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# URBAN GARDENING PRACTICES IN BANGALORE: TOWARDS A MORE LOCALIZED FOOD SYSTEM?

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URBAN GARDENING PRACTICES IN BANGALORE: TOWARDS A MORE LOCALIZED  
FOOD SYSTEM?

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## **I. Abstract**

*Localized Food Systems (LFS) have garnered much attention in recent years among civil society, research, and policy circles, among others. Increased attention and efforts to build more localized food systems are principally motivated by the awareness of the pressures exerted by increasing urbanization on food security and access, and concern for the ecological and social costs of the dominant globalized food system. In their varying purpose to address these two issues, LFS tend to be characterized by certain patterns of (localized) land, water, and other resource use; by direct marketing and distribution arrangements; and by the presence of extensive linkages and connectivity between different actors in the food system. Urban and peri-urban agriculture appears as a potentially instrumental component of LFS for its ability to build these three conditions.*

*The present study examines the particular conditions of urban food growing practices in Bangalore, India's second fastest growing city, with the aim of determining whether such practices are indeed contributing to the emergence of a more localized food system. Data was gathered on the methods of input use and provisioning, the distribution arrangements for products of urban gardening, and the linkages existing among different actors in UPA practices. The study found that on all three points urban food growing practices in Bangalore do conform to the patterns observable in LFS, and therefore to the localization of the urban food system. However, this effect is not complete, particularly owing to challenges in localizing sourcing of irrigation water, and the lack of connectivity with the municipal government.*

## **II. Introduction**

In the context of increasing urbanization and globalization of agricultural production and marketing, localized food systems (LFS) have emerged as a theoretical framework to imagine and order methods to address the effects and impacts of these two growing trends. A variety of actors traditionally and non-traditionally involved with agriculture, including different levels of government, UN agencies, the private sector, civil society organizations, producers, and research institutions, are currently involved in this theorization process (“Food, agriculture and cities”, 6). Localized Food Systems are not new however, either in practice or theory (research focused on them as far back as the 1970s (Feenstra, 28)); what is new, however, is the wide diversity of actors now paying attention to them, as well as their specific framing.

This framing is highly contextual and therefore specific to trends affecting food systems today. The FAO defines a food system as including “all the biological processes ... as well as the physical infrastructure involved in feeding a population” from growing produce to the disposal of food and food-related items. Importantly, a food system includes the inputs required and the outputs produced at each step of this process (“Food, agriculture and cities”, 15). From my review of the relevant literature, it appears that the two trends affecting food systems which are most closely associated with increased attention to LFS are growing urbanization and an increasingly integrated and dominant global agri-food system (“Food, agriculture and cities”, 6-7; Feenstra, 31; USDA Economic Research Service, 2).

Growing cities can have profound positive or negative impacts on their surrounding food producing areas (“Food, agriculture and cities”, 9). The trend that is most often observed, however, is one of negative impacts on food and nutrition security resulting especially from

increasing pressure on the natural resources required to feed the urban population (9, 12). The negative pressures exerted by urbanization on food availability and access are furthermore expected to be exacerbated by climate change (8). With heightened recognition of these impacts of urbanization, local governments, civil society organizations, and citizens, among other actors, have begun to pay increasing attention to localized food systems as a way to alleviate these impacts (9). Indeed, enhancing community food and nutrition security is widely mentioned as one of the main motivational factors for the emergence and expansion (that is, qualitative) of localized food systems (Feenstra, 31, 34; “Food, agriculture and cities”, 16; USDA Economic Research Service, 2). As more than 60 percent of the increase in the world’s urban population growth over the next three decades is expected to occur in Asia (“Food, agriculture and cities”, 12), the establishment of LFS may present increasingly crucial opportunities to Asian cities.

The second motivational factor prompting increased attention to LFS results from an awareness of the ecological sustainability challenges and social inequities posed by the hegemonic global food system. Indeed, localized food systems are overwhelmingly related to the concept of sustainability in all types of sources, including academic, governmental, UN-produced, popular, etc. In her review of studies and practices related to LFS in the United States in the 90s, Feenstra found that models of local food systems were conceptualized in response to “the ecological and social costs of the global food system” and were pursued in practice with the purpose of giving primacy to “local environmental and community health priorities” (Feenstra, 28). More recently, Martinez et al., in a USDA Economic Research Service study, reported that both “the environmental movement” and the desire to “[challenge] the dominance of large corporations” provide a crucial impetus for interest and commitment to LFS (2). This is so much

so that “sustainable development” and “environmental stewardship” have been used in research as positive indicators of a “more localized food system” (Bellows and Hamm, 1).

Here it is important to note that LFS do not necessarily constitute sustainable food systems (USDA Economic Research Service, v). In fact, if poorly designed they could “strengthen inequitable and unsustainable patterns of labor and the use of land and resources” (Bellows and Hamm, 1). Similarly, efforts to create more localized food systems do not necessarily enhance food security or access (USDA Economic Research Service, 47). What is important is that propagating ecologically sustainable urban systems and enhancing community food security are important factors motivating the pursuit of LFS. Furthermore, these two motivations for the building of LFS, deriving from awareness of the pressures on food security posed by urbanization and the ecological costs presented by the global food system, are often invoked in tandem. Thus, providing “adequate food to residents, a sustainable farming system, a safe, clean environment, and satisfying social and cultural interactions around food” are the aim of localized food systems, and the indicators of a successful one (Feenstra, 34).

While there is no consensual definition of localized food systems in terms of geographic distance between production and consumption, definitions based on other structural elements of production and consumption in LFS are commonly used and garner much consensus (Martinez et al., iii). These include the characterization of LFS as typically involving “small farmers, heterogeneous products, and short supply chains in which farmers also perform marketing functions [(direct marketing)] (USDA Economic Research Service, iv). Direct marketing strategies, identified by Feenstra as especially successful in expanding LFS, include roadside operations, farmers’ markets, and CSAs (Feenstra, 33). “Sharing among neighbors” has also been



identified as a significant (and informal) distribution characteristic of LFS (USDA Economic Research Service, 5).

Another important definitional characteristic of LFS is the presence of extensive linkages between different actors in the food system including local farmers, community members, institutions, and businesses (Feenstra, 31; Renting and Dubbeling, 16). The “network of relationships” attributable not only to localized food systems, but any local production system, constitute a “specific asset” which allows LFS to produce greater levels of innovation, and enables “better diffusion of information” and “development of co-operation” (Requier-Desjardins et al., 53).

Finally, “secure access and tenure [of land] for long-term *local citizen* management [my italics]” is also mentioned as a requisite component of successful LFS (“Food, agriculture and cities”, 25).

#### The Role of Urban and Peri-Urban Agriculture (UPA)

UPA can be subdivided in two categories: intra-urban agriculture and peri-urban agriculture. Intra-urban agriculture is that which takes place in the inner city, on vacant or underutilized land areas that may be both publicly or privately owned (Veenhuizen, 5). Types of UA include “community gardens ..., home gardens, institutional gardens (managed by schools, hospitals, prisons, factories), nurseries, [and] roof top gardening (Veenhuizen, 5). These can be further categorized into micro scale (home and rooftop gardens, street verges) and mess scale practices (community and institutional gardens, urban parks), with private land ownership being more common in the first, and public land ownership being significant to the second (Pearson et al., 8).

Peri-urban agriculture takes place in the urban periphery and, in the absence of regulation and other supporting institutions, is highly sensitive to rising land prices and the emergence of new land uses resulting from urban growth (Veenhuizen, 5; Pearson et al., 12). These induce peri-urban farming systems to become smaller in scale, intensify methods of production, and shift towards more perishable crops. Peri-urban agriculture is typically larger in scale than intra-urban agriculture and is more strongly market-oriented (Veenhuizen, 5).

Distinctions are also made between UPA in developed and developing countries. In the former, UPA is found to be mostly non-commercial, with a greater mix of publicly and privately ownership of the land (Leeuwen et al., 22; Eriksen-Hamel and Danso, 86). In the latter however, UPA is characterized by a greater mix of commercial farms and family-scale production (Eriksen-Hamel and Danso, 86).

Finally, “the most important distinguishing feature of [UPA] is not so much its location, ... but the fact that it is an integral part of the urban economic, social and ecological system. It uses urban resources such as land, labour, urban organic wastes, water and produces for urban citizens. Further, it is strongly influenced by the urban conditions such as policies, competition for land, urban markets and prices, and makes a strong impact on the urban system” (Veenhuizen, 6). The vast diversity in the conditions affecting urban farming practices that this underscores, along with the high dynamism of UPA, make it difficult to define and compare UPA practices (Veenhuizen, 12). But perhaps is precisely this dynamic specificity what may give UPA the ability to significantly contribute to the building of localized food systems.

Urban and peri-urban agriculture has garnered increasing attention as a potential element of successfully localized urban food systems due to its ability to integrate production and

provisioning systems in *local* and *circular* loops (Renting and Dubbeling, 16-18). It is not given that urban and peri-urban farming practices will connect these loops locally; in fact, they may also participate in linear, external, and often globalized networks (Renting and Dubbeling, 18). However, when they do, they result in “linkages and networks between food producers and consumers, (re-) localised processing and distribution systems, (food) waste recovery and reuse” as well as linked “market and non-market functions of (peri-) urban agriculture and food provisioning activities” (Renting and Dubbeling, 16). The potential of UPA to close production and provisioning loops at the local community level is further underscored by the fact that UPA is often undertaken “to take control of food security, social ills and environmental degradation” in communities (Sumner et al., 55).

How does UPA close these loops and thereby contribute to the building of localized food systems? Firstly, it is noted that UPA may be undertaken as part of an “alternative paradigm” of food production (Sumner et. al., 55). As such, UPA practices would tend to follow the following principles: decentralization, the prioritization of community over competition, and harmony with nature instead of its domination (Sumner et. al., 55). Decentralization and community, if they are indeed guiding principles of a UPA system, would favor the extension and deepening of connectivity among different actors in the food system, as well as the emergence of direct marketing arrangements. “Harmony with nature” as a guiding principle of UPA practices would result in patterns of input and resource use that are more ecologically sustainable, and therefore more likely to be locally contained.

One of these patterns of input use that has been especially documented for the case of UPA in cities of the developing world—regardless of motivations or guiding principle—is the

reliance on organic wastes for soil fertility management (Eriksen-Hamel and Danso, 89). This includes urban wastewater use and presents the opportunity to localize input provisioning for food production (Renting and Dubbeling, 36).

Another opportunity of UPA to contribute to the localization of the food system rises from its direct access to urban consumers and markets, which facilitates the expansion of direct marketing arrangements (Veenhuizen, 14). The “closeness to institutions that provide market information, credit and technical advice. etc.” (Veenhuizen, 14) can further enable UPA practices to build the connectivity between different actors that is necessary to a localized food system.

### The Bangalore Context

Bangalore is the capital of the state of Karnataka, in southern India. It is one of India’s seven “million” cities (Sastry 2006: 24). Like in many other cities in India, the rapid growth of the city resulted in an expansion into the peripheral areas at a faster pace than it could extend services like running water, sanitation facilities, and waste disposal (25). Urbanization in Bangalore since the 1980s has been largely driven by the state-supported development of the IT industry (25-26). Sastry notes that because the contribution of the primary sector to GDP has decreased less rapidly in the state of Karnataka than at the national level, while the secondary sector makes a smaller contribution than the tertiary sector, city-region disparities are more pronounced than at the national level, as evidenced by indicators like education level, income, piped water supply, etc (10). This is relevant because it implies a tension between primary sector activities and an urbanization model based on the promotion of the IT sector (tertiary sector).

The present study will collect data related to the production, provisioning, and consumption methods associated with UPA in Bangalore, with the aim of analyzing whether these

may be contributing to the emergence of a localized food system in Bangalore, with its attendant ecological, economic, and social benefits. This contribution will be assessed by comparing the production, provisioning, and consumption methods of UPA with the characteristics and components of successful LFS gleaned from the background research.

### **III. Methods**

To examine the role that UPA practices play or may play in creating a localized food system in Bangalore, a varied set of informants were reached, initially through Dr. Vishwanath, founder of the Garden City Farmers Trust. The snowball sampling method, through which respondents give further contacts, was also used to reach a variety of actors in UPA practices in and around Bangalore. These included urban food producers, the directors of two organizations involved in agriculture around the city, Sahaja Samruddha and Annadana, as well as researchers at the Institute for Social and Economic Change. Semi-structured interviews were carried out with these key informants to glean information on the motivations related to UPA practices, the methods for use and provisioning of inputs, the distribution arrangements for products of UPA, as well as the linkages existing between actors in UPA practices. The questions used to guide these interactions are included in Appendix A.

Data related to the factors listed above was also collected through direct and participant observation in a variety of events and field visits. These included participation in a workshop organized by a group of urban gardeners and activists, a training event organized for the residents of Sahakar Nagar (a neighborhood of Bangalore) and facilitated by GCF, and a monthly meeting of urban gardeners in South Bangalore. Other data points included a visit to the BM English School garden and participation in the field day activities with students members of the

school's Green Club. Visits to KR Market (City Market), the Kanakapura Road temporary roadside market, the Bangaluru Mango Wholesale Traders' Market, and the Madinwalla Market were facilitated by an urban gardener who also translated informal interactions with a variety of buyers and sellers at the markets.

Informed consent was sought for all interviews and informal interactions. Written informed consent was taken whenever possible. When it was inconvenient to do so—as for telephone interviews, interviews during farm visits, or interactions during visits to markets—oral consent was taken. Due to the benign nature of the data collected, and to ensure proper recognition of contributions, the information obtained for the study is not anonymous. Confidentiality, however, is assured as the data gathered will not be shared beyond its inclusion in this paper. The data collected (interview recordings and notes) will remain in the researcher's strict possession.

#### **IV. Findings**

##### **A. Overview of Key Actors in Urban Food Growing Practices**

The following are the actors involved in urban food growing practices in Bangalore with whom the study had direct and continued contact.

##### **Organic Terrace Gardeners (OTGians)**

All the urban gardeners interviewed identify as members of an informal group of home and terrace gardeners in Bangalore and, to a looser extent, in the entire country. Membership is not official, but simply determined by the practice of organic gardening in an urban setting, and awareness of other practitioners. Communication among members is mainly mediated through the group's FaceBook page, and group identity is largely built on that platform. The FaceBook

group counts 25 thousand members, at least 12 thousand of which are in Bangalore (Vishwanath, Sahakar Nagar training event, participant observation). As this is not a formal membership group, there are no official meetings or events. However, members are very active in organizing meetings, field visits to nearby farms or other sites, seed sharing events, etc., which are advertised on the FaceBook group and by word of mouth (Upadhya and Magadi, personal interviews). There are also more organized, smaller groups within the larger community. The Bangalore South OTGians, for example, organize to meet monthly.

#### Garden City Farmers Trust (GCF)

GCF was officially registered as a trust four years ago. Its activities in promoting organic terrace gardening, however, really started in 1995 with the promotional work of its founder, Dr. B. N. Vishwanath. GCF's current major focus area is on promoting organic terrace and home gardening in the city of Bangalore by conducting trainings and workshops, connecting practitioners and resources, and promoting awareness of urban food growing through national and state-level seminars. The organization's guiding principle is "Grow What You Eat, and Eat What You Grow". The workshops and trainings conducted by GCF include both regular workshops, and events that are organized by other organizations or groups, at which they are invited to speak. The organization's hallmark event, and one which all the urban practitioners interviewed participate in, is Oota From Your Thota (or Food From Your Garden). OFYT is a quarterly event with a two-fold purpose: to bring urban practitioners and other interested people together to share their experiences and knowledge; and to connect urban gardeners and resource providers (gardening equipment, organic fertilizers and pest controllers, heirloom seeds, etc...).

Finally, a component of this event mentioned by all of the urban gardeners interviewed is the seed and plant sharing.

## B. Motivations

The most salient motivation for keeping a kitchen/terrace garden and growing organically, mentioned by almost all of the gardeners interviewed, in two workshop events, and by the audience at one of these workshops, is the desire to have access to healthy food. Not all respondents assigned the same level of priority to this motivating factor, however. Interestingly, most of the discussions of this factor included comments on the perceived prevalence of chemical- and pesticide-laden food in Bangalore. In fact, some of the respondents discussed the concern for healthy food as a motivating factor only in connection to the presence of toxins in the food that is prevalently available in the city (Sharma and Kapuganti, personal interviews)<sup>1</sup>. Likewise, when the audience at the kitchen/terrace gardening training event in Sahakar Nagar was asked “Why should we grow our own food?”, the most common answer was “pesticide-free food”, which someone qualified with the statement “Everywhere around Bangalore farmers use a lot of pesticides” (S.N. training event, participant observation). Whether or not they exclusively related the desire to have access to healthy, safe food to the perceived prevalence of chemical-laden food in the city, this perception was voiced by almost all the interviewees at some point in the course of conversation. The GCF presentation on “Organic Urban Farming” at the Sahakar Nagar training event also presented organic terrace gardening’s ability to provide “fresh, healthy vegetables” as one of the reasons why it must be pursued (S.N. training event, participant

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<sup>1</sup>This opinion was particularly voiced by Kapuganti’s wife.



observation). Similarly, the Clean Green Workshop<sup>2</sup>, in the section on organic gardening, listed “to improve your family’s health” and “stop worrying about food safety” as reasons to pursue urban gardening, reflecting the concern over access to healthy food as a motivating factor (Clean Green workshop, participant observation).

A significant circumstance that was mentioned in almost all the personal interviews, and which some directly related to the importance of growing food (Murthy and Kandasarma, joint interview), was the uncertainty surrounding the reliability of organic labels in India. Awareness of and concern for the inability to ensure access to safe and healthy food simply by buying food labeled and packaged as organic may reflect another aspect in which access to healthy food constitutes a motivation behind urban food growing practices in Bangalore.

Another common motivating factor cited by practitioners and in workshops represents various versions of Garden City Farmers’ guiding principle: “Grow what you eat, and eat what you grow” (*Garden City Farmers*). Relatedly, some respondents mentioned the desire that their children will come to know how food is grown (Pagadala and Kapuganti, personal interviews), and this is indeed one of the motivating factors behind the BM English School’s eco-center and school garden (Rajesh, personal interview).

Another important motivating factor for many, and principal motivation for some, is the desire to reduce waste generation through composting of one’s wet waste. In fact, two of the interviewees said they started composting before they started growing. One made the decision to start composting because “it is so frustrating and irritating to see all that trash outside on the

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<sup>2</sup> Clean Green is a workshop series run by a group of urban gardeners and citizens involved in local waste management campaigns. The workshop has two related foci: composting as a means of waste reduction and organic terrace gardening.

streets” (A.M., personal interview). Another urban food grower said composting brought to her attention the current issues regarding trash in Bangalore and the Mandur landfill, and that “composting is the more urgent issue right now; gardening will naturally follow” (U. Hoysala, personal interview). This concern to reduce waste as a driving motivation in urban food growing practices is also reflected in the BM English School’s mission to have a zero-waste campus, of which the school garden is an integral component (Rajesh, personal interview). This was also one of the major motivating factors emphasized throughout the Clean Green workshop (Clean Green workshop, participant observation).

In a related vein, the awareness of the “ecological challenges facing Bangalore” (Nadig, personal interview)—that is loss of green cover, heat island effect, air pollution, etc.—is also an important factor behind many of the interviewees’s food growing practices. The GCF presentation also emphasized these challenges as reasons to undertake urban food production (S.N. training event, participant observation).

One final motivation relevant to the study and mentioned by three of the respondents as well as in both the Clean Green workshop and GCF presentation is related to the environmental impacts of chemical agriculture. One of the interviewees said he converted his garden to organic after learning about the challenges of chemical farming and linking those to ecosystem problems (Nadig, personal interview). Another respondent views her urban food growing practices as part of an effort to build awareness in the urban areas and foster the “ecological consciousness that is needed to protect and conserve [agroecological and sustainable farming systems]” (Mehta, personal interview). Similarly, the GCF presentation at the Sahakar Nagar training event cited “environmental pollution” and “contamination of subsoil water” as detrimental impacts of the

Green Revolution, positing a small effort to redress these as a reason to take up organic urban farming (S.N. training event, participant observation).

Enhancing the city's food security was only given as a motivating factor by the GCF presentation, and by Drs. Kannan and Deshpande, professors and researchers at the Institute for Social and Economic Change in Bangalore who participated in a seminar on Urban and Peri-Urban Agriculture (Kannan and Deshpande, personal interviews).

Another important motivation mentioned by several of the interviewees that is not directly relevant to the study is related to the value of the activity as a hobby<sup>3</sup>.

### Garden Typology

Before presenting the findings gleaned from interviews and observation regarding input use, distribution arrangements, and connectivity among actors, a brief overview of garden typology and cropping patterns should be given. All but two of the thirteen urban gardeners interviewed in the present study have their gardens on the terrace of their house or apartment. One of these two gardener keeps her garden in a residential plot in the city bought to build a house, but currently used only as a gardening space (it will remain mostly a garden even after the house is built) (Kesari, personal interview). The other uses both his terrace as well as five in-ground beds in a plot adjoining his house that was bought to construct but is also awaiting the start of construction (Kapuganti, personal interview). Of the others, six use whatever ground space there is around the house, in addition to the terrace, to grow food plants. All terrace gardens are container gardens (that is, the plants are grown in containers), except for one in which the terrace was waterproofed and the growing medium was put directly on the terrace. All

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<sup>3</sup>This was explicitly stated as a motivation by 5 of those interviewed.

focus on the cultivation of food plants, especially vegetables, greens, and aromatics. Many of the gardens also have fruit trees, especially those that use ground space although they are also common in terrace gardens.

### C. Resource/Input Use and Provisioning

What follows is an overview of the methods for the use and provisioning of the most important and common inputs in urban food growing practices in Bangalore.

#### Compost

The importance of compost was ubiquitously stated. All people interviewed said they compost all of their kitchen waste, and use this compost in their gardens. Two of them even compost the waste of other kitchens: the waste of the other kitchen in his joint household in the case of one gardener, and the waste of the other apartments in her apartment complex in the case of the other. Furthermore, four among them also mentioned gathering leaf litter and pongamia flowers from the streets for composting, or picking up already decomposed leaf litter from public spaces (Murthy, Kapuganti, Upadhy, A.M., personal interviews). For seven of the gardeners interviewed, the compost they produce is not sufficient for their needs, and they purchase compost from various sources and with differing regularity. The sources of compost they mentioned were the Lalbagh Botanical Garden and Bannerghatta Park nurseries of the Department of Horticulture, the Mysore zoo, Nitya Jaivika<sup>4</sup>, the University of Agricultural Sciences, and a store in the city that specializes in leaf compost made from leaf litter salvaged from city streets and roads (Murthy, Kapuganti, Magadi, and Nadig, personal interviews).

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<sup>4</sup> Nitya Jaivika is a small organic gardening implements store run by an urban gardener out of her garage. All organic products sold are sourced exclusively from her father's farm in Hindupur, AP, close to the Karnataka border.

Compost may also be shared, and two gardeners reported doing so with some regularity (Murthy and Kapuganti, personal interviews). The BM English School maintains three compost piles to compost all of the school's kitchen waste and leaf litter (Rajesh, personal interview).

### Seeds

The provisioning of seeds by Bangalore's urban gardeners reflects a lively mix of buying, exchanging, saving, and sharing (without exchange). All respondents said they participate in seed sharing and exchange. A primary venue for such sharing and exchange is the Oota From Your Thota event, in which all respondents participate. More regular, informal seed exchanges or sharing, in groups at somebody's house after a workshop or event, or mediated on a personal level, are also common.<sup>5</sup> There are also dedicated seed sharing events, besides that organized at Oota From Your Thota; for example, the monthly meetings of the Bangalore South OTG group begin with a seed and sapling exchange (Bangalore South OTG meeting, participant observation). Two of the urban gardeners interviewed emphasized giving seeds that they save in their gardens (Kesari and A.M., personal interviews). Nine of them save seeds in their gardens, to varying degrees. Two of the people interviewed keep a joint seed bank and want to start an organized seed exchange out of this bank to spread the use of heirloom seeds among urban gardeners (Murthy and Kandasarma, joint interview). Two other urban gardeners interviewed rely solely on exchanged and saved seeds (Kapuganti and Nadig, personal interviews). Six of the interviewees said they choose exclusively or almost exclusively heirloom, open-pollinated variety seeds, although more among those interviewed expressed a preference for such seeds when they are readily available (Magadi, personal interview). Amongst the gardeners who

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<sup>5</sup> Gleaned from comments made by Murthy, Kesari, Nadig, Kapuganti, and Mehta in personal interviews.

expressed a concern for obtaining seeds from trusted sources, the most common sources for purchased seeds were Sahaja Samruddha (a farmer-driven organization seeking to promote organic farming through collective organizing of farmers, based in Bangalore), Annadana (a non-profit trust dedicated to the conservation and dissemination of organic, heirloom seeds, whose seed production farm is in the outskirts of Bangalore), Oota From Your Thota, Nitya Jaivika, and Navadarshanam (a sustainably living community and farm outside Bangalore) (Murthy and Kandasarma, Mehta, and A.M., personal interviews; BME School garden, participant observation). Other sources mentioned were gardening stores, the Department of Horticulture at Lalbagh Botanical Garden, and Namdhari's (a chain of retail grocery stores). Also common is the couriering of seeds by people traveling across the country and abroad (Murthy and Kandasarma, Pagadala, Kesari, Kapuganti, and Mehta, personal interviews).

### Water

All urban gardeners interviewed but one water their gardens manually, with a hose pipe. One gardener and the BM English School use drip irrigation systems. Six of the gardeners interviewed reported having rainwater-harvesting systems in place. Three of these are direct-use systems, used to irrigate the plants in the garden. One more gardener said that he does not have a proper rainwater-harvesting system, but tries to collect as much water as possible in drums placed at the spouts of the gutters, which he uses in his garden (Magadi, personal interview). All those without a rainwater harvesting system expressed a deep understanding of its importance, and the desire to have one. This sentiment was echoed in the GCF presentation on "Organic Urban Farming" which opened with the statement "Before you start gardening, the first thing, the absolute first thing, is rainwater harvesting" (S.N. training event, participant observation).

Other important inputs include the containers, which are both store-bought and recycled. Examples of recycled containers include old paint containers, vegetable wooden crates bought at the market from vendors who have no use for them, used bags of cement mix, rice, etc., old tires, styrofoam packaging, yoghurt containers... Recycling and repurposing of containers was also promoted in the GCF presentation.

Mulching is done with dry leaves from the garden or school grounds and with pea and bean shells dried for that purpose (Sharma, Rajseh, and Magadi, personal interviews).

Cow dung and cow urine are other important inputs, sourced from a wide variety of places. Cow dung is used for manuring, and cow urine for the preparation of organic pest controllers (Mehta and Kapuganti, personal interviews). The interviewees mention getting cow dung and urine from cow sheds in the city (Mehta and Kapuganti, personal interviews), from farms not far from the city (friend's or father's) (Nadig, Kapuganti, and A.M., personal interviews), from gardening supply stores, and directly from Navadarshanam (Murhty and Kandasarma, joint interview).

Other recurring inputs which are bought are neem oil, oil cakes, and coco peat (used in potting mixes). These are usually bought in gardening supply stores, specifically Nitya Jaivika for three of the gardeners in addition to the owner herself. Neem oil is also commonly bought in ayurvedic shops, although one gardener gets it from a friend's family's farm. In addition to neem oil, common methods of pest management are home-made garlic, chili, and herbal concoctions. One gardener not only makes his own but also exchanges saplings for home-made pest control liquids (Pagadala, personal interview).

#### D. Arrangements for Marketing and/or Distribution of Produce

The produce of urban gardening in Bangalore are largely not marketed, and none of the gardeners interviewed make commercial production an intention in their practices. The only exception to this general rule is the produce of the BM English School eco-center, which are sold weekly on campus to faculty and parents, and quarterly at the Oota From Your Thota event (Rajesh, personal interview). (At the school, the produce from the eco-center are sold at 70% of their corresponding price at HOPCOMS<sup>6</sup>, which Dr. Rajesh qualified as a “fair price”, because it sold “directly from us to them” (Rajesh, personal interview)). But perhaps because the eco-center is a little ways outside the city, this would qualify more as an example of peri-urban agriculture. Among the urban gardeners interviewed, only one, whose garden is in a residential plot, produces in excess of her family’s needs. A few times she sold this excess in a small farmers’ market organized in an organic restaurant, but commercial production is not her priority, so she discontinued this activity (Kesari, personal interview). Among the other gardeners, the range of self-sufficiency in produce is very wide—20 to 60 percent among those who could quantify it, but from observations and comments made in conversations, it would appear to be wider (at least one of the gardens was not producing—and was not intended to produce—in significant quantities) (Nadig, Pagadala, Rajesh, and Upadhyya personal interviews). Nevertheless, sharing of produce (with friends, neighbors, family, the personnel working in the apartment complex, etc.) is extremely common, in varying degrees of frequency and extensiveness.<sup>7</sup>

Significantly, ten of the gardeners interviewed reported changing the ways in which they acquire the food they have not grown after starting their gardening practices. All prioritize

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<sup>6</sup> The Horticultural Producer's Cooperative Marketing and Processing Society, a large government-supported organization for the marketing of horticultural produce in Bangalore.

<sup>7</sup> All but one of those interviewed said they share the produce of their garden.



buying organic food, and six among them are particular about developing relationships with and truly knowing the sources of their food. One of these gardeners said that when she started growing around 2005, she started looking out for farms nearby that she could visit to ascertain the quality of the food they were producing (Mehta, personal interview). Another gardener said that over a period of 18 years, he has talked to the farmers present at the Madinwalla Market, trying to understand them and the reasons behind their growing methods; he has now built a small network of farmers (Pagadala, personal interview). Another grower buys her family's one-year supply of rice at a time from a farmer in her native place (close to the AP border) because she knows "what he is adding, what he is doing" (A.M., personal interview). Yet another gardener told me he is "very conscious about where [his] food comes from" and is "careful to make sure his money goes to whoever grew the food" (Nadig, personal interview). Another three mentioned buying their groceries from an organic retail outlet in their neighborhood whose keeper they have come to know and know exactly where she sources each kind of product.<sup>8</sup> Whether in discussing methods for provisioning food or at other points in our conversation, all interviewees but one talked about the unreliability of organic certifications and the inability to know the nature of the food product from the mere label.

### E. Connectivity Among Actors

#### Between Urban Food Growers

Urban food growers in Bangalore are extensively linked in many different ways. Almost all those interviewed emphasized the role that the OTG FaceBook group, and the network of urban gardeners more generally, plays as a source of information in their gardening practices.

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<sup>8</sup> The retail outlet in question is Buffalo's Back, a small and unassuming store where none of the packaged dry goods have any label at all. The only branded products were honey and some jars of jams and syrups.

Several of the interviewees cited the variety of opinions and the applicability of the experiences shared as some of the principal benefits of the social network as a source of information (Pagadala, Kapuganti, and Hoysala, personal interviews). Other ways in which urban food growers are linked are through field trips to farms—one gardener mentioned a trip to a farm in the outskirts (Upadhya, personal interview), and another mentioned a trip to a farm recently started by a group of urbanites to help in their activities (Hegde, personal interview). More common are seed exchange events and workshops independently organized by urban gardeners—two among those interviewed, for example, hold composting workshops in their homes (Murthy and Hoysala, personal interviews). Also common are visits to other people’s gardens which may happen regularly (Kapuganti, personal interview), after events (like workshops or Oota From Your Thota) (Mehta and A.M., personal interviews), or even after a particular garden’s appearance in a newspaper article (Magadi, personal interview). In their discussion of such connections, most of the gardeners interviewed emphasized knowledge-sharing and the dissemination of information. One gardener qualified the network of urban food growers as one in which people have the same interest and “are interested in learning and passing on the information” (Sharma, personal interview).

#### Between Urban Gardeners and Non-Practitioners

Urban gardeners in Bangalore are not isolated from their surrounding communities in their food growing practices. Some of the gardeners said they try to educate their neighbors on gardening by showing them the garden and sharing saplings or seeds with them (Sharma, Kapuganti, and A.M., personal interviews). Two of the gardeners who work in the same office, along with another colleague, conducted a series of workshops in their workplace on organic

gardening to, as one of them put it, “keep spreading the word” (Hoysala and Kapuganti, personal interviews). The BM English School last year started a series of workshops on organic gardening for teachers and parents of the school (Rajseh, personal interview). Another gardener converted his office building’s green spaces into food producing areas (there are no more ornamentals or grass) and eventually organized a volunteer group of 20 to 25 colleagues, who have now become home gardeners themselves. The produce are distributed directly to staff (Pagadala, personal interview). One other gardener, who teaches workshops representing Garden City Farmers, said he has also independently gone to building complexes in his neighborhood and even to a factory to talk about organic terrace gardening (Nadig, personal interview).

#### Between Urban Gardeners and Institutions

Many of the urban gardeners interviewed are also connected to local institutions and organizations through their food growing practices. For example, one gardener has been involved with the Bhumi Foundation in teaching the urban farming/terrace gardening module of the one-year sustainable living course (Mehta, personal interview). Another gardener said she has hosted groups of women brought to her garden by NGOs working in the villages around Bangalore to fight nutritional deficiencies. They bring them to her garden, she said, so that they may learn about kitchen gardening in limited spaces (Sharma, personal interview). All of the gardeners interviewed, as well as the faculty in charge of the garden at the BME School, have attended workshops organized by NGOs and non-profits. These are primarily organized by GCF, but there was also mention of workshops and seminars organized by Sahaja Samruddha (Sharma, personal interview), and the Sahakar Nagar training event was organized in collaboration with the Department of Horticulture (S.N. training event, participant observation). Many gardeners also

set up demonstration stalls at the Oota From Your Thota event (Magadi, personal interview). One gardener mentioned being invited to share her experience at GCF workshops (Kesari, personal interview), and four of the gardeners interviewed are members of the GCF Trust. Three of the interviewees mentioned being aware of the Department of Horticulture workshops, only one of them having attended one (Kapuganti, Magadi, and Rejesh, personal interviews).

### Between Institutions

Data on this category of linkages was more difficult to collect, due both to the relative inaccessibility of certain institutions, and the lack of recorded data on past events and collaborations in the case of Garden City Farmers. Nevertheless, one of the interviewees, member of the GCF Trust, was able to provide some information. He reported that GCF sometimes holds workshops in conjunction with the Department of Horticulture. As an example, he mentioned that last year the Department of Horticulture held an event at the Lalbagh Botanical Garden and invited GCF to help. GCF also participated in the Green Bazaar, an event organized by (or in collaboration with) the Department of Horticulture and BBMP (the municipal corporation) (Nadig, personal interview). GCF has also collaborated with the University of Agricultural Sciences' Alumni Association to host events (Nadig and Vishwanath, personal interviews).

## **V. Discussion**

An examination of the circumstances of urban food production in Bangalore described above in light of the three elements of localized food systems reveals telling patterns.

Regarding input use and provisioning, three kinds of provisioning patterns arise: extremely localized sourcing (in-situ sourcing), sourcing through direct marketing and/or

distribution arrangements (and therefore localizing (Feenstra, 3; USDA Economic Research Service, iv)), and sourcing that conforms to neither of those conditions is therefore not localizing.

The ubiquitous importance of composting for soil fertility management, and particularly the emphasis placed on composting all kitchen waste as well as leaf litter generated in the garden and in the streets of the city, represents a localization of input provisioning. While compost is also purchased, sometimes from non-local sources (e.g. the Mysore zoo), sometimes from unknown sources (e.g. the Department of Horticulture), the prevalence of in-house composting and the relatively high incidence of direct marketing arrangements for purchased compost (e.g. from Nitya Jaivika, from street-leaf compost producers, through sharing with other gardeners), suggests that composting as an example of organic waste reuse for fertility management contributes to the localization of input provisioning.

Methods for the provisioning of seeds mainly reflect the second pattern of input use and provisioning—that is, direct marketing and distribution arrangements for the sourcing of inputs. This is primarily owing to the prevalence of seed sharing and exchanging, and secondarily to the purchasing of seeds from seed producing organizations run by farmers (that are furthermore based in the Bangalore city area) such as Annadana and Sahaja Samruddha, and other “local” sources like Nitya Jaivika and the Department of Horticulture. To the extent that urban gardeners save seeds in their gardens, seed use also reflects a more localized, in-situ sourcing of inputs. However, given that neither the relative amount of seeds sourced from places like Annadana and Sahaja Samruddha versus other companies, nor the amount of seeds saved were quantified in this

study, the stated importance of sharing and exchanging remains the most determining aspect of methods for the sourcing of seeds.

Other inputs which reflect a high-degree of localization are containers, to the extent that they are recycled either from the house itself or from other locations in the city (e.g. vegetable crates from the market, used cement bags and paint drums, etc.). Most of the gardens visited, however, also had many containers that seemed to be store-bought. Mulching, although not mentioned by many, certainly corresponds to the first pattern of input provisioning given it is exclusively done with materials produced in the garden itself. So does the use of home-made concoctions of garden-produced materials (garlic, chilies, marigold flowers, etc.) for pest management.

Cow dung and cow urine are more representative of localizing direct marketing arrangements, given that, from the interviewees' comments, it seems that they are sourced to a significant degree from cow sheds in the city or directly from farms outside the city. Non-defined "gardening supply stores" (Mehta, personal interview), however, were also mentioned.

Other inputs, such as oil cakes, biopesticides and neem oil, do not significantly reflect either kind of localizing pattern of input provisioning, at least from the data gathered in the study. There are specific exceptions, such as those who said to source these products from Nitya Jaivika or particular farms or producers, but they do not represent a significant share of all products and sources discussed.

Finally, water seems to present a great challenge to the ability of urban agriculture to result in the patterns observable and requisite for localized food systems. While all practitioners interviewed acknowledged the importance of rainwater-harvesting, the incidence of direct-use

rainwater harvesting in particular (where collected rainwater is directly used in the house and garden) is low. While rainwater-harvesting systems that recharge the water table could also represent a localization of water provisioning, it is more difficult to quantify the extent to which it does so (i.e. how much of the water used in the garden was had been recharged.) Urban food production practices in Bangalore, furthermore, make no use of wastewater, which the background literature presents as one of the mechanisms by which UPA may further localize input provisioning (Renting and Dubbeling, 36).

Thus, it appears that, generally, urban food growing practices in Bangalore achieve their ability to integrate production and input provisioning systems in local and circular loops, which Renting and Dubbeling posit as one of the characteristics of UPA that may successfully localize food systems (Renting and Dubbeling, 16-18). This ability is not fully achieved however, especially in the case of irrigation water.

As concerns direct marketing arrangements for food, given that the produce of urban gardening in Bangalore are not commercialized, urban food growing practices do not directly facilitate the expansion of such arrangements for food in the city. However, although the nexus of their particular health- and environment- related motivations brings urban gardeners in Bangalore to “organic”, as a principle in their growing and consumption habits, more directly than to “local”, this particular circumstance still induces urban gardeners to engage in more direct marketing arrangements (one of the three elements of LFS) for the foods that they do not produce themselves. This is because both “organic” and “local” require a certain amount of (reliable) meaning conveyed in the distribution process (the process between seller and buyer), and, owing to the perceived unreliability of organic certifications and labels in India thoroughly

expressed by almost all interviewees, ascertaining such meaning necessitates more direct marketing arrangements. This is exemplified in such practices as buying from an organic retail store whose owner and sources they know (Murthy and Kandasarma, and A.M., personal interviews), visiting farms around the city to see their cultivation methods (Mehta, personal interview), acquiring food products directly from the farmer (A.M., personal interview), and developing relationships with farmers and vendors in the market over a period of several years (Pagadala, personal interview). Thus, while urban food growing practices do not themselves expand direct marketing arrangements for food in Bangalore (although, to the small extent of the volume of produce that are shared, they could be said to expand direct *distribution* arrangements), they nevertheless contribute to inducing gardeners to participate in such arrangements for the foods that they do not produce. Furthermore, considering the produce that the gardeners need not buy, they also reduce the extent to which they must rely on conventional and indirect marketing arrangements. In these two manners, urban food growing practices do indeed, albeit indirectly, facilitate the expansion of direct marketing arrangements for food in Bangalore, to however marginal a degree it may be.

The data collected in the present study also yielded significant information regarding the third element of localized food systems: the presence of extensive and varied linkages between different actors in the food system. The data gathered and presented in the “Findings” section above suggests that these linkages are extensive indeed, but not equally varied. The network of urban gardeners appears to be very strong, and, through the OTG FaceBook group as well as through independently organized meetings, workshops, and field trips, is a principal source of information and other resources, especially seeds, to all. It appears that, among the urban food



growers interviewed, linkages to non-growers—leveraged specifically through and because of their gardening practices—are also common. These linkages are also centered on the dissemination of information, and are manifest in such instances as gardeners independently organizing gardening workshops in their workplace (Hoysala and Kapuganti, personal interviews), going to apartment buildings in their neighborhoods to talk about organic gardening (Nadig, personal interview), and converting the office building’s ornamental gardens into food gardens (Pagadala, personal interview). Thus, between these two groups and among urban gardeners, the “network of relationships” which Requier-Desjardins et al. (53) identify as a “specific asset” of localized production systems indeed enables “better diffusion of information” and cooperation.

Among urban gardeners and institutions (which is broadly intended to include NGOs, civil society organizations, government bodies, academic institutions, etc.) the linkages appear to be less extensive. Indeed, urban food growers are mostly only, albeit deeply, connected to the Garden City Farmers Trust. This connection is also somewhat monochromatic in that, for most of the urban gardeners interviewed (excepting those who are part of the Trust themselves), it mostly consists of participation at Oota From Your Thota and attendance in workshops. Only two gardeners said to be connected to other NGOs and, unlike the general engagement with GCF, these linkages are based on volunteerism. (It must be noted here that the four gardeners who are members of the Trust, as well as one additional gardener who sometimes shares her experience with the audience at GCF workshops, are also volunteers.) From the conversations with the urban gardeners interviewed, as well as with Dr. Vishwanath, founder of GCF, it appears that linkages to BBMP (the municipal corporation) are nonexistent and to the Department of

Horticulture, loose. Thus, it would seem that the extensive linkages that exist—namely among urban food growers, and between urban food growers, non-practitioners and GCF—are not the product of [physical] “closeness to institutions” that provide information, technical advice, etc., as suggested in the background literature (Veenhuizen, 14), but to *decentralized* action by individual or groups of urban gardeners. This, according to Sumner et al.’s theory, which describes the role of decentralization in alternative paradigms of food production (Sumner et. al., 55), would suggest that urban food production in Bangalore is being undertaken as part of an alternative food system. The simultaneous emphasis placed by urban gardeners on organic in both their growing and consumption practices further supports this conclusion.

In addition to the three main elements of localized food systems, in light of which the methods and circumstances of urban food growing practices in Bangalore were discussed above, other indicators of LFS emerging from the literature review are the emphasis on “local environmental and community health priorities” (Feenstra, 28), “environmental stewardship” (Bellows and Hamm, 1), and the building of “satisfying social and cultural interactions around food” (Feenstra, 34). From conversations on motivations, especially on the health concerns stemming from conventionally produced and acquired food, as well as on concerns over waste generation and the environmental degradation of the city (pollution, loss of greenery...), it appears that urban food growing practices do indeed prioritize local environmental and health concerns (albeit perhaps not community health as much as personal health). Similarly, concerns over waste generation and the environmental degradation of the city reflect a measure of environmental stewardship in urban food production. Even more generally across all interviews with urban gardeners, it seems that food production practices do indeed

foster satisfying social interactions around food—as one gardener put it, “it is a blessing [to be part of this social network of urban gardeners]” (Pagadala, personal interview). Therefore, in these three circumstances, urban food growing practices in Bangalore can be seen to further contribute to the emergence of a more localized food system.

Limits to the extent to which urban food production contributes to a more localized food system in Bangalore arise from its incomplete ability to integrate production and input provisioning, particularly of irrigation water, at the local (even city) level. Other limitations result from the unfulfilled potential existing in the closeness between urban producers and local institutions, especially municipal government institutions, and the resulting incomplete connectivity among actors in the city’s food system. The absence of commercial arrangements for the products of urban gardening in Bangalore may or may not represent a limitation—the present study does not consist of research adequate to determine this question. Interestingly, however, a study by DeLind and Bingen found that local food systems that are based primarily on market relations—direct or indirect—are not intrinsically structured to promote democratic participation or social equity (cited in Olsen, 6). In this way, being based primarily on market relations would restrict the ability of a localized food system to distribute power more widely among actors in the food system, which is the mechanism by which LFS fulfill their benefits (Olsen, 6).

## **VI. Conclusion**

The review of the relevant literature conducted for this study indicated that localized food systems are garnering increased attention and support in response to two principal motivational factors. These are an awareness of the pressures exerted by increasing urbanization on food

security and access, and concern for the ecological and social costs of the dominant globalized food system. Understanding how urban food production in Bangalore relates to these drivers for localized food systems, as well as to the general urban development trends of the city, would help us apprehend just how strongly or permanently urban food growing practices in the city are contributing to the emergence of a more localized food system.

Enhancing community food and nutrition security did not appear to be a major driving factor in urban farming practices in Bangalore. Indeed, it was only stated as a reason for such practices by the Garden City Farmers Trust (in their presentation as well as in conversation with Dr. Vishwanath), and by academicians from the Institute for Social and Economic Change. While GCF is very closely associated with individual urban gardeners, a concern for food security was not mentioned by the gardeners and, thus, they appear to be quite removed from urban food growing practices in Bangalore. It is interesting that while food security was discussed by the greatest variety of sources as a factor related to LFS in the background literature (i.e. academicians, FAO, government agencies...), in the field, in Bangalore, it musters less varied attention.

Prior studies of local food systems have defined concerns over “the ecological and social costs of the global food system” and “local environmental and community health priorities” as other important incentives for the localization of food systems (Feenstra, 28; USDA Economic Research Service, 2). The present study has shown that ecological sustainability as related to agricultural systems is not as important to Bangalorian urban food producers as is ecological sustainability related urban growth. Indeed, while the ecological costs of the dominant food production system were mentioned by some of the respondents, much more common were

concerns for the ecological detriments of urban growth and the personal health risks resulting from the dominant food production system.

That urban food growing practices in Bangalore are contributing to a more localized food system along this pattern of priorities is evident in the particular nodes of control salient in the data gathered for the study. Localized food systems are characterized by a wider distribution of control among actors (Olson, 6). Urban food growing practices in Bangalore constitute an attempt by gardeners to take control of food provisioning to ensure access to healthy food; as well as an attempt to take control of input provisioning to ensure not only quality but also the beneficial effect of their gardening practices on the environmental conditions of the city.

This particular combination of motivations, in some ways conforming to and in some ways differing from what is described in the literature, must be the product of locally specific trends and experiences. From the many conversations and observations that composed the study, it appears that two conditions, resulting from Bangalore's urban growth experience in the past ten years, have been most influential in shaping urban gardening practices and developments in the urban food system in general. These two conditions are "the garbage and sewerage problem", and the outward expansion of the city and separation from the countryside. The "garbage problem", widely acknowledged both in connection to food growing practices (as when gardeners say they compost first and foremost to reduce waste generation) and in isolation, has produced a sense that the food in the city is polluted. This explains the predominance of organic as a principle of urban food growing practices in Bangalore. Likewise, the outward expansion of the city (Bangalore, despite its growth is not very dense nor tall) and increasing separation from the countryside, may urge the desire to know where food comes from and how it is grown, and

the sense that urbanites, and in particular the younger generation, do not know how food is grown, do not know the value of food.

This suggests that while those two trends of urbanization in Bangalore—the garbage problem and outward expansion—remain significant or even intensify, urban food production may gain increasing attention from residents in particular, and thereby continue to contribute (albeit in its presently limited ways) to the localization of the urban food system in Bangalore.

## **VII. Recommendations for Further Study**

The present study has a few limitations that should be addressed in future studies to produce a complete understanding of urban food growing practices in Bangalore and their potential effect in localizing the food system.

Firstly, owing to limitations in time and access, this study does not include the perspective of the BBMP, Bangalore’s municipal corporation. Including such data would not only complete the picture of the linkages existing among actors in Bangalore’s food system, it would also shed light on some of the potential opportunities and obstacles related to factors such as access to land and water, tenancy rules, use of public spaces, etc.

Another perspective that it would be important to include in a future study is that of the Department of Horticulture. The present study only indirectly observed the involvement of the Department of Horticulture with urban food growing practices and urban gardeners. Greater depth and more direct information is needed to better understand the connectivity among different actors, and the ways in which the Department of Horticulture, as a provider, affects patterns of input use and provisioning.

The study observed that alternative initiatives in the food system are not limited to urban gardening, and indeed organic peri-urban farming seems to be a potentially significant element contributing to a more localized food system in Bangalore. Comparing this to urban food growing practices may provide a richer understanding of the factors, especially those related to the recent development of the city, that are propelling these alternatives.

Finally, the present study did not seek to quantify the costs associated with urban gardening practices (that is, personal financial costs to the gardeners), which were mentioned by several of the interviewees as the biggest challenge to the spread of the practice. A future study quantifying these costs could help identify exactly where the obstacles are posed, and where collaborations with both governmental and non-governmental organizations would bridge these obstacles.

## Primary Sources

A. M., urban gardener and owner of Nitya Jaivika, personal interview, Bangalore, May 4, 2015.

Bangalore South OTG Meeting, participant observation, Bangalore, April 19, 2015.

Clean Green Workshop, participant observation, Bangalore, April 19, 2015.

Deshpande, R.S., faculty, personal interview, Institute for Social and Economic Change,  
Bangalore, May 4, 2015.

Hegde, R., trustee, Garden City Farmers, personal interview, Bangalore, April 26, 2015.

Hoysala, U., urban gardener, personal interview, Bangalore, April 25, 2015.

Kannan, E., faculty, Institute for Social and Economic Change, personal interview, Bangalore,  
April 24, 2015.

Kapuganti, S., urban gardener, personal interview, Bangalore, April 25, 2015.

Kesari, P., urban gardener, personal interview, Bangalore, April 22, 2015.

Magadi, V., urban gardener, personal interview, Bangalore, April 27, 2015.

Mehta, A., urban gardener and trustee, Garden City Farmers, personal interview, Bangalore,  
April 21, 2015.

Murthy, V. and Kandasarma, U., urban gardeners, joint interview, Bangalore, April 22, 2015.

Nadig, A., urban gardener and trustee, Garden City Farmers, personal phone interview,  
Bangalore, April 27, 2015.

Pagadala, H., urban gardener, personal phone interview, Bangalore, April 20, 2015.

Rajesh, S., Director, BM English School, urban gardener, personal interview, Bangalore, April  
20, 2015.

Sahakar Nagar kitchen/terrace gardening training event, participant observation, Bangalore, May



3, 2015.

Sharma, A., urban gardener, personal interview, Bangalore, April 17, 2015.

Upadhyaya, N., urban gardener, personal interview, Bangalore, April 19, 2015.

Vishwanath, B.N., urban gardener and President, Garden City Farmers, personal interview, Bangalore, April 14, 2015.

### **Secondary Sources**

Bellows, A. C., & Hamm, M. W. (2001). Local autonomy and sustainable development: Testing import substitution in more localized food systems. *Agriculture and Human Values*, 18(3), 271-284. Retrieved from <http://link.springer.com/article/10.1023%2FA%3A1011967021585>

Eriksen-Hamel, N. & Danso, G. (2010). Agronomic considerations for urban agriculture in southern cities. *International Journal of Agricultural Sustainability*, 8(1&2), 86-93.

Feenstra, G. W. (1997). Local food systems and sustainable communities. *American Journal of Alternative Economics*, 12(1), 28-36.

*Food, agriculture and cities: The challenges of food and nutrition security, agriculture and ecosystem management in an urbanizing world (T. Forster, Comp.). (n.d.).* FAO Food for the Cities - Multidisciplinary Initiative.

Leeuwen, E., Nijkamp, P., & Noronha Vaz, T. (2010). The multifunctional use of urban greenspace. *International Journal of Agricultural Sustainability*, 8(1&2), 20-25.

Olson, K. A. (2015, February). *Growing in place: Building a local food economy in Vermont.* The Future Economy Initiative.

Pearson, L. J., Pearson, L., & Pearson, C. J. (2010). Sustainable urban agriculture: Stocktake and

- opportunities. *International Journal of Agricultural Sustainability*, 8(1&2), 7-19.
- Renting, H., & Dubbeling, M. (2013, November). *Synthesis report: Innovative experiences with (peri-) urban agriculture and urban food provisioning – Lessons to be learned from the global South (Research Report No. 3.5). SupurbFood.*
- Requier-Desjardins, D., Boucher, F., & Cerdan, C. (2003). Globalization, competitive advantages and the evolution of production systems: rural food processing and localized agri-food systems in Latin-American countries [PDF]. *Entrepreneurship and Regional Development*, 15, 49-67.
- Sastry, G. S. *Urbanisation in a Forward Looking State: Patterns Issues and Policy*. N.p.: Institute for Social and Economic Change, 2006.
- Sumner, J., Mair, H., & Nelson, E. (2010). Putting the culture back into agriculture: civic engagement, community, and the celebration of local food. *International Journal of Agricultural Sustainability*, 8(1&2), 54-61.
- USDA Economic Research Service. (2010, May). *Local food systems: Concepts, impacts, and issues (Research Report No. 97) (S. Martinez, M. Hand, M. Da Pra, S. Pollack, & K. Ralston, Authors)*. Retrieved from [http://www.ers.usda.gov/media/122868/err97\\_1\\_1.pdf](http://www.ers.usda.gov/media/122868/err97_1_1.pdf)
- Veenhuizen, R. (2007). *Profitability and sustainability of urban and peri-urban agriculture*.  
FAO.

## Appendix A

A. To discern patterns of input and resource use and provisioning:

- Why and When did you start growing? What do you grow?
- Where do you grow it?
- What are the most important inputs that you use in your garden? Do you use any methods for fertilizing and pest control, and if so, which ones?
- How do you water the plants?
- How do you procure seeds?
- Did you have to get any items when you started your garden (i.e. containers, beds, irrigation system...) and where did you get them?
- How much time do you spend in a day/week? Who all participates in it?

B. To discern arrangements for provisioning and consumption of produce:

- Do you consume all of the produce you grow? If not, do you sell the rest, do you share it, and with whom? Do you donate it?
- How important is it to you and your family (and to those with whom you share your produce) to know that it was produced by someone they know? That it was produced locally? That it was produced organically?

C. To discern extent of connectivity among different actors:

- How and to what extent do you communicate with other urban farmers?
- How do you get information that is helpful to you (perhaps regarding gardening methods, seeds, etc.)?

- How important is it for you to be part of a network of urban growers? (How important is the social component?)
- Do you ever visit other growers's gardens or share seeds or other inputs with them?
- Are you involved in any other initiatives related to urban food growing?