agronomy

Review

Benefits of Non-Commercial Urban Agricultural Practices—A Systematic Literature Review

Ouiam Fatiha Boukharta [1,*], Iona Yuelu Huang [2], Laura Vickers [3], Luis Manuel Navas-Gracia [1] and Leticia Chico-Santamarta [1,4,*]

1 TADRUS Research Group, Department of Agricultural and Forestry Engineering, University of Valladolid, 47011 Valladolid, Spain; luismanuel.navas@uva.es
2 Food, Land and Agribusiness Management, Harper Adams University, Edgmond, Shropshire TF10 8NB, UK; ihuang@harper-adams.ac.uk
3 Agriculture and Environment Department, Harper Adams University, Edgmond, Shropshire TF10 8NB, UK; lvickers@harper-adams.ac.uk
4 Global Impact Department, Harper Adams University, Edgmond, Shropshire TF10 8NB, UK
* Correspondence: ouiamfatiha.boukharta@uva.es (O.F.B.); lchico-santamarta@harper-adams.ac.uk (L.C.-S.)

Abstract: Urban agriculture refers to any type of activity located within or around a city designed to provide ecosystem services. Given the rapid population growth and urbanization, urban agriculture is seen as a potential alternative route to a more sustainable urban food system. This review answers the main question: What are the benefits of non-commercial of Urban Agriculture (NCUA) forms and its contribution towards food production? using a systematic literature review approach. The methodology involved capturing 1355 recent articles from qualified search engines, using key terms according to the defined question, then screened for relevance and the defined scope of this review, resulting in a final selection of 40 articles for analysis. The results show that implementing NCUA practices has multifaced social, economic, and environmental benefits, such as improving people's health, reducing expenditure on food and creating sustainable cities, highlighting the need to recognize the multifaceted role of NCUA in promoting a more sustainable lifestyle and strengthening local communities and engagement. Moreover, awareness of urban agriculture differs between developed and developing countries, as does the recognition and valorization of its benefits. Further research is needed to examine the enabling factors and barriers to NCUA adoption in different urban context, the resource implications, and the long-term sustainability of these practices.

Keywords: non-commercial urban agriculture; benefits; community gardens; school gardens; allotments; urban farms

check for updates

Citation: Boukharta, O.F.; Huang, I.Y.; Vickers, L.; Navas-Gracia, L.M.; Chico-Santamarta, L. Benefits of Non-Commercial Urban Agricultural Practices—A Systematic Literature Review. *Agronomy* **2024**, *14*, 234. https://doi.org/10.3390/agronomy14020234

Academic Editor: Rosa Maria Fanelli

Received: 29 December 2023
Revised: 20 January 2024
Accepted: 21 January 2024
Published: 23 January 2024

Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Ensuring sustainable urban food systems is of extreme importance, given that urban areas are currently characterized by rapid population growth, aggressive food marketing, and unhealthy diets [1]. Indeed, these areas and their inhabitants face numerous challenges linked to the expansion of urbanization, including socio-economic, ecological, and environmental issues, which have a negative impact on the environment and unsustainable urban development and a huge impact on health [2]. According to the World Health Organization (2020), we are now in an era of concern for mental health and well-being, in which the presence of green spaces has been shown to reduce the mental health burden associated with depression [3], affecting more than 264 million people. In addition, cities increasingly need food supplies, but growth of cities is reducing urban and peri-urban green spaces and removing food production. Sustainable food production should therefore be located close to the centers of consumption [4].

To address these challenges, urban agriculture (UA) is seen as a potential solution that can provide green space and bring food production [5]. Indeed, UA is defined as any type

of activity located within or at the periphery of a city and aimed at providing products and ecosystem services to the residents, such as physical and mental health benefits, mitigation of social and economic problems, and community resilience [6].

Many forms of UA are currently being practiced [6]. In this systematic review, the focus is on NCUA, focusing particularly on urban farms, community gardens, school gardens, and allotments. Community gardens (CG) have been defined as 'open spaces which are managed and operated by members of the local community in which food or flowers are grown, and whose total area is maintained collectively, ranging from small neighborhood gardens to larger ones of up to 1000 m^{2}' [6,7]. This is a popular strategy for strengthening social cohesion and improving health [1]. As far as allotments (A) are concerned, they have been defined as 'plots of land designated by local authorities for the purpose of growing vegetables for home consumption' [8]. A occurs when land is acquired through a personal-use lease [8]. Nevertheless, when A meet the criteria of growing food or flowers in a communal manner, they can also be considered as CG [9]. Another form of NCUA are school gardens (SG), which feature vacant land on school sites designed for a range of food education-related agricultural activities involving student participation [10], which are useful for improving children's nutritional outcomes and knowledge [11], making them more willing to try unfamiliar varieties of fruits and vegetables [12]. In addition, SG provide an opportunity to meet and interact with other students in a natural environment, developing social skills, communication, and cooperation [13]. The final form of UA that is evaluated in this study is urban farms (UF), which are considered the main source of income for many urban households [14]. According to the FAO, by 2022, urban and peri-urban farmers will increasingly strive to produce high-demand crops efficiently, making the best use of available resources and inputs, whether by planting in the ground or in containers [4]. Moreover, they can provide shelter for birds and beneficial insects, helping to preserve urban biodiversity [15].

The benefits of implementing NCUA practices within the cities have long been demonstrated in the literature, which can be categorized into economic, environmental, and social benefits. The literature considers NCUA to have a number of potential social benefits, including strengthening social capital, increasing social cohesion and community resilience, and improving public health [16]. Moreover, the positive social effects of being in nature have been shown to increase feelings of generosity, friendship, and empathy [17,18]. Indeed, it reduces personal feelings of anxiety and improves mental health and well-being [19–21]. In terms of economic benefits, a number of studies have shown that the implementation of urban agricultural practices (UAP) helps to reduce the global food supply and demand situation, as it can be seen as a source of income while providing direct access to a wider range of nutritionally rich products [22]. In other words, UA can generate an additional source of income, improving the economic situation of many households [14]. The final aspect is that of the environmental, where the outcomes of UA are generally highly valued and recognized by scientists for their great potential to improve the quality of urban life and the environment [23]. In fact, the creation of UA spaces in cities helps to retain stormwater, purify the air, and conserve biodiversity [24], thus helping to mitigate the pollutants responsible for global warming [25]. Moreover, as food is grown and produced locally, it reduces transport costs and ensures environmental protection [26].

In view of continuing population growth, shrinking urban spaces, and increasing food insufficiency, it is worth discussing and examining the NCUA and its current relevance. Although the categories of benefits of NCUA have been presented in existing literature, there is a lack of understanding of the variations in the types of benefits derived from different forms of NCUA and how these benefits may vary in different contexts. To this end, the following main research question (RQ) was defined:

What are the benefits of non-commercial forms of Urban Agriculture and its contribution towards food production?

To facilitate the understanding and structure of this review, this main question is complemented by the following sub-research questions:

- RQ1: Which countries have conducted this type of research? And what are the similarities and differences across countries/continents?
- RQ2: What forms of NCUA food production have been practiced?
- RQ3: What are the similarities and differences reported across different forms of UA?
- RQ4: What are the challenges and limitations of implementing UAP faced by the authors of the selected articles in this review?

The main objective of this systematic review is therefore to synthesize the evidence on the benefits of NCUA practices, since much of the existing research is case-specific and lacks a comprehensive systematic analysis of the benefits in different contexts and at different scales, such as the lack of awareness of these projects, the benefits they bring to the population and the city, and the feasibility of integrating UAP [27,28]. To this end, and through this review, we aim to summarize the findings and relevance of the available literature, using a systematic mapping, in order to provide an overview of NCUA practices to ensure a healthy and accessible food supply while improving urban environmental performance for current and future generations.

Section 2 describes the methodology used for this review and presents the main inclusion and exclusion criteria that enabled the final selection of the articles analyzed and coded to answer and address our RQs. Section 3 presents the results and conclusions of this analysis, highlighting the different categories of NCUA benefits, the differences between and across countries, along with the difficulties and limitations reported in the selected articles with regard to NCUA implementation. Section 4 places these results in a clearer perspective, exploring some of the main implications of the NCUA, taking up the results at a global level and filling in the gaps found in the literature. The final section is the conclusion, in which an overview of the current situation is presented, together with some recommendations that should be followed for better implementation of the future NCUA.

2. Materials and Methods

The methodology used in this review follows the systematic literature review process recommended by James et al. (2016). This involved searching for and capturing relevant articles on the topic under review, using key terms derived from the main RQ, and then screening them according to their relevance to the specific topic of this study, and other criteria that will be described further in the following sub-sections. The methodology aimed at ensuring a rigorous, comprehensive, and objective literature collection and filtering processes, in order to reduce reviewer selection and publication bias and guarantee transparency of evidence inclusion decisions [29].

2.1. Search Strategy

The databases consulted included the Web of Science and Scopus search engines. The search terms used were developed on the basis of the key elements of a systematic literature review: population, intervention, and outcomes, where population refers to the object of our study, in this case *urban agriculture*, intervention refers to the description of the action addressed and the studies, namely *food production* in this review, and outcomes represent the results we wish to find, which are *benefits*. In addition, Boolean operators such as "AND" and "OR" were used for the combinations of our keywords for this search, enabling the following string to be formed:

((((urban AND (agricul* OR farm*)) OR "community garden*" OR "school garden*" OR allotment*) AND benef*) AND (food OR fruit* OR veg*)).

Details of the components and relevant key terms are presented in Table 1.

In terms of components, it shows the different ways in which a keyword can be searched for. For example, in the case of urban agriculture, agriculture can be written in different ways, such as agriculture, agricultural, etc., which is then searched for under agricul*; similarly, benefits, which can be written in different ways, such as benefit, benefits, beneficial, etc., to avoid missing information, is searched for under benef*. This is the best way to be sure of obtaining all the relevant information needed to address our problem.

Table 1. Search terms used in Scopus and Web of Science.

	Components	Key Terms
Population	urban agricul*—urban farm* school garden—school gardens community garden—community gardens	urban AND (agricul* OR farm*) "school garden*" "community garden*" allotment*
Intervention	food production	food OR fruit* OR Veg*
Outcomes	benefit—benefits—beneficial—benefic—etc.	benef*

2.2. Inclusion and Exclusion Criteria

The inclusion criteria for this review were articles and early accepted articles published in English between 2016 and 17 January 2023 to ensure that the review included the most recent literature on the subject, given that the growing interest in UAP and their implementation in cities has improved since 2016, and increased significantly from 2020. No country limitation was used, as the aim was to carry out a global review. The specific inclusion and exclusion criteria presented in Table 2 were applied manually for screening at title and abstract and at full text. If the criteria could not be applied at title and abstract screening due to incomplete information, they were included for full text screening.

Table 2. Inclusion and exclusion criteria.

Criterion	Eligibility	Exclusion
Document type	Articles and early accepted articles Open and non-open access	Conference papers, book chapters, reviews, editorials, conference reviews, full text articles not accessible
Language	English	Others
Timeline	From January 2016 until 17 January 2023	Before 2016
Relevance	Non-commercial urban agriculture	Commercial urban agriculture
Type of articles	Empirical paper with primary findings about the benefits of NCUA	Review papers, commentaries, or primary studies with no benefits reported

2.3. Data Extraction and Analysis

The search and selection process identified 1754 articles from the Web of Science and Scopus search engines. After deleting 399 duplicates, the total number of articles selected was 1355. After applying the inclusion criteria by selecting articles and early accepted articles in open and non-open access, all in English between 2016 and 17 January 2023, as well as the exclusion criteria, excluding conference papers, book chapters, etc., directly from Web of Science and Scopus via the selection filters provided on their web pages, and then checking the resulting data and eliminating articles that do not meet our selection criteria, 45 articles were deemed eligible for results mapping. When coding and analyzing each article, 5 articles were excluded: 2 for including commercial UAP, 2 for not including any NCUA content, and 1 for not including any NCUA benefits, which resulted in a final selection of 40 articles for analysis. The diagram illustrated in the PRISMA Figure 1 demonstrates in detail the process and results of screening stage by stage.

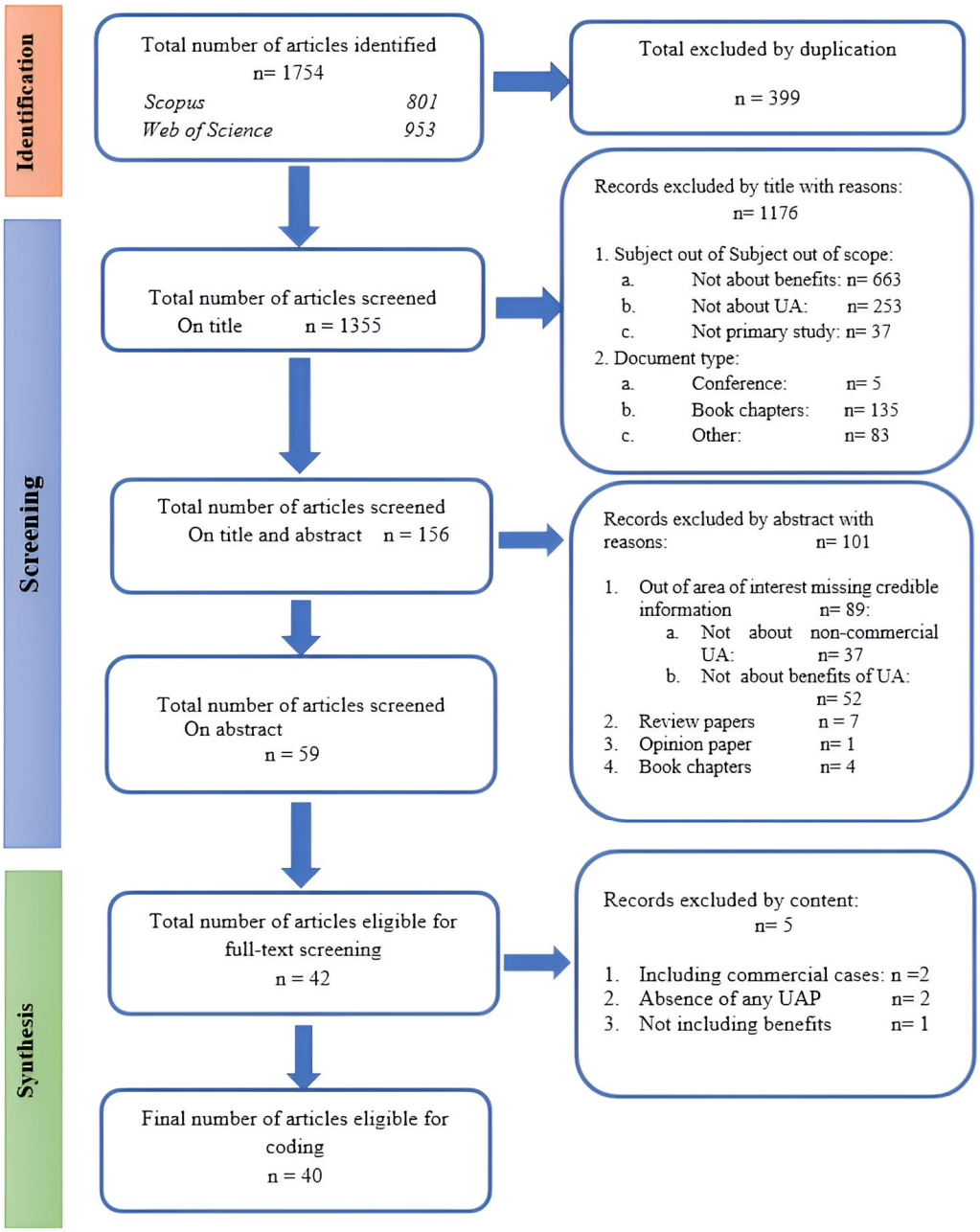


Figure 1. The PRISMA 2020 flow diagram of the systematic literature review process (adapted from Page et al., 2020 [30]).

A qualitative synthesis approach was adopted to map the results of the included articles. For this purpose, the software used in the present review is NVivo, one of the most used qualitative data management programs. NVivo has features such as character-based coding, rich text capabilities, and multimedia functions that are crucial for qualitative data management [31]. In addition, it enables researchers to process large amounts of data with greater transparency and provides opportunity for double-checking the reliability of coding by members of the research team [32].

3. Results

The following sections present the results obtained from this review, which clearly answer our main RQ and the sub-questions. It should be noted that across the articles obtained, there is a steady increase in the number of articles published per year, with

accelerated progression from 2020 to 2023, showing that the concept of UA has become more popular in recent years, and that interest in its application is growing.

3.1. Study Sites Location

From the included papers, Figure 2 shows the number of articles from different countries using a map to facilitate data analysis and processing the country distribution of the selected studies using a bar chart indicating the number of articles published by each country:

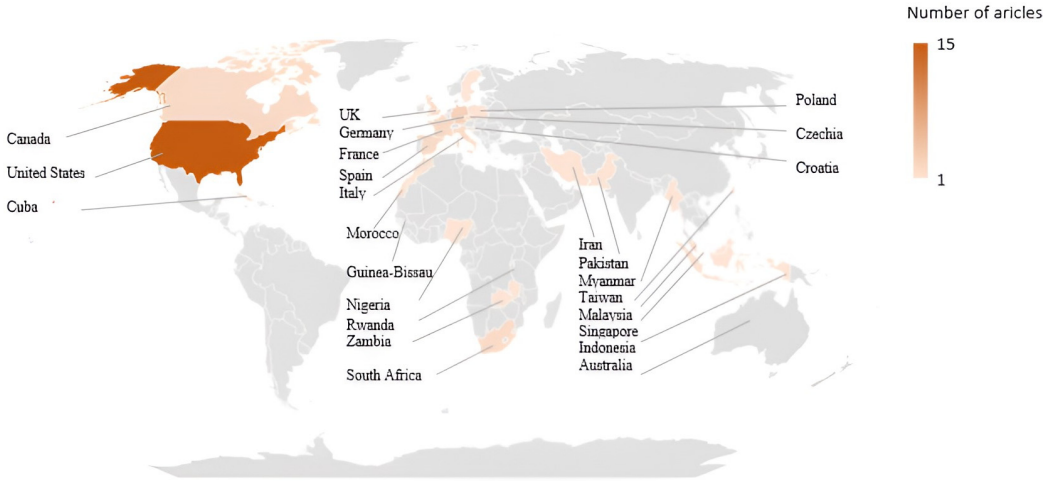


Figure 2. Location of the study sites identified from the 40 articles analyzed in this systematic literature review, represented on a world map featuring a heatmap showing the number of articles published per country (where the darker the color, the more articles exist).

Figure 2 shows that there was a very wide distribution of NCUA related studies throughout this research, in which it can be seen that around 30 countries were analyzed. Figure 2 also presents a heatmap showing the frequency of articles published by country, where the darker the color, the more articles were published. It can be seen that USA and Canada have the highest number of published articles in this overview. Figure 2 is complemented by Figure 3, which illustrates in greater detail the countries where the most UAP have been analyzed:

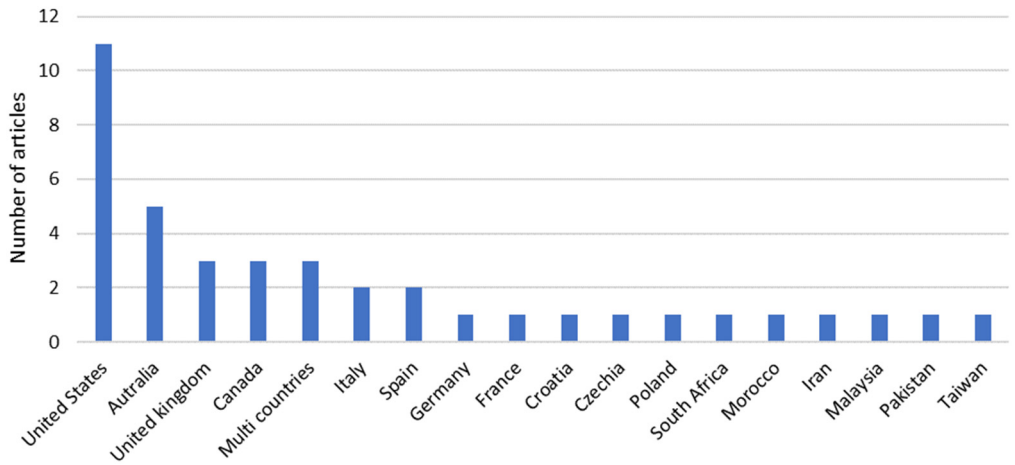


Figure 3. Cross-country distribution of articles analyzed in this review.

According to Figure 3, the largest number of articles are found in USA, Australia, Canada, UK, and EU countries. In addition, other African and Asian countries are also

implementing UA, such as Morocco and Malaysia, demonstrating that NCUA is now a global concept that is increasingly widespread around the world (particularly in more developed countries), given the benefits it provides.

3.2. NCUA across Continents

In North America, food insecurity affected around 14.3 million people in 2018 [33]. Consequently, NCUA has become very popular in New York City, which has at least 500 urban spaces [34]. The aim is to improve access to fresh produce for city dwellers, especially the food-insecure, and has been attributed to tackling poverty and food shortages in times of war and economic depression [35].

In Australia, rapid population growth and ageing in capital cities are increasing pressure on social, environmental, and public health systems, where one in four Australians experience chronic episodes of loneliness [10]. Australian local authorities are therefore coordinating their efforts to improve the urban canopy within the cities, which would offer significant opportunities to improve well-being [36].

The NCUA situation in Europe differs from country to country: Germany is a typical European country where NCUA is about much more than just food production, and where there is an appreciation of the benefits NCUA brings to citizens, through active participation in European Union projects [37]. In the UK, therapeutic and prescriptive gardening is gaining increasing support to help people overcome or live with mental health problems [9,38]. In Spain, CG have only emerged recently and are developing rapidly. In Croatia, urbanization, environmental issues, the future development of tourism, and social issues (mental health, unhealthy diet, and poverty) are behind the development of UA [39].

In North Africa, Morocco has an agricultural strategy adopted in 2008, known as the Plan Maroc Vert (Green Morocco Plan, in English), and whose second pillar supports small- and medium-sized farmers so as to encourage the implementation of NCUA within the cities [40]. Finally, in South Africa, several studies have been conducted to assess the role of NCUA in contributing towards poverty alleviation and food security [41].

3.3. Forms of NCUA Identified

Many forms of NCUA can be implemented in a city, including community gardens (CG), allotments (A), school gardens (SG), and urban farms (UF) [3]. In this section, the aim is to map the different forms of NCUA studied in different countries on the basis of the articles selected, processed and analyzed in this review. To this end, Figure 4 presents the result of the cross-tabulation analysis of the forms of NCUA identified in the studies carried out in the selected countries.

Figure 4 shows that the most widespread form of NCUA found from the selected articles is CG, with 29 articles out of 40, followed by UF and then A and SG (this analysis considered that the same study can deal with several forms of NCUA at the same time). Other forms of NCUA reportedly used are rooftop gardens, backyard gardens, etc., but these were not part of the selection criteria of this review. These results show that there is a diversity in the implementation of different forms of NCUA within countries, differing from a country to another, as explained in Section 3.4.

3.4. Forms of NCUA by Countries

CG is an abundant form of UA. Figure 4 shows that of the 11 articles analyzed in the USA, 10 address CG cases, while in Australia and Spain, CG cases are found in all the articles analyzed from these two countries. For the other countries, only 3 of the 18 categories selected do not contain that form of NCUA in their analysis.

Regarding UF, it is the second frequently used NCUA form in this review, which is most widely used in multi-countries (studies that evaluated more than one country), followed by Italy and USA. Finally, UF, A, and SG forms were the least used in the selected articles for this review.

Reviewed articles	A	CG	SG	UF	Other	Total
USA	0	10	2	2	1	11
Australia	1	5	0	0	0	5
Spain	0	2	0	0	0	2
Canada	1	2	1	0	1	3
Czech	0	1	0	0	0	1
Multi countries	1	1	0	3	0	3
Taiwan	1	0	1	0	1	1
Germany	0	1	0	0	0	1
Italy	0	1	0	2	0	2
Croatia	0	1	0	0	0	1
Morocco	0	1	0	0	0	1
UK	2	1	0	1	0	3
Iran	0	0	0	1	0	1
South Africa	0	1	0	0	0	1
France	0	1	0	0	0	1
Malaysia	0	0	0	1	0	1
Poland	1	0	0	0	0	1
Pakistan	0	1	0	0	0	1
Total	7	29	4	10	3	40

Figure 4. Cross-tabulation of NCUA forms implemented across the countries evaluated in the selected articles of this review. A: allotments; CG: community gardens; SG: school gardens; UF: urban farms. Colors: red: no articles mentioning the form of NCUA practices; yellow: low; dark yellow: medium; light green: high; dark green: very high (Source: the authors).

3.5. Methodology Employed and Its Link to NCUA Forms

Understanding the methodology employed to analyze the different NCUA forms is one of the main objectives of this review. The following subsections will present different results extracted from the analysis carried out via coding in NVivo 14 Software:

3.5.1. Methodologies Used for the Realization of the Article

Identifying the different research methods used in each of our 40 articles provides a better understanding of the type of research methods employed to analyze the benefits of NCUA, as shown in Figure 5:

Figure 5 shows that the most commonly used research methods approach adopted is the survey to collect data for analysis. Surveys were used in 15 articles out of 40 (37%), followed by interviews and observation with 7.5% each, and finally the experimental method with 5%.

The use of the mixed method is the most interesting. Indeed, it indicates that the most frequent approach in the articles was to use a mixture of research methods. The percentage breakdown of the mixed method is presented in more detail in Figure 6.

In these 17 articles out of 40, surveys have the highest percentage of use, followed by interviews, and finally observation and experimentation (Figure 6). The results show that the joint use of surveys and interviews to analyze NCUA forms is favored for analysis, and can be supplemented by observation and/or experimentation, making understanding and evaluation more precise.

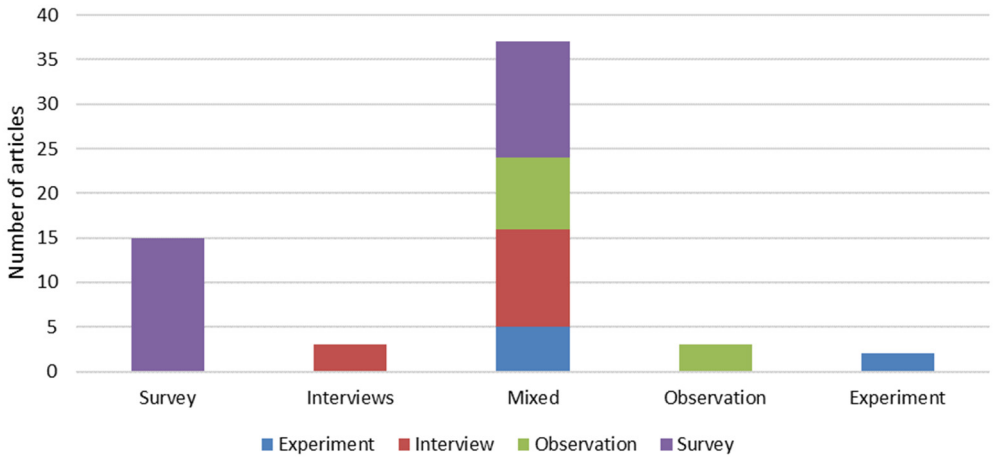


Figure 5. Number of articles that employed exclusively each research methodology in the selected articles, except for the mixed category which is where articles employed more than one research method.

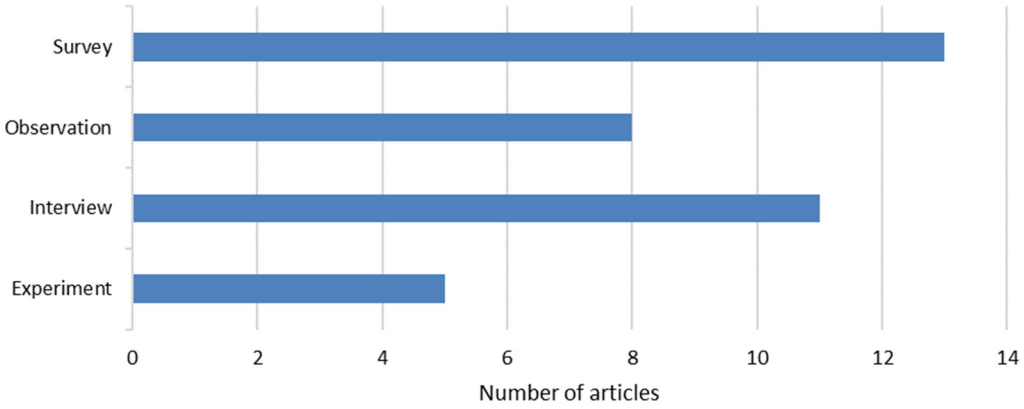


Figure 6. Frequency of use of each search method in articles using the mixed search method.

3.5.2. The Methodology Used for Each NCUA Form

One of the main purposes of this systematic review is to analyze the relationship between the different forms of NCUA and the research methodology used. To this end, Figure 7 details the methodology used for each UA form.

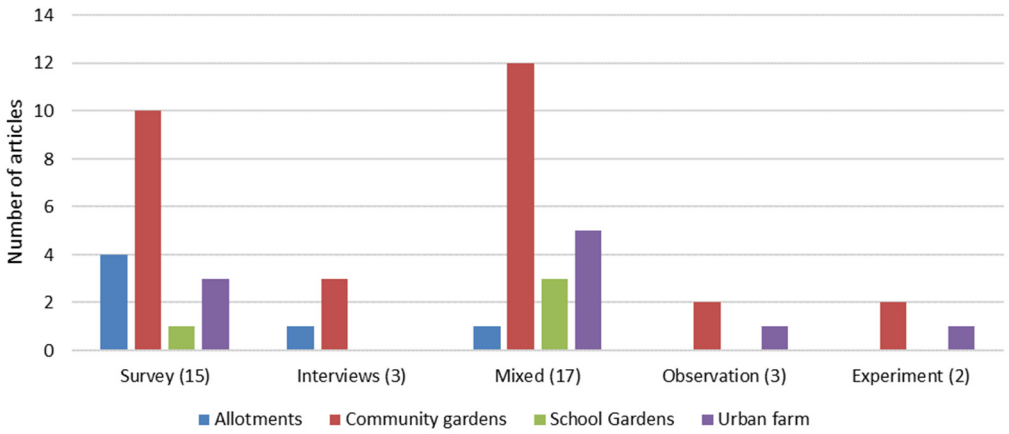


Figure 7. Number of articles that used each research methodology, related to the form of non-commercial Urban Agriculture Practice evaluated.

Figure 7 shows that several research methods are used to analyze the implementation of NCUA in cities and the resulting benefits, i.e., through interviews, surveys, experiments,

observations, or even a mix of these methods employing at least two of them, making the analysis more precise and comprehensive. Experimental methodology is the least used in the articles selected, and was used in only 2 articles out of 40. For interviews and observation, four and three articles, respectively, used only these methods to obtain results. Once again, the methodology most used in our 40 articles is the mixed method, which is employed for the majority of UA forms, where CG is the most analyzed with this approach, followed by UF, SG, and A.

These results show us the diversity of existing research methodologies employed for analyzing the use of UA and the benefits they bring, and shows preference for some research strategies over others.

3.6. Benefits of the Implementation of NCUA Practices

Identifying the benefits that NCUA practices bring is the main objective of this review article. Indeed, in-depth coding of the selected articles has resulted in the cross-tabulated table shown in Figure 8, which was obtained from NVivo 14 Software, and where the green color refers to the highest number of studies and the red color to the lowest number.

Categories of benefits	Sub-categories	CG	UF	SG	A	Mixed	Total
Economic		12	3	0	0	5	20
Environmental		6	4	0	0	6	16
Social	Social cohesion (including community and networking and other aspects)	24	6	1	0	6	37
	Community and networking	17	4	1	0	2	24
	Society economic growth	5	4	1	3	0	13
	Human (mental health, health and nutrition, skills and education)	21	5	1	2	5	34
Total		24	6	1	3	6	40

Figure 8. Cross tabulation showing the frequency of benefit against the types of UA: CG: Community Gardens; UF: Urban Farms; SG: School Garden. Colors: red: no articles mentioning the benefits of UA; dark orange: the lowest; light orange: low; dark yellow: medium; yellow: medium to high; light green: high; dark green: very high (Source: the authors).

Categories of Benefits Identified in This SR

The findings from the analysis of this systematic review shows that the benefits of NCUA can be divided into three categories: economic, environmental, and social:

- Economic benefits: the implementation of NCUA practices helps to promote community resilience and stimulate economic development [42]. The analysis of this aspect identified two sub-categories, namely cost reduction and income generation: cost reduction is related to people saving money on their groceries [43], by reducing the prices and making them accessible to low-income households [44]; income generation relates specifically to the fact that these gardens offer the opportunity to develop an agricultural system that matches their values and is adapted to their needs, and which can be translated into revenue [45,46].
- Environmental benefits: implementing NCUA practices has been shown to promote greening and environmental enhancement [10,47], support city adaptation to climate change, and reduce human damage and health problems [4]. NCUA helps to improve carbon sequestration and limit extreme weather events, thereby improving the quality of urban life and the environment [23].
- Social benefits: the main benefit of implementing UAP would be to improve well-being in terms of mental and physical health [9,38]. The most obvious would be to increase access to fresh and healthy products. In addition, NCUA can play an important role in

the social integration of less privileged people at risk of social exclusion, contributing to a more sustainable society [13,21].

Figure 8 presents a cross-tabulation of the results obtained, demonstrating the outcomes of implementing these practices linked to its various forms of NCUA:

As shown in Figure 8, there were four sub-categories under social benefits in the 40 articles selected and analyzed in this systematic review. All the articles that analyzed the CG form of NCUA reported social benefits of UA, focusing on the human aspects, including health benefits, nutrition, and trusting relationships with others. Furthermore, all three studies of allotments (A) reported the social benefits, especially for the socio-economic and human subcategories. Economic benefits were reported in 20 of the 40 articles, with results showing that setting up UA areas could save money and generate income for individuals, and where, once again, the CG form of NCUA had the highest frequency of reported economic benefits (Figure 8). Finally, environmental benefits were the least reported, found in 16 articles out of 40, although all 6 studies using a mixed form of NCUA reported environmental benefits.

3.7. Benefits vs. Countries

The main objective of this literature review is to identify the different benefits of involving NCUA spaces within cities, which has been reported in the previous section. In addition, this section shows whether there is any variability in the reported benefits of NCUA across the countries identified in the selected articles. Figure 9 presents a cross tabulation of the benefits of NCUA in relation to the countries studied, in order to better identify the potential/targeted benefits of NCUA use in each country:

	Economic	Environmental	Social						Total
			Community and networking	Society economic growth	Health and Nutrition	Mental health	Skills and Education	No significant social benefits	
USA	6	5	7	1	10	1	1	0	11
Australia	0	2	4	0	5	3	0	0	5
Spain	2	0	2	1	1	0	1	0	2
Canada	2	2	2	2	3	0	1	0	3
Czech	0	0	1	0	1	1	0	0	1
Multi countries	2	2	2	2	3	1	1	0	3
Taiwan	1	1	1	0	0	0	0	0	1
Germany	1	0	0	0	0	0	1	0	1
Italy	1	2	1	1	1	0	0	0	2
Croatia	0	0	1	0	0	1	1	0	1
Morocco	0	1	1	1	1	0	0	0	1
UK	1	0	0	0	3	3	0	0	3
Iran	0	0	1	1	1	0	0	0	1
South Africa	1	0	0	1	0	0	0	0	1
France	1	0	0	0	0	0	0	1	1
Malaysia	1	1	1	0	1	0	1	0	1
Poland	0	0	0	1	1	0	0	0	1
Pakistan	1	0	0	0	1	0	0	0	1
Total	20	16	24	11	31	10	7	1	40

Figure 9. Cross tabulation showing the frequency of evocation of the benefits of involvement and integration of urban practices across the countries covered through the analysis of the articles selected for this review. Colors: red: no articles mentioning the benefits of NCUA per country; yellow: low; dark yellow: medium; light green: high; dark green: very high (Source: the authors).

From Figure 9, the USA is by far the country that cited the most benefits compared with other countries, especially for health and nutrition. Second place goes to Australia, which also has the greatest number of reports on the social aspect, followed by community networking. In third place come Canada, Spain, Italy, and the multi-countries (studies that evaluated more than a country), all of which mention the benefits of NCUA in their articles, focusing almost equally on all three aspects.

Figure 9 also shows that the social aspect is most often mentioned in the 40 selected articles, with health and benefits being the most cited in the 19 countries analyzed (31 out of 40 articles), followed by community and networking, and mental health. Economic benefits were the second most common focus (20 of the 40 articles), and were most frequently mentioned in studies carried out in the USA, Canada, and multi-countries. Economic benefits were not the focus of studies in countries such as Australia, Morocco, and Iran. Lastly, the environmental aspect was the least mentioned, being mentioned in less than half the articles, particularly in the USA, Australia, Canada, and multi-countries.

The final analysis involved mapping each article according to the benefits reported, as shown in Figure 10, providing an overview of the results founded by each article with regard to economic, social, and environment aspects, and which have been explained above.

Category of benefits		References	Cited
Economic		Ambrose et al. 2023 - Camps-Calvet 2016 - Delshad 2022 - Górna 2021 - Hammelman 2019 - Hsiao 2021 - Kirby et al. 2021 - Krikser et al. 2019 - Lucertini et al. 2021 - Mejia et al. 2020 - Palau-Salvador Et al. 2019 - Porter 2018 - Santo et al. 2021 - Schoen et al. 2020 - Sonti and Svendsen 2018 - Swanepoel et al. 2021 - Tharrey and Moisa 2020 - Thiesen et al 2022 - Yusoff et al. 2017 - Zulfiqar 2021	20
Environmental		Bailey and Kingsley 2021 - Delshad 2022 - Furness and Gallaher 2018 - Górna 2021 - Guitart et al. 2015 - Hammelman 2019 - Hsiao 2021 - Kirby et al. 2021 - Lucertini et al. 2021 - Mansur et al. 2022 - Romagny et al. 2021 - Santo et al. 2021 - Sanyé-Mengual et al. 2020 - Sonti and Svendsen 2018 - Thiesen et al 2022 - Yusoff et al. 2017	16
Social	**Community and networking**	Alemu and Grebitus 2020 - Camps-Calvet 2016 - Delshad 2022 - Diekmann et al. 2020 - Dubová et al. 2020 - Egerer 2019 - Furness and Gallaher 2018 - Guitart et al. 2015 - Hsiao 2021 - Kingsley 2021 - Kirby et al. 2021 - Mansur et al. 2022 - Menconi 2020 - Moffatt 2016 - Moghayedi et al. 2022 - Palau-Salvador Et al. 2019 - Pollard Et Al. 2018 - Porter 2018 - Poštek 2021 - Romagny et al. 2021 - Sanyé-Mengual et al. 2020 - Shafieisabet and Mirvahedi 2022 - Sonti and Svendsen 2018 - Yusoff et al. 2017	24
	Society economic growth	Delshad 2022 - Dobson et al. 2021 - Górna 2021 - Janus et al. 2022 - Kell et al. 2018 - Lucertini et al. 2021 - Mansur et al. 2022 - Moffatt 2016 - Moghayedi et al. 2022 - Palau-Salvador Et al. 2019 - Romagny et al. 2021 - Shafieisabet and Mirvahedi 2022 - Swanepoel et al. 2021 -	13
	Human	Alemu and Grebitus 2020 - Ambrose et al. 2023 - Bailey and Kingsley 2021 - Delshad 2022 - Diekmann et al. 2020 - Dubová et al. 2020 - Dobson et al. 2021 - Egerer 2019 - Furness and Gallaher 2018 - Górna 2021 - Guitart et al. 2015 - Hammelman 2019 - Janus et al. 2022 - Kell et al. 2018 - Kingsley 2021 - Kirby et al. 2021 - Krikser et al. 2019 - Mansur et al. 2022 - Mejia et al. 2020 - Menconi 2020 - Moffatt 2016 - Moghayedi et al. 2022 - Palau-Salvador Et al. 2019 - Pollard Et Al. 2018 - Porter 2018 - Poštek 2021 - Romagny et al. 2021 - Santo et al. 2021 - Sanyé-Mengual et al. 2020 - Schoen et al. 2020 - Shafieisabet and Mirvahedi 2022 - Sonti and Svendsen 2018 - Thiesen et al 2022 - Yusoff et al. 2017 - Zulfiqar 2021	34
	No significant social benefits	Tharrey and Moisa 2020	1

Figure 10. Matrix coding query that summarizes all information obtained in this systematic review and which showed individual authors against the different benefits. Binary system where 1 shows the presence of the benefit and 0 reflects its absence (Source: the authors) [1–4,6,8–10,13,14,17,23,25,27,28,34–57].

Figures 9 and 10 show that only one article mentions that there are no significant social benefits. This study was carried out in France, where the authors describe that "that

the practice of gardening for one year in a CG may not be sufficient to change health and sustainability behaviors", giving a culturally dependent aspect to consider in the analysis.

3.8. Reported Challenges and Limitations from the Studies against NCUA Implementation

The analysis of the articles selected for this review has enabled the identification of a number of challenges and limitations in the implementation of UAP, which may differ from one situation to another, and which have been commented on by the authors:

3.8.1. Challenges

Despite the many positive effects of UA, its implementation faces a number of challenges. The field is still under-researched and requires collaboration between agricultural specialists, developers, and local authorities [39]. Pollution could be one of the major problems for the safe production of urban food systems. For example, urban soils may be contaminated or of poor quality, so local production and consumption need to be monitored; access to water may also reduce their implementation [4,48]. Another challenge is to ensure that UAP values are reflected in urban planning and decision-making, including civic engagement and willingness [49,50]. NCUA is now gaining ground around the world, but its true value is not understood beyond its ability to help reduce food insecurity [45]. Moreover, NCUA offers an opportunity for creating jobs, which should be of major importance, reducing poverty and enabling households to have access to food [41].

3.8.2. Limitations

Regarding the limitations identified from the selected articles in this systematic literature review, most articles reveal that gardens face political obstacles due to zoning laws, unreliable access to water, and lack of funding and access to land, where discrepancies between theory and reality of operations are striking with regard to NCUA economics [43,51]. In addition, many authors have also mentioned a lack of awareness of how to carry out a project (technical knowledge, engaging the community, etc.), ref. [4,27], as well as a lack of empirical evidence to support claims of environmental benefits on how general gardening and horticultural activities can potentially shape the environment of urban areas [28].

4. Discussion

With more than half of the world's population currently living in cities and an urban population estimated to reach 60% by 2030 [3], achieving more sustainable, livable, and resilient cities is one of the greatest challenges for urban policy and planning in the 21st century [58]. This systematic literature review analyzed the benefits that different forms of NCUA bring to the population, and to the city itself, in different countries. The results show that NCUAs have multiple functions, which contribute to a variety of outcomes associated with urban food systems, in the different cases and countries analyzed [59], and which can be categorized into social, environmental, and economic aspects, explained more in depth in the following sections.

4.1. Social Benefits

The implementation of NCUA yielded in four categories of social benefits from gardening: mental health and wellbeing, society economic growth and employment opportunities, nutrition, and social cohesion: First, mental health and wellbeing, where it was found that living in green environments was associated with reduced instances of depression and helped reduce personal feelings of anxiety [60], with an 8–12% reduction in mortality risk [9,35,61]. Secondly, the society economic growth and employment opportunities, where a number of professionals, technicians, and farmers are hired to manage the UAP by offering help and advice to users [62], making these NCUA areas a "refuge sector" for unemployed workers, retired people, or failed entrepreneurs [46,52]. In the third place comes the nutrition aspect, where gardens expand access to healthy nutritional fruits and vegetables in economically significant quantities, and where fruit and vegetable consump-

tion has improved [53,63], increasing food security and providing livelihoods for urban dwellers [64]. Finally, the social inclusion is the aspect most cited by the authors of the articles selected for this systematic review. Indeed, the implementation of NCUA offers spaces for socialization and, consequently, multiple opportunities to increased 'social cohesion and integration' [19], which can be defined as links between individuals that cultivate norms of reciprocity and civic engagement [65], helping people to break out of isolation and anxiety [54].

4.2. Environmental Benefits

The analysis of the 40 selected articles shows that the implementation of NCUA makes an essential contribution to the sustainable development goal of creating sustainable cities and communities [55], where environmental sustainability remains a potential priority [56]. They could help improve the green infrastructure that contributes to creating and maintaining habitats for a wide range of plants and animals by providing shelter and nesting sites, offering water and food resources, and integrating into surrounding ecosystems. [56]. A number of potential biodiversity enhancements in CG have been identified, such as plants that attract and feed pollinators [15]. In addition, one of the main environmental benefits cited for different forms of NCUA in different countries is improved air quality, increased air humidity, and lower air temperatures during the summer months, which can significantly mitigate the urban heat [23]. Furthermore, the implementation of NCUA forms enables community development as a means of rebuilding declining cities and neighborhoods and reducing food miles and the resulting carbon emissions [66].

4.3. Economical Benefits

In terms of economic benefits, this review finds that the implementation of urban areas has improved the economic situation of many households, as gardens inherently amplify the aesthetic appeal of neighborhoods, and as a result, are likely to increase property values in the immediate vicinity, particularly in deprived neighborhoods [14]. Indeed, results suggest that gardeners harvest nutritionally and economically significant quantities of food [63], and also enable the integration of aspects of Circular Economy [67]. Moreover, at an individual level, growing one's own produce also has a tangible economic benefit, as it reduces the amount spent on groceries, although the exact savings have not been studied extensively [68].

From the analysis presented above, it is clear that using this systematic literature review processing approach has helped to address our main problematic, namely the identification of the outcomes and benefits that the implementation of NCUA brings to the city and the population, which may vary from case to case and person to person, but nevertheless offer many of the services we are looking for today.

The findings of this review are aligned with the results found by Nikolić et al. (2022), who highlight the potential of UA in providing alternative food sources for growing urban populations, focusing on UA's multifunctionality and its perceived benefits in improving cities and combating food insecurity, taking into account the various economic and social impacts of UA, along with its environmental potential for mitigating the effects of climate change and creating sustainable cities [69]. Furthermore, in 2023, Boukharta et al. also stated the importance for policy makers and urban planners to consider the potential benefits of UA and to prioritize stakeholder engagement in the development and implementation of NCUA [70].

The explanation of the significance of the results and actions taken can be reinforced by a qualitative assessment with benchmarks focusing on aspects such as resource use, community involvement, the impact and benefits of NCUA, and their measurement against established standards to assess the performance and impact of the UA initiative.

5. Conclusions

UA has multiple functions, contributing to a variety of outcomes associated with localized urban food systems, including food access, food and agriculture education, community building, and civic engagement [57,70]. The analysis of the articles selected for this review has enabled us to identify a number of benefits that the NCUA forms provide, such as improving the health and well-being of the population, increasing the social inclusion and society economic growth, helping customers to obtain a variety of fruit and vegetables at lower prices, purifying the air, etc., and which can be categorized into three aspects, namely social, economic, and environmental. Furthermore, the results obtained clearly show that there is a difference in the implementation of UAP and the assessment of its benefits between countries, with UA being more common and encouraged in developed countries and less known and used in developing countries, suggesting the need to explain and share the concept further within communities, which has also been mentioned by Boukharta et al. (2023), by organizing workshops for residents along with other activities that can help strengthen ties between residents and provide them with the opportunity to learn more about UA and its services [70].

The authors of the selected articles for this review highlighted numerous challenges and limitations, such as pollution, water scarcity, and lack of interest on the part of the authorities. However, it must be emphasized that the fundamental limitation to the realization of such UAP is a poor or incomplete understanding of the concept of UA, as it is thought to be linked only to food security issues, but its other functions are ignored and insufficiently known, hence the need to insert a specified and explained outline of the UA concept. In addition, there is a lack of skills to engage the community in UA initiatives, which should be mentioned as a limitation, but also as an area where interventions from public authorities are required. Future research should seek to quantify the extent of the ecological benefits of UA, and to identify where and how local authorities should provide reliable and affordable access to land and water, so that all residents can participate and enjoy the benefits that the NCUA provide. Moreover, they should also highlight strategies of how best to include NCUA into the municipality's long-term land-use planning, as mentioned in 2022 by Nikolić et al., emphasizing UA multifunctionality and perceived benefits for city improvement [69].

The development of NCUA could be supported by local policymakers or land-use managers, when planning and making decisions about the use of public spaces in cities, by making municipal land available free of charge, providing water at a lower price, helping to provide seeds, etc. This is in line with the work carried out by Bednarska-Olejniczak et al. in 2019, which points to the role that policymakers could perform in adjusting existing laws, plans, and strategies to integrate the principles of sustainable development through the revision of regulations on urban development and environmental protection, in partnership with NGOs and SDGs that can facilitate community engagement in the development of sustainable smart cities, driving the transition to sustainable and smart urban and rural landscapes [71]. Finally, it is also necessary to consider other aspects and criteria for NCUA success, such as sustainability strategy and return on investment, as NCUA can play an important role in promoting a circular economy in contributing to various aspects of sustainability, minimizing waste, optimizing resource use, promoting local and sustainable practices, and supporting resilience and community engagement.

This systematic literature review demonstrates the gaps in knowledge about NCUA at a worldwide level, along with its benefits. The methodology used showed that the main assumption of the approach employed in this review is that we were able to obtain relevant studies and that there is a body of literature that enabled us to address our problems. Furthermore, this approach provided us with studies of sufficient quality, validity, and representativeness. However, the process of searching for multiple eligibility and exclusion criteria can present a limitation, due to the time required for the search and the availability of numerous databases. In addition, this study was confined to studies conducted in English; future studies could evaluate more published languages to have a wider range of

results and openness around the world. The present study is one of the first to illustrate the perceived benefits of NCUA to both the population and the city itself, improving cities and making them more sustainable and resilient. However, we suggest that further research should be carried out in the future to further explore and understand this discipline which is currently of great importance to current and upcoming generations, using more critical appraisal of study design and contextual information which may produce more nuances into the variances of findings.

Author Contributions: Conceptualization, O.F.B., L.M.N.-G. and L.C.-S.; methodology, O.F.B. and I.Y.H.; software, O.F.B. and I.Y.H.; validation, L.C.-S., L.M.N.-G. and L.V.; formal analysis, O.F.B., I.Y.H., L.C.-S., L.V. and L.M.N.-G.; investigation, O.F.B., I.Y.H., L.M.N.-G. and L.C.-S.; resources, L.M.N.-G. and L.C.-S.; writing—original draft preparation, O.F.B.; writing—review and editing, O.F.B., L.C.-S., L.M.N.-G., I.Y.H. and L.V.; visualization, O.F.B., L.C.-S., L.M.N.-G. and L.V.; supervision, I.Y.H., L.C.-S., L.M.N.-G. and L.V.; project administration, L.M.N.-G.; funding acquisition, L.M.N.-G. and L.C.-S. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the European Union supporting this work through the FUSILLI Project (H2020-FNR-2020-1/CE-FNR-07-2020), grant number No. 101000717; website: https://fusilli-project.eu/ (accessed on 1 January 2024).

Data Availability Statement: Not applicable.

Acknowledgments: Ouiam Fatiha Boukharta has been financed under the call for University of Valladolid 2021 predoctoral contracts, co-financed by Banco Santander.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

List of Abbreviations

A	allotments
CG	community gardens
NCUA	non-commercial urban agriculture
RQ	research question
SG	school gardens
UA	urban agriculture
UAP	urban agricultural practices
UF	urban farms

References

1. Alemu, M.H.; Grebitus, C. Towards sustainable urban food systems: Analyzing contextual and intrapsychic drivers of growing food in small-scale urban agriculture. *PLoS ONE* **2020**, *15*, e0243949. [CrossRef]
2. Santo, R.E.; Lupolt, S.N.; Kim, B.F.; Burrows, R.A.; Evans, E.; Evenson, B.; Synk, C.M.; Viqueira, R.; Cocke, A.; Little, N.G.; et al. Characteristics and growing practices of Baltimore City farms and gardens. *Urban For. Urban Green.* **2021**, *65*, 127357. [CrossRef]
3. Pollard, G.; Roetman, P.; Ward, J.; Chiera, B.; Mantzioris, E. Beyond Productivity: Considering the Health, Social Value and Happiness of Home and Community Food Gardens. *Urban Sci.* **2018**, *2*, 97. [CrossRef]
4. Lucertini, G.; Di Giustino, G. Urban and Peri-Urban Agriculture as a Tool for Food Security and Climate Change Mitigation and Adaptation: The Case of Mestre. *Sustainability* **2021**, *13*, 5999. [CrossRef]
5. Dubbeling, M.; van Veenhuizen, R.; Halliday, J. Urban agriculture as a climate change and disaster risk reduction strategy. *J. Field Actions* **2019**, *20*, 32–39.
6. Menconi, M.; Heland, L.; Grohmann, D. Learning from the gardeners of the oldest community garden in Seattle: Resilience explained through ecosystem services analysis. *Urban For. Urban Green.* **2020**, *56*, 126878. [CrossRef]
7. Genter, C.; Roberts, A.; Richardson, J.; Sheaff, M. The contribution of allotment gardening to health and wellbeing: A systematic review of the literature. *Br. J. Occup. Ther.* **2015**, *78*, 593–605. [CrossRef]
8. Tharrey, M.; Sachs, A.; Perignon, M.; Simon, C.; Mejean, C.; Litt, J.; Darmon, N. Improving lifestyles sustainability through community gardening: Results and lessons learnt from the JArDinS quasi-experimental study. *BMC Public Health* **2020**, *20*, 1798. [CrossRef]
9. Bailey, A.; Kingsley, J. Connections in the garden: Opportunities for wellbeing. *Local Environ.* **2020**, *25*, 907–920. [CrossRef]

10. Hsiao, H. Characteristics of urban gardens and their accessibility to locals and non-locals in Taipei City, Taiwan. *Landsc. Ecol. Eng.* **2021**, *17*, 41–53. [CrossRef]
11. Charlton, K.; Comerford, T.; Deavin, N.; Walton, K. Characteristics of successful primary school-based experiential nutrition programmes: A systematic literature review. *Public Health Nutr.* **2021**, *24*, 4642–4662. [CrossRef]
12. Ohly, H.; Gentry, S.; Wigglesworth, R.; Bethel, A.; Lovell, R.; Garside, R. A systematic review of the health and well-being impacts of school gardening: Synthesis of quantitative and qualitative evidence. *BMC Public Health* **2016**, *16*, 286. [CrossRef]
13. Kell, S.; Rosenfeld, A.; Cunningham, S.; Dobbie, S.; Maxted, N. The benefits of exotic food crops cultivated by small-scale growers in the UK. *Renew. Agric. Food Syst.* **2018**, *33*, 569–584. [CrossRef]
14. Górna, A. Urban agriculture and shortened supply chain—different approaches to local food production. *Pract. Stud. Geogr.* **2021**, *66*, 49–61. [CrossRef]
15. Ochoa, J.; Sanyé-Mengual, E.; Specht, K.; Fernández, J.A.; Bañón, S.; Orsini, F.; Magrefi, F.; Bazzocchi, G.; Halder, S.; Martens, D.; et al. Sustainable Community Gardens Require Social Engagement and Training: A Users' Needs Analysis in Europe. *Sustainability* **2019**, *11*, 3978. [CrossRef]
16. Certomà, C.; Tornaghi, C. Political gardening. Transforming cities and political agency. *Local Environ.* **2015**, *20*, 1123–1131. [CrossRef]
17. Dubová, L.; Macháč, J.; Vacková, A. Food Provision, Social Interaction or Relaxation: Which Drivers Are Vital to Being a Member of Community Gardens in Czech Cities? *Sustainability* **2020**, *12*, 9588. [CrossRef]
18. Capaldi, C.A.; Passmore, H.-A.; Nisbet, E.K.; Zelenski, J.M.; Dopko, R.L. Flourishing in nature: A review of the benefits of connecting with nature and its application as a wellbeing intervention. *Int. J. Wellbeing* **2015**, *5*, 1–16. [CrossRef]
19. Soga, M.; Cox, D.T.C.; Yamaura, Y.; Gaston, K.J.; Kurisu, K.; Hanaki, K. Health Benefits of Urban Allotment Gardening: Improved Physical and Psychological Well-Being and Social Integration. *Int. J. Environ. Res. Public Health* **2017**, *14*, 71. [CrossRef]
20. Maheshwari, S. Food in the City: Review of Psychological Impact of Growing Food in Urban Spaces. *J. Innov. Incl. Dev.* **2017**, *2*, 36–43.
21. Shafieisabet, N.; Mirvahedi, N. Benefits of rural-urban interactions for sustainable food security in Iran. *Hum. Geogr.-J. Stud. Res. Hum. Geogr.* **2022**, *16*, 19–31. [CrossRef]
22. Bonuedi, I.; Kornher, L.; Gerber, N. Agricultural seasonality, market access, and food security in Sierra Leone. *Food Secur.* **2022**, *14*, 471–494. [CrossRef]
23. Sanyé-Mengual, E.; Specht, K.; Vávra, J.; Artmann, M.; Orsini, F.; Gianquinto, G. Ecosystem Services of Urban Agriculture: Perceptions of Project Leaders, Stakeholders and the General Public. *Sustainability* **2020**, *12*, 10446. [CrossRef]
24. Czembrowski, P.; Łaszkiewicz, E.; Kronenberg, J.; Engström, G.; Andersson, E. Valuing individual characteristics and the multifunctionality of urban green spaces: The integration of sociotope mapping and hedonic pricing. *PLoS ONE* **2019**, *14*, e0212277. [CrossRef]
25. Camps-Calvet, M.; Langemeyer, J.; Calvet-Mir, L.; Gómez-Baggethun, E. Ecosystem services provided by urban gardens in Barcelona, Spain: Insights for policy and planning. *Environ. Sci. Policy* **2016**, *62*, 14–23. [CrossRef]
26. Bon, H.; Parrot, L.; Moustier, P. Sustainable urban agriculture in developing countries. A review. *Agron. Sustain. Dev.* **2010**, *30*, 21–32. [CrossRef]
27. Furness, W.W.; Gallaher, C.M. Food access, food security and community gardens in Rockford, IL. *Local Environ.* **2018**, *23*, 414–430. [CrossRef]
28. Guitart, D.A.; Byrne, J.A.; Pickering, C.M. Greener growing: Assessing the influence of gardening practices on the ecological viability of community gardens in South East Queensland, Australia. *J. Environ. Plan. Manag.* **2015**, *58*, 189–212. [CrossRef]
29. James, K.L.; Randall, N.P.; Haddaway, N.R. A methodology for systematic mapping in environmental sciences. *Environ. Evid.* **2016**, *5*, 7. [CrossRef]
30. Page, M.J.; Moher, D.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. PRISMA 2020 explanation and elaboration: Updated guidance and exemplars for reporting systematic reviews. *BMJ* **2020**, *372*, n160. [CrossRef]
31. Zamawe, F.C. The Implication of Using NVivo Software in Qualitative Data Analysis: Evidence-Based Reflections. *Malawi Med. J.* **2015**, *27*, 13–15. [CrossRef]
32. Ozkan, B.C. Using NVivo to Analyze Qualitative Classroom Data on Constructivist Learning Environments. 2004. Available online: http://www.nova.edu/ssss/QR.QR9-4/ozkan.pdf (accessed on 29 December 2023).
33. Samuelsson, K.; Barthel, S.; Colding, J.; Macassa, G.; Giusti, M. Urban nature as a source of resilience during social distancing amidst the coronavirus pandemic. *Digit. Vetenskapliga Ark.* **2020**, 1–9. [CrossRef]
34. Mejia, A.; Bhattacharya, M.; Miraglia, J.; The Village Community Garden & Learning Center. Community Gardening as a Way to Build Cross-Cultural Community Resilience in Intersectionally Diverse Gardeners: Community-Based Participatory Research and Campus-Community-Partnered Proposal. *JMIR Res. Protoc.* **2020**, *9*, e21218. [CrossRef]
35. Mansur, A.V.; McDonald, R.I.; Güneralp, B.; Kim, H.; de Oliveira, J.A.P.; Callaghan, C.T.; Hamel, P.; Kuiper, J.J.; Wolff, M.; Liebelt, V.; et al. Nature futures for the urban century: Integrating multiple values into urban management. *Environ. Sci. Policy* **2022**, *131*, 46–56. [CrossRef]
36. Egerer, M.; Ordóñez, C.; Lin, B.B.; Kendal, D. Multicultural gardeners and park users benefit from and attach diverse values to urban nature spaces. *Urban For. Urban Green.* **2019**, *46*, 126445. [CrossRef]

37. Krikser, T.; Zasada, I.; Piorr, A. Socio-Economic Viability of Urban Agriculture—A Comparative Analysis of Success Factors in Germany. *Sustainability* **2019**, *11*, 1999. [CrossRef]
38. Dobson, M.C.; Reynolds, C.; Warren, P.H.; Edmondson, J.L. "My little piece of the planet": The multiplicity of well-being benefits from allotment gardening. *Br. Food J.* **2021**, *123*, 1012–1023. [CrossRef]
39. Poštek, A.; Kisić, I.; Cerjak, M.; Brezinščak, L. Social aspect of urban agriculture with examples from Croatia. *J. Central Eur. Agric.* **2021**, *22*, 881–891. [CrossRef]
40. Romagny, B.; Aderghal, M.; Auclair, L.; Ilbert, H.; Lemeilleur, S. From rural to urban areas: New trends and challenges for the commons in Morocco. *J. N. Afr. Stud.* **2023**, *28*, 57–74. [CrossRef]
41. Swanepoel, J.W.; Van Niekerk, J.A.; Tirivanhu, P. Analysing the contribution of urban agriculture towards urban household food security in informal settlement areas. *Dev. S. Afr.* **2021**, *38*, 785–798. [CrossRef]
42. Hammelman, C. Challenges to supporting social justice through food system governance: Examples from two urban agriculture initiatives in Toronto. *Environ. Urban.* **2019**, *31*, 481–496. [CrossRef]
43. Delshad, A.B. Community gardens:An investment in social cohesion, public health, economic sustainability, and the urban environment. *Urban For. Urban Green.* **2022**, *70*, 127549. [CrossRef]
44. Zulfiqar, F.; Shang, J.; Yasmeen, S.; Wattoo, M.U.; Nasrullah, M.; Alam, Q. Urban agriculture can transform the sustainable food security for urban dwellers in Pakistan. *GeoJournal* **2021**, *86*, 2419–2433. [CrossRef]
45. Thiesen, T.; Bhat, M.G.; Liu, H.; Rovira, R. An Ecosystem Service Approach to Assessing Agro-Ecosystems in Urban Landscapes. *Land* **2022**, *11*, 469. [CrossRef]
46. Palau-Salvador, G.; De Luis, A.; Pérez, J.J.; Sanchis-Ibor, C. Greening the post crisis. Collectivity in private and public community gardens in València (Spain). *Cities* **2019**, *92*, 292–302. [CrossRef]
47. Kirby, C.K.; Specht, K.; Fox-Kämper, R.; Hawes, J.K.; Cohen, N.; Caputo, S.; Ilieva, R.T.; Lelièvre, A.; Poniży, L.; Schoen, V.; et al. Differences in motivations and social impacts across urban agriculture types: Case studies in Europe and the US. *Landsc. Urban Plan.* **2021**, *212*, 104110. [CrossRef]
48. Porter, C.M. What gardens grow: Outcomes from home and community gardens supported by community-based food justice organizations HHS Public Access. *J. Agric. Food Syst. Community Dev.* **2018**, *8*, 187–205. [CrossRef]
49. Schoen, V.; Caputo, S.; Blythe, C. Valuing Physical and Social Output: A Rapid Assessment of a London Community Garden. *Sustainability* **2020**, *12*, 5452. [CrossRef]
50. Sonti, N.F.; Svendsen, E.S. Why Garden? Personal and Abiding Motivations for Community Gardening in New York City. *Soc. Nat. Resour.* **2018**, *31*, 1189–1205. [CrossRef]
51. Moffatt, L. Start with a Seedling: Uncovering the Kindergarten Language and Literacy Curriculum One Leaf at a Time. *Lang. Lit.* **2016**, *18*, 89–105. [CrossRef]
52. Moghayedi, A.; Richter, I.; Owoade, F.M.; Kapanji-Kakoma, K.K.; Kaliyadasa, E.; Francis, S.; Ekpo, C. Effects of Urban Smart Farming on Local Economy and Food Production in Urban Areas in African Cities. *Sustainability* **2022**, *14*, 10836. [CrossRef]
53. Janus, E.; Szewczyk-Taranek, B.; Smrokowska-Reichmann, A. Perceived functions of allotment gardens and their importance during the COVID-19 pandemic in Poland. *Folia Hortic.* **2022**, *34*, 51–63. [CrossRef]
54. Ambrose, G.; Das, K.; Fan, Y.; Ramaswami, A. Comparing happiness associated with household and community gardening: Implications for food action planning. *Landsc. Urban Plan.* **2023**, *230*, 104593. [CrossRef]
55. Yusoff, H.B.N.; Ramzi, M.; Hussain, M.; Tukiman, I.; Yusoff, N.H. Roles of Community towards Urban Farming Activities. *Plan. Malays.* **2017**, *15*, 1–8. [CrossRef]
56. Kingsley, J.; Bailey, A.; Torabi, N.; Zardo, P.; Mavoa, S.; Gray, T.; Tracey, D.; Pettitt, P.; Zajac, N.; Foenander, E. A Systematic Review Protocol Investigating Community Gardening Impact Measures. *Int. J. Environ. Res. Public Health* **2019**, *16*, 3430. [CrossRef]
57. Diekmann, L.O.; Gray, L.C.; Le Thai, C. More Than Food: The Social Benefits of Localized Urban Food Systems. *Front. Sustain. Food Syst.* **2020**, *4*, 534219. [CrossRef]
58. UN-United Nations. Sustainable Cities. Available online: http://www.un.org/en/sustainablefuture/cities.shtml (accessed on 14 December 2013).
59. Valley, W.; Wittman, H. Beyond feeding the city: The multifunctionality of urban farming in Vancouver, BC. *City Cult. Soc.* **2019**, *16*, 36–44. [CrossRef]
60. Tomita, A.; Vandormael, A.M.; Cuadros, D.; Di Minin, E.; Heikinheimo, V.; Tanser, F.; Slotow, R.; Burns, J.K. Green Environment and Incident Depression in South Africa: A Geospatial Analysis and Mental Health Implications in a Resource-Limited Setting. *Lancet Planet Health* **2017**, *1*, e152–e162. [CrossRef]
61. Martyn, P.; Brymer, E. The relationship between nature relatedness and anxiety. *J. Health Psychol.* **2014**, *21*, 1436–1445. [CrossRef]
62. Fox-Kämper, R.; Wesener, A.; Münderlein, D.; Sondermann, M.; McWilliam, W.; Kirk, N. Urban community gardens: An evaluation of governance approaches and related enablers and barriers at different development stages. *Landsc. Urban Plan.* **2018**, *170*, 59–68. [CrossRef]
63. Algert, S.; Diekmann, L.; Renvall, M.; Gray, L. Community and home gardens increase vegetable intake and food security of residents in San Jose, California. *Calif. Agric.* **2016**, *70*, 77–82. [CrossRef]
64. Badami, M.G.; Ramankutty, N. Urban agriculture and food security: A critique based on an assessment of urban land constraints. *Glob. Food Secur.* **2015**, *4*, 8–15. [CrossRef]

65. Gonzalez, Y.; Potteiger, M.; Bellows, A.; Weissman, E.; Mees, C. A case study: Advancing public health through gardens for healthy communities (GHC) in New York city: The role of anti-obesity objectives in urban agriculture policy. In *Sowing Seeds in the City: Human Dimensions*; Springer: Cham, The Netherlands, 2016; pp. 107–118. [CrossRef]
66. Martellozzo, F.; Landry, J.-S.; Plouffe, D.; Seufert, V.; Rowhani, P.; Ramankutty, N. Urban agriculture: A global analysis of the space constraint to meet urban vegetable demand. *Environ. Res. Lett.* **2014**, *9*, 064025. [CrossRef]
67. Ferreira, A.J.D.; Guilherme, R.I.M.M.; Ferreira, C.S.S.; Oliveira, M.d.F.M.L.d. Urban agriculture, a tool towards more resilient urban communities? *Curr. Opin. Environ. Sci. Health* **2018**, *5*, 93–97. [CrossRef]
68. Okvat, H.A.; Zautra, A.J. Community Gardening: A Parsimonious Path to Individual, Community, and Environmental Resilience. *Am. J. Community Psychol.* **2011**, *47*, 374–387. [CrossRef]
69. Nikolić, A.; Uzunović, M.; Mujčinović, A. Perspectives and Limitations of Urban Agriculture in Transition Economies: A Case Study in Bosnia and Herzegovina. In *Handbook of Climate Change Across the Food Supply Chain*; Springer International Publishing: Berlin/Heidelberg, Germany, 2022; pp. 55–80. [CrossRef]
70. Boukharta, O.F.; Pena-Fabri, F.; Chico-Santamarta, L.; Navas-Gracia, L.M.; Sauvée, L. Governance structures and stakeholder's involvement in Urban Agricultural projects: An analysis of four case studies in France. *Open Access Int. Food Agribus. Manag. Rev.* **2024**, *1*, 1–18. [CrossRef]
71. Bednarska-Olejniczak, D.; Olejniczak, J.; Svobodová, L. Towards a Smart and Sustainable City with the Involvement of Public Participation—The Case of Wroclaw. *Sustainability* **2019**, *11*, 332. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.