedilla’—vigorous, globose to flat globose, resistance to leather rot (<i>Phytophthora cactorum</i>), verticillium wilt, powdery mildew and anthracnose; ‘BG-959’—tolerant to two-spotted spider mites, aphids and flower thrips, moderately tolerant to botrytis fruit rot and powdery mildew; ‘DPI Rubygem’—strong vigor, globose compact, upright, highly resistant to fusarium wilt (<i>Fusarium oxysporum</i> f. sp. <i>fragariae</i>)	Finn and Clark, 2008 [100]
Strawberry cultivars ‘Amelia’—vigorous, resistant to powdery mildew (<i>Podosphaera aphanis</i>) and phytophthora crown rot (<i>Phytophthora cactorum</i>), moderately susceptible to verticillium wilt; ‘Argentera’—vigorous, very productive, tolerant to main soilborne pathogens and powdery mildew, low susceptibility to anthracnose and angular leaf spot; ‘Eves Delight’—medium-to-strong vigor, moderate yield, erect, upright and open growth habit, resistant to powdery mildew, phytophthora crown rot and verticillium wilt; ‘Evie 2’—strong vigor, some tolerance to high temperatures, good tolerance to verticillium wilt, phytophthora crown rot and powdery mildew, high yield, flat globose habit; ‘Zet’—very vigorous, very productive, tolerant to abiotic stress, main soilborne pathogens and powdery mildew, medium susceptibility to anthracnose and angular leaf spot, can be grown in non-fumigated soils and organic production systems	Clark and Finn, 2010 [101]
Strawberry cultivars ‘Glory’—medium vigor, globose, moderately susceptible to two-spotted spider mite, flower thrips (<i>Frankliniella</i> spp.), powdery mildew, botrytis fruit rot and angular leaf spot; ‘Herriot’—vigorous and spreading, resistant to powdery mildew, tolerant to replant diseases; ‘Portola’—medium-to-strong vigor, globose, resistant to phytophthora crown rot and common leaf spot (<i>Ramularia tulasnei</i>), moderately resistant to powdery mildew, anthracnose crown rot and verticillium wilt, tolerant to two-spotted spider mite	Finn and Clark, 2012 [87]

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Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Strawberry cultivars ‘Benicia’—moderate vigor, moderately resistant to powdery mildew, tolerant to two-spotted spider mite and local strawberry viruses, moderately susceptible to anthracnose crown rot (<i>Colletotrichum acutatum</i>), phytophthora crown rot and common leaf spot; ‘Joly’—vigorous, globose, semi-upright, resistant to local leaf and root diseases; ‘Malwina’—vigorous, globose, resistant to rain cracking, sunburn, verticillium wilt, local root diseases, moderately resistant to botrytis fruit rot and powdery mildew	Gašić and Preece, 2014 [102]
Strawberry cultivars ‘AAC Lila’—medium vigor, semi-upright, moderately resistant to common leaf spot and leaf scorch (<i>Diplocarpon earlianum</i>), tolerant to red stele (<i>Phytophthora fragariae</i>), susceptible to powdery mildew (<i>Podosphaera macularis</i>); ‘BBB PO 01’—strong vigor; upright mounded, tolerant to phytophthora crown rot; ‘Buddy’—medium vigor, semi-erect, resistance to phytophthora crown rot and verticillium wilt; ‘Grandarosa’—strong vigor, upright globose, resistant to powdery mildew and strawberry spider mite (<i>Tetranychus lambi</i>), tolerant to verticillium wilt; ‘Linosa’—medium vigor, semi-upright, tolerant to phytophthora crown rot, powdery mildew, poor soils and general root and leaf diseases; ‘Merced’—medium vigor, resistant to phytophthora crown rot and common leaf spot, moderately resistant to powdery mildew and anthracnose crown rot	Gašić et al., 2016 [93]
Strawberry cultivars ‘Yambu’—medium vigor, compact and semi-upright growth habit, resistant to botrytis fruit rot and phytophthora crown rot, somewhat resistant to powdery mildew; ‘Cabrillo’—strong vigor, upright growth habit, moderately resistant to powdery mildew, verticillium wilt, phytophthora crown rot and common leaf spot, tolerant to two-spotted spider mite and California strawberry viruses, moderately susceptible to anthracnose fruit rot; ‘Archer’—vigorous, spreading growth habit, resistant to powdery mildew, moderately tolerant to replant diseases	Gašić et al., 2018 [92]
Strawberry cultivars ‘Allegro’—moderate-to-high vigor, compact and upright habit, moderately resistant to phytophthora crown rot; ‘Emilia’—high vigor, upright growth habit, moderately tolerant to charcoal rot (<i>Macrophomina phaseolina</i>) and verticillium wilt; ‘Florida Brilliance’—moderate vigor, semi-upright growth habit, resistant to rain, powdery mildew, anthracnose fruit rot and charcoal rot, moderately susceptible to botrytis fruit rot	Gašić et al., 2020 [94]
Strawberry cultivars ‘American Aroma 10’—strong vigor, globose growth habit, resistant to anthracnose crown rot and anthracnose fruit rot; ‘CIVN260’—strong vigor, upright growth habit, highly resistant to powdery mildew, generally resistant to leaf and root diseases; ‘Cordial’—moderate-to-strong vigor, compact, upright and globose growth habit, resistant to rain and anthracnose fruit rot, moderately resistant to bacterial angular leaf spot, powdery mildew, leaf scorch and leaf blight (<i>Paraphomopsis obscurans</i>)	Karp and Gašić, 2022 [89]
Nuts	
Persian walnut cultivar ‘Sexton’—moderate vigor, suitable for hedgerows, low occurrence of blight (<i>Xanthomonas campestris</i> pv. <i>juglandis</i>)	Finn and Clark, 2008 [100]
Walnut cultivars ‘Chandler’—moderately vigorous, semi-upright, tolerant to blackline disease, less likely to be affected by frost, walnut blight and codling moth (<i>Cydia pomonella</i>) because of late leafing; ‘Fernor’—cold-resistant, grows in a semi-upright manner, tolerant to blackline disease, less likely to be affected by frost, walnut blight and codling moth because of late leafing	Internet source [135]
Walnut cultivars ‘Franquette’—small tree, very resistant to frost, resistant to blight and codling moth; ‘Europa’—compact growth habit and dwarf variety, making it perfect for small gardens and limited spaces, good pest and disease resistance	Internet source [136]
Hazelnut cultivars ‘Sacajawea’—moderately vigorous, high level of resistance to eastern filbert blight (<i>Anisogramma anomala</i>), resistant to big bud mites (<i>Phytoptus avellanae</i> and <i>Cecidophyopsis vermiformis</i>); ‘Santiam’—moderately vigorous, complete resistance to eastern filbert blight, moderately resistant to big bud mites	Finn and Clark, 2008 [100]

Table A2. Cont.

Species, Cultivar and Its Characteristics	Author(s) and Year of Publication
Hazelnut cultivar ‘Dorris’—low vigor, very highly resistant to eastern filbert blight, highly resistant to bud mite	Gašić et al., 2018 [92]
Hazelnut cultivar ‘Somerset’—low vigor, very highly resistant to eastern filbert blight	Karp and Gašić, 2022 [89]
Hazelnut cultivars ‘Hunterdon’—vigorous, upright tree with a slightly spreading growth habit, high level of tolerance to eastern filbert blight (quantitative resistance); ‘Monmouth’—moderately vigorous tree with a slightly spreading growth habit, very high level of tolerance to eastern filbert blight (quantitative resistance)	Internet source [137]
Hazelnut cultivars ‘Closca Molla’, ‘Ratoli’, ‘Grand Traverse’, ‘Medium Long’, ‘Potomac’, and ‘Yoder 5’—all have ‘Gasaway’ gene for resistance to eastern filbert blight	Lunde et al., 2000 [138]
Hazelnut cultivar ‘Webb’s Prize Cobb’—moderate-to-vigorous growth, hardy	Internet source [122]
Chestnut cultivar ‘Jianding Youli’—semi-erect, resistant to chestnut blight (<i>Cryphonectria parasitica</i>) and chestnut weevil (<i>Curculio</i> sp.)	Karp and Gašić, 2022 [89]
Chestnut cultivars ‘Marigoule’—medium-growing, upright, resistance to root rot (<i>Phytophthora cinnamomi</i>), winter-cold-resistant to -30°F ; ‘Maraval’—fast-growing, upright, with open interior, resistant to root rot and chestnut blight; ‘Marsol’—very upright growth, resistant to root rot, winter-cold-resistant to -30°F ; ‘Mollissima’—highly valued tree, autumnal beauty to any landscape, blight-resistant	Internet source [139]

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