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Urban Agriculture — Best Practices and Possibilities

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Report developed for the Urban Sustainability Directors in the cities of Columbia, Kansas City and St. Louis, Missouri, through the financial assistance of the Urban Sustainability Directors Network

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ABSTRACT

This report provides an overview of urban agriculture and local food system resources and practices across the United States and parts of Canada, with a primary emphasis on providing resources that can encourage and support urban agriculture in Missouri's metropolitan areas. We analyzed information from a survey of Urban Sustainability Directors Network members who belong to either the national network or the Heartland Sustainability Network. We provide examples of emerging practices that are working well for cities and collate a number of resources that exist for cities and their urban agriculture practitioners and advocates. This information is accessible in this report, but is highlighted in the website created for this project at *http://extension.missouri.edu/foodsystems/urbanagriculture.aspx*, which includes a public, searchable database that provides documents and websites of zoning ordinances, promotional and educational information, and resources on urban agriculture and food systems.

INTRODUCTION

At the request of the cities of Kansas City, Columbia and St. Louis, we seek to provide research-based guidance that can help these cities to realize the potential of regional food systems as an entrepreneurial strategy for urban economic development, paying special attention to urban agriculture. In particular, these cities were interested in seeing how regional food systems can be developed to bring together the interests of municipalities, advocates and practitioners.

Our *specific objective* was to assess and compile best practices and policies to promote urban agriculture, working with members of the Urban Sustainability Directors Network (USDN) and urban agriculture advocates and practitioners in the cities of Kansas City, Columbia and St. Louis. This report joins several other major guides and assessments that have been published recently in the constantly changing field of urban agriculture. The results of this project are presented in several different formats. First, this written report helps to define and describe urban agriculture and local food system efforts within Missouri's metropolitan areas and other cities across the nation. A report is a static document that is good only at the time of writing. Thus, a second output of this project is a dedicated web page created within University of Missouri Extension's website to provide information and resources on urban agriculture as part of larger food system efforts. The third output, a searchable database housed on the website, contains links to existing resources that cities can use to support and encourage urban agriculture and local food system strategies. This database also affords access to existing ordinances concerning urban agriculture as well as educational and promotional efforts made by cities to help advocates and practitioners of urban agriculture. This database is meant to be a dynamic tool that can help cities share information and resources with each other and the general public in the rapidly emerging field of urban agriculture.

PROJECT METHODOLOGY

Two primary methods were used to collect data for both the written report and the web page. First, we conducted an online survey of USDN members and members of the Heartland Sustainability Network; 29 members responded. This survey included questions about what kinds of urban agriculture existed in their cities; what challenges urban agriculture faced in their cities; and what kinds of policies, ordinances and practices they used to promote urban agriculture. The survey included space for respondents to upload any relevant public documents from their cities. Second, we conducted face-to-face interviews with eight advocates and practitioners of urban agriculture in Kansas City, Columbia and St. Louis. Interviewees were asked about urban agriculture practices in their cities, challenges faced by urban agriculture in those cities, and opportunities to work with city government to promote urban agriculture. All data gathering was conducted in accordance with the rules of the Internal Review Board of the University of Missouri.

While this report draws primarily from the survey and interview responses, it also uses information collected and shared through the listserv of the Community Food Security Coalition on specific urban agriculture practices, ordinances and programs.[1] In the course of our work, several queries about municipal policies, ordinances, programs and support for urban

[1] The Community Food Security Coalition has existed since 1996. It is one of the most important groups of practitioners, advocates and scholars in the United States and Canada connecting nutrition, food security and local food systems. Its mission is "to catalyze food systems that are healthy, sustainable, just, and democratic by building community voice and capacity for change." See http://foodsecurity.org/ for more information. The listserv is (COMFOOD-L@elist.tufts.edu).

agriculture surfaced on this listserv. We used answers to these queries not only to supplement the scan done through the survey but, more important, to cover a wider range of tools and resources for the web page. Finally, material for this report also came from public testimony received by the State of Missouri's Joint Committee on Urban Agriculture. Hearings were conducted in four cities in Missouri from July to October 2011. This testimony was reviewed for relevant information.

DEFINITIONS OF URBAN AGRICULTURE AND LOCAL FOOD SYSTEMS

The popularity of urban agriculture has increased considerably in the last few years as concerns about the environment have combined with increased interest in health and community-building issues, giving rise to support for food systems in metro areas as an integral part of a sustainable development path for cities. More cities, advocates and practitioners are moving to take advantage of the rise in interest in sustainable local or regional food systems, but they face many challenges, which accounts for the fact that a number of resources provided in this document have appeared only within the last six to twelve months.

Many of the respondents to our survey mixed conversations about local food systems with questions and policies dealing specifically with urban agriculture, which is actually one subsector of a city's food system. A **food system** is all the growing, processing, distributing, retailing, consumption and waste disposal activities associated with food ***(Figure 1)***. Definitions of local food systems often incorporate two other components — the location of these activities in a specific geographical area, and specified goals to "enhance the environmental, economic, social and nutritional health of a particular place."[2] However, these definitions vary from place to place, leading to little consensus on what "local" means. Finding a consensus definition frustrated authors of a report on local food systems prepared by the United States Department of Agriculture in 2010. For their purposes, they defaulted to the Congressional definition in the 2008 Farm Bill, which was "locally or regionally produced agricultural food product *[that] is less than 400 miles from its origin, or within the State in which it is produced.*"[3] Clearly, local food systems and urban agriculture vary substantially from place to place, making them sensitive to local context and the specific people involved; thus, ***cities must define and clarify their meanings for urban agriculture and food system issues when changing codes or when providing education and resources.***

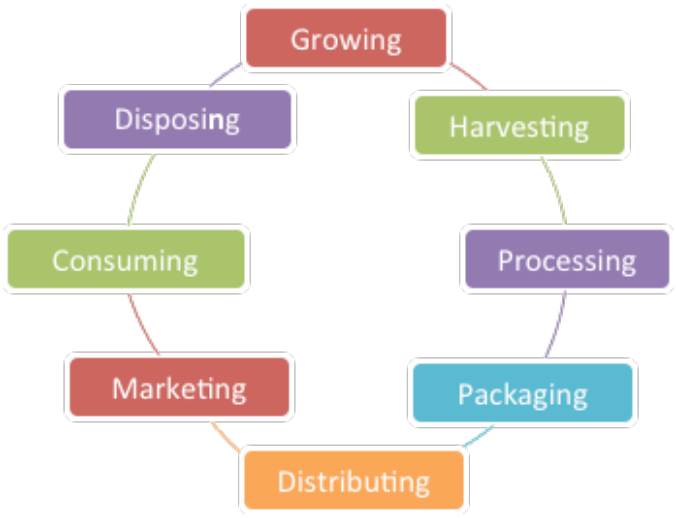

Figure 1. A food system and its components.

A city's food system is fed by local, regional and global systems of production and consumption. In local food systems, the emphasis is on building community relationships in the food system that can meet overall goals of enhancing the health, economy, society and environment of a particular place. For instance, while a notion of geographical place has been at the heart of local food system discussions, the USDA report concluded that consumers often associate other characteristics with local food systems such as marketing arrangements (e.g., direct farmer-to-consumer marketing like farmers' markets), product characteristics (e.g.,

[2] Garrett, S., and Gail Feenstra. 1999. Growing a Community Food System. Pullman, Wash.: Western Rural Development Center.

[3] Martinez, Steve, et al. Local Food Systems: Concepts, Impacts, and Issues. ERR 97. U.S. Department of Agriculture, Economic Research Service. May 2010.

produced with reduced use of synthetic fertilizers or other chemicals, humanely raised), and who produced the food (e.g., ethics of the farmer, fair labor practices).[4]

Urban agriculture is one component of local food systems. As a subsector of such a complex system, urban agriculture can be defined in many ways and will need to be adapted to the local context. For the purposes of our project, the definition provided by Bailkey and Nasr is used: **"The growing, processing, and distribution of food and other products through intensive plant cultivation and animal husbandry in and around cities."**[5] In our face-to-face interviews, respondents generally follow the path of Goldstein et al.[6] by broadening the definition: urban agriculture "refer[s] to growing and raising food crops and animals in an urban setting for the purpose of feeding local populations. Cities choose to narrow and focus this definition in various ways, often categorizing urban agriculture as one or more of the following: community gardens, commercial gardens, community supported agriculture, farmers' markets, personal gardens, and urban farms." One of our interview respondents (M-1) said that "urban agriculture is community-based and community-minded." ***We believe it is important for cities to understand urban agriculture as a food-producing and community activity, one that is sometimes a for-profit business, especially as urban agriculture is incorporated into sustainable development goals.***

Important Issues for Cities:
Policies, education and technical assistance are going to differ based on the type and scale of urban agriculture. Profit-making farms need different support than community gardens or other more communal or community-based farming. The majority of urban farms are small, most being less than one acre, which is approximately half a city block. However, larger scale urban farms – from four acres to 100 acres – are possible. With intensive cultivation and good marketing practices, urban farming businesses can gross more than $50,000 per acre, which may be an important economic development tool.

Figure 2 shows that survey respondents generally believe that urban agriculture is used to supplement household income or to provide food for the household. This may not reflect reality, but as we show in this report, there is little ongoing research to provide answers to this question. Thus, cities may want to separate out forms of urban agriculture that are primarily profit-based – essentially farming in the city[7] – from those that exist primarily to benefit the common good (e.g., community gardening) when thinking about policies, education or technical assistance that can or should be provided ***(Figure 3)***.

Cities should also understand matters of scale in urban agriculture. Although many urban farmers are small producers who use profits mostly to subsidize household income rather than make a living, it is important that cities understand that urban agriculture projects can also be large-scale. For example, the FarmWorks project in St. Louis envisions redeveloping a four-acre site in the downtown area to provide jobs, fresh foods and processing in one place.[8] In Kansas City, Kansas, a two-acre plot of organic land grosses over $100,000 in sales for Cultivate Kansas City, a nonprofit that uses the land as a farm incubator.[9] In Detroit, one private investor, Hantz Farms, and Michigan State University have both announced plans to establish large-

[4] Ibid.

[5] Bailkey, M., and J. Nasr. 2000, From Brownfields to Greenfields: Producing Food in North American Cities, Community Food Security News, Fall 1999/Winter 2000:6

[6] Goldstein, M., et al. (2011). Urban agriculture: a sixteen city survey of urban agriculture practices across the country. Page 4. Retrieved from http://www.georgiaorganics.org/Advocacy/urbanagreport.pdf.

[7] The U.S. Department of Agriculture defines a farm as "any operation that sells at least one thousand dollars of agricultural commodities or that would have sold that amount of produce under normal circumstances." For instance, urban farmers can qualify for assistance under USDA farm programs, including those for conservation and income support.

[8] Written testimony provided by *Farm Works* at the Missouri Joint Committee on Urban Agriculture hearing in Maplewood, Mo., on October 4, 2011.

[9] Testimony from Katherine Kelly provided to the Missouri Joint Committee on Urban Agriculture hearing in Kansas City, Mo., July 11, 2011.

acreage urban farms of 100 acres or more.[10] Thus, it is important for cities to understand urban agriculture as private enterprise that can exist from a micro to macro scale.

Interest in urban agriculture as a viable economic enterprise is reflected in some responses to our survey of USDN members. For instance, a couple of respondents specifically asked for resources that would help them answer the following questions:

- How can we address the financial viability of urban or peri-urban farming or incentivize urban/peri-urban agriculture to increase food security but also consider issues of affordability?
- Can urban agriculture create full-time employment through food production?

Other cities responded that they were working on activities to make urban agriculture more financially viable, including establishing a centralized incubator farm[11] and working with local lenders to help capitalize urban food production efforts.

STRUCTURE OF THIS REPORT

We have chosen to focus on a few key areas in this written report, including key questions that USDN members and urban agriculture practitioners/advocates have about urban agriculture; city ordinances and zoning regulations; access to water and capital; brownfields and contaminated soil; food policy councils; food access; local food system infrastructure; and Missouri-specific information. These particular discussions follow this introduction. Each section presents a discussion of the issues, an analysis of USDN members' interest in those issues, and a highlight of either a best practice or a best resource. In the concluding section, we identify some gaps in the work and discuss overall ways that cities can successfully deal with local food system and urban agriculture work. As noted above, this written report is only one of the outputs of this project.

Another key output is the development of a web page at the University of Missouri that includes a searchable database of educational resources, reports, best practices and specific ordinances that apply to urban agriculture or local food systems. We believe this database will be the most significant output of this work for its ability to function as a dynamic tool for USDN members and the general public. **See the screen shot on p.10** of the opening page of the website, which provides access to the searchable database and an online copy of this report.

[10] Gallagher, John. 2012. "Michigan State proposes 100-acre, $100-million urban-farming research center in Detroit." *Detroit Free Press*. April 13. Also consulted Hantz Farms website at http://hantzfarmsdetroit.com/.

[11] For good examples of urban farm incubators, see Cultivate Kansas City (http://www.cultivatekc.org/) and Growing Power in Milwaukee (http://growingpower.org/).

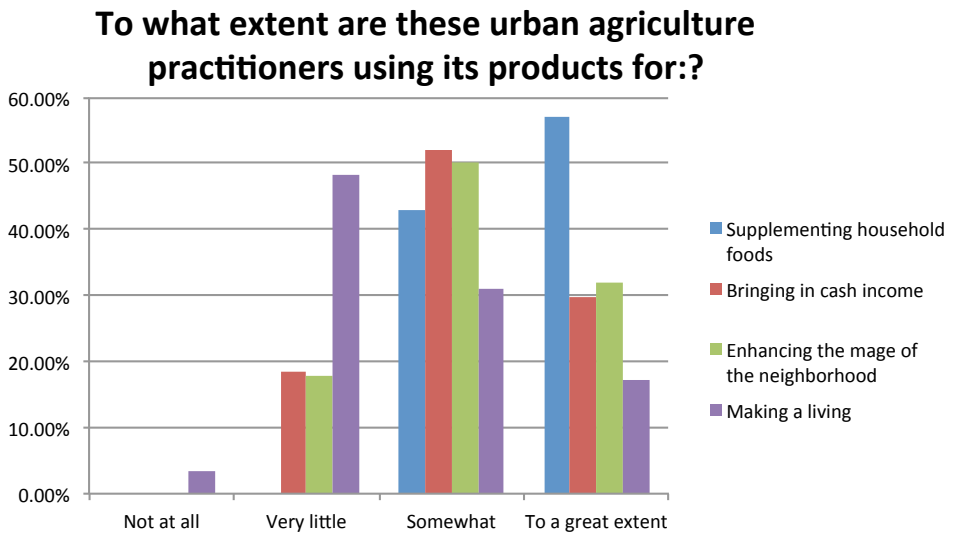

Figure 2. How urban agriculture is used in cities.

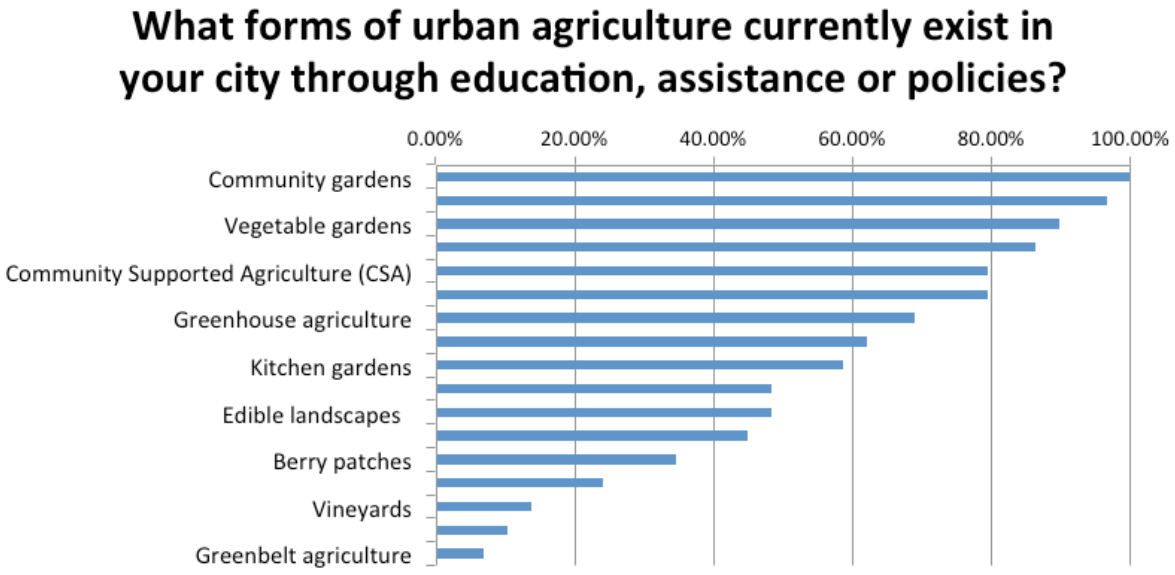

Figure 3. Most common forms of urban agriculture surveyed in cities.

KEY QUESTIONS ABOUT URBAN AGRICULTURE AND FOOD SYSTEMS

In general, we have noted these key questions that have been arising about urban agriculture based on analysis of queries on listservs, interviews and in a limited review of the literature: (note that questions are grouped by level of frequency; **bold type** representing the most frequent questions and *italic type* representing the less frequent.)

- **How can city municipalities and practitioners work together to make urban agriculture financially affordable? (e.g., How can practitioners afford the cost of access to water?)**
- **How can urban agriculture be better incorporated into city plans?**
- **What are the benefits and selling points for urban agriculture?**
- **How can we get more people involved in urban agriculture?**
- *How have other cities handled liability issues, and what are some of the best management practices for urban agriculture?*
- *What are other cities/practitioners/advocates doing to promote the growth of urban agriculture?*
- *Is there a way to map our existing resources in each city?*

USDN members are generally struggling with many of the same questions, but USDN members are primarily interested in the "how-to" strategies:

- Political engagement and community organizing (e.g., How can we incentivize the community in urban agriculture projects? What models have other communities used to organize urban agriculture efforts?)
- Land use and associated city ordinances (e.g., How has urban agriculture been included in zoning? How can greenbelts be used for urban agriculture? How can we change cumbersome zoning that thwarts urban agriculture?) This issue has received the most attention from cities, and there are a number of resources highlighted in this report and loaded in our database that specifically address these issues.
- Access to capital (e.g., How can one get access to capital for urban farmers?) This is particularly important as access to capital is seen as a key barrier to expansion of urban agriculture efforts.
- Support for local foods (e.g., How can we make institutional purchasing of local foods feasible for both the city and local growers? How can we cultivate food hubs?)
- Liability (e.g., How have cities handled the "liability issue," particularly regarding community gardens and edible landscaping on public lands?)

Urban agriculture practitioners and advocates in St. Louis, Columbia and Kansas City, Missouri, are also interested in "how-to" issues:

- Land use and city ordinances that could support urban agriculture, including a desire for resources from other cities.
- Best practices for food production and food safety in urban agriculture.

But they are also concerned with finding information that could help them position urban agriculture for the future:

- Research and evaluation of urban agriculture's economic, social and other benefits.
- Future trends in urban agriculture, including larger questions of overall development strategies for cities.

We have identified a *gap in the academic literature* where there is little data on the long-term benefits that urban agriculture can provide. Many of the benefits are assumed, as interest in urban agriculture generally increases during times of economic uncertainty and then decreases when stability is restored,[12] leading to a dearth of research on the long-term impacts. However, simply collecting data at the city or metropolitan level could help cities make good decisions about the best ways to incorporate urban agriculture into overall plans.

[12] Mukherji, N., and A. Morales. 2010. *Practice urban agriculture.* Chicago: American Planning Association. Page 2.

CITY ORDINANCES AND ZONING REGULATIONS

Urban agriculture can offer health, environmental and economic advantages that make it an appealing movement. For example, farming in cities can provide increased access to healthy, cheap produce for urban residents, while lowering pollution impacts from transportation and waste products.[13] Urban agriculture also has the potential to help in the economic revitalization of cities through the use of vacant land and the potential to use urban agriculture for small business opportunities. However, there are typical concerns associated with urban farming, including aesthetics, worries over property value, and concerns about nuisances. Zoning regulations are well suited to balance these concerns and benefits because they are designed to regulate competing land uses and thus should be a starting point for any municipality interested in promoting urban agriculture. In fact, 13 of our respondent cities indicated they were reviewing city ordinances, and another eight indicated they were reviewing policies such as food codes. ***(See Table A2 in Appendix for more information.)***

While municipal efforts to accommodate urban gardening have been useful, many are ineffective amendments that fail to take a broader view in addressing urban agriculture.[14] Unfortunately, a piecemeal approach can serve to discourage urban farmers because it adds complexity and increases costs, thus deterring would-be farmers and entrepreneurs. To make full use of urban agriculture as a tool for promoting revitalization of a town or city, officials should consider a more comprehensive approach for incorporating urban agriculture into their zoning regulations.[15] Such an approach would involve steps that clarify the city's support for urban farming, standardize the urban farming activities that are permitted, and facilitate the sale of goods produced from those permitted activities.[16] Because a city's comprehensive plan is where a municipality identifies the goals and priorities it seeks to implement through its zoning code, such a plan is an important starting point for a community committed to encouraging urban farming through land use controls.[17]

USDN member cities are making critical strides in this direction. Because urban agriculture is being practiced in so many of USDN members' cities, the majority of survey respondents (21 of 29) said that urban agriculture was addressed in their city plan. This corresponds to findings from 16 case studies on urban agriculture conducted for Georgia Organics by the Emory Law School in 2011 where most cities had some provision for urban agriculture in their zoning ordinances.[18] However, as we see throughout the report, clarity on goals for urban agriculture is important.

When asked to "List the goals related to urban agriculture that your city's comprehensive plan addresses or will address," respondents gave a wide variety of answers, but the mode (7) was "create sustainable food systems" ***(see Table 1)***. At least three respondents directly mentioned health, primarily access to healthy foods, and another four specified a focus on community gardening in some form. However, there were also goals associated with community economic development (2), local foods (3), and zoning. Most cities were trying to address overall goals

[13] Mukherji, N., and A. Morales. 2010. *Practice urban agriculture*. Chicago: American Planning Association.

[14] Pothukuchi, K. J. K. (January 01, 2000). The food system: A stranger to the planning field. *Journal of Planning Literature*, 15, 1.)

[15] Mougeot, L. J. A., and International Development Research Centre (Canada). 2006. *Growing better cities: Urban agriculture for sustainable development.* Ottawa: International Development Research Centre.

[16] See Mukherji and Morales 2009.

[17] National Policy and Legal Analysis Network to Prevent Childhood Obesity. 2009. Public Health Law and Policy, Establishing Land Use Protections for Community Gardens 2, 4.

[18] Goldstein et al. 2011.

of sustainability by including urban agriculture in their comprehensive plans as evidenced by the inclusion of goals related to developing local food systems, or overall community economic development. ***Table A2 in the Appendix shows the approaches used in various cities to include urban agriculture and food systems in their comprehensive plans.***

Table 1. Goals in comprehensive plan

	Cities
Create sustainable food systems	7
Address or support community gardening	4
Use urban agriculture for community economic development	2
Support access to healthy foods to address health issues	3
Support local foods	3
Create open space	1

In our survey, the city ordinances and zoning were key challenges to urban agriculture ***(see Table 2)***, where 83% of respondents reported city ordinances were sometimes, often or always a problem; zoning was reported by 76% of respondents as sometimes, often or always a problem. Health codes, homeowner association restrictions and contamination/brownfields were less problematic, but all were considered barriers at least some of the time. Over 40% of respondents said that health codes and homeowner association restrictions were rarely or never problematic.

Table 2.
To what degree has each barrier prevented residents from developing urban agriculture projects in your city? (N=29)

	Never	Rarely	Sometimes	Often	Always	No response	Mode	Mean
Health codes	0	11	11	4	0	2	Rarely/ Sometimes	2.54
Zoning	1	6	11	9	2	0	Sometimes	3.17
City ordinances	0	5	14	8	2	0	Sometimes	3.24
Access to water	0	4	12	9	3	1	Sometimes	3.28
Access to capital	0	1	6	15	7	0	Often	3.97
Homeowners association restrictions	2	12	10	3	0	0	Rarely	2.52
Contamination/ brownfield redevelopment	3	7	13	4	1	0	Sometimes	2.75

Most cities were trying to address the barriers identified above in some way either by changing ordinances or by reviewing policies that act as barriers to urban agriculture (18 of 29 cities).

By amending its model ordinances to include support for urban agriculture, a municipality can establish urban agriculture as a priority in its communities and set the stage for the revision of its zoning regulations. When incorporating urban agriculture into its plan, a city should include its goals and objectives for urban agriculture, and the policies and actions it will use to implement those goals and objectives. To do this, the municipality should identify the benefits it is hoping to gain from promoting urban agriculture. These benefits can include health, environmental, or economic benefits; for example, access to fresh, local produce, "additional open areas, nutrition or job training for their children, community gathering spaces,

increase economic opportunities," or promoting "community gardening opportunities, nonprofit programs or small businesses."[19]

Traditional planning policies can be critically important for urban agriculture. While urban agriculture and local food systems have largely emerged as a grassroots movement in the last 15 years, the movement has developed to the point that cities need to plan for it to the same extent as they do for streets, buildings or other infrastructure. In 2011, the American Planning Association[20] provided recommendations for cities in addressing ordinances, zoning regulations and city plans, calling for:

- Use of non-zoning regulations that affect private land (e.g., animal control and residential composting ordinances)
- Land use policies that promote public land to be used for gardens or farms (e.g., Hartford, Conn., keeps track of all of its vacant public lands to match gardeners to those lots)
- Land disposition policies that permit surplus properties to be acquired for urban agriculture
- Policies and regulations that strengthen infrastructure for widespread urban agriculture (e.g., abandoned property management programs, brownfield cleanup programs, local procurement policies)

As summarized in the Missouri-specific section below, tenure and security of land is a key issue for urban agriculture practitioners. Without security on the land, urban farmers are unlikely to make investments in soil or infrastructure that could lead to more productive farms and greater availability of locally produced food products in cities. For instance, soil remediation and improvement is a long-term strategy that urban farmers will be working on for the life of their enterprise. Infrastructure investments such as water lines or hoop houses[21] require multiple years to show a return on investment. Both urban farmers and community gardeners need security on the land, so cities should work with urban agriculture advocates and practitioners to find the best practices for transference of vacant lots and use of public land for food production.

In June 2010, the city council of Kansas City, Mo., reviewed and updated codes affecting urban agriculture activities. The new code secures the right of homeowners to grow produce in their front yard for consumption or off-site sales; allows for on-site sales from urban farms; enables local growers to have apprentices and interns; and allows gardening as a principal or accessory use of a property.

Information about zoning practices identified during our study is available through a searchable database at *http://extension.missouri.edu/foodsystems/policysearch.aspx*. ***Figure 4*** is a screen shot of how the database works as a search engine. To date, we have entered over 100 articles and resources into this database. However, it will remain a dynamic tool that can be updated for a long period of time.

[19] Rhoads, Amanda, et al., Portland Multnomah Food Policy Council, The Diggable City Phase II: Urban Agriculture Inventory Findings and Recommendations 30 (2006), available at http://www.portlandonline.com/bps/index.cfm?c=42793.

[20] Hodgson, K., M. Caton Campbell, M. Bailkey. 2011. Growing Healthy, Sustainable Places. Chicago: American Planning Association.

[21] Hoop houses are relatively inexpensive structures made by stretching plastic over metal hoops and used for growing produce. These are unheated structures that can provide significant opportunity to extend the growing season; for example, spinach may survive all winter in Midwestern climates or tomatoes may be produced as early as June. Such season extension can provide income opportunities for growers. Use of hoop houses can also protect against water and pest damage to produce. As these innovations appear, there are several issues for cities to consider. How do these agricultural buildings fit into current city codes? Are there agricultural exemptions? How do cities value these structures for tax purposes that fit the best interest of cities and urban farmers?

Figure 4. Screen shot of the searchable database developed through this project.

BEST PRACTICES

For the general public, clearly explaining ordinances and how to comply with them is very important. We highlight two websites that are good examples. One was developed by the nonprofit Northeast Organic Farming Association (NOFA)[22] and focused on backyard chickens. While it explores only one form of urban agriculture, it may be a model for how cities would like to construct an urban agriculture website that would help educate their population interested in practicing urban agriculture. *This could be especially important when governance occurs across multiple municipalities in one metropolitan area, and ordinances differ from jurisdiction to jurisdiction.*

The website shares **regulatory** information by providing a database of towns in Massachusetts and their poultry-keeping laws and regulations, and an article on how citizens can best comply with rules and changes to laws. It also provides **practice** tips that demystify common myths about chicken keeping, a brief history of chicken keeping, a narrative on trying to change zoning laws in one town, and a partial list of resources for further research, study and inspiration. This information tool provides an efficient way to break down barriers that typically impede the keeping of chickens and lays the framework for a relationship between municipalities and their citizens. It also allows for someone to upload new documents by sending them to a correspondent.

Another model we identified as helpful is the Ontario Ministry of Agriculture, Food and Rural Affair's Urban Agriculture Business Information Bundle[23]. This website serves as a central resource for information about urban agriculture for a city-dweller who wants to produce fruit or vegetables or raise livestock, or a municipal policy maker exploring the topic. The website provides means to help assess and improve soil conditions, marketing, food safety and legislation/regulations for those considering commercial production, and it collates relevant legislation and regulations that are required reading for producers and policy makers alike.

[22] *Backyard chickens in Massachusetts.* (July 23, 2011). Retrieved from http://nofamass.org/programs/backyardchickens.php

[23] Urban agriculture business information bundle. (April 28, 2011). Retrieved from http://omafra.gov.on.ca/english/livestock/urbanagbib/welcome.htm

BEST RESOURCES

Two resources from the **American Planning Association** provide extremely useful analysis and tools for cities engaged in changing ordinances and planning policies.

The first is ***Growing Healthy, Sustainable Places***, which provides an overview of the urban agriculture movement, discusses how cities can facilitate urban agriculture and local food systems, provides case studies of 11 U.S. and Canadian cities that are working on urban agriculture (Chicago, Cleveland, Detroit, Kansas City, Milwaukee, Minneapolis, New Orleans, Philadelphia, Seattle, Toronto and Vancouver), and extensively summarizes urban agriculture codes in cities across North America. (Most of the codes provided in the appendix of this resource are uploaded into our searchable database.) The main findings of the report are that "urban agriculture can positively contribute to a healthy, resilient community, especially when combined with other planning strategies" but that it takes public engagement and an engaged political leadership to develop and implement urban agriculture policies and programs. Moreover, "urban agriculture proliferates in communities with a wide range of policies and programs to support the diversity of urban agriculture types, sizes, and scales and its integration into the urban fabric." For cities, traditional planning tools can be deployed to support urban agriculture, which means they do not need to develop special skill sets but rather communicate effectively with stakeholders. Finally, data gathering through food system assessments and land inventories can help justify the need for urban agriculture planning, even in the face of the fact that land values often dictate policy and programs for urban agriculture.

The second resource, a shorter document called ***Zoning Practice: Urban Agriculture***, was published by the American Planning Association in 2010 and is available online. This resource presents a number of definitions and examples of urban agriculture as well as ways that planners can support and encourage urban agriculture. This short resource is available at *http://www.planning.org/zoningpractice/2010/pdf/mar.pdf*.

Finally, ***Urban Agriculture: A Sixteen City Survey of Urban Agriculture Practices Across the Country*** was developed by the Emory Law School for the nonprofit Georgia Organics. Published in late 2011, this report analyzes urban agriculture codes in 16 different cities and provides an overview of codes that cities may be interested in adopting. The report specifically states that local context is extremely important in considering how codes may be best updated. It is available at *http://www.georgiaorganics.org/Advocacy/urbanagreport.pdf*.

ACCESS TO WATER / ACCESS TO CAPITAL

As noted earlier, ***(see Table 2 on p.13)***, key challenges for cities in supporting and promoting urban agriculture were access to capital (with nearly 100% reporting this is at least sometimes a problem) and access to water (86% reported this sometimes, often or always a problem). Access to water and capital, as well as contamination, were the only three of seven probable barriers to be selected by at least some recipients as always a problem.

Access to water can be difficult for community gardeners and urban farmers because of the costs associated with installing water lines to long-vacant lots, hooking into existing water sources or paying ongoing costs of using water at retail rates. In St. Louis, respondents observed that "securing water from a hydrant has not been difficult but does not allow for drip irrigation" because of the high water pressure. Drip irrigation is a best practice that uses water efficiently and should be encouraged. In San Francisco, the city is providing $100,000 to install water meters for community gardens and areas zoned for urban agriculture. Several cities, including Milwaukee, Madison and Cleveland, are working with water utilities or departments to help urban farms and gardens access water and adjust water usage rates for urban agriculture. Minneapolis developed a more transparent process for accessing water, while Dallas and Dubuque are working on water collection (e.g., rain barrels) and conservation practices.

The consistent lack of funding poses a large obstacle to the success of urban agriculture as a viable community development or economic strategy. Some cities are addressing the problem of access to capital in creative ways. Baltimore, for instance, reported "working with local lenders to investigate options for capitalizing urban agriculture operations (small grants, revolving loan fund, micro-loans)." Cleveland's office of economic development offers small grants for market growers, while Minneapolis provides low-interest business loans to urban farmers.

Table 2a.
To what degree has each barrier prevented residents from developing urban agriculture projects in your city? (N=29)

	Never	Rarely	Sometimes	Often	Always	No response	Mode	Mean
Access to water	0	4	12	9	3	1	Sometimes	3.28
Access to capital	0	1	6	15	7	0	Often	3.97

In general, few local governments provide financial resources to assist with urban agricultural start-up, management and expansion.[24] Difficulty in obtaining access to capital has also been exacerbated by federal funding decisions. Despite opportunities to include urban agriculture activities in new and existing public housing, schools, and other civic spaces, the Environmental Protection Agency, the Department of Housing and Urban Development and the Department of Health and Human Services offer little to no financial support, although this is slowing changing.[25] Part of the problem is that agriculture is still widely viewed as rural, not urban, by many federal and state agencies.

[24] Kaufman and Bailkey 2000.

[25] Hodgson, K., M. C. Campbell, and M. Bailkey. (2011). Urban agriculture: Growing healthy, sustainable places. Chicago, Ill: American Planning Association. Pg. 34.

However, there are some federal resources for urban agriculture and local food systems. The USDA Community Food Projects Competitive Grant Program provides funding for small-scale urban agriculture projects that address food insecurity in low-income communities, although the amount allocated to this program is inadequate to cover the growing number and variety of urban agriculture projects throughout the country, and urban agriculture is not its specific focus. In the past several years, urban farmers have qualified to receive cost-share assistance for constructing hoop house high tunnels (examples exist in Kansas City, Cleveland and Harrisburg, Pa.)[26] through USDA's Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program.[27] Urban farmers can also receive technical assistance and consulting from NRCS. In October 2011, Kathleen Merrigan, Deputy Secretary of Agriculture, issued a memo detailing funding and assistance available for urban agriculture through USDA and other federal agencies.[28]

Other important actions to deal with barriers to urban agriculture were development of food system assessments or action plans and direct engagement with community residents to help them practice urban agriculture. ***Specific examples of how cities are dealing with various barriers to urban agriculture are further elaborated in the Appendix.***

[26] McDonough, M. 2012. "Urban farm supports local community." USDA Know Your Farmer Know Your Food Blog, March 29. http://kyf.blogs.usda.gov/tag/high-tunnels/.

[27] See more about this initiative at http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/?&cid=stelprdb1046250.

[28] Merrigan, Kathleen. 2011. " Memo on Urban Agriculture and Gardening – Supporting farm viability, building access to nutritious, affordable food and encouraging rural-urban linkages." October 14. Accessed on October 31, 2011 at http://kyf.blogs.usda.gov/files/2011/10/USDA_Urban_Ag_Memo-Final.pdf.

BROWNFIELDS AND CONTAMINATED SOILS

For many urban agriculture advocates and practitioners, the large swathes of vacant land in the core of some major cities are an urban farm paradise waiting to happen, but access to land is often more difficult than anticipated. Such access is a critical issue that was articulated many times during the Missouri Joint Committee on Urban Agriculture hearings.[29] While having a large contiguous piece of property available for food production is extremely valuable, the soil and the contaminants it may hold are basic, critical issues for urban agriculturalists. There is also a crucial difference between access to land and access to good soil; the latter is arguably the most important resource any farmer has.

For any farmer, rural or urban, the structure of the soil, its organic matter content, its ability to hold water, and its microbial activity are critical to raising good crops. While farmers can amend their soil through composting, application of synthetic fertilizers, use of manure, or use of cover crops to increase the availability of soil nutrients and organic matter content, the basic quality of the soil they start with affects crop yields. Soil forms over millennia, and disturbances to soil are not readily fixed in one, two or even three generations.[30] Thus soil is a critical human resource that needs to be stewarded and treated as extremely valuable. Vegetable and fruit crops, in particular, need high-quality soil. Grain and vegetable crops, as well as orchards, can absorb a number of contaminants, particularly heavy metals, from soil; thus brownfields[31] and contaminated soils are of particular concern to urban food producers. In fact, brownfields and contaminated land were reported by the majority of survey respondents (18 out of 29) as sometimes, often or always a problem for urban agriculture ***(see Table 2b)***. However, because crops can absorb contaminants and encourage new microbial activity in the soil, agricultural uses are also beneficial to brownfield redevelopment.

Table 2b.
To what degree has each barrier prevented residents from developing urban agriculture projects in your city? (N=29)

	Never	Rarely	Sometimes	Often	Always	No response	Mode	Mean
Contamination/ brownfield redevelopment	3	7	13	4	1	0	Sometimes	2.75

For any urban food producer – gardener or farmer – researching the history of the proposed farm site is the first step. Knowing what the property has been used for in the past, particularly

[29] The Missouri General Assembly appointed a Joint Committee on Urban Agriculture that held four public hearings across the state from July to October 2011 to collect information on critical issues in urban agriculture and food systems. For more information see http://www.house.mo.gov/committeeIndividual.aspx?com=806&year=2012.

[30] In rural areas, soil is easily lost to wind and water erosion. Intense rainfall events (often occurring in spring) can cause massive soil erosion as can runoff from metropolitan areas. Recovery is centuries long as it can take 500-1000 years to form an inch of soil. One agronomist at the University of Missouri, Peter Scharf, cited data that losing one inch of topsoil leads to a permanent reduction in corn yields of 2.2 bushels per year, which on average yields of 120 bushels per acre is almost a 2 percent loss. Other crop yields can suffer as much or more. In urban areas, many of which are located along rivers that created fabulous soils, soils are generally lost to development. The very process of construction largely destroys the quality of the soil, which will take centuries to replace. Thus, experienced urban farmers are delighted to find areas of cities that have not been touched by these processes. Such areas are few and far between.

[31] A brownfield is defined by the U.S. Environmental Protection Agency as "a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." Definition accessed at http://www.epa.gov/brownfields/basic_info.htm on 6/15/2012.

Making an inventory of appropriate land available for potential urban agriculture plots can assist urban producers in accessing land. Additionally, a history of use of that property that is easily accessible could help urban farmers avoid soil contamination issues.

if manufacturing occurred on the property, can help the producer understand what risks the soil may hold. Residential uses can also leave lasting impacts, particularly if remnants of building materials that used harmful substances remain. For cities, **making the history of a site easily available to urban food producers** is a good practice.

Farmers and gardeners **need to test the soil to determine fertility needs and the presence of heavy metals**. Universities and nonprofits can be good partners in this step, as many university extension services offer soil testing services (mostly for a fee). (To access these services, it's best to contact a local extension office and to speak with the person responsible for the Master Gardener Program or agriculture and natural resources.) Some land-grant universities are involved in soil remediation strategies. Kansas State University's Center for Hazardous Substance Research, for example, includes a research and extension project on children's health issues in urban gardening and brownfields (*http://www.engg.ksu.edu/chsr/*).

Once the history of the site is known and the soil has been tested and the results interpreted, urban farmers and gardeners can figure out how best to manage the risks associated with a particular site. Because testing for heavy metals or trace minerals can be expensive, gardeners and organizations often assume soil is contaminated, building raised beds with topsoil and compost.[32] But because some plants have especially deep roots that can penetrate beyond the raised bed, it is advisable to seek expert advice on which crops are best suited to production in a particular site. Understanding the history of the site can help direct which metals to test for, and risks of contamination can be managed in a variety of ways, including construction of physical controls, use of soil amendments, soil remediation, crop selection, raised beds, and use of cover crops.

In Cleveland, the **city works with Ohio State University** to provide soil tests before any urban plot is farmed. Every state has university extension services, and most have a local extension staff that can advise gardeners and farmers on the best strategy. The city of Burlington, Vt., is examining brownfields as potential sites for greenhouses, which generally do not use ground production. The Environmental Protection Agency also published a resource on urban agriculture and brownfields (discussed below). Because costs of testing and remediation could discourage needed urban agriculture, **cities may consider subsidizing some costs**.

BEST RESOURCES

In 2011 the Environmental Protection Agency released interim guidelines for safe gardening practices in brownfields. The report suggests potential best management practices that can significantly reduce risks from producing food in brownfields. The guidelines and recorded webinars discussing the science and policy of using brownfields for urban agriculture are available at *http://epa.gov/brownfields/urbanag/*.

Slightly less extensive is a practical guide to understanding soil contamination published in 2006 by Resource Centers on Urban Agriculture and Food Security (RUAF). It contains contamination limits applicable for Canada, discusses potential remediation strategies for contaminated soil, and provides cost estimates for these strategies. The primer is called "Soil Contamination and Urban Agriculture: A Practical Guide to Soil Contamination Issues for Individuals and Groups" and is available on the RUAF website at *http://ruaf.org/*.

[32] For instance, this is the preferred strategy of Gateway Greening, a community gardening organization located in St. Louis and working primarily in St. Louis City. See more information at http://gatewaygreening.org/.

FOOD POLICY COUNCILS

Food policy councils have existed in North America for almost 30 years, some of the oldest of which are those in Knoxville, Tenn., and Toronto. Food policy councils provide a place to discuss and plan for a city's or region's food system, which is generally not the jurisdiction of a single agency or department at many different levels of government. The North American Food Policy Council web page, hosted by the Community Food Security Coalition, states that food policy councils exist to "bring together stakeholders from diverse food-related sectors to examine how the food system is operating and to develop recommendations on how to improve it."[33] The organization notes that because "no U.S. government entity has a Department of Food," food issues are often parceled out to various agencies or left to the private sector, which "limits the potential for coordination and for government to address broad goals such as improving access to healthy foods."

Local food systems need projects, partnerships and policy to succeed. Mark Winne asserts that the first two have been extremely significant in developing local food systems, but the policy aspect needs to b addressed.

Developing local food systems, which is an important effort that many USDN members are undertaking, generally consists of a number of different efforts in the public and private sectors at the same time. These can be divided into **local food system projects, partnerships and policy efforts**. Every city has nonprofit organizations that have operated **local food system projects** for a number of years. For example, community gardening organizations are widespread and focus on using communal plots of land to benefit the community or neighborhood. According to Mark Winne, an expert on food policy councils, local food system projects are the "programs, activities, businesses, and services that make up local food systems."[34] In St. Louis, Gateway Greening, a community-gardening organization, operates an urban farm that provides job training to homeless men ***(Figure 5)***. This is an important project with multiple benefits for the city, including beautifying a neglected piece of property, providing organic food, attracting pollinators in the city, and using volunteers who come in contact with diverse populations. However, this project depends upon a number of **partnerships** with other groups, such as the St. Patrick's Center, the Missouri Department of Transportation, the City of St. Louis, and numerous volunteers from private and public groups across the city. Partnerships are important because they help accomplish things for the local food system that no single entity can do alone. However, for Winne, it is the **policy** aspect of local food systems that needs attention. He defines polices as "the action and in-actions of government at levels that influence the supply, quality, price, production, distribution, purchase, and consumption of food." In this latter case, food policy councils can take the lead in helping to assess, discuss and plan how policies can be created, changed or removed to help grow local food systems in a sustainable manner.

Food policy councils can be organized in several different ways, according to Winne, who was one of the founders of the Hartford Food Policy Council. They can be established by statute, as occurred in Hartford, Conn., and Knoxville, Tenn., or by executive order of a city or state executive, as occurred at the state level in New York, Iowa and Michigan. They can also be self-organized in a coalition form, which is emerging as a popular alternative. Winne estimates about 100 food policy councils have organized over the last 15 years. Some councils stay

[33] Community Food Security Coalition's North American Food Policy Council web page at http://foodsecurity.org/FPC/. Accessed on May 15, 2012.

[34] Mark Winne. 2009. "Building Just and Sustainable Local Food Systems." Keynote presentation at the St. Louis Food Policy Summit. March.

Figure 5. Gateway Greening's City Seeds Urban Farm makes use of Missouri Department of Transportation land along Interstate 64.

active and become enduring institutions, which has happened in Toronto, where the food policy council operates by statute and is overseen by the Board of Health.[35]

In our survey of USDN members, 16 respondents (55%) said that their cities had food policy councils. Ten survey respondents reported that their cities did not have food policy councils, while respondents in three other cities did not know. When asked what top food policy issues urban agriculture could address in their cities, the vast majority of respondents said health (100%), food security (93%) and affordability (72%), while another fifth (21%) said energy and a tenth (10%) said climate change ***(Figure 6)***.

One task that food policy councils often take on is developing a food system assessment for the city, or other information-gathering tasks that can help stakeholders better understand how the area's food system operates. Chicago, Vancouver and Calgary are all involved with food system assessments and development of integrated food system strategies or action plans. Lawrence, Kan., is actively working with its food policy council to review zoning and codes that are prohibitive to urban agriculture activities. Many cities are waiting until these assessments are finished before pursuing changes in policies or practices to support local food system development. In Kansas City, the Greater Kansas City Food Policy Coalition was heavily involved in helping to develop and advocate zoning that addressed issues in urban agriculture.

[35] The Toronto Food Policy Council maintains a website that provides information on upcoming meetings, includes their food strategy for the city, and provides a history of accomplishments. See http://www.toronto.ca/health/tfpc/index.htm for more information.

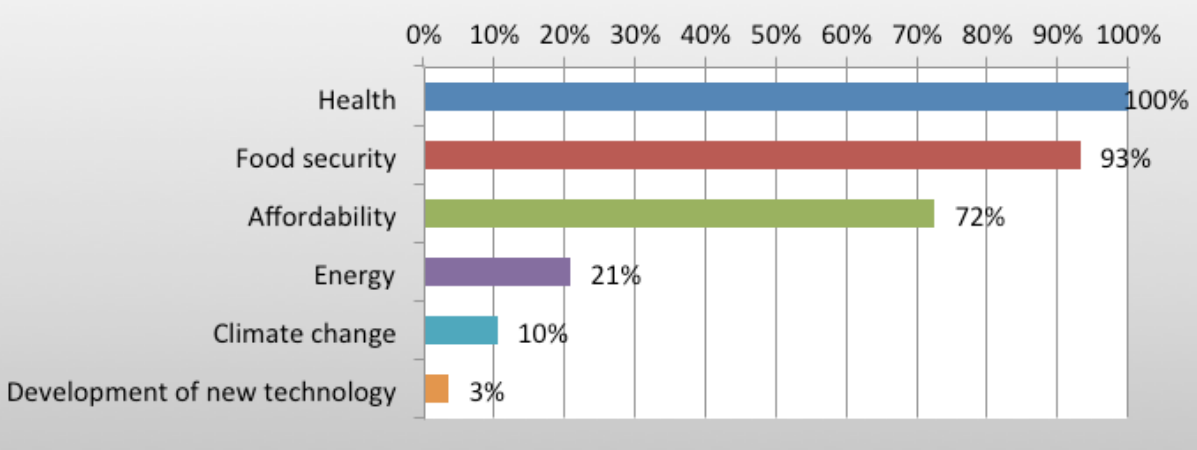

Figure 6. Top issues that food policy councils can address.

BEST RESOURCES

Any city interested in food policy councils should check out the North American Food Policy Council web page at *http://foodsecurity.org/FPC/*. If applicable, the city should consider joining the Food Policy Council Listserv, which facilitates discussion and resource sharing between local and statewide council coordinators and members from around North America. To subscribe to the listserv or for more information, contact Mark Winne at *mark@foodsecurity.org* or 505-983-3047.

In Missouri, the Greater Kansas City Food Policy Coalition exists as a grassroots coalition of farmers, distributors, school food services, hospitals, healthcare providers, city planners, university extension services, grocers, nonprofits, emergency food providers, food assistance program coordinators, consumers and advocates for urban agriculture, local foods and healthy kids. The coalition's mission is "to advocate for the Greater Kansas City food system and promote food policies that positively impact the nutritional, economic, social, and environmental health of Greater Kansas City." The coalition works closely with the Mid-America Regional Planning Council, which exists to coordinate activities of the region's municipal and county governments. Find more information about the coalition at *http://kcfoodpolicy.org/*.

Elsewhere in Missouri, planning efforts for food policy councils are under way in Springfield, Columbia and St. Louis. In each of these cities, it is primarily grassroots coalitions that are forming, but often with involvement from city or county governments.

HEALTHY FOOD ACCESS

The term "food desert" has lately been used to indicate areas of cities where residents have difficulty accessing affordable, healthy foods. Usually this refers to the lack of a nearby or accessible supermarket that carries a wide array of foods necessary for a healthy diet ***(Figure 7)***. In 2009 the U.S. Department of Agriculture published a report summarizing the extent and characteristics of food deserts.[36] From this report they developed a food desert locator, which is an interactive web tool located at http://ers.usda.gov/data/fooddesert/index.htm.

Figure 7. Bob's Quality Supermarket in St. Louis features very little produce.

However, cities should understand that the term "food desert" has been criticized on several fronts.[37] First, developing geographic measures that can quantify access for neighborhood residents is difficult because the measurement must be able to account for many different things, including:

- The availability of food products to local residents
  (Is healthy food actually in a particular place like a store?)
- The accessibility of those products to residents
  (Can a resident walk, bike, ride a bus to that place?)
- The affordability of those products for residents
  (If that food is available and residents can get to it, can they afford it?)

This measurement will vary based on a number of factors, including household demographics and the variability of private enterprises that serve particular neighborhoods. Thus, residents in some places that are designated food deserts may actually have greater access to healthy food than it first appears.

Second, many low-income communities have protested that the term promotes a view of their neighborhoods as "wastelands devoid of people, hope or wealth"[38] and makes them susceptible to large-scale projects that may or may not solve food access issues. Such neighborhoods may have community gardens or farmers' markets that help with food access. Residents in these communities may also fear that cities will adopt strategies that work solely to attract grocery stores (often with public financing) without considering other options that may make the community more food secure, including incubating food businesses to promote community economic development or redeveloping empty lots as green spaces for recreation as well as healthy food production.

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[36] Ver Ploeg, Michele, et al. 2009. Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and their Consequences. Report to Congress by the Economic Research Service, US Department of Agriculture. Available at http://ers.usda.gov/Publications/AP/AP036/AP036fm.pdf.

[37] Bornstein, David. 2012. "Time to revisit food deserts." *New York Times*. Accessed at http://opinionator.blogs.nytimes.com/2012/04/25/time-to-revisit-food-deserts/ on June 15, 2012.

[38] Wang, Yi, Eric Holt-Giménez, and Annie Shattuck. 2011. Grabbing the Food Deserts: Large scale Land Acquisitions and the Expansion of Retail Monopolies. Oakland, Calif.: Food First. Accessed at http://www.foodfirst.org/en/Grabbing+food+deserts.

Third, "food desert" is a simple and elegant concept that is likely to mask other issues. For instance, studies on access to healthy foods and its long-term effect on diet-related diseases often do not agree. As Bornstein frames it, "Is [lack of] access to healthy food a primary barrier to healthy eating? And, if so, will increasing access lead to better health outcomes?"[39] From a research point of view, the jury is still out. Greater access to a wider variety of fruits and vegetables and other healthy foods actually may not change behaviors that are deeply rooted in social, cultural and economic conditions. Still, the popularity of the concept of food deserts — the related idea "food swamps" where the landscape is littered with availability of fast food or otherwise unhealthy food — tells us that there are real issues here that need to be better understood.

To that end, we highlight some places where urban agriculture and local food systems are being used to address basic food security questions. In Kansas City, Missouri, urban agriculture advocates worked with the city council, the mayor, and the City Planning Department in 2010 to craft and adapt ordinances for urban agriculture, including changing codes that allowed for on-site sales, enabled local growers to have apprentices and interns, and allowed gardening as a principal or accessory use of a property. Advocates promoted changes in the ordinances in part based on the idea that urban growers could improve food access for many residents in the city.

In St. Louis, the Healthy Corner Store Project is a partnership between the City of St. Louis, University of Missouri Extension, and the St. Louis Development Corporation. Corner stores that agree to regularly stock a number of healthy foods and beverages, accept Supplemental Nutrition Assistance Program (SNAP) benefits, use promotional displays for healthy foods, and keep displays fresh and clean gain access to business development resources, a retail mentor, and publicity and promotion.[40] Healthy in a Hurry Corner Stores in Louisville, Ky., has a similar program. Food access concerns across the nation led to the creation of the Healthy Corner Store Network,[41] which "supports efforts to increase the availability and sales of healthy, affordable foods through small-scale stores in underserved communities."

In Kansas City, Beans and Greens (*www.beansangreens.org*) doubles the value of SNAP benefits at participating farmers' markets. Several of these markets have a number of vendors who are urban growers. Doubling the value of SNAP benefits provides new markets for local growers and improves access to healthy foods for consumers. Cities across the country, particularly in the Midwest, Southeast and Northeast, have similar programs. The Wholesome Wave Foundation has been an important impetus behind this movement and provides partner locator information on their interactive map, available at *http://wholesomewave.org/map/*. (Note that Beans and Greens received technical assistance from Wholesome Wave to implement their project, but it is not identified as a partner on the map.)

BEST PRACTICES

Many cities are changing ordinances to allow urban agriculture to flourish. Often this means allowing urban agriculture to take place on many different types of property, enabling on-site sales for urban agriculture operations, or adding gardening or food production to the list of primary uses of urban land. Such steps can improve healthy food access in neighborhoods that are underserved as urban growers are often able to locate their operations in those very neighborhoods.

[39] Bornstein. 2012.

[40] For more information see http://extension.missouri.edu/stlouis/healthycornerstore.aspx.

[41] Good resources are available at http://www.healthycornerstores.org/

BEST RESOURCES

The Healthy Corner Stores Network provides resources and tool kits to increase the availability of healthy and affordable foods through small-scale stores in underserved communities. Check out tools like *Green for Greens: Finding Public Financing for Healthy Food Retail,* the *Access to Healthy Foods Toolkits, and The Supplier-Retailer Gap: Connecting Corner Stores with Local Foods* on their website at *www.healthycornerstores.org*.

The Healthy Corner Store Project in St. Louis and the Healthy in a Hurry Corner Stores project in Louisville provide assistance (financial and technical) and mentors to help small stores stock healthy foods. See *http://extension.missouri.edu/stlouis/healthycornerstore.aspx* and *http://www.ymcalouisville.org/social-responsibility/social-services/healthy-in-a-hurry-corner-stores.html* for more information.

LOCAL FOOD SYSTEM INFRASTRUCTURE

Respondents to our survey were extremely interested in larger issues involved in relocalizing the food system, or creating local/regional food systems. As shown in **Table 1 (p.13)**, the most frequently cited goal (mode = 7) for a city's comprehensive plan was to "create sustainable food systems." In addition, respondents are looking for answers to questions about supporting local foods (e.g., How can we make institutional purchasing of local foods feasible for both the city and local growers? How can we cultivate food hubs?).

Survey respondents seemed very interested in basic food system issues that are barriers to urban agriculture, which also pose difficult questions of community development and sustainable economies. For example, some cities are struggling with the high cost of trying to implement local food purchasing, while others are dealing with influxes of labor and new immigrants who are interested in urban farming. Some are also interested in trying to protect agricultural lands from development sprawl. According to the USDA Economic Research Service, in 2009 U.S. residents spent more than $600 billion on food prepared at home and more than $526 billion on food purchased outside the home.[42] From this statistic it would appear that promoting urban agriculture in a city would present a significant economic opportunity for regional food systems.

Local food system development relies on creating, strengthening and enhancing right-sized food infrastructure. Currently, transportation and distribution systems are oriented to larger, higher volume product flows, which inadvertently shut out many small growers (especially urban farmers) and smaller retailers. For instance, grocery firms like Wal-Mart or Kroger operate their own national supply chains and distribution systems. The largest food service distributors, like Sysco and US Foods, also operate large national distribution systems, although some are organized on regional levels and do regional purchasing. US Foods, for instance, installed a new computer inventory system that allows it to track products that are grown or purchased within 300 miles of its St. Louis distribution center.[43]

To ameliorate food access problems, cities may need to help re-create critical infrastructure that can help food systems function efficiently. Infrastructure can mean a variety of things, from accessible storage and warehousing for distribution of locally or regionally produced food products, to processing facilities where crop harvests can be turned into value-added food products like jam, milled grain or frozen vegetables. For instance, every city that has a terminal produce market[44] will have a number of distributors that specialize in produce or produce co-packing. Building relationships between this kind of existing infrastructure and smaller growers or healthy corner stores can be especially fruitful.

[42] Hodgson, K., M. C. Campbell, and M. Bailkey. 2011. Urban agriculture: Growing healthy, sustainable places. Chicago, Ill: American Planning Association. Pg. 84

[43] Personal conversation with US Foods recruiter, fall recruitment fair 2010 for the College of Agriculture, Food and Natural Resources at the University of Missouri, Columbia, Mo.

[44] Cities that report prices from their terminal produce markets to the USDA Agriculture Marketing Service, include Atlanta, Baltimore, Boston, Chicago, Columbia (S.C.), Dallas, Detroit, Los Angeles, Miami, New York, Philadelphia, Pittsburgh, San Francisco, Seattle and St. Louis. See list at http://ams.usda.gov. Search for terminal markets.

AGGREGATION AND DISTRIBUTION

A critical issue for local food systems is the difficulty of aggregating and distributing food products in efficient and economical ways for producers and their customers. Aggregating locally produced products from many different growers in one place that can also function as a distribution point to customers is extremely useful. For growers, aggregation allows them to

a. access markets for which they do not produce enough volume;
b. sort and grade products for different market outlets;
c. collectively purchase grading, packing and washing machines, distribution boxes, labels or other needed items;
d. ensure food safety through the post-harvest handling process; and
e. brand their products cooperatively.

Aggregation is the process of collecting food products – generally fresh produce, but also meat and dairy products – in one place where they can be washed, sorted, graded and packed in standard-size packaging.

On the other hand, aggregation and distribution infrastructure allows grocery stores, institutional food services, or restaurants a way to source locally produced food in large quantities, without having to deal with multiple vendors.

Efficient aggregation and distribution is crucial as well to moving locally produced foods into areas with limited food access because it can reduce distribution costs for farmers and retailers alike, resulting in more affordable fresh fruits and vegetables. Food policy councils often identify distribution problems as a significant barrier to developing viable local food systems. Food hub is the name often given to the places where this aggregation and distribution happens, particularly if it offers business incubation services and processing capacity. USDA defines a food hub as "a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products."[45] Food hubs can provide access to new markets for small and medium-sized producers, and increase access for consumers."

Cities can support the development of this critical infrastructure in several different ways. Infrastructure development should be seen as an economic development issue for which economic development resources can be used. This could include identifying existing infrastructure and networking private businesses (urban farmers and existing distributors, for example). Providing tax credits or other incentives, or low-interest loans for construction could help create new infrastructure or repurpose the old. Technical assistance in business planning and marketing and energy-efficient logistics are extremely valuable. Cities should be aware that right-sizing infrastructure may mean developing several different levels of aggregation and distribution; that is, small corner stores and restaurants will need smaller, more frequent deliveries than full-size supermarkets or institutional food services. Because urban farmers with limited resources may also need aggregation points to be located close to their fields, zoning and ordinances may come into play.

There are also some federal resources available for this infrastructure. USDA released a memo in October 2011[46] detailing its programs related to local foods. One that was specifically highlighted is the **Wholesale, Farmers, and Alternative Market Development Program**. According

[45] Bragg, Errol, and James Barham. Undated. "Regional Food Hubs: Linking producers to new markets." USDA Know Your Farmer, Know Your Food (KYF2) Regional Food Hub Subcommittee. Powerpoint presentation accessed at http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5088011&acct=wdmgeninfo on June 15, 2012.

[46] Merrigan, Kathleen. 2011. " Memo on Urban Agriculture and Gardening – Supporting farm viability, building access to nutritious, affordable food and encouraging rural-urban linkages." October 14. Accessed on October 31, 2011 at http://kyf.blogs.usda.gov/files/2011/10/USDA_Urban_Ag_Memo-Final.pdf.

to the memo, this "program conducts research and provides technical assistance to State agencies, municipalities and non-profit organizations on direct farm marketing, food supply chain practices, and market facility design and infrastructure. It also analyzes the potential of innovative delivery systems to help small and mid-sized producers gain access to new market channels, enhance farm profitability, and expand the availability of fresh food supplies in retail and foodservice channels." Many states have used Farm Bill programs such as the Specialty Crop Block Grant to develop marketing infrastructure, while the Federal State Marketing Improvement Program and the Farmers' Market Promotion Program have been used to develop marketing alternatives.

Cities may find the "Financing Healthy Food Options Resource Bank," a site maintained by the US Department of Treasury's Community Development Financial Institutions Fund a useful resource. The site provides overviews of different parts of the agricultural and food sector from a business and investment perspective, training curriculum and training webinars. Resources are available at *www.cdfifund.gov.*

Creating this kind of infrastructure is often referred to as "scaling up local food systems." Scaling up is the process of making locally produced foods available in more places to more people more often. While farmers' markets and other direct marketing relationships provide good food and community connections, they also require a great deal of marketing time from the farmer without guaranteed sales, and are often held at times or in places that are inconvenient to large numbers of consumers. Scaling up local food systems can maintain the values and connections that both consumers and farmers appreciate in local food systems while moving larger quantities of local food through efficient systems that are rewarding and convenient for farmers, consumers, chefs and others.

Essentially, scaling up is about creating new food value chains. A value chain differs from traditional concepts of a supply chain in that members of the chain share risks and benefits in true partnership across the chain **(see Figure 8)**. USDA's Know Your Farmer, Know Your Food program highlights a number of different projects that are creating the infrastructure for local food systems at their Compass website, *http://www.usda.gov/kyfcompass*.

University extension services can be useful partners for cities interested in scaling up their local food systems. For example, extension services in each of the 12 states that make up the North Central Region of USDA's Sustainable Agriculture Research and Education program have a statewide team specifically trained in scaling up local food systems.[47] The Northeast Regional Center for Rural Development is coordinating a regionwide project that provides research and extension information about community, local and regional food systems.[48] Additionally, members of the National Good Food Network (*http://ngfn.org/*) maintain professional profiles on their website, which can help cities who are seeking out expert advice.[49]

[47] The 12 states of the region are Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa, Minnesota, Missouri, Kansas, Nebraska, and North and South Dakota. A reader can view resources and presentations from a regionwide training session at http://www.northcentralsare.org/About-Us/Regional-Initiatives/Scaling-Up-Local-Food.

[48] More information about "Enhancing Food Security in the Northeast with Regional Food Systems" can be found at http://nercrd.psu.edu/efsne.html.

[49] As defined by the Kellogg Foundation's Food and Community Program, "good food" is grown in ecologically sound ways (green), is healthy for people and communities, provides fair returns for farmers and workers, and is affordable for all members of the community.

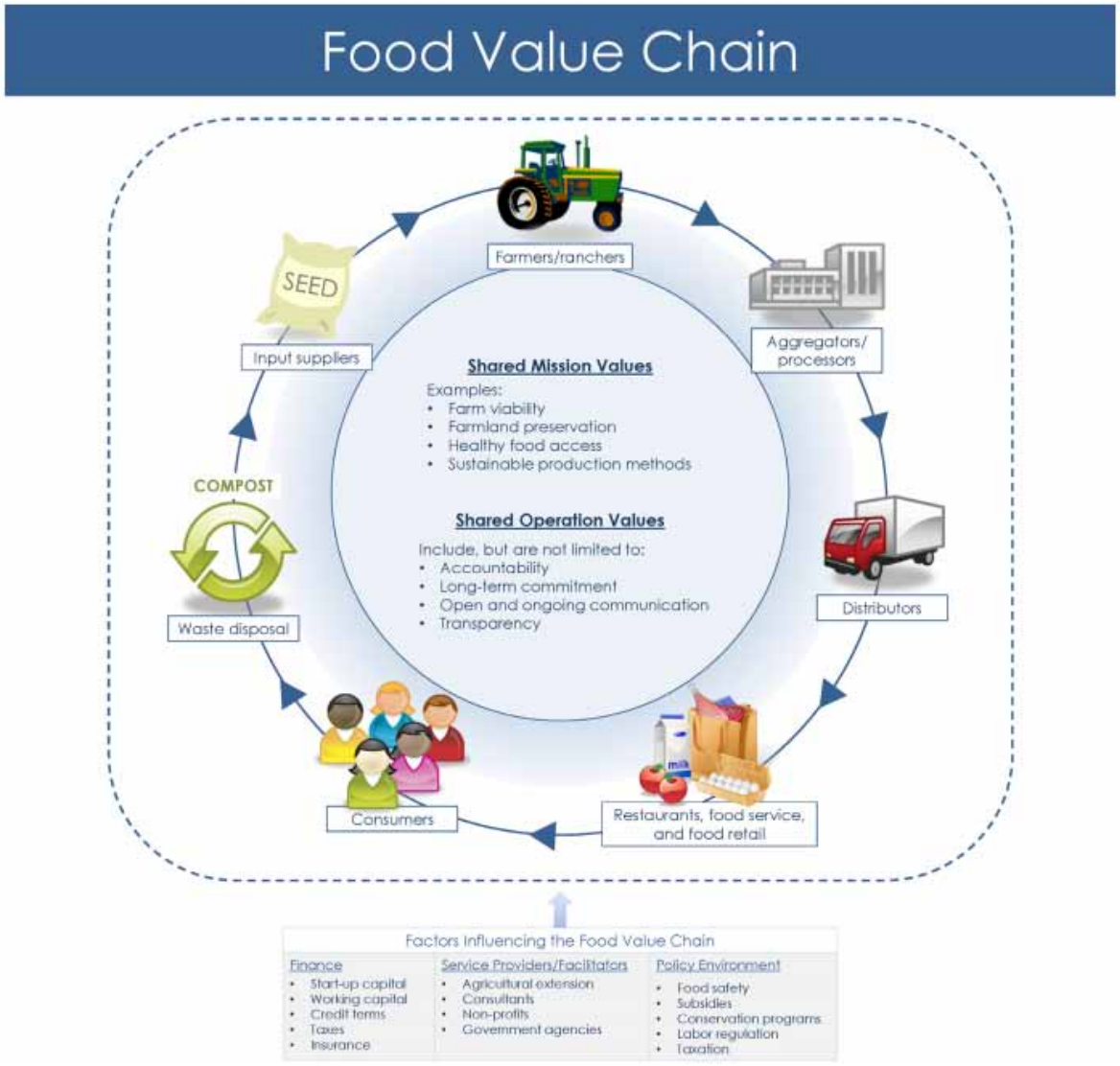

Figure 8. Reproduced from "Moving Food along the Value Chain: Innovations in Regional Food Distribution" published by USDA in March 2012.

BEST RESOURCES

Concentrated efforts to "scale up" local food systems exist across the country. Through the Know Your Farmer, Know Your Food Compass program *http://www.usda.gov/kyfcompass*, USDA has produced a number of reports that highlight local food infrastructure needs, analysis and solutions. Particularly valuable are the *Moving Food Along the Value Chain: Innovations in Regional Food Distribution*[50] and the *Regional Food Hub Resource Guide*.[51] The first report analyzes eight food value chains across the country to see how they operate, the challenges they face, and how best to facilitate emerging opportunities in local and regional food chains. The second describes the concepts behind food hubs, maps where they exist, explores their impact, and examines their economic viability.

The National Good Food Network (*http://ngfn.org/*) connects people working on the "good" food system by maintaining a professionals database, hosting and archiving monthly webinars and serving as a resource center.

[50] Diamond, Adam, and James Barham. 2012. *Moving Food Along the Value Chain: Innovations in Regional Food Distribution*. USDA Agriculture Marketing Service. Accessed at http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=stelprdc5097504 on 3/31/2012.

[51] Barham, James, Debra Tropp, Kathleen Enterline, Jeff Farbman, John Fisk, and Stacia Kiraly. 2012. *Regional Food Hub Resource Guide*. U.S. Department of Agriculture, Agricultural Marketing Service. Washington, D.C. April.

Healthy Food Systems: A Toolkit for Building Value Chains[52] provides practitioners and communities with conceptual models of food value chains and tools for building markets, increasing supply and providing processing, aggregation and distribution. It reflects on the lessons learned by farmers and consumers involved in the Appalachian Harvest network. It differs from the USDA resources mentioned above by providing practical questionnaires aimed at different actors in the food value chain and helping to identify key needs of specific value chain participants.

PROCESSING

Another critical piece of infrastructure for metropolitan areas interested in developing vibrant local and regional food systems is processing capacity for value-added foods (e.g., salsas, jams, jellies, frozen vegetables and fruits, baked products) as well as dairy or meat products. Farmers gain new markets with value-added foods, or, in the case of dairy and meat products, eliminate significant barriers to selling their products. Both outcomes help farmers develop profitable small businesses. Processing can preserve seasonal local food products for sale year-round, and value-added activities can offer new jobs for less educated workers. Finally, processing capacity can satisfy consumers seeking to buy and eat local products year-round.

Dairy processing and meat slaughter require extremely specialized facilities and must comply with significant food safety regulations. Thus, while providing smaller scale and lower cost facilities in this arena is useful for local food systems, it is a fairly technical arena that will not be discussed further in this report. However, by assisting in the development of shared kitchen facilities for processing local foods, cities can help entrepreneurs experiment with and develop into seasoned local businesses. Shared facilities can include everything from kitchen incubators that provide commercial grade kitchens and storage facilities along with standard business incubation services like technical assistance and shared office space; to shared-use kitchens that are licensed kitchen facilities available for rent or use by small-scale entrepreneurs; to community kitchens that provide communal space for storing or preserving food products. Farmers and food entrepreneurs should also investigate co-packing facilities, which are larger scale, private companies that manufacture and package foods for other companies to sell.[53] These companies can pack and label canned foods, sauces, condiments and the like; produce frozen foods, including frozen fruit or vegetables, baked goods or frozen dinners; and guide producers through labeling and marketing strategies.

A number of U.S. and Canadian cities have kitchen incubators, including long-standing ones in places like Taos, N.M.; Denver, Colo.; Athens, Ohio; and Toronto, Ontario. In Missouri, both Kansas City and St. Louis have kitchen incubators that serve food entrepreneurs as well as smaller catering businesses. On the western side of the state, the Independence Regional Ennovation Center[54] provides business services along with its fully equipped kitchen facilities. This partnership between the Independence Council for Economic Development and the Independence School District turned an old hospital into "the largest kitchen incubator facility in the Kansas City metro area dedicated to early-stage catering, retail and wholesale food businesses." The facility's five kitchens and shared commercial equipment allow for "food preparation, packaging and distribution of finished products in an environment that offers the top level of food safety." In St. Louis, the Midtown Enterprise Center houses a kitchen incubator that is supported by the St. Louis County Economic Council.[55]

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[52] Flaccavento, Anthony. 2009. *Healthy Food Systems: A Toolkit for Building Value Chains. Prepared for the Central Appalachian Network*. Accessed at http://www.cannetwork.org/documents/Value%20Chain%20Toolkit%20 07.22.09.pdf on July 22, 2009.

[53] Rushing, J.E. 1999. "Choosing and using a copacker." Department of Food Science, North Carolina State University. Accessed at http://www.ces.ncsu.edu/depts/foodsci/ext/pubs/copackers.html. on June 20, 2012.

[54] See http://ennovationcenter.com/ for more information.

[55] See http://www.slcec.com/midtown-business-incubator-space.html for more information.

BEST RESOURCES

Appalachian Center for Economic Networks (ACEnet) in Athens, Ohio, has one of the oldest and most successful kitchen incubators in existence. ACEnet provides business incubation services, a well-equipped commercial kitchen, marketing and distribution assistance, and access to financing as well as facilitating regional marketing campaigns. For more information see *http://acenetworks.org/* and check out their YouTube channel through the Northeast Ohio Food Web (NEOFoodWeb).

Cities might also consult Markley and Hilchey's *Adding Value for Sustainability: A Guidebook for Cooperative Extension Agents and Other Agricultural Professionals,* now available in e-book form.[56]

[56] Hilchey, Duncan, and Kristen Markley. 2000. *Adding Value for Sustainability: A Guidebook for Cooperative Extension Agents and Other Agricultural Professionals*. Pennsylvania Association for Sustainable Agriculture and Cornell University's Farming Alternatives Program.

MISSOURI'S URBAN AGRICULTURE

In 2011 the Missouri Legislature's Joint Committee on Urban Agriculture, along with the Subcommittee Advisory Group on Urban Agriculture, conducted four hearings in Kansas City, Springfield, Columbia and St. Louis. A final hearing was held in Jefferson City in January 2012 while the General Assembly was in session. Reviews and testimony from these hearings were analyzed to identify issues of concern to urban agriculture advocates in Missouri. Recommendations were also offered by residents who testified.

This resulted in a final report of the committee and proposed legislation[57] that did not pass in the 96th General Assembly.

In general, Missouri's urban agriculturalists face similar issues to those in the nation as a whole. It is clear that urban agriculture quickly involves the larger food system for most practitioners. For example, improving food access, addressing obesity issues, removing the disconnect between consumers and the food they eat, encouraging farm-to-school programs, and re-localizing the food supply are all food system issues identified in the hearings that often transcend metropolitan boundaries. In addition, certain production and marketing issues, including organic and food safety certification as well as access to markets and food distribution, transcend urban-rural boundaries and are largely a matter of farm scale and profitability. However, specific concerns about soil remediation in contaminated areas and brownfields, cost of and access to water, and land tenure and long-term security on improved urban farms remain strong barriers in Missouri's cities and may provide opportunities for change.

While the Missourians who testified before the Joint Committee were interested in larger food system issues as well as more practical urban agricultural issues, the urban agricultural practitioners and advocates we interviewed tended to define urban agriculture in terms of production and distribution without many of the larger food system issues. **It is important for Missouri cities to clarify their definitions of urban agriculture and clearly articulate which policies, technical assistance and education can be changed and promoted based on different kinds of urban agriculture and food system issues.**

Missouri urban agriculture advocates are hoping that food production in cities will expand and grow through the creation of more urban farms and community gardens – even through edible landscaping[58] – and that by raising awareness and providing education, more people will become involved, especially among minority groups. They hope to see city or other public

Cities should clearly define urban agriculture when approaching policies, education or technical assistance. Four Missouri urban agriculture advocates who were interviewed defined urban agriculture as "any activity that relates to the production of food in an urban setting, including growing vegetables, fruits, herbs, grains but also the raising of livestock/insects for food production." — (D-5, L-4, N-6, S-2)

Two of the interviewees expanded it to larger food system issues as in "Growing and processing and distributing and selling produce and other agricultural produce in and around cities, emphasis on selling, and market" — (M-1, R-3)

One clearly articulated that urban farming is about selling products, and not using them just for home consumption; while another asserted that "Urban agriculture is community based and community minded." — (Ni-8, M-1)

[57] House Bill 1660 in Missouri's 96th General Assembly. The bill passed unanimously out of the Missouri House Agriculture Committee but did not receive a general hearing.

[58] Edible landscaping "is the use of food-producing plants in the residential landscape." (Oregon State Extension http://extension.oregonstate.edu/mg/metro/sites/default/files/Edible_Landscaping.pdf). Edible landscaping is promoted by groups such as Food Not Lawns (http://www.foodnotlawns.com/). Edible landscaping sometimes doesn't conform to existing city codes, as evidenced by a recent case in Tulsa, Okla., where a resident sued the city for destroying plants the city considered a nuisance. (See http://www.krmg.com/news/news/local/botanical-battle-woman-suing-tulsa-after-city-crew/nPcC3/ for more information.)

lands be used for food production to address issues of food security. **In general, these advocates believe there are city officials who support urban agriculture and are easy to work with, but they would like more awareness of the potential benefits of urban agriculture from elected officials.**

However, these practitioners and advocates also see substantial barriers to urban agriculture in Missouri cities:

- The need to clarify regulations, rework ordinances (especially zoning ordinances), and review policies in general (6 of 8 interviewees cited this as a barrier)
- Lack of access to water, including reasonable costs for hook-ups and water use (5 of 8 interviewees)
- The need for education and increasing involvement in urban agriculture (4 of 8 interviewees)
- Access to land and security on that land for urban growers, especially with transfers of vacant lots (3 of 8 interviewees)
- Contamination of soil and lack of access to good soil (3 of 8 interviewees)

Our general sense from the interviews is that communication between urban agriculture advocates and practitioners and city officials has been generally good but that both can do a better job of increasing awareness of and education about city policies that allow for urban agriculture activities. This is particularly important for the average citizens who want to start in urban agriculture in their cities. Missouri cities should address the need to provide less costly access to water for urban agriculture (especially for community gardens), offer ways for urban agriculturalists to secure land and protect their land tenure, and review their city codes and ordinances that might impede the development and growth of urban agriculture (e.g., on-site sales of farm and garden products).

Interviewees also identified a clear need to understand the extent of urban agriculture now practiced across Missouri. The Missouri Department of Agriculture has created a registry of gardens (including urban plots) that can provide one estimate of urban agriculture activity,[59] but there is little information about how many plots are devoted to urban agriculture, how much those plots produce, the economic activity generated by those plots, and the viability of urban growers. This is a reflection of a more general need for better long-term research and evaluation of urban agriculture impacts at the national level.

BEST PRACTICES

The city of Kansas City, Missouri, engaged with constituents in two different processes in 2010. First, the city council reviewed and updated codes affecting urban agriculture activities. The code – passed in June 2010 – secures the right of homeowners to grow produce in their front yard for consumption or off-site sales; allows for on-site sales from urban farms; enables local growers to have apprentices and interns; and allows gardening as a principal or accessory use of a property. The city council also sponsored a Food Summit that brought together community leaders, advocates for local food systems, city staff and resource people to think about how to improve the food system in Kansas City. Similar types of food summits have been held in Columbia and St. Louis. Such summits allow for many different people involved in the food system to come together to meet and share ideas.

[59] See AgriMissouri's 10,000 gardens registry at http://agrimissouri.com/gardens/

Missouri 96th General Assembly, 2012: House Bill 1660

This bill establishes Urban Agriculture Zones in municipalities in Missouri. Specifically the bill

- Creates distinctions for Urban Agriculture Zones (UAZ) either Grower, Vendor, or Processor.
- Provides for distinction and approval of an Urban Agriculture Zone at the discretion of municipalities. Municipalities of 5,000 residents will be eligible, ensuring local control over UAZs.
- Provides tax abatement for blighted properties that qualify as UAZs (Chapter 353 Mo. Revised Statutes), as 10 years pre-assessed value, and 15 years at 50% of the assessed value.
- Provides a 50% discount to UAZs for hooking up to municipal water sources.
- Allows UAZs to be eligible for wholesale water costs.
- Specifies that sales taxes in vendor UAZs will be placed into a fund overseen by the treasurer's office and allocated to school districts as seed money for elementary and secondary school gardens.

According to the bill's sponsors, the establishment of Urban Agriculture Zones will

- Provide a hedge against rising food costs for local residents and communities;
- Reduce food miles and thus the carbon footprint of food transportation;
- Lead to less importation of food from other states and countries;
- Connect consumers to their food sources through living illustrations of growing and distributing food;
- Alleviate urban blight;
- Increase social connectedness in communities; and
- Mitigate criminal elements associated with abandoned and vacant lots.

More information is provided below about barriers and potential remedies from both the Joint Committee hearings and the interviews. See the blue box above for a discussion of the House Bill 1660, which resulted from the committee hearings.

Barriers identified in joint committee hearings	St. Louis	Kansas City	Columbia	Springfield
Access to food is often inadequate, especially in food deserts and among low-income communities	x		x	
Organic regulations are difficult to meet	x			x
Statewide policy can be impeded by local barriers				
Brownfields need soil remediation		x	x	
City residents need better access to water suitable for agriculture		x	x	x
Land tenure and land security can impact growers ability to plan and discourage improvements	x	x	x	
Missouri has high obesity rates			x	x
Sales tax on food can limit food access		x	x	
There is a disconnect between city residents and where their food comes from				x

Barriers identified in joint committee hearings	St. Louis	Kansas City	Columbia	Springfield
Often food produced in school gardens is not allowed to be used in school food service (city specific)	x			x
Zoning issues can affect growers' security on land				x
State agencies often lack coordination on food issues				x
Urban agriculture needs new food distribution infrastructure		x		
Access to markets is a big concern for urban growers		x		

Recommendations made in joint committee hearings	St. Louis	Kansas City	Columbia	Springfield
Encourage composting, especially among state institutions such as universities and prisons	x	x		
Find more opportunities for children to visit farms	x			
Issue brownfield credits for urban agricultural clean-up	x			
Use common ground for urban agriculture. Schools and parks could partner in providing land for community gardens				x
Subsidize heirloom crops. Subsidize organic foods, especially in food deserts. Subsidize school lunch. Subsidize certification (organic and good agricultural practices, GAP)	x		x	x
Provide for on-site sales for gardens	x			x
Provide incentives or policies to help with the cost of water, such as subsidizing water, or providing tax incentives for creation of water catchment		x	x	
Remove sales tax on food (A related item is to tax food not grown in Missouri)		x	x	
Formulate statewide regulations to promote re-localization of the food supply				x
Create farm-to-school programs				x
Create incentives for businesses to eliminate food deserts				x
Adopt cottage laws on food processing		x		

CONCLUSIONS

Many cities and towns are now looking at how they can be more sustainable, and promoting urban agriculture is one step toward a goal of increased overall sustainability. Urban agriculture also fits with increasing interest in enhancing and developing food systems that can contribute to a community's overall economic, social, environmental and nutritional development. Urban agriculture is one strategy for achieving sustainable food systems and can be seen as a way to address key citizen issues such as increasing access to healthy foods, encouraging community economic development or green economy goals, and strengthening community relationships. This conclusion is supported by the experience of national listservs like COMFOOD, which receive multiple requests for information about urban agriculture. Not only can urban agriculture provide residents with a fresh and important food source, but it can also bring about an increased awareness of our relationship to the food cycle. By forming just and well-thought-out urban agriculture ordinances, cities can allow citizens the right to produce their own food or access healthy foods while also addressing the concerns of other stakeholder groups.

However, from our research, we find that many questions impede the further development of urban agriculture. There are significant questions about what kinds of ***tools*** cities can use to promote and encourage urban agriculture. These and other questions might be best addressed through ***information sharing*** among cities about ordinances and planning tools, as well as among practitioners and advocates. We believe that this sharing of information can be accomplished by continuing to populate the searchable database that we constructed through this project. While USDN members can already share food systems information, this searchable database brings in other information and resources while providing for public access.

The landscape of urban agriculture and local food systems is extremely dynamic at the present time. An enormous amount of information has been published during the very time period of our project, reflecting the intense interest in this topic. Where USDN might help is in the **clarification of terms and concepts used in urban agriculture and local food systems**, especially as the diverse sectors and interests involved have specialized concepts and language. For instance, city planners often use language that is not understood by the general public, while farmers and food entrepreneurs have developed their own concepts and terms. What exactly are USDN members interested in – urban farming, community gardens, developing local food systems, institutional purchasing? Most likely it is all of the above, but they cannot be all lumped into the terms "urban agriculture" or "local and regional food systems." If local and regional food systems are to be pursued, then ***issues of scale and boundaries are particularly important*** for USDN members. This may require further reflection and thought about ways that USDN members can help bridge these boundaries in developing local and regional food systems.

There is a great deal of interest from cities as well as practitioners and advocates in ***data about urban agriculture*** – how it is practiced, what benefits it provides, and what city ordinances will either limit or encourage urban agriculture. While there is significant data about urban agriculture at the international level, it appears there is a big gap in data that is useful in the U.S. and Canadian contexts, especially as it relates to inventories of urban agriculture land or plots, and **evaluation and research** on urban agriculture that could **help cities implement evidence-based strategies**. A forthcoming draft analysis from OSEDA, MU of studies of the impacts of community gardens (one part of the urban agriculture community) reveals that certain economic, health and social benefits accrue with community gardens, but there is little longitudinal analysis of impacts.

Across the three groups surveyed, interviewed or considered for this project – USDN

members, urban agriculture practitioners and advocates, and those who testified before the Joint Committee on Urban Agriculture – there are also questions of how best to organize communities around urban agriculture. While we have provided some information in this report, this may be an area that USDN is interested in pursuing.[60] These summary points are further explored below.

BEST PRACTICES FOR ENCOURAGING AND PROMOTING URBAN AGRICULTURE

During this study, several best practices have become apparent and many USDN members have adopted them. First, urban agriculture is emerging as important for many cities, but as cities grapple with ways to support and encourage urban agricultural activities, there is no one "best" path. As the report by Goldstein et al.[61] indicated, urban agriculture will necessarily be rooted in place, and best practices for urban agriculture are specific to the local context. Thus, those cities that are undertaking a **review of codes and city ordinances** that may inhibit the development of urban agriculture, or **working with stakeholders in food policy councils or food system assessments** are taking important steps that will help them understand and engage with urban agriculture as it is practiced in their cities. Perhaps because of these reviews, many of the respondents to our survey suggested that a place to share resources and information would be helpful.

Sharing as a strategy should be accomplished in the new web page from the University of Missouri that results from this project. Cities will want to explore the **searchable database** to find examples of successful policies, useful resources or academic research. Each form of urban agriculture included is given a brief description and a list of resources and policies related to that form. As we've identified problems in the communication of existing and new policies between municipalities and advocates and practitioners, one of main components of this database is its ability to grow. This will allow for the web page to be kept up to date with new and revised policy changes.

Another useful strategy for cities to support and encourage urban agriculture is **direct engagement with community residents and stakeholders in urban agriculture**. Because so many cities are overhauling or rethinking zoning and ordinances that constrain urban agriculture, now is the time to undertake education and outreach efforts to ensure that city officials and urban agricultural practitioners and advocates understand what is and isn't working in their cities. Many of the practitioners and advocates of urban agriculture in metro areas in Missouri believe that cities have policies in place to allow for successful urban agriculture projects but that a majority of citizens don't know about the policies or the support that cities can provide. Thus, they end up making mistakes or criticizing the cities for not supporting urban agriculture. Engaging with stakeholders and community residents can help cities take a "how to do" urban agriculture approach, one that promotes overall objectives of a particular city, rather than saying in absolute terms "Yay or Nay" to urban agriculture. It may also help for cities to have a designated point of contact for residents and stakeholders who want to "do" urban agriculture. This point of contact could bridge knowledge and communication gaps between city administrations and city dwellers.

HOW-TO APPROACHES RELY ON COMMUNICATION

City councils should adopt a "how to" approach to urban agriculture rather than a "yes" or "no," as a growing list of cities promoting urban agriculture across the nation shows that it can be done successfully.

[60] Colleagues at the University of Missouri's Office of Social and Economic Data Analysis were commissioned to review research literature on community gardens. The authors have seen a draft report issued in May 2012, but it is undergoing revision. Once the report is complete, it will be uploaded to the searchable database created through this project.

[61] Goldstein, et al. 2011.

Communication is the key to having a good urban agriculture strategy. In interviews, Missouri advocates and experienced practitioners say that many barriers can be worked out or addressed through current city ordinances and officials but that folks new to urban agriculture or less experienced – the so-called everyman in urban agriculture — don't have the information they need to get started or do urban agriculture in compliance with city policies. Thus, more communication of and education about city policies is necessary to promote urban agriculture well within a city. Cities want to avoid a reactionary approach that deals with issues of urban agriculture after a farm or garden is already started and in violation – knowingly or not – of city policies. Approaching the issue beforehand means cities can set the ground rules, in dialogue with stakeholders and practitioners, to encourage urban agriculture in many different forms.

In dealing with food system issues in general, and urban agriculture in particular, language is extremely important. The language of planning and city ordinances is often foreign to urban agriculture practitioners and advocates, while agricultural knowledge systems and practices are often specialized and not widely shared by the community at large. Thus, while cities and practitioners and advocates may have the same goal in mind, the communication process could be tripped up by specialized language and knowledge. For instance, in Seattle, there is an "FAQ" associated with the permitting process that basically simplifies the ordinances so that everyday folks trying to do urban agriculture can figure it out. In essence, helping practitioners understand what the city already has in place and what they need to know could help residents comply with ordinances.

BRIDGING THE GAPS: WHAT WORK MAY NEED TO BE DONE?

While communication gaps might occur at the local level, there are certain **knowledge gaps** generally about urban agriculture that the USDN could work to eliminate. First, for city planners and urban agriculture practitioners alike, there is little **evaluation and research** on urban agriculture that is widely available to **help cities implement evidence-based strategies**. The searchable database that is beginning to be populated through this project and will remain a dynamic tool can help to share information about cities' current policy tools and education efforts, but there needs to be evidence of the social, economic and nutritional benefits of different forms of urban agriculture to assist cities in using urban agriculture to accomplish sustainability goals.

The term **urban agriculture is being used broadly** by many cities **to include** what are usually referred to as **food system issues**, including development of local food systems, food access, and institutional purchasing of locally produced foods. The production and distribution of food in local food systems in the volume necessary to address institutional food purchasing or food access issues, is regionally based and necessarily will include the metro area and beyond. Metro areas that straddle multiple city, county and state jurisdictions already have significant coordination issues to address as the development of regional food systems will necessarily extend into rural counties several hours from the metro area. **Embedding urban agriculture in discussions of these larger food system issues is extremely beneficial, but it is important to clarify questions of scale and the level at which planning or organizing should take place.** Cities that are using a food policy council approach are already dealing with these issues, generally by including at least city and county jurisdictions.[62]

There are a number of tools, resources and partnerships that will help cities. USDA's Know Your Farmer, Know Your Food program synthesizes and aggregates a vast amount of resources on creating local food systems. Nonprofit groups and educational entities like universities

[62] For instance, the Greater Kansas City Food Policy Coalition, which is a grassroots organization, works closely with the Mid-America Regional Planning Council (MARC), which coordinates planning and policies for the two-state metro area on behalf of multiple municipal and county political entities. This planning area includes nine counties across the two states, and several cities, including Kansas City, Lee's Summit and Independence on the Missouri side and Kansas City (Kan.), Overland Park, Olathe and Lenexa, all of which rank on top ten population centers in their respective states. The Cleveland-Cuyahoga County Food Policy Coalition similarly works across jurisdictions and includes private-public approaches.

and university extension services have developed and are providing resources in urban food production (e.g., soil testing, dealing with contaminated soil, best practices for production), food distribution (e.g., food hubs, institutional purchasing of foods), community food assessments, and evaluation. We have listed some of these resources throughout the report, but many more have been included in the searchable database. While these resources can help cities, the fact remains that supporting urban agriculture and strengthening local and regional food systems is at heart a local process of communication between and among city officials, practitioners and advocates, nonprofits, neighborhood groups, private business and state and federal agencies.

Because urban agriculture and local food systems continue to be high priority areas for USDN members, ongoing discussions in the new Food System User Group and new innovation grant projects provide an opportunity to build upon the research and findings of this project. These ongoing discussions should also be used to determine how best to utilize and update the new searchable database created through this project in concert with the resources and information available on the USDN website. While the USDN website is a valuable tool to share information among USDN members, the searchable database provides an open forum to communicate and share information among USDN members, urban agriculture practitioners, local food policy council members, university extension staff, elected officials, and interested members of the public. Bridging communication gaps between networks or interest groups may be a difficult process, but it will be essential for achieving the full potential of urban agriculture and local food systems.

APPENDIX

This appendix contains quoted or paraphrased responses to the survey of USDN members and interviews with practitioners and advocates in Columbia, Kansas City and St. Louis.

Table A1: What respondents would like to see from this study?

City	General issue	Specific questions
Calgary, Burlington, Edmonton	Land use/City ordinances	• How has urban agriculture been incorporated into land use zoning and bylaws, including any spatial considerations and allocations in land use planning? How has or can the issue of urban sprawl and associated land costs and value be addressed to ensure protection of agricultural lands for farming versus presumption for development while still considering the average age of farmers and their desire to retire with sufficient financial support? • How cities can work together to change cumbersome and long-standing city ordinances that thwart urban agriculture? • How can areas like greenbelts and rooftops be utilized for urban agriculture? • It would be great to gain insight into how other municipalities are dealing with land use issues (e.g., preservation of agriculture land) and economic issues.
Calgary, Portland Maine, Milwaukee	Food system issues	• How can we address the financial viability of urban or peri-urban farming or create incentives for urban and peri-urban agriculture to increase food security but also consider issues of affordability? • How can we address the labor shortage or competition for labor and associated high wages that affect the cost of food, including the potential impacts immigrant workers? • How can we access funding (be it government led or through social finance initiatives) to support sustainable local food production? • What other cities have food security plans? • Can urban agriculture create full-time employment through food production?
Calgary, Fort Myers, Raleigh	Political engagement/ community organizing	• How have the values of urban agriculture successfully been delivered or communicated to gain political support? • How to create incentives and involve the community in these types of projects (urban agriculture)? • What models have other communities used to organize their urban agriculture efforts? • How does one facilitate urban agriculture with no money?

Table A1: What respondents would like to see from this study?		
City	**General issue**	**Specific questions**
Baltimore, Milwaukee	Contamination/production	• How are cities successfully dealing with the problem of soil contamination and potential health risks versus the expense of testing and remediation? • How can northern-tier cities easily expand urban agriculture despite being subject to severe winters? • Milwaukee is considered as a national innovation center for urban agriculture and aquaponics, and the city is committed to the sustainability of its urban agriculture system.
Baltimore, Cleveland	Access to capital	• How are cities successfully dealing with access to capital for beginning urban farmers • What about access to capital? We are looking at Slow Money and other examples, but this is a barrier for growers.
Cleveland, Lawrence, Salt Lake City	Local foods	• How to make institutional purchasing of food produce within the city feasible for growers and institutions? • I am most interested in research that supports institutional food purchasers' conversion to local food buying. Here we have a university, a jail, many schools, a hospital, etc. that would all benefit from that. • How to cultivate food hubs?
Lawrence, Kan., Minneapolis, Raleigh, Milwaukee	Resources and research	• I find model policies and ordinances to be most helpful. Therefore, any recommendations that are accompanied by models are most useful. • Evaluation of current systems that tie urban agriculture and economic development. Evaluation of current urban agriculture marketing programs. • What are other cities doing? • Milwaukee is considered as a national innovation center for urban agriculture and aquaponics, and the city is committed to the sustainability of its urban agriculture system.
Knoxville, Raleigh, Madison	Insurance/liability	• How, in the absence of a carrying nonprofit, do community groups overcome the insurance requirement costs associated with my legal department's requirements? • How have other cities handled the liability issues? • Resolving liability issues to facilitate the planting of community gardens and edible landscaping on public lands
Burlington	Poultry/livestock	• How can chickens and livestock be incorporated into an urban agriculture plan when there is limited space? • How can issues of smell and noise successfully be addressed?

Table A2:
Based on your answers to the previous question (on barriers), what solution(s) are you applying or considering?

City	General issue	Specific issues
Columbia, St. Louis, Fort Myers, Fayetteville, Salt Lake City	Direct engagement	• It's typically a person-to-person discussion, when a situation comes up restricting urban agriculture projects developing. • Outreach to civic leaders to engage them and have them see urban agriculture projects throughout the city and county. • Integration with other agencies such as the health department and food pantries in the development of future policies. • None in particular. Each group working in the realm of urban agriculture addresses an issue as they come to it and usually it is worked around in one way or another. • Work with the health department to help provide education to address health concerns. • Work with residents to ensure that best management practices are applied in urban agriculture projects.
Chicago, San Francisco, Milwaukee, Raleigh, St. Paul, Burlington, Dallas, Flagstaff, Minneapolis, Vancouver, Knoxville, Cleveland, Salt Lake City	Ordinance revision	• Developing urban agriculture site environmental and site preparation protocols on city-owned property. • The largest barrier to gardening in San Francisco is access to land, which is being addressed in zoning code changes and city programs to increase access - such as the Street Parks program and the land audit. • City review of zoning and ordinances should initiate changes beneficial to the urban agriculture community. • Revising the zoning code • Rewriting zoning regulations and city ordinances, • Trying to change zoning and city ordinances to make it a more friendly environment for urban agriculture. • Working to change zoning and ordinances. • Updating codes. • Zoning amendments going through city council. • Policy changes. • Zoning overhauls that address each issue. • We have worked to update codes, policy and zoning to accommodate urban agriculture. • We have revised our ordinances to remove barriers related to regulations or zoning.

Table A2:
Based on your answers to the previous question (on barriers), what solution(s) are you applying or considering?

City	General issue	Specific issues
Chicago, Portland Maine, Fort Myers, Fayetteville, Flagstaff, Minneapolis, Lawrence, Baltimore	Policy review	• Internal city working group to review city policies and codes related to food enterprises, code changes as warranted. • We are undertaking a review of potential sites for community gardens to identify the best sites for expanding the program and establishing a process to site new gardens. The intent is to streamline the site plan review process. • Comprehensive review of city policies. • In the case of zoning, I am imagining that planning staff will eventually bring forward new use units that will allow one to get a conditional use permit for certain agricultural activities not currently allowed. • Working with the comprehensive plan committee to incorporate food policy. • Working through various business licensing related to food restrictions. • We are actively working with the Food Policy Council to review zoning and codes that are prohibitive to urban agriculture activities. • Investigating a policy for dealing with soil contamination.
Chicago, Vancouver, Calgary	Assessment/action plans	• The food plan incorporates draft recommendations to develop business, site development and training resources for food enterprises. • Development of urban health strategy and food strategy. • These will be identified and addressed through our current Food System Assessment and Action Plan, which includes a parallel report specific to land use.
St. Louis, San Francisco, Milwaukee, Madison, Saint Paul, Dallas, Minneapolis, Cleveland, Dubuque	Provision of water	• Securing water from a hydrant has not been difficult and it does not allow for drip irrigation. • The San Francisco Public Utilities Commission has identified $100,000 to install water meters for urban agriculture zoned and community gardens. • Water department cooperating with urban agriculture groups on access to water; after years of few restrictions, the water department is tightening access to water for urban agriculture, but helping to find alternate solutions. • Working with the water utility to provide service and adjust rates. • Looking into funds for water access. • Working to develop best practices for water (collection, conservation, exploring reduced rates). • Developed more transparent process on how to access water. • We offer reduced water rates. • Use of rain barrels at community garden sites.

Table A2:
Based on your answers to the previous question (on barriers), what solution(s) are you applying or considering?

City	General issue	Specific issues
St. Louis, Minneapolis, Cleveland, Baltimore	Provision of capital	• We also work with several farmers and agencies to secure the capital through grant funding. • Providing low-interest business loan. • Cleveland's economic development department offers small, Neighborhood Retail Assistance Program grants for market growers. • Working with local lenders to investigate options for capitalizing urban agriculture operations (small grants, revolving loan fund, micro-loans).
St. Louis, Milwaukee, Madison, Dallas, Dubuque	Funding	• Looking for other alternatives to fund necessary infrastructure for urban agriculture projects. • City is applying for a greater number of grants directly related to urban agriculture as well as brownfield clean-up. • Grants for new garden proposals, • Working to secure grant monies and donations. • Working to secure brownfield mitigation grants. • Creation of wading pool garden grant program (to address landlord restrictions for renters).
St. Louis, Ft. Collins, Milwaukee, Burlington, Dallas, Flagstaff, Cleveland	Other	• St. Louis is working to start a centralized incubator farm to establish infrastructure necessary for operation and subsequent Land Reutilization Authority lots for growing crops. • We were forced to remove our beehives because the neighborhood association called for a community vote from uneducated neighbors who voted "no hives" out of fear. • We used a large amount of free mulch delivered by the city and raised berm systems because soil tests showed the land was free of contaminants but was not nutrient dense. Having the soil brought in was extremely costly. • Learning more about how ordinances and zoning issues are developed and decided upon. • Build community gardens in local parks. • City is cooperating with initiatives such as mobile food marts and farmers' markets on health issues • Working on brownfield issues - looking into using brownfields to house greenhouses. • Homeowners associations are powerful in our state; will require legislative change. • Providing access to gardening in low-income, high-density areas. • Work with university extension to offer soil tests before farming in the city.

Table A3: List the names of agencies, advocates and practitioners that have been most interested in promoting urban agriculture in your city.

As Mark Winne said, local food systems (and urban agriculture) require partnerships. This table highlights the partnerships that exist in cities. The majority are community groups, which have no highlighting, while other partnerships are coded in the following ways:
Food policy coalition; Task force; Urban agriculture alliances; City and state offices; University, School, Education; Community groups

Baltimore	Baltimore Office of Sustainability; University of Maryland Extension; Civic Works; Parks & People Foundation; Power in Dirt.
Boston	The Food Project; Garden Girl; ReVision Urban Farm; Massachusetts Department of Agriculture; Allandale Farm; Boston Natural Area Network
Burlington, Vt.	Urban Agriculture Task Force; Friends of Burlington Gardens; Burlington Permaculture; City Market Co-op; Community and Economic Development Office; University of Vermont Extension program; University of Vermont Agriculture and Life Sciences; Intervale Food Hub; Burlington Farmers' Market.
Calgary	University of Calgary SAIT; Calgary Parks Foundation; The City of Calgary, Parks (Community Gardens and Orchards), The Office of Sustainability and Environmental and Safety Management (ecofootprint from food); Calgary Horticulture Society; Slow Food Calgary; Calgary Farmers Market; Kingsland Farmers Market; Sunnyside Market; Millarville Farmers Market; Community Natural Foods; Verge Permaculture; Big Sky Permaculture; Backyard Bees; Community Garden Resource Network; Calgary Food Bank; GFSA - Growing Food Security in Alberta; Alberta Farm Fresh Producers Association; Calgary Zoo Master Gardener Program; GoodFoodBox/Community Kitchens; Calgary Food Policy Council; L.E.A.F.; Dine Alberta; Meals on Wheels; River Café.
Chicago	City of Chicago; Advocates for Urban Agriculture; NeighborSpace; others
Cleveland	Cleveland-Cuyahoga County Food Policy Coalition; City of Cleveland; Councilman Joe Cimperman; Local Food Cleveland; GrowOhio; Ohio State University Agricultural Extension of Cuyahoga County; Cleveland Foundation; and many individual entrepreneurs and dedicated community gardeners.
Columbia, Mo.	Columbia Center for Urban Agriculture; Main Squeeze; Community Garden Coalition; University of Missouri Extension; Unite for Health Neighborhoods; PedNET; Columbia Farmers Market; Boone County Farmers Market; numerous providers, educators, columnists, etc.
Dallas	Gardeners in Community Development, Dallas County Master Gardeners [associated with Texas AgriLife Extension from Texas A&M]; Multiple community garden organizations; City of Dallas Office of Environmental Quality; City of Dallas Sustainable Planning and Development.
Dubuque	City of Dubuque; Green Dubuque; Multiple farmers markets; Crescent Community Health Center; Iowa State University Extension; Dubuque Jaycees.
Edmonton	There is wide support for promoting urban agriculture within the city from various levels of government, interest groups, and individual citizens.
Fayetteville, Ark.	City of Fayetteville; GrowGreen; Fayetteville Community Garden Coalition, Appleseeds; National Center for Appropriate Technology; University of Arkansas (to some extent); Fayetteville Public Schools
Flagstaff	City of Flagstaff Sustainability Program; Flagstaff Foodlink; Willowbend Environmental Education Center; SEDI and Northern Arizona University
Fort Collins, Colo.	City of Fort Collins; Gardens on Spring Creek; Coalition for Activity & Nutrition to Defeat Obesity; Larimer County Youth Conservation Corp (Agricorps); Home Grown Food Colorado; Be Local Northern Colorado; The Growing Project; Local CSAs; Colorado State University Extension and Master Gardner Program; Food Co-op; Poudre School District.
Fort Myers, Fla.	The Roots Heritage Garden
Kansas City	City Planning & Development Dept.; The City's Office of Environmental Quality; Cultivate Kansas City; Greater Kansas City Food Policy Coalition; University of Missouri Kansas City Urban Design & Planning program; Kansas City Community Gardens; City Market of Kansas City
Knoxville	Knoxville's Food Policy Council; El Puente; Knox County Heath Dept.; St. John's Lutheran Church; Beardsley Community Farm; Farmers Market.

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Lawrence, Kan.	Douglas County Food Policy Council; Lawrence Fruit Tree Project; Community Mercantile Education Foundation; Kansas State University Extension; Douglas County/Master Gardeners (Note: University extension supported).
Lincoln, Neb.	Community Crops Parks and Recreation Farmer's Markets
Madison, Wisc.	Community Action Coalition of SW Wisconsin; REAP; MAC-SAC (A CSA coalition); University of Wisconsin-Extension
Milwaukee, Wisc.	Milwaukee Urban gardens; Victory garden Initiative Growing Power; Sweetwater Organics; Braise Center for Resilient Cities; Walnut Way; Kilbourn Gardens; Fondy Food Market; University of Wisconsin Extension; MKE Metropolitan Sewerage District; City of MKE Office of Environmental Sustainability; Department of City Development
Minneapolis	Institute for Agriculture and Trade Policy; Gardening Matters; [University of] Minnesota Extension; Farmers Markets; Food Coops; CSAs; Restaurants; Blue Cross Blue Shield etc.
Portland, Maine	Cultivating Communities; Healthy Portland; Portland Farmers Market; Portland Fish Exchange; Dept. of Public Services; Environmental Programs Division.
Raleigh, N.C.	Advocates for Health and Action; Master Gardeners; Interfaith Food Shuttle
Saint Paul, Minn.	City of Saint Paul, Gardening Matters; Ramsey County and Saint Paul Food and Nutrition Commission; local CSA's.
San Francisco	Mayor's Office; Department of the Environment; Recreation and Parks Department; Department of Public Works; SF Unified School District and the Green Schoolyard Alliance; Public Utilities Commission; Planning Department; The Parks Alliance; San Francisco Urban Agriculture Alliance; Garden for the Environment; Little City Gardens; *many* community gardens and individual advocates — too many to list.
St. Louis	Gateway Greening; University of Missouri Extension; Lincoln University Small Farms Outreach; Lincoln University Urban Impact Center; The International Institute; Office of the Mayor/Vanguard Cabinet; Local Harvest Grocery; Washington University; Catholic Charities; Saint Louis University; Forest Park Greenhouse; New City Christian Fellowship.
Vancouver	City of Vancouver; Vancouver School Board; Vancouver Food Policy Council; Vancouver Urban Agriculture Network; Vancouver Urban Farmers Network; Environmental Youth Alliance; Community Garden Coordinators; Neighbourhood Food Networks; Neighbourhood Houses; other NGOs.

Note that Tables A4-A12 come from interviews with urban agriculture advocates and practitioners in the cities of Columbia, Kansas City and St. Louis. Interviewee responses are coded for confidentially (example L-4).

Table A4: Interviewee responses to "How do you define urban agriculture?"	
Production-orientation	• **D-5** The production of food and fiber crops in the city or suburban area • **L-4** Any activity that relates to the production of food in an urban setting, including growing vegetables, fruits, herbs, grains but also the raising of livestock/insects for food production • **M-1** Growing and processing and distributing and selling produce and other agricultural produce in and around cities, emphasis on selling, and market; • **N-6** The ability for residents to undertake agricultural related functions within the city not necessarily on a typical farm but can be within single family residential properties • **Ni-8** Any form of growing edible food in the city, difference between community and home gardening is for personal consumption or community consumptions, urban farming is for sale • **R-3** Growing and distributing food within an urban area, city, town • **S-2** Food production in the city, it take many different forms, in general it's the production of food in and around the city. • **S-7** Any type of production of food in an urban area, produce such as fruits/ vegetables, livestock, eggs or even flowers, shrubs, and trees should be included too
Distribution	• **M-1** Growing and processing and distributing and selling produce and other agricultural produce in and around cities, emphasis on selling, and market; • **R-3** Growing and distributing food within an urban area, city, town
Community-orientation	• **M-1** Urban agriculture is community based and community minded
Distinguish for-profit	• **M-1** Growing and processing and distributing and selling produce and other agricultural produce in and around cities, emphasis on selling, and market • **Ni-8** Any form of growing edible food in the city, difference between community and home gardening is for personal consumption or community consumptions, urban farming is for sale

Table A5: What forms of urban agriculture currently exist in your city?	Number of those interviewed responding affirmatively
Community gardens and gardens at institutions such as schools or churches. Also one indicated edible landscaping as a separate area.	8 of 8
Private gardens: backyard gardens, kitchen gardens, container gardens and rooftop gardens.	8 of 8
Urban farms (Note how these were defined: urban farm or garden that is a small farm for market; commercial farms; or traditional farms. This indicates farm means something very different than gardening.)	8 of 8
Micro-livestock, including chickens, bees and aquaponics.	5 of 8
Community Supported Agriculture (CSA) (Note that one interviewee said that he doesn't consider CSA urban agriculture if the food is not grown within the city; Doesn't include farmers markets – [that's] part of urban food system.)	4 of 8
Orchards and berry patches	3 of 8
Farmers' markets (see CSAs)	2 of 8
Nursery stock production	1 of 8

Table A6: Interviewee responses to "What would you like to see happen with urban agriculture in your city?"	
General issue	**Specifics**
Increase in production	**D-5** To expand, increase the amount of food and other products being produced; **L-4** More people are aware of opportunities to engage in urban agriculture; **Ni-8** Urban farms in every neighborhood – similar to victory garden movement; **S-2** Growth – expanding what's currently there (i.e. backyard gardens and fruit trees, training/education center); **S-2** Expand micro-livestock production, and aquaponics; **S-7** More individuals having gardens at home; **S-7** More people getting into urban gardening and urban agriculture as a form of supplemental; **S-7** More urban farmers/gardens using greenhouses/hoop houses to extend the growing season.
Expanded opportunities	**L-4** Make more use of community gardens; More community gardens available; **M-1** Opportunities for larger garden plots – 20x20; **Ni-8** To have a community garden on every corner; **S-2** More community gardens, more sites for urban farming, Pocket garden in neighborhoods; **S-7** More schools involved in urban gardens.
Use of public land	**M-1** Parks and Rec should provide more resources – developing gardens in parks; **R-3** Some type of policy where community gardens are in all parks, fire stations; **S-7** More vacant lots transferred at no cost from land trust to neighborhood organizations that could turn them into community gardens, which could become neighborhood gathering places; **S-7** More fruit trees in public places.
Community involvement	**M-1** More participation from African American community – better outreach, involvement; **N-6** Raising awareness and education about urban agriculture to everyday people and growers; **Ni-8** Emphasis on the community/social aspect of urban agriculture; More neighborhood organizations based around urban agriculture.
Food security	**L-4** Use of public land for individual urban agriculture users or nonprofit users to supplement food insecurity issues; **N-6** For it to grow and for more people have access to fresh foods at a reasonable price.
Scaling up	**S-7** More institutional purchases of locally grown dairy, meat and produce products; **S-7** Development of food processing facilities; Licensed kitchen space, central kitchen space.
Codes/ordinances	**L-4** Update the codes to incorporate livestock, apiaries, etc. into planning even more; **S-2** Development – incorporating new pieces into existing structure.
Water	**L-4** Water access issues addressed to make food production financially affordable.
Nature/sustainability	**D-5** Shift in attitude or mental shift by reconnecting people with nature and redefine our understanding of sustainability (use urban agriculture and exposure to it to help create this change).
City interest	**M-1** City is taking more of an interest; **M-1** Public works – garden at the health department.
Other	**D-5** Vocal support of visionary dialogue about what a city can be with urban agriculture; **L-4** Investments necessary to meet demands of community gardens; **R-3** Increased activity discussion of the idea of food policy councils; **S-2** Sees an opportunity to expand the definition of agriculture include to fuel and fiber. Therefore it reads the food, fuel and fiber production within the constraints of the city. **S-7** Using edible plants as part of landscaping; **S-7** More outlets for locally produce products at farmers market (not just fruits and vegetables, but also sauces); **S-7** Study the advantages of vertical agriculture/aquaponics in vacant buildings.

Table A7: Interviewee responses to "What are the main challenges to urban agriculture in your city?"	
General issue	**Specific issue**
Codes/ordinances	**D-5** Regulation and zoning and ordinances – overall evaluation of policies in relation to all forms of urban agriculture needs to be done; **L-4** Clarity of codes and ordinances; **M-1** Interpretation of code for structures on vacant lots – don't fix it if it's not broke; **Ni-8** Lack of clarity on high tunnels being allowed on empty lots by city government; **R-3** Zoning; **S-2** The city has been positive in their working relationship in various projects and agencies from the city. They haven't put a lot of money behind it but they have been very supportive as far as policies. **S-7** Ordinances were there but never allowed selling of produce on site.
Access to land	**L-4** Land Trusts – County vs. City ownership/expenses, who owns the property, how to easily identify trust properties; **N-6** Land trust lots; Empty big lots; **Ni-8** Access to sunlight and good soil; **S-7** Slow movement on transforming of vacant lots (policies are in place); Vacant lots are even a drain on the city's economy because of upkeep and they have no economic value as they currently are.
Access to water	**L-4** Water accessibility and expenses; **M-1** Access to water – installing water hydrants; **N-6** Access to water; **Ni-8** Access to water; **S-7** Access to water (reasonable water hookup costs and water rates).
Community involvement	**M-1** Participation – bulk of the work falls on a few people; **N-6** Lack of education and awareness; **Ni-8** Drawing people out their homes to participate/work in community gardens; **R-3** Urban agriculture is a new concept to people /education - especially low-income communities; **S-2** Keeping people involved in year after year.
Food security	**N-6** Higher premium attached to higher quality, local products.
Self-interest	**D-5** Individual human tendencies to want a comfortable lifestyle and agriculture is not seen that way; **L-4** Local realtors association – questioned that this would do to their neighborhoods.
Other	**N-6** Access to capital; N-6 Contamination redevelopment of properties; **Ni-8** Contamination of vacant lots; **D-5** We undersell the importance of engaging with nature; **M-1** Fencing costs; **M-1** Theft – produce.

Table A8: Interviewee responses to "How do you feel Food Policy Councils can be important in discussing or advancing urban agriculture in your city?"	
General Issue	**Specifics**
Transparency	**D-5** Could benefit from transparency to the public, typical people wouldn't know what's going on behind closed doors; **R-3** Important in getting missing groups involved
Work with public officials	**L-4** Helping people who are passionate about urban agriculture understand changes to policy, regulations thus becoming better advocates; **L-4** Also how to work with elected officials and ways policies are implemented and organized; **N-6 and S-7** foremost promoted and acts as an umbrella agency for small groups/ nonprofits working with urban agriculture to be heard; **S-2** also help find public/ private partnerships.
Education	**L-4** Yes, it plays a critical role in helping people understand the totality of the food system and the role urban agriculture plays in that.
Dialogue	**R-3** Yes, it's a starting point for people to start talking, the city thinks that it's important that it's not a government driven entity; **S-2** it's important; currently looking to see what advisory council, organization could help address specific food policy barriers to production in the city.
Food security	**Ni-8** Yes, some of their work is on food desert issues.
Scaling up	**Ni-8** they are working on local/regional food hub (aggregation point for regional producers for small-medium farms).

Table A9: Interviewee responses to "What does your city do to promote urban agriculture?" (Note: In general the interviewees did not distinguish between city government and nonprofit efforts. Also note most said cities were open to new ideas.)	
Promotion	**M-1** Parks and Rec is becoming more involved – finding land on city property; Public works – garden on health department; **Ni-8** Urban farm tour around the city; **Ni-8** local organization expos and open houses promoting the urban food scene; **S-7** urban garden tours.
Education	**R-3** There a some within government that are supportive but there still needs to be more education of why it could be beneficial for the city (economic/development opportunity); **S-7** Several programs work to promote urban agriculture through education resources, providing seeds; Two interviewees from **D-5 and L-4** said the city was open to hearing new ideas.
City codes/ordinances	**M-1** Zoning un-enforcement; **M-1** City is open to allowing on-site sales for urban farms; **N-6** There has been a zoning ordinance since 1926 allowing farming in the city, there's not prohibition against growing in agriculturally zoned areas.
Food access/health	**Ni-8** [Nonprofit] program that matches SNAP dollars to allow for more affordability of products; **S-2** Several programs are based around concerns of food security, deserts and overall human obesity; **S-7** even medical centers becoming interested in developing a local supermarket.

Table A10: Do you feel people in city government are open to hearing new ideas on urban agriculture?
• **D-5** Yes, but need people to come out and make it clearer what is available within the city.
• **L-4** Yes, quite a few, but there also people who are opposed to it at state and local levels.
• **Ni-8** For the most part, most are supportive. You run into more issues when you start to involved livestock, chickens, etc. However, when it's dealing with just produce, there isn't much opposition.
• **R-3** Yes, but it's a new concept to some people, need the hard numbers to drive home its benefits
• **S-2** Yes, haven't had any problems and they've been really supportive.
• **S-7** Yes, when ordinance amendments were made there were oppositions from city officials, there was also a concern by realtors associations and the state department [of agriculture] has been very helpful.
• **M-1** There are people within city government that are; Unsure about the city council – probably a few.
• **N-6** Overall yes, there are a few councilmen and women who are currently involved but overall there is a need to raise awareness and educate more city officials to understand the benefits of urban agriculture and begin to break down barriers related to uncertainties surrounding urban agriculture.

Table A11: Interviewee response to "How do you feel that you can impact the growth of urban agriculture in your city?"	
Overall strategy	**Specifics**
Education	**D-5** Educate other on how to implement urban agriculture in their lives; **D-5** Parallels to urban planning design through teaching from field research; **S-2** Yes, through non-traditional education (technical, social, critical thinking).
Grassroots support	**M-1** Maintain viable organizations; **S-2** Finding people (get them to buy in).
Providing opportunities	**L-4** Continuing to promote farmers markets and on-site sales for community gardens and farmer's markets; **M-1** Continuing to provide opportunities for people to become involved (community gardening); **S-2** Starting new projects; **S-2** Setting up large farm model.
Advocacy	**L-4** Getting people that are heavily invested to negotiate with the city on ordinances and zoning regulations; **N-6** Work with stakeholders to update ordinances; **N-6** Being an advocate of urban agriculture in government structure; **R-3** Continuing benefits discussion of urban agriculture.
Addressing barriers	**L-4** Reform of land trust to give more control to city ownership of property; Addressing water access/affordability issues; **R-3** Looking at policies that would allow gardens in the city parks; **S-7** Facilitate the approval of the access of water to community gardens when it arises.
Food Policy Council	**R-3** Working towards development of a food policy council to involve more parties/ voices.
Other	**D-5** Allowing self to be open to different forms of social arrangements, leading by example; **Ni-8** Knowing people in the city and being a resource of who to contact for others.

Table A12: Interviewee responses to "For you to better promote urban agriculture in your city, what questions would you like to have answered in our final report?"	
Land use and city ordinances	**N-6** Not much information out there related to other city ordinances; **S-2** sample joint use agreements with the city; **S-2** what they can do on the local level; Urban Agriculture Enterprise Zone – reduce operation and land costs.
Best practices for food production and food safety in urban agriculture	**L-4** Best practices from other cities in Missouri and nationally; **D-5** How to make urban agriculture possible in cities (technical, infrastructure, society as a whole); **N-6** What can we do to better educate, raise awareness and get more people involved?; **Ni-8** Come up with a guide sheet (you want to grow carrots, how much space do you need and how much will you yield from your investment); **S-2** What are some of the best management practices (food handling procedures – begin with good agricultural practice (GAP) standards, community garden models and internal policies to make groups more efficient; **S-7** Giving examples of successful urban agriculture projects and what's been done in those neighborhoods or cities that have proved to be most successful; What other cities have done to better promote urban agriculture.
Research and evaluation of urban agriculture's economic, social and other benefits	**L-4** Examples of research and sources of documentation to the positive impacts for economies/communities for different parts of urban agriculture (food security, crime rates, consumption data); **L-4** Data to better address myths of urban agriculture (dispelling myths); **Ni-8** How many acres are in cultivation in the region? What kinds of things people are growing and what they are doing with it? Providing useful statistics to educate people about urban agriculture; **R-3** What are the economic benefits of urban agriculture for cities – helps sell it better; **S-2** Where are we? What's the inventory of where we are as far as urban agriculture stands? Inventory of production – Sq. ft. of production – therefore they can best harvest the production of the city.
Future trends in urban agriculture, including larger questions of overall development strategies for cities	**D-5** How do we begin to re-envision our own target as a whole? **S-2** What's the trajectory or projection of urban agriculture; **S-2** Big picture of policy and where's it going.
Other	**M-1** Doesn't want it to turn into another government program, needs to be grass roots effort; If a city is going to get active in urban agriculture that they have a citizen practitioner advisory to not lose grass roots character.