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Results of a US and Canada community garden survey: shared challenges in garden management amid diverse geographical and organizational contexts

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Abstract Community gardens are of increasing interest to scholars, policymakers, and community organizations but there has been little systematic study of community garden management at a broad scale. This study complements case study research by revealing shared experiences of community garden management across different contexts. In partnership with the American Community Gardening Association, we developed an online questionnaire. Results from 445 community garden organizations across the US and Canada reveal common themes as well as differences that are particularly significant across different organizational sizes. The findings suggest that organizers see multiple benefits, and respondents confirmed recent expansion of gardening efforts. Analysis then focuses on challenges, which are closely related to garden management. We address garden losses as well as challenges to routine operation. Key challenges included funding, participation, land, and materials. We developed a typology based on organization size, to reveal distinctions between small organizations (serving 1 garden), medium-sized organizations (2–3 gardens), large organizations (4–30 gardens) and very large organizations (31 or more gardens). These categories shed light on different needs for funding, land, material, and participation. Together, this analysis suggests that community gardens can be linked through the work it takes to sustain them rather than specific causes or outcomes. Community gardens can be better integrated into local food systems through analysis of how people involved with this work navigate these shared processes.

Keywords Community gardening · Urban agriculture · Food systems · Community participation · Global north

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Introduction

Community gardening has become increasingly recognized and advocated in many parts of the world as a localized way to strengthen communities and build civic engagement through food production. The community gardens literature, our own fieldwork in community gardens across the US and Australia, and our participation as community gardeners and garden managers in the US, tell us that each community garden is shaped—physically and programmatically—by its social and environmental context. In the global north, community gardeners' motivations are multiple, and although there may be overlapping goals at any particular garden, local context tends to be a dominant factor in shaping the overall garden project. Whereas some gardeners may focus on food access in poverty-stricken areas, middle-class gardeners might focus on environmental stewardship. And while struggles over real estate development may be foregrounded in dense global cities such as New York City and Berlin, lower-density places—suburbs and small towns—may have easier access to land. This diversity of purposes and horticultural characteristics, in turn often results in a diversity of issues in community garden organizing and maintenance.

Although these sites engage community members in food production, community gardening involves more than the gardeners themselves. Non-governmental organizations,

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local government agencies, and religious organizations, for instance, assist neighborhood groups in planning, finding land and resources, and building garden sites. Organizations such as the Australian City Farms and Community Gardens Network, American Community Gardening Association (ACGA) serving the US and Canada, and the Federation of City Farms and Community Gardens in the UK, signify the broad national focus. When we attend the ACGA's annual conference, we talk with practitioners who represent community gardens and others who work for charities, cooperative extension offices, and city parks departments who are engaged in supporting or managing community garden efforts. At such events, attendees come from cities well known for community gardening—e.g., Toronto, Seattle, Philadelphia—but also from countless other cities and towns that we learn about for the first time through such encounters. Such organizations are relatively recent developments when considering the global history of food production in and around cities. What is becoming clear is the deliberate intention to organize and design food production in ways that foreground individual and community wellbeing. The work of such organizations, along with the expansion of research on community gardens in recent decades, suggests that this is a widespread and expanding phenomenon that involves a diversity of geographical contexts and a variety of actors and stakeholders.

Whether seeking to know more about community gardening as a practitioner or as a scholar, the tendency is to rely on the experiences and stories of individual community gardens. Community garden research relies heavily on case studies or cross-case comparisons. Since the development of any particular community garden is deeply shaped by the local context in which it is situated, these are not simply case studies of individual gardens but also studies of how those gardens unfolded in particular places. An ontological effect of such research, then, is that it is too easy to define the workings and issues of community gardens in relation to particular places and extrapolate those meanings to apply to all community gardens. This sometimes leads to singular characterizations of community gardening based on the experiences in particular places. If we read examples from San Francisco, Berlin, and New York City, for example, contradictory conclusions are reached—has community gardening lost its activist roots and been coopted by neoliberal policies (Pudup 2008; Rosol 2012), or has it increased community activism (Eizenberg 2013)? Such reports explain local conditions, but it is all too easy to read these cases and ascribe the conclusions across the board to all community gardening efforts. It does not mean that the case study approach is flawed—to be clear, it is our *modus operandi*—but rather that a different empirical and theoretical approach can complement what is already known. It is not an attempt to define the essence of a singular community gardening movement—we do not need to determine whether community gardening is *really* about food security, poverty, gentrification, etc. Ours is an anti-essentialist approach to a phenomenon that we recognize as diverse but argue that there are still important lessons to be learned from a broad-scale study.

Given the expansion of national community gardening associations across the global north, it is important to understand how garden management is similar and different across contexts. If practitioners are interested in sharing knowledge, it is crucial to understand just what issues are important across specific locations, even if those issues manifest differently. This paper is an exploratory effort to outline and discuss key experiences and issues community garden managers and organizers face across community gardening contexts. We undertake this project through a web-based survey of 445 community gardens and organizations involved in community garden management across North America. The format of this paper is as follows. In the next section, we review the community gardens literature to show that although the intentions and outcomes of community gardening are well documented, much less is known about day-to-day management issues that are common across contexts. After explaining our methods, which are based on qualitative survey analysis, we discuss our findings through the themes of organization size, networking, benefits, and challenges. We go into more detail on the four main challenges of funding, participation, land, and materials. In the conclusion, we turn our attention to how these shared experiences of community gardening as a broader practice relate to efforts in building local food systems.

Community gardening in the context of urban and peri-urban agriculture

Food production in and around cities has a long history and takes many forms around the world (Smit et al. 1996). Community-based food production has a variety of interpretations, including the practice of production on public land, cultivation by a community group, or food distribution to community clients (Wade 1987; Lawson 2005; Drescher et al. 2006; Lyson 2004). While this study is situated in the North American context, we feel this context is useful in the study of such efforts in other world regions, particularly those in developed countries.

The form prevalent in North America, which we have also observed through fieldwork in Australia, falls within the following three garden types. The first features individual plots, which may be in-ground or raised beds, within a communally maintained garden space. A garden coordinator (who is normally, but not always, one of the

gardeners) assigns gardeners to certain plots within the overall garden site. The second type has no assigned plots but instead all members garden collectively and make decisions about what is to be grown. Third, many community gardens feature both individual and shared plots. Regardless of the spatial design *within* a community garden, the garden space is collectively managed and gardeners are responsible for, at minimum, maintaining shared areas such as pathways and social space, and shared resources such as tools.

Community gardens can be initiated in a variety of ways. The archetypal North American story is that a neighborhood group comes together in order to turn a vacant or abandoned city property into a productive green space. In practice, this often involves a number of other actors. Local governments sometimes promote community gardening by providing leases for public parcels or dedicating park space for community gardens. NGOs act on behalf, or in place of, neighborhood residents to secure land, funding, and other resources; this is common in other world regions as well (Drescher et al. 2006; Rosol 2010). Furthermore, there can be a complex web of interactions across scales as communities, local and extra-local NGOs, and government agencies plan and implement community gardens (Drake 2014; Pudup 2008; Lawson 2004; Henderson and Hartsfield 2009). For example, community gardening in the New Jersey cities of Trenton and Newark are facilitated by local NGOs—Isles and the Greater Newark Conservancy—that serve as mediators between residents and municipal agencies. In contrast, Seattle's P-Patch program is a municipal program within the Department of Neighborhoods that facilitates numerous community gardens. A community garden in North America might exist as an independent entity or align with government or non-governmental partners for funding and resource support. In addition, community gardens may be located on land that is leased, owned, or squatted upon.

A parallel to community gardening is the allotment tradition in Europe, which has some similarities as well as differences because of its associated legal standing. In England, France, and Germany, allotment gardens emerged as a result of land enclosures before and during the industrial revolution as government authorities provided land to compensate for low wages and loss of livelihoods in the transition to urban living (Local Government Association 2008; Nilsen 2014). Given that there is no broad legal mandate in North America for local authorities to provide garden space like there is in countries with allotment laws, we define them as different categories of food production. Although the legal mandate may not keep up with demand and does not guarantee permanent land access (Groening 2000), community gardeners in countries without allotment laws may struggle for permanence (Lawson 2005). In this definition, there are no allotments in the US; however, countries with allotment gardens may also have community gardens. Since community gardens exist in other developed regions, including Europe, our approach to community gardening should hold some resonance beyond North America.

Regardless of specific garden typologies, a broad range of scholarship has identified motivations and broader social and economic contexts that shape why individuals and organizations start community gardens. These activities are increasingly on the agenda of local governments and NGOs as targeted interventions to address a host of problems in cities and neighborhoods (Henderson and Hartsfield 2009). Often, community garden organizers hope to achieve a set of specific goals such as food access, environmental education, or community development (American Planning Association 2007; Pudup 2008; Hobson and Hill 2010; Drake 2014); however, such outcomes can flow from these activities without specific agendas to do so (Saldivar-Tanaka and Krasny 2004). The literature on urban and peri-urban agriculture in the global south has long pointed out its role in livelihood strategies, of particular concern in countries without social safety nets. In developed countries that have these safety nets, food access is often couched in the context of *healthy* food, along with environmentalism (Pothukuchi and Kaufman 1999). This advocacy is bolstered through studies in countries like Canada, the Netherlands, and the US that suggest gardening can support healthy eating habits, and that cities can provide some degree of their own healthy food (Groenewegen et al. 2006; Alaimo et al. 2008; MacRae et al. 2010; Grewal and Grewal 2012).

Scholars working in Australia, North America, and the UK also make the case that food production goes hand-in-hand with community development and that gardens can contribute to social capital through civic engagement (Levkoe 2006; Alaimo et al. 2010; Firth et al. 2011; Feenstra et al. 1999; Kingsley and Townsend 2006). In a social capital approach, networking practices build social capital as gardeners cooperate within and between garden sites (Alaimo et al. 2010; Cameron 2011; Firth et al. 2011). The relationship between community and food, however, is not clear. Altieri et al. (1999), working in Cuba, find community effects to be secondary to the amount of food produced, but in Australia, gardeners often prioritize social aspects more than horticultural output (Nettle 2014). As urban policies in places like New York City begin to support commercial urban agriculture, others argue that these community-building processes may be lost (Mees and Stone 2012). Food, health, and community are thus often presented as core outcomes of community gardens (Armstrong 2000; Baker 2004; Tranel and Handlin 2006).

Case studies have repeatedly revealed the challenges to sustaining community gardens. The legal status of urban agriculture in much of the world, including countries in both the global north and south, has long been tenuous. Urban planning in the global north contains normative assumptions that non-capitalist production, such as that which occurs in a community garden, has no permanent place in cities (Lawson 2004; Moore 2006). As a result, the organization and treatment of such spaces has largely been grounded in a temporary, rather than permanent, outlook (Drake and Lawson 2014). In the global south, planning models taken from the north do not mesh with the livelihood strategies of urban residents and ignore broader patterns of regional agrarian change (Jarlov 2001; Bryld 2003; Roy 2005). Land markets across the north and south have put pressures on urban agriculture of all kinds, pitting gardeners against real estate developers and local governments (Groening 2000; Lynch et al. 2001; Schmelzkopf 2002; Irazábal and Punja 2009; Möhrs et al. 2013).

Land access is not the only challenge, however, and scholars have pointed to a range of needs including water access, sustained interest, community engagement, and design (Drescher et al. 2006; Domene and Sauri 2007; Milburn and Vail 2010). We are particularly drawn to the issue of participation as we have had to address it in our roles as garden coordinators. Although studies have examined various ways that labor decisions affect community garden productivity and longevity (e.g., Drescher et al. 2006; Hayes-Conroy 2010; Milburn and Vail 2010; Rosol 2012), less theoretical work has been done to conceptualize community gardeners as laborers producing community wellbeing in addition to food. Hill (2011), for example, builds a link between food production and community participation by drawing on Gibson-Graham (1996) to reveal a community food economy in the Philippines. She raises an important distinction between work for personal and community benefit, a point we return to in our discussion. In sum, a range of overlapping experiences is likely to shape community gardening and we aim to gather information on those that are commonly experienced.

Taken together, the literature is well developed in terms of the motivations to start community gardens, the social and economic contexts shaping these motivations, and the diverse outcomes of these practices. It is also becoming clearer that a number of issues constrain garden longevity and that a range of actors help to start and maintain community gardens. Despite focusing on the causes and effects of community gardening, there is still not much known about the process of community garden management apart from case studies, which certainly provide in-depth discussion of how individual gardens operate within their local contexts. Put simply, it is unclear which management experiences are shared across contexts and regions. At a time when national community gardening associations bring together practitioners to share knowledge, it is important to gather a baseline understanding of what these actors experience across contexts. This study provides a picture of key benefits and challenges in the day-to-day management of community gardens. It complements existing case studies and provides entry points for future work on how these processes unfold in specific local contexts.

Study design and methods

This paper builds on case studies and comparative studies through a survey of organizations involved in community gardening efforts in North America. Returning to our research question, we use survey methods in order to explore the issues faced across geographical contexts and among the multitude of actors involved in planning and sustaining community gardens.[1] Survey and other quantitative methods have long been associated with positivist epistemologies but can be effectively used in qualitative approaches by opening up new categories of analysis and thinking in a broader context without relying on the development of laws or predictions (Lawson 1995). Our goal is not to replace the context found through case studies, but instead to provide an *additional* context within which to understand some of the shared experiences in undertaking what is ostensibly an immeasurably diverse phenomenon (Moss 1995).

Our unit of analysis in this study draws on our interest in the geography of community *gardening*, rather than community *gardens*. Because a multitude of actors, in addition to gardeners, are increasingly engaged in supporting community gardening efforts, we contend that these actors must be included in an examination of the issues involved in community garden management. "Organizations"—groups that identify as supporting community gardening—are our unit of analysis, and community garden practice is the object of study. We did not distinguish between non-governmental organizations, government agencies, or informal groups in part because there can be considerable overlap between organizational typologies.

The survey was developed and distributed in partnership with the American Community Gardening Association (ACGA). The instrument was a 21-question web-based survey sent to community gardeners and organizations directly involved in assisting the management of community gardens in 2011–2012. We based questions in part on

[1] The ambiguity in the definitions of community gardens, and the fact that the total number of community gardens is unknown, limits our use of inferential statistics.

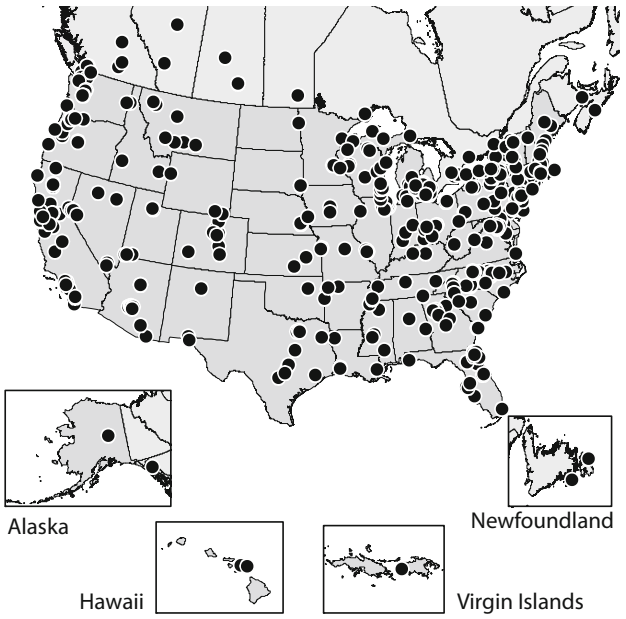


Fig. 1 Locations of survey respondents

past ACGA surveys (American Community Gardening Association 1992, 1998), community gardens literature, and our own previous empirical research. Respondents held roles in the management of community garden activities; we asked respondents about their organizations' location and service areas, partnerships, benefits, challenges, and collaborations. Four question types were used—closed-ended, partial closed-ended, scaled, and open-ended—in order to gather both quantitative and qualitative data. Pilot testing occurred with three key informants in New York, Chicago, and Denver (Montello and Sutton 2006; Dillman 2011). After revisions, the survey was sent to the ACGA and Community Food Security Coalition email lists. After removing duplicate and incomplete responses, the sample size was 445; these respondents reported a total of 8,550 community gardens. Respondents were located in all 50 US states, Washington, DC, the US Virgin Islands, and eight Canadian provinces, as shown in Fig. 1.

Key experiences and issues

The intent of this paper is not to summarize the findings but to discuss four key issues that surfaced in results that shed light on current community gardening efforts.[2] These include the impact of organizational size on overall results, the role of networking, benefits from the perspective of organizations, and challenges faced by organizations. Even though results suggest increased support and growth of community gardening in North America, we pay particular attention to the reported challenges that have caused gardens to close or impact the regular work of garden management. These key challenges include funding, participation, land, and materials.

Variation in organization size

Results revealed significant spread and distribution of organizations in terms of size and capacity. Using the natural breaks method, we divided respondents into four categories: small (respondent works with one community garden); medium (two to three gardens); large (four to 30 gardens); and very large (31 community gardens or more) (Table 1). The "small" category includes individual community gardens and organizations such as neighborhood associations, churches, schools, and cooperative extension offices that work with, or operate, just one community garden. Respondents fitting the "medium" category are those with two to three community gardens and include community gardens that have expanded into additional sites, local organizations and government agencies, and cooperative extension offices. The "large" category features local government agencies in larger cities, local and regional community garden coalitions and networks, cooperative extension offices, and food banks. Respondents in the "very large" category have more than 30 community gardens; these include municipal agencies that operate community gardening programs in major cities, community garden coalitions and networks in major cities, statewide community garden networks, and cooperative extension. Of particular note across our classifications is that NGOs and government agencies appear in each category. Although further research on the specific dynamics of these types of actors will extend community gardening research, we focus in this study on the size of the respondents' organizations.

Given the focus on the role of organizations, we sought to understand whether size influenced the narrative of "grassroots" efforts—community gardens initiated by gardeners themselves—versus gardens being created by an outside entity, possibly in a "top down" manner. We asked respondents to indicate how many new community gardens developed in the past 5 years were initiated by gardeners or a grassroots organization, or by external actors. Respondents noted that 81 % of the community gardens created in the past 5 years were initiated from the "bottom-up" and 19 % were started by outside organizations. Looking at these same data by organization size, the percent of new "bottom-up" community gardens for small, medium, large and very large were 69, 52, 60, and 89 %, respectively. Interestingly, the small and very large respondents reported

[2] For full results, see Lawson and Drake (2013).

Table 1 Organization categories

Organization size	Criteria	Number of respondents	Percent of respondents	Number of community gardens represented	Percent of community gardens represented
Small-sized organization	1 garden	172	39	171[a]	2
Medium-sized organization	2–3 gardens	86	19	209	2
Large-sized organization	4–30 gardens	132	30	1,545	18
Very large organizations	31 gardens or more	55	12	6,623	77
Total		445	100	8,548	100

[a] One of the respondents in the "small" category was functioning with a group of gardeners but the actual garden site was not ready at the time of submitting survey responses

the highest proportions of grassroots-initiated gardens. The explanations for this are beyond the scope of this project because it may depend on the internal reporting procedures of these organizations and how respondents define grassroots. One interpretation is that smaller organizations could have better knowledge of specific garden histories while larger organizations could have policies that limit them to assisting existing gardens. These figures serve to prompt further research into the dynamics of how community gardens are initiated and the relationships between neighborhood groups and other actors. Such research has begun to a limited extent, but additional case studies can shed light on these situations (Staeheli et al. 2002; Pudup 2008; Drake 2014).

Networking

Since this survey focuses on the issues and experiences that accompany community garden management—that is, the everyday processes of how they work and are maintained—a look into networking practices is useful. We asked respondents to indicate the degree to which they utilize or work with thirteen types of partners. Many respondents formed relationships with a range of government and non-governmental partners (Table 2). Partnerships are quite common—only one percent does not partner with anyone else—but local partnerships take precedence over regional or national partners. As shown in Table 2, small and very large organizations offer contrasting examples; the latter tend to partner with all of the types of organizations more than the other sizes of organizations. Quite often, these collaborations are based in the need to obtain land, funding, or other resources. Respondents elaborated on this work in open-ended comments at the end of the survey—for example, a respondent from a large organization in Pueblo, Colorado, noted that "employees of the city planning office have been very involved in the gardens and worked with the health department to develop a community garden land use policy."

Eighty percent of small respondents indicated they receive some type of support from local government (e.g., land, materials, staff assistance, zoning). The results show difference by organizational size, with larger organizations identifying local government support at greater degrees (80 % for small, 83 % for medium, 90 % for large, 92 % for very large). It may be that larger organizations can mobilize political capital more efficiently and work across municipalities, thus having greater chances to gain support.

Table 2 Percent of respondents that have the following types of primary or secondary partners, by organization size

Types of partners	Small	Medium	Large	Very large
Agricultural extension agents and specialists	67	80	86	97
Other government agencies	64	76	80	97
Colleges and universities in your community	47	56	83	97
Funding agencies	59	80	80	93
National environmental organizations	32	8	36	50
Local environmental organizations	59	56	77	93
Local social service providers	46	76	85	97
Local gardening clubs	58	44	71	93
Neighborhood associations	39	40	71	97
Foodbank	65	71	77	89
Schools/school districts	58	71	86	83
Faith-based organizations	54	64	75	100
Other	30	0	69	67

Categories sum to >100 % because respondents could list more than one partner

Relationships with local agencies can, however, be a source of conflict that community gardens must address. A respondent from a small organization in Los Angeles, California, for instance, wrote that the "Department of Recreation and Parks have been very heavy handed in this fee situation [in charging for access to department-owned land]. If you ask individual gardeners who have invested many years and a lot of money into their plots you will find everyone is very anti-city at this point." Another respondent, from a large organization in Somerville, Massachusetts, described their relationship with local government as

follows: "It has been very difficult to get the [department of public works] to help maintain the garden when heavy machinery is needed. For example if we have trees that need to be pruned it can take 1–3 years before they respond." Inter-departmental tension is nothing new for any government entity, and here a representative of a city's public health department explains some of these dynamics: "Employees of the City Planning Office have been very involved in the gardens and worked with the Health Department to develop a Community Garden Land Use Policy. The Parks and Recreation Department has not shown an interest in the garden development." Given how respondents took time to provide comments on their relationship with local government, though, these connections are likely to be the most contentious, especially for smaller organizations.

Future research into networking practices might reveal much about how community gardens and other urban agriculture efforts are created and sustained. Our results extend existing literature by providing context on the everyday actions that draw together various community garden practitioners. It is already clear that networking can build capacity and social capital, as described above, and that community gardeners reach out to others in times of crisis—for example, when land access is under imminent threat (Smith and Kurtz 2003; Lawson 2007; Irazábal and Punja 2009). Given the size of the broader community garden phenomenon, it will be important to understand how these networking practices affect the establishment and maintenance of community gardens and how they entwine with other political, economic, and social processes that are present in such sites.

Benefits

Assuming that organizations become involved with community gardening because it aligns with certain desired benefits or fits within an organizational mission, we sought to understand what benefits organizations considered achieved. Much community garden advocacy, as well as mainstream research, points out benefits in order to justify the *purposes* of community gardens. In this study, we addressed this topic with the following question: "Community gardens are associated with many benefits. For each benefit listed below, check the box that is most appropriate to the work of your organization." Respondents then listed whether each option is a primary or secondary benefit, or a benefit they do not see; we arranged these responses in Table 3 to show which outcomes are considered to be either a primary or secondary benefit. Out of the 16 options provided (including "other"), 11 were either primary or secondary benefits to over 75 % of respondents. This finding confirms that many organizations see multiple benefits derived from gardening. We also asked respondents to describe their main benefits, and by coding these open-ended responses we found that the most significant benefits across the sample—regardless of organization size—are food production, social engagement, education, and nutrition. These findings also reveal as much about the ideology of community gardening as it does actual outcomes. Responses could be informed by the organization's own goals, and as such they have as much to do with what organizers want their community gardens to do as what they actually accomplish. While some of the academic literature focuses on a particular outcome—food production, nutrition, community engagement, etc.—it seems that organizations may accept multiple and varied outcomes.

Table 3 Percent of respondents who reported the following benefits

Benefits	Percent of respondents
Food production and access	99.7
Nutrition/improved diet	99.5
Social engagement/wellbeing	99.5
Exercise/physical activity	98.6
Individual personal satisfaction	97.8
Education specifically about gardening	96.7
Environmental benefits	95.9
Intergenerational activities	94.0
Education	86.1
Inter-cultural communication	85.1
Neighborhood revitalization	78.7
Horticultural therapy	68.1
Art	55.7
Job training	41.6
Income generation	34.0
Other	33.6

Challenges

Essential to the survey was to understand the difficulties that organizations face in supporting community gardening efforts. While there has been a general upswing in the number of gardens—89 % of organizations reported developing new gardens or expanding existing ones in the past 5 years—they also reported garden loss. The ACGA board was particularly interested in understanding what caused garden losses; this has been a recurring question in their previous surveys. Respondents reported that 1,615 community gardens had been lost from 2007 to 2012. Strikingly, land was not the main reason given; instead, declining participation was most blamed. In asking about the reasons gardens ceased to operate, we found that lack of interest by gardeners was the most frequent reason given (37 %), followed by loss of land (30 %), "other" (17 %), and loss of funding (15 %). Table 4 explains these responses in terms of organization size. Notably, lack of

Table 4 Percent of respondents stating reasons for garden loss, by organization size

Reasons	Small	Medium	Large	Very large
Lack of interest	67	27	50	59
Loss of land	11	18	30	59
Loss of funding	22	36	16	24
Other	22	45	22	21

Size categories sum to >100 % because respondents could list more than one reason

gardener interest is more highly attributed to garden failure among small organizations, while loss of land is blamed most highly among very large organizations. These trends can be partially explained in the way that coordinators of individual community gardens are likely to be deeply involved in the day-to-day activities of their members; representatives of very large organizations may be negotiating with a number of different landowners in different areas and thus face land issues more frequently. Furthermore, any individual community gardens that lost their land access likely would not be included in the survey sample if the garden ceased to exist.

We cannot infer the reasons for any individual community garden's failure from the quantitative data because we asked about respondents' experiences over time. Yet, large and very large organizations do have the extended reach that they might experience different reasons for garden loss within their group of gardens. The following qualitative responses elaborate these reasons.

> Lack of commitment from growers, lack of consistent organization, and lack of education for growers. (Large organization from Pensacola, Florida)

> One became a private business [because of land loss]; three because agency support stopped; three others [because of] disinterest from the community. (Very large organization from Waterloo, Ontario)

> Opposition from neighboring homeowners. (Large organization from Atlanta, Georgia)

We do not intend these results to be taken as an attempt to find an essential factor in garden loss, however. Rather, it is clear from the quantitative and qualitative responses that the reasons for garden loss are intertwined and often relative to the context of each site. For instance, decreased interest by gardeners may result in overgrown sites that lead the landowners to revoke leases. Nonetheless, land, sustained gardener interest, and funding are all major concerns for community gardens.

In addition to studying the reasons for garden loss, we also sought to reveal the everyday challenges that community garden organizations face. We provided respondents with a list of 22 challenges and asked them to indicate how often they address these issues. As shown in Table 5, community gardeners address a wide range of challenges on a frequent or occasional basis, from educating gardeners on safety, to dealing with neighbors and stakeholders, to seeking funding. We recognize that each community garden's local context shapes those particular challenges. Although deeper investigation and explanation of these particular contexts is beyond the scope of a broad survey, the point here is that a common set of challenges seems to affect community gardening across the broad geographical and organizational contexts in which it is situated.

Organization size influences the way challenges are prioritized. For instance, access to land for new sites is a frequent or occasional challenge for 83 % of very large organizations but only for 42 % of small organizations. This might seem obvious—a group working with one garden that is stable wouldn't face land access issues as often as an organization that seeks to provide new gardens throughout a city or region—however, this finding brings to light the influence of different missions and scope on the challenges faced. Along this vein, whereas 94 % of very large organizations face the challenge of community building before a new garden is started, only 38 % of small organizations identified this as a frequent or occasional problem. Funding for staff also emerges as an area of difference, with 24 % of small organizations identifying this issue and 74 % of very large organizations citing it. These differences also reveal possible differences between larger advocacy efforts that seek growth in gardening and the individual garden or garden group.

Whereas the above numbers show that community gardening organizations address a variety of day-to-day issues, we asked additional questions about the *significance* of these challenges. In a set of open-ended questions, we asked respondents to describe their most challenging issues. After coding responses into the categories of challenges in which they best fit (list in Table 5), we identified four sets of the most significant challenges for respondents—funding, participation, land, and materials (Table 6). These four issues are the most challenging for survey respondents across organization sizes.

Funding

Funding is needed to both establish new community gardens and also sustain existing ones. This issue manifests differently based on temporal, geographical, and political-economic contexts. Although it is relatively easy to find grants and in-kind donations to build community gardens, participants recognized that funding is not just a one-time

Table 5 Frequency that respondents experience challenges, by percent of respondents

Issues	Address frequently	Occasionally	Infrequently	Do not address
Materials used in the garden (soil, compost, water, etc.)	69	25	4	2
Getting new people involved	62	28	7	3
Keeping people involved long term	61	26	8	1
Horticultural training/gardening education	59	26	11	4
Recruiting volunteers	56	27	11	6
Funding to sustain programs	54	22	13	9
Collaboration with other organizations and institutions	52	28	14	5
Funding for new programs	44	29	16	8
Advocacy across the city/community	40	30	17	10
Understanding the safety of materials used in garden	40	31	24	4
Access to new sites for new gardens	37	29	14	18
Community building before a new garden is started	36	26	14	18
Funding for staff	36	15	11	29
Utilizing social media	36	30	19	11
Planning social events	29	42	19	8
Engaging with non-gardeners	29	36	25	10
Securing/protecting land for existing gardens	24	27	20	27
Cross-cultural dialogue	22	27	25	20
Addressing theft/vandalism	18	27	31	19
Inter-generational dialogue	18	34	27	18
Conflicts with community	9	23	34	26
Other	41	7	0	18

Table 6 Types of issues reported as the most significant to community garden management

What are your most challenging issues?	Percent of respondents
Funding	61
People—getting new people involved, keeping them involved, or community building	58
Land—access to new sites or securing it long-term	23
Materials used in the garden (e.g., soil, water, compost)	22
Other	17

need. As someone from a large organization in Greenwood, South Carolina, noted, "Locating funding to sustain gardening efforts has been very challenging. Funds are somewhat available to begin new garden initiatives; however sustainability funds are not." A respondent from a large organization in Seattle, Washington, shared that concern—"While we are successful at fund raising for our new programs, we have difficulties raising money for our existing programs."

By expressing frustrations, respondents also alluded to the political-economic context of government funding priorities. A respondent from a large organization in Seminole, Florida, wrote about their efforts to dig a new well and install a new water pump—"SO wish the government would help small farmers like us to get a well in. Billions for war and to BIG business and all we gardeners need is $1,400.00! IMAGINE!" In sum, this survey confirms the funding issues that are well-known in much of the literature and elaborates on the breadth of the issue and some of the ways in which it manifests differently across contexts (Armstrong 2000; Twiss et al. 2003; Wakefield et al. 2007).

Participation

Participation in community gardening is another issue that is pervasive across community gardening contexts. Community gardening certainly requires work and commitment on the part of garden members. Producing and distributing food, maintaining the overall garden site, advocating for resources, and fundraising are all tasks involved in creating and sustaining community garden sites. Gardeners must decide how much to work for their own personal reward and how much to contribute to the upkeep of the overall garden. The decisions between personal and community labor seem to be a two-sided aspect to community gardens—social engagement is a benefit, but getting and keeping people involved is also a challenge. On the one hand, 99.5 % of respondents consider social engagement and wellbeing to be either a primary or secondary benefit;

66 % of respondents consider social engagement, community building, or neighborhood revitalization to be one of the most significant outcomes that they have seen. On the other hand, 90 % stated that they must either frequently or occasionally try to get new people involved, while 87 % reported that a frequent or occasional challenge was to keep people involved long-term. Overall, cultivating individual and community relationships—getting new people involved, keeping them involved, and community building—was one of the biggest challenge for 58 % of respondents.

It is often the realities of gardening that influence people's participation; springtime enthusiasm can often lead to mid-summer discouragement amid mosquitoes, heat, humidity, weeds, and pests. In a community garden, however, these issues are compounded by the fact that people may disagree on how to manage the garden site and to what extent they want to participate in group workdays and the maintenance of shared areas. Respondents gave detailed comments about the unevenness in gardeners' contributions of community labor:

> The biggest challenges have been engaging gardeners who will get involved in the sustaining of the gardens in the long term. (Respondent from a medium organization in Idaho Falls, Idaho)
>
> People often neglect their garden spaces and claim to not have enough time. We try to inform new gardeners of the amount of time they will need per week to maintain their garden. It can be difficult to get people interested in trying gardening if they have never done it before. (Respondent from a large organization in Avenal, California)
>
> Though we always seem to have more volunteers signed up to help throughout the garden season we seem to end up without any volunteers come the last few weeks of the season. Everyone seems to be vested in the garden but as soon as the weather doesn't cooperate, repairs are needed, or the bugs are bad, people seem to lose interest. (Respondent from a small organization in Indian Lake, New York)
>
> We have a hard time keeping some gardeners going with their plots and "policing" those who do not. Most communal work (e.g., path maintenance) is done by 10 % of the gardeners. (Respondent from a small organization in Oxford, Mississippi)

These comments illustrate the importance that respondents placed on participation in the collective labor needed to sustain gardens; case studies in Australia and the Philippines have examined these processes in some detail (Cameron 2011; Hill 2011). The material state of garden sites depends on participants' work, and if abandoned, they are overtaken by weeds and rotten produce, for example. This labor extends beyond the cultivation of plants and soil, however, as participants organize food distribution, clean and maintain shared areas, and lobby agencies and organizations for materials and land. Even if the notion that "community" includes a commitment to working with others, this process is not straightforward given the participatory decision-making processes often seen in community gardens (Nettle 2014). Deeper understanding of how and why gardeners choose to contribute surplus labor for community benefit may emerge from economic geography studies of informal, alternative, diverse, or social economies (Gibson-Graham 1996; Leyshon et al. 2003). We return to this point in the conclusion as a way to find common ground across community gardens.

Land

Our survey provides some additional context on land ownership patterns, and survey responses show a diversity of land ownership types. The literature shows that community gardens are often located on borrowed, leased, or squatted land—whether vacant lots, undeveloped marginal areas, or within parks and preserved land. Our respondents, though, stated that nearly one-fifth of garden sites are owned outright by the community garden or gardening organization (18 %). Among land not owned by the respondent's organization, these sites are owned by public entities (48 %), privately (24 %), or by land trusts (4 %).[3] Across organization sizes, public land is the highest proportion for each category. Very large organizations reported the lowest rate of garden land ownership—only 6 %. In contrast, small, medium and large organizations owned 38, 10, and 32 % of their gardens, respectively. Given the diversity of land ownership patterns, conflicts with developers are probably not the only underlying issue with getting and keeping land access. There can be tension as landowners push agendas (e.g., environmental stewardship, nutrition) that discourage gardeners who may not share such concerns (c.f. Staeheli et al. 2002). Additionally, when community gardeners are forced to move locations, unexpected challenges can come up:

> We had one garden, but had to move twice, first from a private space, then from a public space. The second time, we split into two locations. So we had a net gain [in the number of gardens], but it was after we lost two other spaces, and the total space we have now barely replaces what we had at the original garden. (Respondent from a medium organization Los Angeles, California)

[3] Respondents did not know the land ownership type for 6 % of the community gardens they reported.

This quote suggests that the social and environmental context of land access is as important as access itself. The size and configuration of land parcels can affect the activities of an entire group of gardeners, and the example above shows how space is important in its various qualities. Just because land is available does not make it suitable for community gardening.

Materials

Lastly, materials used in community gardens—for example, soil, water, and compost—were either a frequent or occasional issue for 94 % of all respondents, a figure that is similar across organization sizes. Twenty-four percent stated "materials" as one of the most challenging issues. More large and very large organizations reported this as a top issue (30 and 27 %, respectively) than did small and medium organizations (22 and 17 %, respectively). We suspect that this difference comes from the greater work that larger organizations do to access and distribute materials to a larger number of garden sites. What these figures tell us about the community gardening broadly, though, is that the task of obtaining materials—water, tools, seeds, soil, and so on—is an everyday issue that may lead to other problems. The lack of a reliable water supply, for instance, can lead to decreased participation.

Respondents drew attention in their open-ended comments to one specific material: water. In conventional agriculture, water is of course a well-discussed topic. Water access is discussed in many community gardening studies, but is less often the central focus of investigation (e.g., Armstrong 2000; Twiss et al. 2003; Drescher et al. 2006; Wakefield et al. 2007). Others examine water from a policy and reclamation perspective in urban and peri-urban agriculture (Smit and Nasr 1992; Perret 2002). There are many studies on rainwater harvesting and catchment techniques that can be used by community gardeners, but few elaborate the existing state of water access in various contexts. Turner (2011) shows that in Australia, water conservation within community gardens is hotly debated. In North America, this may be the case as well, but remarks about water in our survey all related to the availability of water—getting it to the garden in the first place.

This survey contributes to understanding water access in community gardening by showing how the seemingly simple matter of delivering water to the garden can be a major obstacle. Not only did respondents remark that water access was a general issue, some were quite specific in how it mattered. Getting water to the garden site, and then making sure that all garden members have access to that water within the site, entails working with external partners. As a respondent from a small organization in Atlantic Beach, Florida, stated, "the city wants to see progress on the garden before it will consider helping to bring water to the site, but how can you have a garden without water?" Alternatives to piped water are insufficient in other cases, as this respondent from a large organization in Pittsburgh, Pennsylvania made clear:

> Water is a huge challenge. We find that it is impossible to maintain a healthy garden with just rain barrels. But installing a permanent water line is expensive and a long-term financial obligation for the garden.

Still, other respondents brought up the ways that water access and funding are entwined:

> Our garden needs a new deeper well and a new pump. This will cost us approximately $1,400. We have been collecting money over the past two years selling our extra produce and seeking donations of any sort to get this job completed. (Respondent from a large organization in Seminole, Florida)
>
> People are eager to start their gardens, but one major problem is the water meter which costs $10,000. (Respondent from a large organization in Santa Fe, New Mexico)

Lastly, concerns about water availability came up:

> Our water is provided by a well, and Texas has been in a drought. Running out of available water is a big concern for the upcoming season. (Respondent from a small organization in Round Rock, Texas)

These examples show that in a broader geographical context, water access manifests differently. We see this in our own fieldwork as well. In cities, public water supply may not be available on land parcels that have never been developed (such as utility rights of way). Often, fire hydrants can be used to fill barrels in those cases, but this practice depends on the strength of the relationship between the garden organization and the municipality. In suburban and rural areas, public water supply may not be available at all, in which case wells must be dug. In places where public supply exists, these garden sites may be large enough in area that the cost to extend new pipe and faucets to irrigate all parts of the garden may be prohibitive. In such cases, tension mounts between gardeners and public authorities as shown in the quote above, when water agencies doubt whether the investment would be matched by long-term gardening commitment.

Conclusions

Community gardens have long been promoted as parts of local food systems, and in this paper we have attempted to

shed light on practices and processes that are shared among community gardens in North America. Building on case study research that has shown both benefits and challenges related to community gardening, we set out to get a better understanding of these issues at a broad scale. In particular, as community gardeners and stakeholders share information, how relevant are their experiences to others in different contexts?

Our survey points to community garden management as a way to find common ground. We found that garden organizers and managers share the experience of finding and keeping funding, participation, land, and materials. Looking toward the *how* of community gardening, rather than the *why*, is for us a more productive way to explain the phenomenon in general. There is remarkable geographical and organizational diversity in our survey, and the size and purpose is likely to vary as much as the location; there is community gardening from global cosmopolitan cities to isolated small towns, but people involved in it may not necessarily be driven by the same concerns. When coming together at national conferences, though, people are more likely to find common bonds through the work it takes to manage these sites, regardless of the underlying reasons for getting involved. Given this expansion across much of North America, a definition that unites community gardens would draw on this process of starting, supporting, and maintaining these sites and programs.

In this perspective, we see community gardening as part of a growing social or community economy (Amin et al. 2003; Gibson-Graham 2006). People produce and distribute food, and support these efforts, by securing the funding, participation, land, and materials to do so. Even when these management processes are contested and prone to disagreement, it is a collective effort to sustain a commons. Even if motivations differ widely, there is a shared sense of community wellbeing. Cooperation is not a given, though, as shown above; decisions on how to balance collective and personal labor are always in flux. Across contexts, then, we argue that this view of economy is a valid entry point for discussing community gardens.

This work to sustain and grow community gardening draws together a range of actors working at different scales. Networking practices are common across the board, and this survey suggests an ontological shift in thinking of community gardens not as isolated, individual sites but as networked among many other local relationships. These connections can both enable and impede gardening efforts; external partners play a large role in securing resources. As an increasing topic of food security agendas in the global north, however, community gardens are not sites that can be built and expected to run on their own. They need to be woven into existing community efforts with attention to the resources needed not just to start but also to sustain them.

Likewise, community gardens differ in respect to funding, participation, land, and materials by the scope of one's involvement. Someone leading an individual garden may turn their attention to developing strong participation among the other gardeners once their land is secured. A very large organization responsible for dozens of sites, however, is more likely to focus on securing land for additional locations and negotiating with various agencies to secure materials for these sites. The nature of community garden management means that at different levels of engagement, actors experience these processes differently. Furthermore, the particularities of these issues are shaped by local context; practitioners can nonetheless use the topics presented here as starting points for sharing knowledge.

Opportunities for future research include examining how community gardeners navigate these shared processes and how they intersect with broader food system efforts. Food production, nutrition, and education are all key benefits associated with community gardening, and effectiveness in management could bolster local food system development. They function, however, through complex decisions regarding labor, and garden organizations get resources by navigating a range of partnerships. Better understanding of these processes in specific contexts can provide clarity on how community gardening is integrated with local food systems. This direction of study could entail further case studies of both individual sites as well as regions in order to get a deeper look at how people and organizations address this variety of challenges, how and why they connect with others, and what effects result from these relationships. Such research would provide a broader picture of the ways that communities are involved in agricultural activities across cities and suburbs in countries in the global north. The results from this survey convey the commitment of organizations to support such efforts, compelling a deeper look into the role and capacity such organizations can play in healthy, accessible food system endeavors.

References

Alaimo, K., E. Packnett, R.A. Miles, and D.J. Kruger. 2008. Fruit and vegetable intake among urban community gardeners. *Journal of Nutrition Education and Behavior* 40: 94–101.

Alaimo, K., T.M. Reischl, and J.O. Allen. 2010. Community gardening, neighborhood meetings, and social capital. *Journal of Community Psychology* 38: 497–514.

Altieri, M.A., N. Companioni, K. Cañizares, C. Murphy, P. Rosset, M. Bourque, and C. Nicholls. 1999. The greening of the "barrios": Urban agriculture for food security in Cuba. *Agriculture and Human Values* 16(2): 131–140.

Association, American Community Gardening. 1998. *Community gardening survey: 1996*. Columbus, OH: American Community Gardening Association.

Association, American Community Gardening. 1992. *National community gardening survey*. Columbus, OH: American Community Gardening Association.

American Planning Association. 2007. *Policy guide to community and regional food planning*. Chicago: APA.

Amin, A., A. Cameron, and R. Hudson. 2003. The alterity of the social economy. In *Alternative economic spaces*, ed. A. Leyshon, R. Lee, and C. Williams, 27–54. London: Sage.

Armstrong, D. 2000. A survey of community gardens in upstate New York: Implications for health promotion and community development. *Health and Place* 6: 319–327.

Baker, L. 2004. Tending cultural landscapes and food citizenship in Toronto's community gardens. *Geographical Review* 94(3): 305–325.

Bryld, E. 2003. Potentials, problems, and policy implications for urban agriculture in developing countries. *Agriculture and Human Values* 20(1): 79–86.

Cameron, J. 2011. Bodily learning for a (climate) changing world: Registering differences through performative and collective research. *Local Environment* 16(6): 493–508.

Dillman, D.A. 2011. *Mail and internet surveys: The tailored design method*, 2nd ed. Hoboken, NJ: Wiley.

Domene, E., and D. Sauri. 2007. Urbanization and class-produced natures: Vegetable gardens in the Barcelona Metropolitan Region. *Geoforum* 38: 287–298.

Drake, L. 2014. Governmentality in urban food production: Following "community" from intentions to outcomes. *Urban Geography* 35(2): 177–196.

Drake, L., and L.J. Lawson. 2014. Validating verdancy or vacancy? The relationship of community gardens and vacant lands in the US. *Cities* 40(Part B (0)): 133–142.

Drescher, A.W., R.J. Holmer, and D.L. Iaquinta. 2006. Urban homegardens and allotment gardens for sustainable livelihoods: Management strategies and institutional environments. In *Tropical homegardens: A time-tested example of sustainable agroforestry*, ed. B.M. Kumar, and P.K.R. Nair, 317–338. Dordrecht: Springer.

Eizenberg, E. 2013. *From the ground up: Community gardens in New York City and the politics of spatial transformation*. Burlington, VT: Ashgate.

Feenstra, G., S. McGrew, and D. Campbell. 1999. *Entrepreneurial community gardens: Growing food, skills, jobs, and communities*. Oakland: University of California.

Firth, C., D. Maye, and D. Pearson. 2011. Developing "community" in community gardens. *Local Environment* 16(6): 555–568.

Gibson-Graham, J.K. 2006. *A postcapitalist politics*. Minneapolis: University of Minnesota Press.

Gibson-Graham, J.K. 1996. *The end of capitalism (as we knew it): A feminist critique of political economy*. Oxford: Oxford University Press.

Grewal, S.S., and P.S. Grewal. 2012. Can cities become self-reliant in food? *Cities* 29(1): 1–11.

Groenewegen, P.P., A.E. van den Berg, S. de Vries, and R.A. Verheij. 2006. Vitamin G: Effects of green space on health, wellbeing, and social safety. *BMC Public Health* 6: 149. doi:10.1186/1471-2458-6-149.

Groening, G. 2000. Aspects of allotment gardening politics in Berlin, Germany, between 1985 and 1995. *Acta Horticulturae* 523: 167–182.

Hayes-Conroy, J. 2010. School gardens and "actually existing" neoliberalism. *Humboldt Journal of Social Relations* 33(1–2): 64–96.

Henderson, B.R., and K. Hartsfield. 2009. Is getting into the community garden business a good way to engage citizens in local government? *National Civic Review* 98(4): 12–17.

Hill, A. 2011. A helping hand and many green thumbs: Local government, citizens and the growth of a community-based food economy. *Local Environment* 16(6): 539–553.

Hobson, K., and A. Hill. 2010. Cultivating citizen-subjects through collective praxis: Organized gardening projects in Australia and the Philippines. In *Ethical consumption: A critical introduction*, ed. T. Lewis, and E. Potter, 216–230. Oxfordshire: Routledge.

Irazábal, C., and A. Punja. 2009. Cultivating just planning and legal institutions: A critical assessment of the South Central Farm struggle in Los Angeles. *Journal of Urban Affairs* 31: 1–23.

Jarlov, L. 2001. Why we need new urban planning concepts: Insights from South Africa. *Urban Agriculture Magazine*. 9–10.

Kingsley, J.Y., and M. Townsend. 2006. "Dig in" to social capital: Community gardens as mechanisms for growing urban social connectedness. *Urban Policy and Research* 24(4): 525–537.

Lawson, L.J. 2007. The South Central Farm: Dilemmas in practicing the public. *Cultural Geographies* 14: 611–616.

Lawson, L.J. 2005. *City bountiful: A century of community gardening in America*. Berkeley: University of California Press.

Lawson, L.J. 2004. The planner in the garden: A historical view into the relationship between planning and community gardens. *Journal of Planning History* 3: 151–176.

Lawson, V. 1995. The politics of difference: Examining the quantitative/qualitative dualism in post-structuralist feminist research. *Professional Geographer* 47(4): 449–457.

Lawson, L.J., and L. Drake. 2013. 2012 Community gardening organization survey. *Community Greening Review* 18: 20–41.

Levkoe, C.Z. 2006. Learning democracy through food justice movements. *Agriculture and Human Values* 23: 89–98.

Leyshon, A., R. Lee, and C. Williams. 2003. *Alternative economic spaces*. London: Sage.

Local Government Association. 2008. *Growing in the community*, 2nd ed. London: Local Government Association.

Lynch, K., T. Binns, and E. Olofin. 2001. Urban agriculture under threat: The land security question in Kano, Nigeria. *Cities* 18(3): 159–171.

Lyson, T. 2004. *Civic agriculture: Reconnecting farm, food, and community*. New Lebanon, NH: Tufts University.

MacRae, R., E. Gallant, S. Patel, M. Michalak, M. Bunch, and S. Schaffner. 2010. Could Toronto provide 10 % of its fresh vegetable requirements from within its own boundaries? Matching consumption requirements with growing spaces. *Journal of Agriculture, Food Systems, and Community Development* 1(2): 105–127.

Mees, C., and E. Stone. 2012. Zoned out: The potential of urban agriculture planning to turn against its roots. *Cities and the Environment* 5(1): Article 7.

Milburn, L.-A.S., and B.A. Vail. 2010. Sowing the seeds of success: Cultivating a future for community gardens. *Landscape Journal* 29(1): 71–89.

Möhrs, K., F. Forster, S. Kumnig, L. Rauth, and members of the SoliLa! collective. 2013. The politics of land and food in cities in the North: Reclaiming urban agriculture and the struggle Solidarisch Landwirtschaften! (SoliLa!) in Austria. In *Land concentration, land grabbing, and people's struggles in Europe*, ed. J. Franco and S. M. Borras Jr., 96–127. Transnational Institute (TNI) for European Coordination Via Campesina and Hands off the Land network.

Montello, D., and P. Sutton. 2006. *An introduction to scientific research methods in geography*. Thousand Oaks, CA: Sage.

Moore, S. 2006. Forgotten roots of the green city: Subsistence gardening in Columbus, Ohio, 1900–1940. *Urban Geography* 27: 174–192.

Moss, P. 1995. Embeddedness in practice, numbers in context: The politics of knowing and doing. *Professional Geographer* 47(4): 442–449.

Nettle, C. 2014. *Community gardening as social action*. Farnham: Ashgate.

Nilsen, M. 2014. *The working man's green space: Allotment gardens in England, France, and Germany 1870–1919*. Charlottesville: University of Virginia Press.

Perret, S.R. 2002. Water policies and smallholding irrigation schemes in South Africa: A history and new institutional challenges. *Water Policy* 4(3): 283–300.

Pothukuchi, K., and J. Kaufman. 1999. Placing the food system on the urban agenda: The role of municipal institutions in food systems planning. *Agriculture and Human Values* 16(2): 213–224.

Pudup, M.B. 2008. It takes a garden: Cultivating citizen-subjects in organized garden projects. *Geoforum* 39: 1228–1240.

Rosol, M. 2012. Community volunteering as neoliberal strategy? Green space production in Berlin. *Antipode* 44: 239–257.

Rosol, M. 2010. Public participation in post-Fordist urban green space governance: The case of community gardens in Berlin. *International Journal of Urban and Regional Research* 34: 548–563.

Roy, A. 2005. Urban informality: Toward an epistemology of planning. *Journal of the American Planning Association* 71(2): 147–158.

Saldivar-Tanaka, L., and M.E. Krasny. 2004. Culturing community development, neighborhood open space, and civic agriculture: The case of Latino community gardens in New York City. *Agriculture and Human Values* 21: 399–412.

Schmelzkopf, K. 2002. Incommensurability, land use, and the right to space: Community gardens in New York City. *Urban Geography* 23: 323–343.

Smit, J., and J. Nasr. 1992. Urban agriculture for sustainabIe cities: Using wastes and idle land and water bodies as resources. *Environment and Urbanization* 4(2): 141–152.

Smit, J., J. Nasr, and A. Ratta. 1996. *Urban agriculture: Food, jobs, and sustainable cities*. Publication series for Habitat II, Vol. 1. New York: UNDP.

Smith, C.M., and H.E. Kurtz. 2003. Community gardens and politics of scale in New York City. *Geographical Review* 93: 193–212.

Staeheli, L.A., D. Mitchell, and K. Gibson. 2002. Conflicting rights to the city in New York's community gardens. *GeoJournal* 58: 197–205.

Tranel, M., and L.B. Handlin. 2006. Metromorphosis: Documenting change. *Journal of Urban Affairs* 28: 151–167.

Turner, B. 2011. Embodied connections: Sustainability, food systems, and community gardens. *Local Environment* 16(6): 509–522.

Twiss, J., J. Dickinson, S. Duma, T. Kleinman, H. Paulsen, and L. Rilveria. 2003. Community gardens: Lessons learned from California healthy cities and communities. *American Journal of Public Health* 93(9): 1435–1438.

Wade, I. 1987. Community food production in cities of the developing nations. *Food and Nutrition Bulletin* 9(2): 29–36.

Wakefield, S., F. Yeudall, C. Taron, J. Reynolds, and A. Skinner. 2007. Growing urban health: Community gardening in south-east Toronto. *Health Promotion International* 22(2): 92–101.

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