GARDENING AS A RESPONSIBLE LEISURE ACTIVITY: THE GEOGRAPHY OF CENTRAL EUROPEAN FOOD SELF-PROVISIONING

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With 6 tables
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Summary: Recent research on food self-provisioning (FSP) has pointed to its material similarity with the practices of alternative food networks (AFNs) – a subject of enormous scholarly interest in the last two decades. Most of the limited research on FSP has so far focused on comparing gardeners with the non-gardening population in a single country and overlooked geographical differences in FSP practices. The objective of this article is to assess the differences in FSP in two Central European countries (Austria and Czechia) and between urban, suburban and rural areas. More specifically, we have analysed robust survey data on 1,284 households practising gardening with the objective of comparing FSP practices in different geographical settings in terms of time spent in the garden, motivations for growing food, the volume of vegetable production, the extent of mutual help and food sharing and fertiliser and pesticide use. The results reveal similarities rather than differences between geographical categories, despite a significant disparity in living standards between the two countries. Associating FSP with the quality of produce and a leisure activity rather than poverty or obligation, as well as proving its comparable relevance in both rural and urban areas and across international boundaries, contributes to bridging the gap between research on AFNs and FSP. It also demonstrates that food alternatives have significantly greater material significance in terms of volume of production and the number of participants than previously realised.

Keywords: food self-provisioning, environmental protection, practising gardeners, responsible leisure, food alternatives, Central Europe

1 Introduction

Food production has been transformed into a market-driven, economically efficient system through the application of scientific knowledge and technological innovation. It has achieved, to a large extent and for a significant proportion of the Global North's population, the goals envisaged at the beginning of the process during the Enlightenment, namely freedom from the threat of hunger and toil in the fields. At the same time, however, it has brought new threats and risks that significantly limit the freedoms achieved, both locally and on a planetary scale. The severity of these risks has been enhanced by the introduction of the neoliberal food regime, which has further increased the pressure for intensification of production, dependence on inputs in the form of capital, improved seeds, machinery and technology, water, chemicals and fossil fuels (McMichael 2009, Young 2012), and deepened social inequalities (Clapp 2016, 2022).

With growing awareness and a better understanding of these risks in society, long-standing alternatives to the dominant food system have received more attention and new alternatives have begun to emerge. The first stream of alternatives relies on educated and ethically conscious consumers using external certification systems developed to limit the negative impacts of the globalised food system. These include environmental degradation or the undermining of animal welfare (organic food certification), precarious work and social conditions of agricultural workers in poorer countries (fair trade), and the marginalisation of local producers, landscapes and cultures (local provenance labelling) (Jaffee & Howard 2010).

The second stream of alternatives acknowledges the need for more active involvement of consumers in the form of sharing finance, labour, or risks with agricultural producers (e.g., community-supported agriculture schemes) or blurring the distinction between producer and consumer altogether (e.g., community gardens). The latter types of alternatives are typically referred to as alternative food networks (AFNs). These food alternatives began to emerge in urban contexts in affluent countries of the Global North. This is the context where they find the majority of adherents, and where the majority of academic studies of AFNs are located (see Rosol 2020 for a critical discussion of AFNs).

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The third stream of alternatives, often termed food self-provisioning (FSP)[1] or food gardening, lie long in the shadow of more novel alternatives such as certification schemes and AFNs. This was because these non-market alternatives were, in the context of the Global North, associated with the European East (Alber & Kohler 2008), whereas AFNs were associated primarily with Western societies. In scholarly accounts produced in the 1990s and 2000s, these non-market alternatives were considered largely as a tradition surviving from the past or a strategy of disadvantaged groups for coping with the difficulties of the neoliberal transition in Eastern Europe (Rose & Tikhomirov 1993). This line of interpretation supposed that FSP would decline with rising living standards (Seeth et al. 1998, Williams & Round 2007, Alber & Kohler 2008), and hence implicitly rendered it unworthy of academic attention. This one-sided interpretation has recently been challenged by the growing body of literature on Central and East European (CEE) food gardens that displayed a more nuanced understanding of these practices. These studies portrayed FSP as a positively valorised practice with a number of environmental and social benefits similar to AFNs, but differing in its significantly greater prevalence in society, its quiet (non-activist) nature, and its considerably larger volume of produce (Smith et al. 2015, Vávra et al. 2018a, Yotova 2018, Ančić et al. 2019, Pungas 2019, Sovová & Veen 2020, Šiftová 2021, Daněk at al. 2022).

Two sources were behind this recasting of Central and East European FSP. The first, at the conceptual level, was connecting the growing body of literature on AFNs, developed mainly in the context of Western Europe, North America and Australia, with food gardening in CEE (Daněk et al. 2022). This showed that both practices were materially similar, but their different framing in academic accounts was largely context-dependent. Thus, the previous framing of CEE FSP as an economic necessity was more a question of the geography of unequal knowledge production, the tendency of othering CEE, and the inclination to orientalise CEE, rather than a question of a qualitative difference in the material practice (Trubina et al. 2020, Jehlička 2021).

Empirical research in food gardens and with gardeners was the second source of the shift in the interpretation of FSP in CEE. It demonstrated that the size of the gardening population and the popularity of the practice did not decrease in time but remained stable despite CEE societies becoming richer and adopting Western lifestyles (Jehlička et al. 2013). It also showed that the practice was not driven by scarcity because food gardeners were not poorer or socially disadvantaged compared to the rest of society. It was both leisure and work, thus confirming the critique of dualistic economic theory that divides all practices into productive and un- or re-productive practices (Gudeman & Hann 2015). It portrayed the practice as driven mainly by the quality of food produced, enjoyment associated with it, care for the soil and social ties related to gardening, or generosity (Jehlička & Daněk 2017, Pungas 2020, Mincyté et al. 2020, Daněk & Jehlička 2020, Jehlička et al. 2021, Sovová et al. 2021).

Drawing on this scholarship, this paper aims to expand the existing knowledge of FSP in two important geographical directions that have been neglected by researchers. The first direction lies in the comparison of food gardening in cities and the countryside. Despite the consistent attention paid to FSP in the last decade (Smith et al. 2015, Vávra et al. 2018a, Yotova 2018, Ančić et al. 2019, Pungas 2019, Sovová & Veen 2020, Šiftová 2021), relatively little is known about the possible differences in motivations for the practice and its form in urban and rural settings. In the existing literature, gardening tends to be associated with allotment sites and community gardens in cities (Spilková & Vágner 2018, Szczepanska et al. 2021, Hawes et al. 2024), while gardening in rural settings tends to be overlooked (Hruška et al. 2020). In this paper, by drawing on robust empirical analysis of the data on food gardening in both urban and rural settings in two European countries, we seek to rectify this imbalance and explore differences between FSP in cities, suburbs and the countryside. The first objective of the paper is to compare rural, suburban and urban FSP in terms of the garden and seedbeds area, motivations for FSP, the volume of food produced, sharing home-grown food and routines indicating environmental values behind the material practice (such as the use of fertilisers and pesticides). The rationale for this endeavour is the need to examine the dominant (yet often implicit) tendency in the literature to associate the sustainability benefits of gardening primarily with its urban variant (Hawes et al. 2024).

[1] We define FSP in the same way as Jehlička (2021: 14): '[a] set of social practices outside the market economy that involves the production of food by non-farming households in residential gardens, on allotments and in collective (often urban) gardening projects which is, in many cases, accompanied by the non-monetised sharing of gardening produce in networks transcending the household'.

The second geographical direction is provided by an international comparison. FSP research based on quantitative survey data has so far focused on a single country, with only a few international comparisons (for exceptions see Jehlička et al. 2021, Poniży et al. 2021, Mackiewicz et al. 2021). This study provides a detailed comparison (within the limits of quantitative research) of the role FSP plays in two European countries with similar ecological conditions, but different standards of living, resulting from their location on different sides of the Iron Curtain in the second half of the last century: Austria and Czechia. The objective of this comparison is to assess the extent to which differences in FSP practices could be attributed to different standards of living in the two countries. Taking a close look at gardening in these countries as a specific case of sustainability-compliant everyday practice, the paper examines the assumption that these forms of environmentally beneficial behaviour are contingent on what has been termed the postmaterialist value change (Inglehart 1995). This value change is dependent on the fulfilment of material needs and, as a consequence, postmaterialist orientation is more widespread in more affluent societies. The upshot of this line of argument is that gardening in Austria is likely to exhibit more sustainability credentials than its Czech counterpart.

This contribution is unique in providing insight into FSP practice within a representative set of gardening households. Unlike most of the previous analyses based on survey data (Smith et al. 2015, Vávra et al. 2018b, Jehlička et al. 2021), we do not compare gardeners with the non-gardening population but focus on the differences between subgroups of the gardening population, especially those defined along the urban-rural axis and by the international border. This particular approach was made possible by the availability of representative survey data for both countries.

The next section describes the similarities and differences in the development of home gardening in Austria and Czechia. Section 3 introduces the dataset and the method of analysis. The results, presented in Section 4, are organised in the form of a comparison of food gardening across urban, suburban and rural spaces and across the international border between Austria and Czechia. Attention is paid to the differences across spatial categories in terms of the area of the garden, time spent in the garden, motivations for growing food, the volume of produce, mutual help in the garden, sharing home-grown food and the use of fertilisers and pesticides. It is followed by the Discussion and Conclusion.

2 Food gardening in Austria and Czechia: The historical context

Food gardens adjacent to homes have traditionally been a source of food for the rural population. With rapid urbanisation beginning in Central Europe in the first half of the 19th century, millions of residents of growing cities were deprived of this source of food, especially the poorer urbanites who could not afford to live in a house with a garden. This led to the spontaneous establishment of gardens on unused land within cities or in their outskirts. In the German-speaking region of Europe, Schreber's gardens represented an organised initiative to establish allotment gardens in cities (first established in Leipzig in 1869; Autengruber 2018). On the territory of today's Austria, the oldest allotment, the so-called *Heimgarten*, was founded in 1904 in Purkersdorf near Vienna (Autengruber, 2018). Within the borders of today's Czechia, the first allotments were also established in German-speaking regions: in 1906 in Varnsdorf (Jankovičová 2017) and in 1907 in Brno (Sovová 2014). While the initial goal of the movement inspired by Daniel Schreber was to provide urban children with space for outdoor exercise, *Schrebergarten* soon became a synonym for 'allotment garden' (Tóth et al. 2018).

The importance of gardens as sources of valuable food increased during the First World War (Gibas & Boumová 2019). In Vienna, the capital of the Austrian-Hungarian monarchy, the area of gardens increased from 150,000 m^2 in 1914 to 1,260,000 m^2 in 1917 (Autengruber 2018). In Czechia, the number of allotment garden associations increased from 29 in 1914 to 141 in 1920 (Spilková & Vágner 2016). The interwar period saw the institutionalisation of the gardening movement in both newly independent countries. The disintegration of Austria-Hungary did not mean a significant change in the practice of food self-provisioning on either side of the new international border between Austria and Czechoslovakia. Gardening remained a widespread phenomenon in both countries even after World War One, and demand for gardens and home-grown food increased during the 1930s Depression and World War Two (Autengruber 2018, Gibas & Boumová 2019).

International differences began to grow soon after the Communist Party seized power in Czechoslovakia in 1948. In Austria, food gardens continued to fulfil their traditional role of supplying households with food. Some of them, typically on larger plots in rural areas, became a source of additional income from the sale of surplus produce.

This explains the greater size differentiation of gardens and gradual transition from FSP to small-scale agriculture in contemporary Austria compared to Czechia, which is evident in the results of this survey. The position of gardeners in Austrian cities, and their negotiations about the space for allotment sites in urban development, was supported by the strong position of the Central Association of Allotment Gardeners and Settlers of Austria (*Zentral Verband der Kleingärtner und Siedler Österreichs*), as well as the adoption of the Federal Allotment Garden Act (*Bundeskleingartengesetz*) in 1959 (Autengruber 2018).

With retail expansion and a greater selection of fresh vegetables in shops since the 1970s, as well as rising living standards, the area dedicated to growing food in many gardens has decreased, and some gardens have acquired a largely recreational function. However, recent decades have seen a reversal of this trend as the cultivation of vegetables and fruits is on the rise in many Austrian gardens (Autengruber 2018). There were 39,000 allotments organised in 384 associations in Austria in 2015 (Lorbek & Martinsen 2015).

In Czechoslovakia, the socialist collectivisation of agriculture in the 1950s led to the demise of most small farmers and replaced the continuum between home food gardens and smaller or larger agricultural holdings with a sharp division between small home gardens and large-scale collectivised agricultural holdings. The simultaneous nationalisation of the retail sector and the introduction of a centrally planned economy made it impossible, with few exceptions, to sell food produced domestically, and strengthened the dependence of households on a centrally controlled retail system.

In the paradoxical environment of state socialism, gardens acquired a specific role as places for social gathering beyond the reach of the ideological mobilisation of the socialist state. Gardens also provided spaces for self-realisation under the regime that limited opportunities for career development and foreign travel. It contributed to the popularity of the Czechoslovak Gardening Association, founded in 1957, which organised voluntary education for gardeners, competitions and excursions, and registered a membership of 480,000 in 1989 (Jankovičová 2017). Gifts and sharing of home-grown food, together with mutual help in gardens, and information disseminated with the food that was passed on, helped to form the fabric of civil society outside official state organisations (Gibas et al. 2013, Tóth et al. 2018, Gibas & Boumová 2020).

Post-socialist democratisation and transformation of the economy since 1990 have opened up opportunities for entrepreneurship, career development and travel, and many people have reduced the time they spend gardening. The absence of a gardening law (only passed by Parliament in 2021) made urban allotments vulnerable to development projects. Between 2009 and 2019, two thousand allotment sites were removed to make space for retail, housing, transport and logistics projects. Spilková & Vágner (2016) document the loss of productive function for a third of the allotments in Prague between 2004 and 2014 alone. The proliferation of supermarket chains with attractive food on offer has also weakened the incentive for FSP and led to the transition of some gardens into sites more focused on recreation or second homes (Spilková & Vágner 2016, 2018).

To recapitulate, the similar development of FSP before 1945, and its evolution in significantly different economic and political conditions over the past 75 years, make Austria and Czechia a particularly suitable case study for assessing hypotheses about the role of FSP in modern societies. On the one hand, the two countries share a common tradition of gardening, which remains a widespread and popular practice in both places. Austria ranks as one of the top countries in Western Europe in terms of the extent of FSP measured by the number of practitioners in population. Drawing on the data from the European Quality of Life survey, Church et al. (2015) reported that in 2007, 25% of Austrian households grew their own food, the highest number among the EU-15 countries. Data from the same survey are unavailable for Czechia, but a representative survey of Czech households in 2015 showed that 38% of households produced part of their food consumption (Jehlička & Daněk 2017).

On the other hand, the different social and economic developments during state socialism and post-socialist neoliberalism in Czechia are reflected in the differences in living standards between the two countries. For example, in Austria, GDP per capita in purchasing parity power in 2020 (the year of empirical data collection) was 125% of the EU average, while it was only 93% in Czechia (Eurostat 2022a). Actual individual consumption, an indicator describing the material welfare of households, was 115% of the EU average in Austria in 2020, while it was 85% in Czechia (Eurostat 2022b). Food and non-alcoholic beverages accounted for 11.3% of total household expenditure in Austria and 17.1% in Czechia (Eurostat 2022c). The legacy of divergent development in the second half of the twentieth cen-

tury is also visible in huge differences in the number of hectares of agricultural land utilised per farm. While farms with utilised agricultural land exceeding 100 ha operate on 86.4% of the total utilised agricultural land in Czechia, the relevant share for Austria is 15.1% (data from the 2020 Agricultural Census, Eurostat 2022d).

In terms of the urban-rural divide – the second geographical differentiation analysed in this text – the settlement structure of both countries is characterised by a dense network of small towns and a high proportion of the population living in rural areas: according to the Population and Household Census 2021, 49.0% of the Austrian population and 52.5% of the Czech population lived in municipalities with less than 10,000 inhabitants (Eurostat 2022e). The boundary between rural and urban areas has been blurred by the process of suburbanisation, massive in the hinterland of larger Austrian cities since the 1970s, and in Czechia after 2000 (Klusáček et al. 2009). After 2010, both countries saw signs of re-urbanisation (the re-growth of urban cores being faster than their hinterland).

3 Data and methods

Two rounds of a representative quantitative survey of households producing food for their own consumption provide the data for the following analysis. The survey covered only households that had access to land suitable for cultivation (regardless of ownership and area) and that, at the same time, did not have farming as their main source of income. The survey was conducted using the CAWI method and was organised by a professional survey agency, selected in a competitive tender. The survey participants answered 57 questions (in addition to the standard battery of socio-demographic questions) on the size, location and use of their land, the volume of food production, food sharing, mutual help, motivations for FSP, use of fertilisers and pesticides, waste management, sources of information on cultivation and their environmental values.

The first round of the survey took place in April 2020 in Czechia, and the second in May 2020 in Austria. The participants were asked identical questions in both rounds. The wording of the questions in German was translated from Czech by an authorised translator and checked by the authors and the survey agency. A total of 1,858 respondents participated in the survey, of which 1,037 were in Czechia and 821 in Austria. The participants were selected by the agency using the quota method so that their composition in terms of gender, age, educational attainment, population size of the municipality of residence, and region, corresponded to the population structure of the respective country.

The data were subsequently sorted and cleaned up. The sample population of Austrian FSP households included more respondents for whom domestic food production is a secondary source of income (9.5% in Austria, only 4.5% in Czechia). Consequently, these small farmers were excluded from the analysis to achieve a greater comparability of national datasets (i.e., only households for whom food production is not a source of income are included in the following analysis). Households that reported that they did not use the land for growing food were also excluded. Furthermore, those who spend less than one hour per week in the garden were also excluded. The result is a hypothetical population of 'practising gardeners', consisting of respondents who produce some food at home, this produce is not for sale and they spend at least one hour per week (in season) in the garden. The sample population of 'practising gardeners' consists of a total of 1,284 respondents, of which 813 were in Czechia and 471 were in Austria. This dataset forms the basis for the following analysis.

The analysis is based on a comparison of responses from practising gardeners in both countries and in rural and urban areas. The rural-urban division was defined by combining the data on the place of residence (a choice of five options) and the population size of the settlement. Three categories were defined: urban, suburban and rural. The urban category is composed of respondents living in a compact built-up area of a town or city if such a town has a population of more than two thousand (50% of the sample population of practising gardeners falls into this category). The suburban category consists of respondents living in the 'outskirts of the city, suburbs' if the city population exceeds two thousand (20% of the sample). The rural category is composed of respondents from settlements with up to two thousand inhabitants and those from larger municipalities if their place of residence is 'a village' or a hamlet' (30% of the sample). The data was sorted by the location of the respondents' residences and not by the location of the plot. However, in practice, there was little difference between the two types of location, as 64% of the gardens were located 'near the house where I live' and another 20% within walking distance of respondents' place of residence.

The data were analysed using the SPSS computer programme. Since most of the data are categorical in nature, the existence of a significant difference between the geographical categories was indicated by the z-test. The results of the z-test are indicated in Tables 2–6 by small letters *a, b* and *c* after the number in the field of the table. The same letter in every column for a particular row indicates that there is no statistically significant difference between the values in that row. This analysis is based on the categories given in the columns of the table, which are Austria-Czechia and urban-suburban-rural). Different letters indicate a significant difference between these categories. The source of data presented in Tables 1–6 is the survey described in this section.[2)]

4 Results

4.1 Knowledge of gardening, size of plots and time spent in the garden

FSP is a traditional practice in both countries, reproduced mainly through personal experience. A substantial majority (90%) of 'practising gardeners' stated that they have personal knowledge of vegetable and fruit cultivation from their childhood.[3)] Geographical differences in the extent of childhood knowledge of cultivation are not significant, either horizontally (Austria-Czechia) or vertically (urban-rural), both in the whole sample population and within the two countries. FSP is more deeply rooted through generations in Czechia, where only 9% of practising gardeners have no personal knowledge from their childhood (compared to 13% in Austria), but overall the similarity prevails.

The median size of the garden used for FSP is 400 m^2. Gardens in rural areas are larger (median 500 m^2) than in suburbs (400 m^2) and cities (300 m^2). There is no significant difference in the overall median or mean size of the garden between the two countries.

Vegetable beds cover 12% of the total garden area on average. In half of the gardens, the area of these vegetable beds ranges between 12 m^2 (lower quartile) and 100 m^2 (upper quartile). The difference between the areas of vegetable beds in rural and urban gardens is not significant, either in the whole sample or within the two countries. The total area of rural gardens is larger compared to urban or suburban gardens because land is more readily available in rural areas, but the extent of intensely cultivated vegetable beds, reflecting the gardeners' preferences and capabilities, is similar in cities, suburbs and rural areas. In contrast, the difference between both countries in the median and average area of vegetable beds is significant: vegetable beds in Czech gardens (median size 40 m^2) are larger than those in Austrian gardens (20 m^2), with an average bed area being 46% larger in Czechia.

The importance of gardening in the lives of practising gardeners' households can be inferred from the amount of time they spend in the garden. The most common answer was 12 hours per week during the season (median value), with an average of almost 15 hours[4)] (Tab. 1). Gender differences are small in both countries, yet men spend slightly more time in gardens than women (0.7 hours per week more). Time spent in the garden clearly increases with age. The younger cohorts (18–24, 25–34 years of age) spend on average 12.1–12.2 hours per week in the garden, the middle cohorts (35–44, 45–54 years of age) spend 14.8–15.0 hours, while the older cohorts (55–64, 65+ years) spend 16.8–18.0 hours per week, respectively. In terms of geographical categories, there is a significant difference between the countries (Tab. 1): Czechs spend more time in their garden than Austrians (on average 2.5 hours more per week). Rural-urban differences are hardly noticeable in Austria. In Czechia, there is a significant difference between cities and suburbs, on the one hand, and rural municipalities, on the other: rural gardeners in Czechia spend 1.4 hours more per week in their gardens compared to their urban counterparts.

4.2 Motivations for growing food

The main motivations for FSP are the quality of the food obtained and enjoyment of the activity. These results are in line with the findings of previous research. In a representative survey carried out in Czechia in 2015, in which the identical question was asked as in the present survey (the participants were asked to choose from a list of nine reasons[5)]), the com-

[2)] Authors are happy to share the survey data upon request.

[3)] Question wording: 'Do you have personal experience of gardening or other food growing from your childhood?'

[4)] The mean values were calculated after excluding 5% of outliers from the sample of 1,214 respondents.

[5)] The list was abbreviated to seven reasons by combining the two least frequent responses with similar ones in this article. The 'I will apply skills and knowledge' reason was combined with 'It's a hobby for me' and the 'I am fulfilling a family obligation' reason was combined with 'I am continuing in a family tradition'.

Tab. 1: Time spent in the garden (in hours per week, during the season); the first value is the median and the value in parentheses is the mean

Country	Cities	Suburbs	Rural areas	Total
Czechia	12 (15.4)	12 (15.9)	15 (16.8)	14 (15.9)
Austria	10 (13.7)	10 (12.5)	10 (13.5)	10 (13.4)
Total	12 (14.9)	10 (14.6)	14 (15.2)	12 (14.9)

bined reasons 'healthy food', 'fresh food' and 'hobby', on the one hand, versus 'financial savings', on the other hand, stood in the ratio 68:19 (Jehlička et al. 2021). When the same question was asked in Croatia in 2017, the ratio was 69:17 (Jehlička et al. 2021). In the present survey, conducted in 2020 in Austria and Czechia (Tab. 2), the same ratio is 79 (healthy food + fresh food + hobby): 8 (financial savings). Thus, the expressed importance of 'good food' and hobby reasons is even higher in this survey compared to previous research.

The various motivations for growing food are very similar in different geographical contexts. Food quality (healthy and fresh food) is the most important reason for cultivation in cities, suburbs and the countryside. Based on these results, the thesis that rural FSP is driven by financial reasons as a coping strategy and is qualitatively different from the 'post-materialist' gardening in urban areas, can convincingly be ruled out.

The only statistically significant difference on the rural-urban axis exists in the case of environmental motivation (growing local food as a contribution to protecting the environment) which is stronger in the countryside than in the suburbs (Tab. 2). However, environmental reasons are generally weak in all geographical settings, accounting for only 8% of the first reasons for food cultivation, which is on a par with financial motivations. The paradox of weak environmental motivation to engage in an activity with positive environmental impacts can be interpreted in the context of caring for one's own well-being (healthy and fresh food, hobby). Superficially egoistic reasons for caring for one's own well-being are inseparably related, in the practice of gardening, to caring for people close to oneself (healthy social relations) and also for caring for the soil, plants and the planet (see Pungas 2019, Pungas 2020, Mincytė et al. 2020, Sovová et al. 2021). This non-activist, and partly unreflected, relationship between caring for oneself and caring for loved ones, with profound if unintended environmental benefits, was termed *quiet sustainability* by Smith & Jehlička (2013).

The motivations of Austrian and Czech gardeners are very similar (Tab. 2), despite the difference in living standards between the two countries. However, a significant difference exists in three partial aspects. First, environmental motivation is more

Tab. 2: Motivations for FSP

Reason for FSP	Cities	Suburbs	Rural areas	Czechia	Austria	Total
It's a hobby for me	23.6%$_a$	26.3%$_a$	22.0%$_a$	24.4%$_a$	22.5%$_a$	23.7%
I am continuing a family tradition	5.4%$_a$	3.5%$_a$	3.9%$_a$	4.9%$_a$	4.0%$_a$	4.6%
I get food that is not available on the market	1.6%$_a$	0.8%$_a$	2.4%$_a$	1.0%$_a$	2.8%$_b$	1.6%
I get healthy food	27.1%$_a$	27.4%$_a$	27.0%$_a$	25.7%$_a$	29.5%$_a$	27.1%
I get fresh food	28.0%$_a$	29.7%$_a$	28.0%$_a$	32.3%$_a$	21.4%$_b$	28.3%
I'll save money	7.9%$_a$	8.1%$_a$	8.4%$_a$	8.0%$_a$	8.3%$_a$	8.1%
By producing low-impact food I will help protect the environment	6.4%$_{a,b}$	4.2%$_b$	8.4%$_a$	3.7%$_a$	11.5%$_b$	6.5%
Total	100%	100%	100%	100%	100%	100%

common in Austria than in Czechia (11% of the first reason for FSP in Austria compared to only 4% in Czechia), with the greatest difference in the urban category (environmental consideration is the first reason for cultivation for 13% of practising gardeners in Austrian cities, but only for 3% in Czech cities). Second, within the 'good food' reasons, healthy food is more important than fresh food for Austrian FSP households, whereas for Czechs it is the opposite. It seems that the health (of people and of the planet) is given more importance among practising gardeners in Austria compared to their Czech counterparts. We can speculate that this finding may reflect a lower confidence of Czech households in the ability of the market to provide fresh vegetables. However, if we sum up healthy and fresh food into a 'good food' category, the difference between Austria and Czechia disappears. Third, the acquisition of food that is unavailable on the market is important for a higher proportion of gardeners in Austria, compared to Czechia. However, it is the least important reason in both countries (only 3% of the first reasons).

Those for whom the main motivation is fresh food and a hobby tend to spend more time in the garden, both in Czechia and Austria (between 16.5 and 17 hours per week in season), compared to those who grow food to save money, to protect the environment or to continue a family tradition (between 11.3 and 13.3 hours per week, in both countries). It seems that practising gardeners are inclined to dedicate more time to activities driven by their own interests than to activities driven by obligation (whether to relatives, family budget or nature).

4.3 The scope of FSP in household food consumption

The survey participants were asked to estimate the share of the following three sources of food in their annual household consumption: market purchase, home production, gifts and (non-monetary) barter. In this section the non-market sources, that is, food grown by households plus food received as gifts and barter, are referred to as FSP. The dataset of 1,284 practising gardeners was sorted according to the share of FSP in the overall consumption of the given type of food and divided into quartiles. Consequently, the distribution of these quartiles across geographic categories (urban-suburban-rural, Czechia-Austria) was recorded. Households produce all kinds of food. Although we also obtained data on domestic production of fruit, potatoes, eggs, meat and honey in the survey, in this article we are only considering vegetables as they are the most frequently grown type of food. The data on vegetable consumption are presented in Tab. 3.

Domestic cultivation covers 29% of total vegetable consumption in practising gardeners' households. Another 7% is covered by donated food. The average rate of vegetable self-sufficiency, or the proportion of household non-market economy, is thus 36%. The remaining 64% of consumption is purchased on the market. The share of FSP production varies widely in individual households. In total, 36% of practising gardeners cover at least half of their household consumption. A small proportion (5.5%) of households buy virtually no vegetables, as they grow between 90% and 100% of their consumption themselves.

Rural households are more productive than urban and suburban. However, the differences are not profound, given the different land availability. On average, FSP covers 41% of vegetable consumption in rural areas, 35% in suburbs and 34% in cities. FSP as a source of vegetables accounts for more than half of consumption in 33% of urban and suburban households, and in 43% of rural households (Tab. 3). This rural-urban difference in vegetable non-market production exists in both countries

Tab. 3: Share of FSP (domestic production, gifts and barter) in domestic vegetable consumption

The share of FSP in household consumption	Cities	Suburbs	Rural areas	Czechia	Austria	Total
First quartile (0–14%)	26.9%$_a$	27.0%$_a$	18.6%$_b$	24.6%$_a$	24.2%$_a$	24.5%
Second quartile (15–29%)	20.5%$_a$	22.8%$_a$	17.8%$_a$	21.9%$_a$	17.2%$_b$	20.2%
Third quartile (30–49%)	20.1%$_a$	17.4%$_a$	20.9%$_a$	18.1%$_a$	22.7%$_b$	19.8%
Fourth quartile (50–100%)	32.5%$_a$	32.8%$_a$	42.7%$_b$	35.4%$_a$	35.9%$_a$	35.6%
Total	100%	100%	100%	100%	100%	100%

but is statistically significant (and larger) only in Czechia. Although the degree of self-sufficiency is higher in rural areas, the productivity of urban gardens cannot be underestimated. If we look at the capital cities as special cases then 39% of gardeners grow more than half of their domestic vegetable consumption in Prague and 48% in Vienna. However, these data are based on only a small survey sample (76 practising gardeners in Prague and 89 in Vienna).

The share of FSP as a proportion of household vegetable consumption is very similar in both countries: non-market vegetables cover more than half of consumption in slightly more than a third of gardening households in both countries (35% in Czechia, 36% in Austria). The average share of FSP in the households' vegetable consumption is 36% in Czechia and 38% in Austria.

4.4 Sharing work and the harvest

Growing food is, for many gardeners, a social practice. This is manifested, among other things, by the willingness to help others with their garden work.[6] A quarter of practising gardeners provide mutual help to other gardeners at least once a month. Mutual help with garden maintenance is more common among Czech practising gardeners (27% of them provide such help once a month) than among Austrian gardeners (21%). In Czechia, mutual help with garden work is equally common in cities, suburbs and rural areas. In Austria, mutual help is significantly more common in cities (24% once a month, that is, similar to Czechia) than in rural areas (16%). These differences may reflect the greater geographical distances in rural areas or the higher density of social contacts in urban areas.

Sharing home-grown food is a common practice. Only 14% of practising gardeners declared that they do not share anything, while 43% share a tenth of their produce or more (Tab. 4). Sharing home-grown food is more common in Czechia than in Austria: 47% of Czech gardeners share more than a tenth of their produce, compared to 35% in Austria. At the same time, sharing some home-grown food is also more common than not sharing in Austria. The differences between urban, suburban and rural households are not significant in terms of food sharing, either in the whole survey population or within the individual countries.

In terms of motivation, the largest part of their harvest is shared by those for whom the main reason for FSP is to continue the family tradition. Those motivated primarily by the quality of food, those for whom FSP is a hobby and those who want to save money share a similar proportion of the harvest.

The social networks created by sharing home-grown food are made up most often of two or three beneficiaries outside the producers' household (this is the case for 42% of the food-sharing networks). A further 29% of networks are made up of four to five beneficiaries and 19% of networks are made up of the household of the gardener and more than six other people. In terms of the number of sharing network participants, there is no significant difference between cities, suburbs and rural areas, nor between the two countries.

4.5 Use of fertilisers and pesticides

Although environmental values are not the main motivation for most practising gardeners, they produce food in a highly sustainable manner, not only compared to conventional agriculture. More than 70% of practising gardeners do not use any industrially produced fertilisers and most of the minority who do use them combine them with natural fertilisers (Tab. 5).

This applies equally to gardens in cities, suburbs and the countryside. The differences between these categories are not significant either in the whole population or within the individual countries. Industrially made fertilisers are sometimes resorted to by 31% of urban gardeners, 30% of suburban and 26% of rural gardeners (this may reflect the greater availability of natural fertilisers in rural areas, but the urban-rural difference is small and not significant). On the other hand, the differences between the two countries are significant. Czech FSP gardeners use industrial fertilisers more often than Austrian ones: in Czechia, 40% of gardeners sometimes use them, while in Austria only 12%. This difference may reflect a higher proportion of environmental motivations among Austrian gardeners and their greater emphasis on the health of the food grown (see Section 4.2). However, despite the significance of this difference, the largest group of practising gardeners does not use industrial fertilisers in either country (60% in Czechia, 88% in Austria).

[6] Question wording: 'Do you personally help anyone outside your household and outside your job with gardening?' Respondents chose from four possible answers ('at least once a month'; 'at least once a year'; 'less often'; 'never').

Tab. 4: Sharing home-grown food

Extent of sharing	Cities	Suburbs	Rural areas	Czechia	Austria	Total
We're not giving anything away or bartering	13.7%$_a$	13.1%$_a$	16.2%$_a$	11.2%$_a$	19.7%$_b$	14.3%
Less than 10%	40.4%$_a$	44.8%$_a$	45.0%$_a$	41.5%$_a$	44.8%$_a$	42.7%
10–25 %	35.0%$_a$	33.2%$_a$	30.4%$_a$	36.0%$_a$	28.5%$_b$	33.3%
26% and more	10.9%$_a$	8.9%$_a$	8.4%$_a$	11.3%$_a$	7.0%$_b$	9.8%
Total	100%	100%	100%	100%	100%	100.0%

Question wording: 'How much of what you grow or produce in your home do you give to someone or exchange with someone?' Respondents chose from five possible answers, shown in Tab. 4 (responses 26–50% and more than 50% were combined in the table).

Tab. 5: The method of fertilisation

Type of fertilisers used	Cities	Suburbs	Rural areas	Czechia	Austria	Total
I don't use any fertilisers	15.7%$_a$	13.9%$_a$	18.3%$_a$	9.2%$_a$	28.0%$_b$	16.1%
I only use natural fertilisers like compost or manure	53.3%$_a$	56.0%$_a$	55.2%$_a$	51.2%$_a$	60.1%$_b$	54.4%
I use natural and industrially produced fertilisers (e.g., CERERIT, NPK)	28.8%$_a$	29.0%$_a$	25.4%$_a$	37.1%$_a$	11.7%$_b$	27.8%
I only use industrially produced fertilisers (e.g., CERERIT, NPK)	2.2%$_a$	1.2%$_a$	1.0%$_a$	2.5%$_a$	0.2%$_b$	1.6%
Total	100%	100%	100%	100%	100%	100%

Question wording: 'Regarding fertilisation, how do you manage your garden?'

The use of chemicals for crop protection is similar to the use of fertilisers, both in terms of the prevalence of the practice and its geographical differentiation. Industrially produced pesticides are sometimes resorted to by 35% of practising gardeners, that is, by 5% more than those who ever use industrial fertilisers (Tab. 6). Pesticide use rates are similar in cities, suburbs and rural areas. There is only a small difference between suburbs and rural areas in terms of the proportion of those who use neither natural remedies nor industrial pesticides, both in Austria and Czechia. In contrast, the difference between the two countries is significant, as in the case of fertilisers. Czech gardeners use pesticides significantly more often than Austrians: 46% of Czech gardeners sometimes resort to chemicals, compared to only 15% of Austrian gardeners. Again, the difference may be related to the greater importance of environmental motives and the greater emphasis on healthy food in Austria.

This is also reflected in the relationship between pesticide use and motivations for FSP: the lowest use of pesticides was among those producers for whom the main motivation is environmental considerations (of whom only 19% ever use pesticides). On the other hand, the gardeners primarily motivated by saving money use them the most (39%). However, even in this group, the majority do not use chemicals at all.

Tab. 6: Use of pesticides

Method of pest and mould removal	Cities	Suburbs	Rural areas	Czechia	Austria	Total
By no means	13.7%$_{a,b}$	10.4%$_{b}$	17.0%$_{a}$	12.8%$_{a}$	16.1%$_{a}$	14.0%
I use only natural remedies or by hand	51.0%$_{a}$	52.5%$_{a}$	49.7%$_{a}$	40.7%$_{a}$	68.6%$_{b}$	50.9%
I use natural/hand methods and chemical sprays (e.g., pesticides)	33.1%$_{a}$	33.6%$_{a}$	31.7%$_{a}$	43.3%$_{a}$	14.6%$_{b}$	32.8%
I only use chemical sprays (pesticides)	2.2%$_{a}$	3.5%$_{a}$	1.6%$_{a}$	3.2%$_{a}$	0.6%$_{b}$	2.3%
Total	100%	100%	100%	100%	100%	100%

Question wording: 'How do you get rid of pests and mould?'

5 Discussion

The main objective of the analysis was to identify possible differences in the geography of FSP along two axes: urban-rural and Austria-Czechia. Urban-rural differences are smaller than international ones. Motivations for FSP, mutual help among FSP households, the extent of produce sharing, usage of fertilisers and pesticides, as well as inter-generational transfer of knowledge are similar in cities, suburbs and rural areas. This is the case for the whole sample of practising gardeners as well as for both national sub-populations. On the other hand, significant differences exist in the total area of gardens and their productivity when measured as the proportion of household consumption of vegetables which is home-grown: rural gardens are larger and more productive. However, even this significant difference is only a matter of degree: more than half of annual vegetable consumption is accounted for by FSP in 43% of rural households, compared to 33% of urban and suburban households (Tab. 3).

International differences between Austria and Czechia are more pronounced but even here similarity prevails despite significant differences in average income and living standard between the two countries. Austrian and Czech practising gardeners' households are similar in the range of different motivations for FSP, in the scope of vegetable production, and in the inter-generational transfer of knowledge. Significant differences exist in terms of time spent in the garden, the relative importance of environmental motivation for FSP, the extent of food sharing and, most significantly, the use of fertiliser and pesticide. Austrians tend to spend less time in their gardens but produce a comparable volume of vegetables to Czechs. On the other hand, the longer hours that Czechs spend in gardens may be related to more extensive mutual help and food sharing – or the social relations developed around home-grown food.

Significantly more conservative usage of chemicals in Austrian gardens may be related to relatively more pronounced health and environmental reasons for practising FSP. But again, while environmental reasons are more important in Austria, they only account for 11% of the first reasons for FSP and are far behind 'good food' and hobby reasons, as they are in Czechia (Tab. 2). At the same time, while Czechs resort to using artificial fertilisers and pesticides more often than Austrians, most practising gardeners in Czechia do not use them at all, nor do their counterparts in Austria. Overall, however, gardening is a highly sustainable way of food production in terms of limited application of agricultural chemicals. Only 2% of practising gardeners rely primarily on synthetic fertilisers or pesticides, while the majority refrain from using them altogether.

There are several aspects of FSP for which neither of the two geographical axes makes a difference. First, gardeners motivated by a sense of personal or material commitment (such as an obligation to the family or a desire for financial savings) tend to be more pragmatic in their behaviour. They spend less time in the garden and more often resort to chemicals compared to gardeners motivated by 'good food' reasons and a hobby. From this finding, we can speculate that a way to reduce the negative impacts of the current food system and increase food resilience may rest not (only) in voluntary frugality but also in people acquiring more time and land for practices considered

enjoyable. If gardens were more accessible and people had more free time, the share of healthy and local vegetables in home consumption would increase.

Second, in all geographical settings analysed here, the knowledge and skills of gardening which households practising gardening have acquired have been acquired since childhood in a similar way. The practice is motivated primarily by the desire for food quality and enjoyment of the practice itself. These reasons are most important for rural and urban gardeners in Austria and Czechia. Importantly, there is a relation between the reason for cultivation and time spent in the garden: gardeners who grow food for its quality or consider the practice a hobby, tend to spend longer hours in the garden compared to those who consider it a personal or material commitment.

Third, confirming and extending the findings of previous research (Jehlička & Daněk 2017, Vávra et al. 2018a), our study shows that, regardless of the geographical context, home gardens are an important source of nutrition for the gardening population. In the sample population of practising gardeners, on average 36% of household vegetable consumption was met by FSP. Despite the significant differences in living standards, the proportion of FSP in household vegetable consumption is very similar in both countries. Despite the considerably larger average size of rural gardens compared to urban ones, the vegetable self-sufficiency of urban and suburban gardener households is only slightly lower than in rural areas.

6 Conclusion

In our concluding remarks, we will use this study's findings to draw attention to possible wider implications for alternative food system studies. Although the quantitative approach used in the study could not result in as detailed an interpretation of FSP practices as local studies based on qualitative methodology, this research provides evidence that FSP is a practice that can be remarkably similar in all geographical settings under consideration, despite significant differences in social and economic conditions in which it is embedded. The analysis of a large survey aimed at practising gardeners in two countries with both shared and separate historical experiences has provided a unique opportunity to compare gardening practices in different geographical contexts and to revisit several ongoing major debates concerning FSP's framing and its relationship with localised food alternatives.

First, the similarity of FSP practice in diverse geographical settings shows that framing FSP in CEE as a coping strategy is untenable. This is important, as until recently, a context-dependent framing of FSP prevailed in the literature. Let us remind ourselves that across all geographical settings, saving money was the first reason for food cultivation for 7% to 8% of practising gardeners. Our findings strengthen the argument that the previous framing of CEE FSP as an economic necessity was more a question of the geography of unequal knowledge production, the tendency of othering CEE, and the inclination to orientalise CEE rather than the question of a qualitative difference in the material practice (Trubina et al. 2020, Jehlička 2021).

Second, FSP allows its practitioners to follow the 'product' from seed to harvest and to influence the outcome through their own efforts, skills and knowledge, in contrast to the complex illegibility of the globalised food system. The similarity of FSP practice in diverse geographical settings supports the arguments for abandoning the interpretation of FSP in CEE as a coping strategy. This thesis implies that geographical differences in the extent of FSP do not correspond to differences in economic development or standard of living but to differences in the material conditions for pursuing this responsible hobby, that is, the availability of land suitable for gardening and knowledge of the cultivation practices.

Third, in all contexts studied in this research, FSP is a widespread and sought-after practice with significant positive environmental, social and health effects. The knowledge gained through this paper's analysis contributes to viewing FSP as a caring practice, or a responsible hobby: a practice that combines self-care, purposeful leisure, efforts to strengthen social ties and care for nature. Thus, it supports Zavisca's (2003) claims about meaningful labour in the dachas, countering the alienation from wage labour by growing and tasting the fruits of one's labour (Zavisca 2003, McClintock 2010, Pungas 2019) and upholds gardening's associations with dignity, creativity, and self-worth (in the Hungarian context, Smith 2003).

Finally, the discovery that the geographical difference does not necessarily translate into markedly diverse forms of FSP has potentially profound epistemic implications for the research on food alternatives. It undermines the long-unquestioned dichotomy (in the context of the Global North) about the association of non-market alternatives with the European East (Alber & Kohler 2008) and the epistemic location of AFNs (at least in terms of their

origin) in Western societies. Our findings that FSP, in terms of food growers' motivations and the substance of their practices, displays striking similarities with those associated with AFNs call for abandoning the dichotomy typical for scholarly accounts of these food alternatives. That a demand for this approach might be emerging even among policy-making bodies at the EU level is evidenced by the way AFNs were considered in conjunction with informal home food production (FSP) in a recent Evidence Review Report 'Towards Sustainable Food Consumption' (https://scientificadvice.eu/advice/towards-sustainable-food-consumption/, page 26).

In practical terms, integrating FSP and AFN studies would greatly broaden the field by increasing both the number of alternative food practitioners and the amount of food produced within these combined systems, amplifying their overall impact. This change would give it a much-needed boost of renewed legitimacy.

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