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Urban Agriculture in the United States: Baseline Findings of a Nationwide Survey

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Contents

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Urban agriculture can play an important role in supporting local food systems. The potential benefits agriculture offers in urban areas have gained the interest of many residents and policy makers, who are implementing policies, developing infrastructure, and creating markets to support the growing number of urban farms. Urban farmers are faced with a unique set of challenges that includes the high cost of land, access to capital resources, and limited availability of technical assistance. This publication focuses on information gathered from a 2013 national study of urban agriculture.

Riverpark Farm at Alexandria Center™ in New York City. Photo: Courtesy of Riverpark Farm at Alexandria Center.™

Introduction

Urban agriculture in the United States is an increasingly popular issue for many, from urban dwellers (both those who farm and those who eat) to the media and policy makers. Urban agriculture offers many potential benefits to urban areas, such as green space and access to fresh food for urban consumers. For these reasons, urban agriculture has captured the attention of city residents and policymakers. Food policy councils and city governments around the country, in cities including New York, Baltimore, and Chicago, have explicitly incorporated suggestions for their local food environments intended to facilitate the expansion of urban agriculture (Goldstein et al., 2011; Hodgson, 2012). Integrated into its urban environment, farming in the city uses and reuses urban resources (including labor and natural resources) and returns agricultural products to urban consumers.

Although research on and about urban agriculture is increasing, comprehensive information about its extent and characteristics has not been published. The United States Department of Agriculture's (USDA) Census of Agriculture is considered a consistent measure of agriculture data in the United States; however, information within

the census specific to urban farms can be challenging to identify or separate from rural farm statistics. Part of the reason for this can be attributed to the USDA's broad definition of a farm, in which urban and rural farms are not differentiated by geographical size or location, but instead all fall under the definition of a farm as producing and selling at least $1,000 worth of agricultural products during the year the census is conducted.

USDA Definition of a Farm

"Any place from which $1,000 or more of agricultural products were produced and sold or normally would have been sold during the census year."

This publication seeks to fill some of the gaps in information about urban agriculture in the United States by providing baseline data from a 2013 nationwide study of urban agriculture. The publication addresses characteristics of urban farms and farmers, production methods, and challenges for urban farms, as well as technical-assistance and information needs. A list of further resources is included.

About the National Study: Methods and Procedures

In 2013, a national study of urban farms was initiated by the authors and their institutions (New York University, Pennsylvania State University, and the National Center for Appropriate Technology). The study sought to assess the risks and economics unique to urban agriculture and to examine the technical-assistance needs of urban farmers.

The first part of the study focused on a nationwide survey of urban farmers. The survey collected data about the production practices, marketing practices (e.g., products sold, marketing outlets), risks and challenges, information and technical-assistance needs, and basic farm characteristics of urban farms for 2012.

In total, 315 respondents from across the country identified their farm as "urban or peri-urban (i.e., suburban area, or outside a suburban area of a city)." Because community gardens also grow food in urban areas, we allowed respondents to self-identify as either a community garden or an urban/peri-urban farm. For this report, we focus on the latter. The regional spread of farms was fairly consistent (Table 1), although the Northeast had the highest number of farms responding, and the Midwest had the lowest.

Table 1: Respondent Farms By Region, 2013 National Survey Of Urban Farms

Region	Number	Percent
Northeast	101	32.2
Midwest	59	18.8
South	84	26.8
West	70	22.3

In order to get a richer picture of policy and other trends in urban agriculture, in the second part of the project, informant interviews were completed in 15 cities where urban agriculture is purported to be increasing. These cities included both large and smaller cities, and an effort was made to include cities from different regions of the country. The cities included Atlanta, Georgia; Austin, Texas; Cleveland, Ohio; Denver, Colorado; Kansas City, Missouri; Minneapolis, Minnesota; Missoula, Montana; New Orleans, Louisiana; New York, New York; Philadelphia, Pennsylvania; Portland, Maine; Portland, Oregon; Oakland, California; Salt Lake City, Utah; and Washington, D.C. Semi-structured interviews were undertaken with approximately 10 stakeholders in each city, including Extension personnel, farmers, businesses, and government staff, among others.

About the Study's Urban Farmers and Farms

Respondents to the survey reported farming for approximately 10 years on average. A little more than half (53%) identified that they were female and 44% identified as male. Approximately 2% filled out the survey with both male and female farmers answering the questions together, and the remaining 1% identified as transgender or other.

Urban farmers are generally younger than the overall farming population, with the average age of 44, ranging from 21 years of age to 78. The vast majority of respondents (91%) reported being white/Caucasian; 5% reported Black, African, or Caribbean-American; 4% Hispanic/Latino, 3% American-Indian or Alaskan Native, and 1% Asian. (Respondents could check all that apply, so the percentages total more than 100%.)

Related ATTRA Publications
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Urban farmer at Hollygrove Market & Farm in New Orleans. Photo: Andy Pressman, NCAT

Like many rural and suburban farms, urban farms often undertake production on multiple sites. In the respondent population, approximately 37.3% reported having multiple production sites, and those that did had an average of 3.1 sites. Of all urban farms responding to the survey, an average of 78.1% of total production was reported being grown within city boundaries (Table 2). Although many farms reported small acreage (37% reported an acre or less in production), the average reported for the urban and peri-urban farms was nine acres.

Urban farms had been in operation an average of 13 years. However, many farms and farmers were new to the sector, with 64.8% of the respondents reporting that their farms had been in operation five years or less. Farms had on average two primary farmers or managers, 2.2 farm workers, and 3.3 apprentices or interns.

Land tenure, or the length of time and conditions under which a given plot of land is available for use, greatly affects the level of investment made by a farmer (Hodgson, 2011). Ownership is preferred, but because land values can be high in many urban areas, farmers often lease land or acquire temporary user permits from public or private organizations. Short-term leases are another option for urban farmers; however, these can be revoked at any time at a landowner's discretion, with as little as 30 days' notice.

In the national survey of urban farmers, more than half of the farmers reported owning at least some of their urban farm (Table 3), while 27.5% had a long-term lease (or multiple-year lease) on at least some of their urban farm). Almost a quarter had short-term leases that were year-to-year or shorter, while another fifth were borrowing at least some of the land used for the urban farm. Of those not owning a portion of their land, 64% reported that some portion of it was on public land.

While many urban farms focus on food production for profit, a majority of urban farms also incorporate social aspects into their goals. These include farming to increase food security—particularly in low-income neighborhoods—community building, and education. The importance of social missions is often identified through the legal organization of an urban farm and is often structured around how the farm will manage

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Table 2: General Characteristics of Urban Farms, 2013 National Survey of Urban Farms

Aspect	Mean (St Dev)
Number of production sites[1]	3.1 (2.2)
Percent production in urban core	78.1 (39.5)
Acres in production	9.0 (3.5)
Years farm has been in operation	13.0 (13.6)
Number of primary farmers and managers	2.0 (2.8)
Number of farm workers	2.2 (6.6)
Number of apprentices or interns	3.3 (14.75)

[1]*For those operations reporting multiple sites*

Table 3: Land Tenure Arrangements for Urban Farms, 2013 National Survey of Urban Farms

Tenure Arrangement	N	Percent
Own land that was purchased	141	49.0
Long-term lease, even if you don't pay rent (multiple years)	79	27.5
Short term lease, year-to-year or shorter, even if you don't pay rent	65	22.6
Borrow, informal agreement	61	21.2
Own land that was inherited	14	4.9

Note: Can add to more than 100% because farms may have more than one arrangement

risks. This may include whether or not the farm can access alternative funding sources, such as grants and foundation funding. Urban farms that took part in the survey were split between being structured as a non-profit, sole proprietorship, and limited liability corporation (Table 4). Few were structured as corporations or cooperatives, and only a small number were family owned. For more information on business structures, refer to the ATTRA publication *Tips about Farm Business Structures.*

Production Practices of Urban Farms

The type, size, scale of production, and location of urban farms can vary drastically and so do their forms of production. These can include growing crops in soil, in a closed-loop aquaponics system, or even in a rooftop greenhouse. Urban farms tend to utilize intensive production techniques as a means of increasing production on smaller land bases. The production system utilized by an urban farm is closely related to the amount of start-up and capitalization costs required. For example, vertical farms may have a slower return on investment due to their high initial infrastructure costs. Crop selection is also closely tied to the mission and goals of a farm. While some urban farms focus on producing and marketing higher-value crops, others may focus more on growing crops with higher calories, despite often receiving less of a premium market price. And, while the interest in raising livestock in urban areas is growing, animal health and nutrition needs careful attention, as feed sources can be limiting.

The top products grown by the respondent urban farms were fresh vegetables, followed by nursery items such as seedlings and herbs, fresh fruits, and meat and poultry (Table 5). Although aquaponics are a frequently discussed topic in urban agriculture circles, only 0.2% of production output was reported in fish.

Table 4: Structure of Urban Farms, 2013 National Survey of Urban Farms

Type of Structure	N	Percent
Non-profit	95	32.1
Sole proprietorship	93	31.4
Limited liability corporation	66	22.3
Corporation	16	5.4
Cooperative/employee owned	11	3.7
Other type of partnerships	9	3.0
Family owned	6	2.0

Aquaponics system at City Roots in Columbia, SC. Photo: Courtesy of City Roots

Table 5: Types of Production on Urban Farms, 2013 National Survey of Urban Farms

Percentage of Farm's Total Production	Mean	St Dev	Range
Fresh vegetables	67.5	33.8	0-100
Nursery items (including plants, mushrooms, herbs, and flowers)	8.2	19.0	0-100
Fresh fruits	8.1	14.8	0-100
Meat & poultry	5.5	18.0	0-100
Value-added food products (e.g., processed and prepared food, baked goods, preserves)	2.8	8.6	0-98
Milk & dairy	1.9	11.3	0-100
Honey	1.7	6.6	0-80
Fish	0.2	2.4	0-40

N=284

In terms of animals on the farm, hens and broilers were reported in the largest numbers (Table 6), but broilers were kept on only 9% of farms, and the average numbers are much lower than one would find on conventional farms. Few farms kept pigs or cows, but over a third of urban farms had a beehive and approximately 10% had sheep or goats.

The survey also asked about production practices common to urban agriculture (Table 7). The highest share of respondents reported using raised beds for production, followed by greenhouses, container gardens, and high tunnels (a freestanding or gutter-connected covered structure, without heating or electrical power, using passive ventilation for air exchange and cooling). Vertical farming (farming within urban buildings—such as high-rises—or vertically inclined surfaces, in a technologically advanced manner), aquaponics (a system of aquaculture in which the waste produced by farmed fish or other aquatic animals supplies nutrients for plants grown hydroponically), hydroponics (a method of growing plants in water rather than in soil), and rooftop farming—all generally more capital intensive—were reported by fewer respondents.

In addition, 8.1% of the respondents reported being certified organic, while another 26% reported selling or promoting their products and being "exempt" from organic certification (these are defined by USDA as organic farms and businesses with gross agricultural income from organic sales that does not exceed $5,000 per

Table 6: Average Number of Farm Animals on Urban Farms, 2013 National Survey of Urban Farms

Type of Animal	Mean	SD	Range	% farms with animal
Hens	19.9	47.1	0-500	46.5
Broilers	10.6	62.4	0-700	9.0
Beehives (# of hives)	2.4	8.7	0-125	38.9
Sheep or goats	1.5	8.0	0-100	11.8
Pigs	1.4	12.2	0-190	8.0
Cows	0.9	5.9	0-75	5.6

N=255

Table 7: Production Practices and Structures Used on Urban Farms, 2013 National Survey of Urban Farms

Practices/Structures	Frequency	Percent of Respondents
Raised beds	203	64.4
Greenhouse	130	41.3
Container gardens	118	37.5
High tunnel	92	29.2
Vertical farming	56	17.8
Aquaponics	24	7.6
Hydroponics	17	5.4
Rooftop farming	9	2.9

Urban apiary on rooftop of Waldorf Astoria in New York City. Photo: Andy Pressman, NCAT

Common Good City Farm in Washington, DC. Photo: Andy Pressman, NCAT

year, but they still comply with specific sections of the USDA organic regulations).

Sales and Marketing Practices of Urban Farms

Of the urban farms that responded to the survey, 80.3% reported selling some products (versus donating all products). Farm viability and profitability were raised as key concerns in the interviews with urban farmers and other stakeholders in 15 study cities. The survey hints at these concerns as well. Only 32.9% of farmers reported that the primary farmer earned a living by farming in 2012. Sixty percent of farmers reported relying on off-farm income and another 31.0% reported using grant funding and fundraising. Gross sales data from the farms (Table 8) reveal that almost half of the farms reported less than $10,000 in sales, and less than 5% can be considered mid-sized or large farms with sales over $350,000.

Sixty percent of urban farmers reported relying on off-farm income and another 31.0% reported using grant funding and fundraising.

Of the urban farms that sold some amount of products grown on the farm, farmers markets and Community Supported Agriculture (CSA) were the top marketing outlets (Table 9). Given the farms' close proximity to the urban consumer markets, the use of these markets is not surprising. Direct-to-retail and direct-to-institution (e.g., schools) markets, as well as distribution through wholesale and other higher-volume outlets, were limited for urban farms. These results are also supported by the interviews in the study's 15 cities, suggesting that urban farms have a difficult time providing a high volume of product due to their small acreage and tend to focus on high-value, niche products to low-volume customers, emphasizing quality and price over quantity.

Table 8: Gross Sales of Urban Farms, 2013 National Survey of Urban Farms

Total Gross Sales Categories (from all products)	Frequency	Percent
Less than $10,000	119	49.0
$10,000-$24,999	54	22.2
$50,000-$99,999	17	7.0
$25,000-$49,999	25	10.3
$100,000-249,999	18	7.4
$250,000-$499,999	5	2.1
$500,000-$999,999	1	0.4
$1 million or more	4	1.6

N=243

Table 9: Marketing Outlets Used By Urban Farms, 2013 National Survey of Urban Farms

Marketing Outlet	% Gross Sales Mean (St. Dev)
Farmers market or farm stand	40.7 (38.3)
CSA	22.4 (32.7)
Restaurants	12.0 (22.0)
Other outlets	10.7 (27.1)
Direct-to-retail (e.g., grocery stores, food cooperatives)	4.9 (15.1)
Other institutions (such as schools)	2.6 (13.3)
Wholesale outlets	2.5 (11.8)
Distributed through cooperative of farms/other farmers	2.3 (11.2)
Regional or local food hub	0.9 (6.1)

N=2477

Real Food Farm in Baltimore, MD. Photo: Andy Pressman, NCAT

Challenges and Training Needs for Urban Farms

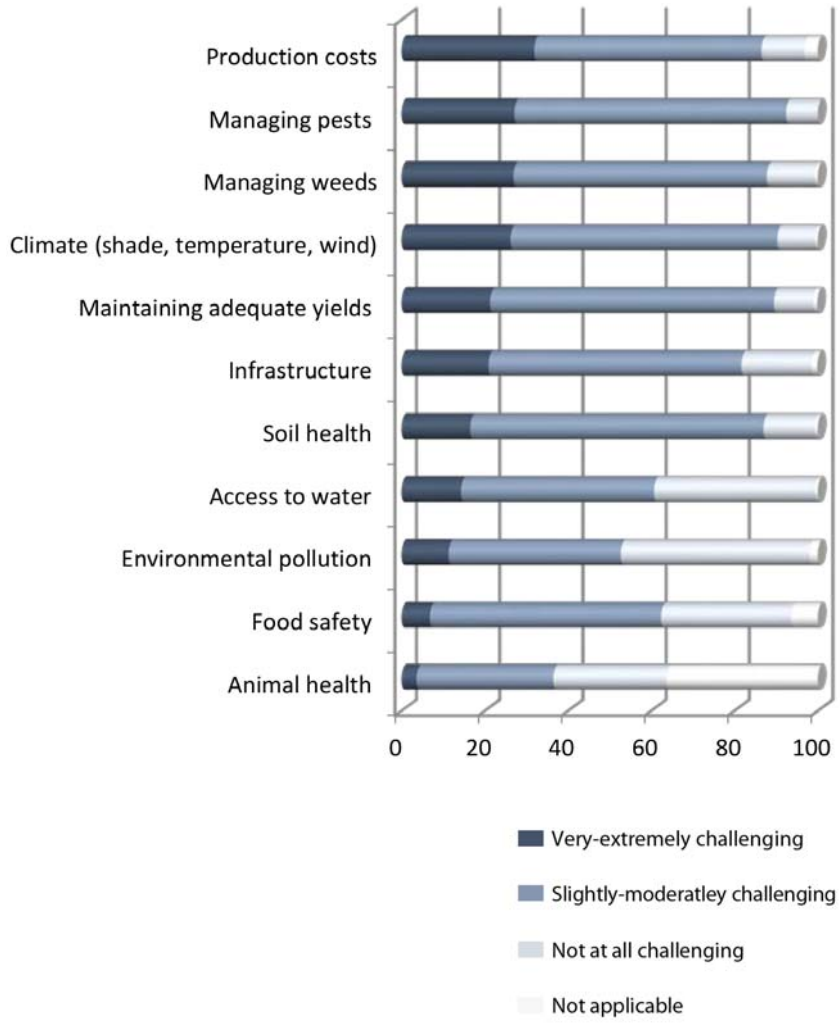
Urban agriculture refers to growing plants and raising animals within and around cities. Farming in the city presents many challenges, some of which are common to all types of farming, and others unique to the urban setting. Urban farmers face significant knowledge gaps and institutional barriers (Pearson et al., 2010). For instance, regulations such as zoning, city plans, and building codes may prevent farms from locating in cities on vacant lots or on rooftops. Other potential obstacles to the expansion of urban agriculture include access to credit and capital, lack of municipal support for composting, land tenure, lack of infrastructure for marketing and processing food raised on the urban farms, environmental contamination, and limited access to water (Castillo et al., 2013; Hendrickson and Porth, 2012; Kaufman and Bailkey, 2000; Raes Harnes et al., 2013).

Technical assistance for urban farmers has historically been provided by non-profit organizations. Although a growing number of state land-grant universities and their Cooperative Extension programs are allocating resources for urban agriculture (Reynolds, 2011; Surls et al., 2014), there is a dearth of research and literature regarding urban agriculture. This is exacerbated by the fact that most Cooperative Extension agents are trained to support rural farming and are often located physically distant from urban centers (Pearson et al., 2010). Time restrictions and funding for technical assistance staff are also challenges (Surls et al., 2014). The end result is that potential and existing urban farmers do not receive adequate support.

The national survey of urban farmers sought to examine the challenges that urban farmers face most in the United States and focus on technical and information needs. Production costs were rated as the most challenging aspect of urban farms, with managing pests, weeds, and climate viewed as very to extremely challenging by at least a quarter of urban farmers (Figure 1). Since few urban farms have substantial livestock numbers, it is not surprising that animal health is the least challenging aspect on these farms. Some topics raised in the literature as challenges in the urban setting—access to water, infrastructure, and environmental pollution—were raised as a concern by fewer farmers in our survey. However, interviews with stakeholders seem to suggest that these topics

Bringing in 800 cubic yards of compost to City Roots in Columbia, SC. Photo: Courtesy of City Roots

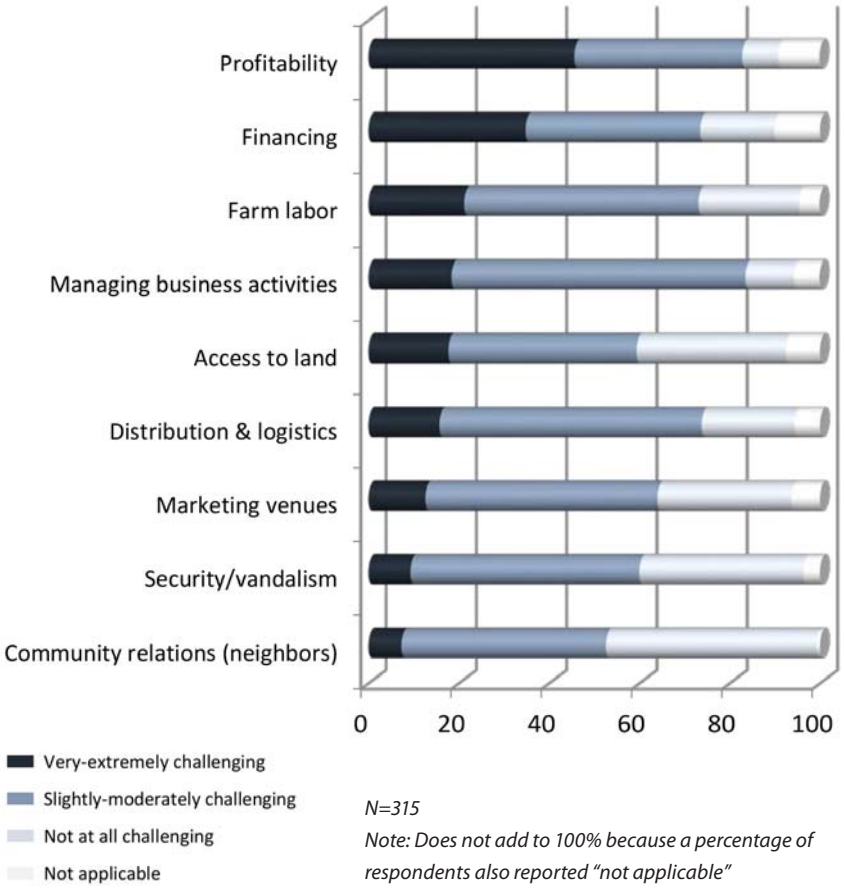
Figure 1: Production Risks and Challenges for Urban Farms, 2013 National Survey of Urban Farms



N=315

Note: Does not add to 100% because a percentage of respondents also reported "not applicable."

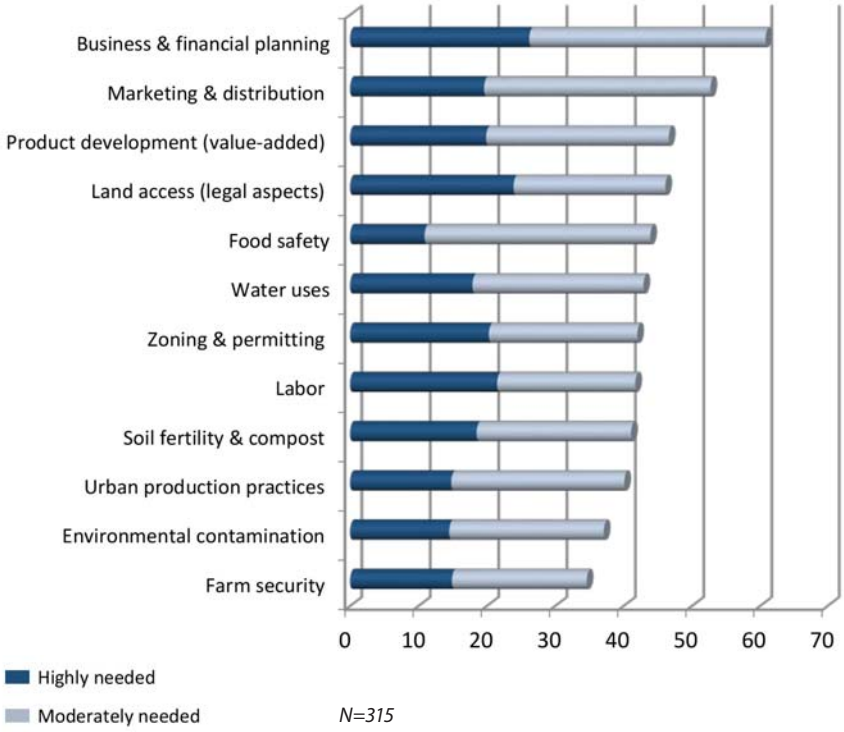
Figure 2: Other Challenges for Urban Farms, 2013 National Survey of Urban Farms



N=315

Note: Does not add to 100% because a percentage of respondents also reported "not applicable"

Figure 3: Technical Assistance and Information Needs For Urban Farms, 2013 National Survey of Urban Farms



N=315

of are of greater concern in certain cities, mostly likely due to policy differences. For instance, access to water may be addressed in some city policies, while in other areas farmers have major problems with access and prices for water usage due to the lack of policy mechanisms.

In terms of other challenges for urban farms (Figure 2), not surprisingly, given the results of the study's informant interviews, profitability was the number one topic of concern and was viewed as very to extremely challenging for almost half of the respondents. Related to this, financing was reported as very or extremely challenging by more than a third of the respondents. Farm labor is another major concern for about one-fifth of the respondents. Surprisingly, access to land, security, and community relations were not reported as major concerns from respondents, even though informants often raised these issues as a concern in the interviews. Distribution, logistics, and marketing venues are also not major concerns, and informant interviews supported this, with most farmers reporting adequate local markets for their products.

When asked about technical assistance and information needs, urban farmers reported business and financial planning, marketing and distribution assistance, and product development as the most-needed technical-assistance topics (Figure 3). Throughout interviews nationwide, land access was also raised as a key topic in most urban settings, and this shows up in the survey results for technical assistance as well, with almost half the respondents noting that legal assistance for land access is moderately to highly needed. In general, however, many urban farmers reported a moderate to high need for many of the topics covered in the survey, showing general demand for technical assistance in the sector.

Summary

Urban agriculture can provide numerous benefits to urban areas. While some urban farms focus on small-scale intensive production techniques to raise crops and livestock for market, they may also be structured around social aspects related to urban agriculture, which include food security, building communities, and education. There are many challenges facing urban farmers as they progress toward their goals but overcoming the barriers can result in a rewarding and profitable profession, as the 2013 national study of urban agriculture showed.

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Further Resources

ATTRA Publications

Start a Farm in the City. ATTRA Publication IP350. 2009. By Rex Dufour. National Center for Appropriate Technology, Butte, MT. www.attra.ncat.org/attra-pub/summaries/summary.php?pub=21

Vertical Farming. ATTRA Publication IP516. 2016. By Jeff Birkby. National Center for Appropriate Technology, Butte, MT. www.attra.ncat.org/attra-pub/summaries/summary.php?pub=512

Equipment and Tools for Small-Scale Intensive Crop Production. ATTRA Publication IP417. 2011. By Andy Pressman. National Center for Appropriate Technology, Butte, MT. www.attra.ncat.org/attra-pub/summaries/summary.php?pub=373

NCAT Marketing Tip Sheet Series. ATTRA Publication IP394. 2013. By NCAT Specialists. National Center for Appropriate Technology, Butte, MT. www.attra.ncat.org/attra-pub/summaries/summary.php?pub=440

Small-Scale Livestock Production. ATTRA Publication IP411. 2011. By Margo Hale, Linda Coffey, Terrell Spencer, and Andy Pressman. National Center for Appropriate Technology, Butte, MT. www.attra.ncat.org/attra-pub/summaries/summary.php?pub=371

Tips About Farm Business Structures. ATTRA Tip Sheet IP451. 2013. By Guy Ames. National Center for Appropriate Technology, Butte, MT. www.attra.ncat.org/attra-pub/summaries/summary.php?pub=429

ATTRA Webinars

Managing Risks on an Urban Farm
www.youtube.com/watch?v=dkX5YSDXxY0&feature=youtu.be

Urban Farms: Commercial Farms or Socially Minded Operations? www.youtube.com/watch?v=fzXS9zJKnBU&feature=youtu.be

Publications

Urban Agriculture Toolkit. 2016. By the United States Department of Agriculture Know Your Farmer Know Your Food. USDA, Washington, D.C. www.usda.gov/documents/urban-agriculture-toolkit.pdf

A resource created by USDA's Know Your Farmer team to help entrepreneurs and community leaders successfully create jobs and increase access to healthy food through urban agriculture. It focuses on some of the most pressing challenges confronting urban producers, such as land access, soil quality, water resources, capital and financing, infrastructure, market development, production strategies, and applying for Federal, State, or private foundation grants.

A Survey of Urban Agriculture Organizations and Businesses in the US and Canada. 2014. By Nathan McClintock and Mike Simpson. Portland State University, Toulan School of Urban Studies and Planning, Portland, OR. www.urbanfood.org

This report summarizes the results of an online survey, conducted during February and March 2013, of 251 groups involved with urban agriculture (UA) projects in approximately 84 cities in the United States and Canada.

Preliminary Cost-Benefit Analysis for Urban Agriculture. 2011. By Jenifer Buckley and H. Christopher Peterson. Michigan State University, East Lansing, MI. http://fyi.uwex.edu/foodsystemstoolkit/files/2015/09/Buckley-Peterson-cost-ben-150904-more-index.pdf

Cost-benefit analysis (CBA) can provide a powerful tool for communicating the economic value of urban agriculture to policymakers, funders, and other decision makers. This guide introduces the basics of cost-benefit analysis and prepares urban agriculture practitioners to conduct a preliminary-level CBA.

Seeding the City: Land Use Policies to Promote Urban Agriculture. 2011. By Heather Wooten, MCP and Amy Ackerman, JD. ChangeLab Solutions, Oakland, CA. www.changelabsolutions.org/publications/seeding-city

This toolkit provides a framework and model language for land-use policies that local policymakers can tailor to promote and sustain urban agriculture in their communities.

Soils in Urban Agriculture: Testing, Remediation, and Best Management Practices for California Community Gardens, School Gardens, and Urban Farms. 2016. By Rachel Surls, Valerie Borel, and Andre Biscaro. University of California Department of Agriculture and Natural Resources, Oakland, CA. http://anrcatalog.ucanr.edu/Details.aspx?itemNo=8552

This publication outlines strategies for urban soil contamination assessment, remediation, and municipal policy around safe soils for urban agriculture, and it offers additional resources for further exploration.

The Guide to Urban Farming in New York State. 2012. Edited by Hannah Koski. Cornell Small Farms Program, Ithaca, NY. www.nebeginningfarmers.org/resources/guides/urban-farming

This Guide is meant to address the changing face of the agricultural industry and to support farmers producing food in urban centers and on the urban fringe. It is a collection of topical factsheets including resources and information to answer the common questions of urban farmers.

Urban Farm Business Plan Handbook. 2011. Partnership for Sustainable Communities. US EPA Region 5, Chicago, IL. www.epa.gov/brownfields/urban-farm-business-plan-handbook

The Urban Farm Business Plan Handbook provides guidance for developing a business plan for the startup and operation of an urban farm.

Websites

Controlled Environment Agriculture
Cornell University
www.cornellcea.com

Website provides technical information, research, and resources on advanced and intensive forms of hydroponically based agriculture.

International Network for Urban Agriculture (INUAg)
www.inuag.org

INUAg.org is an up-to-date, organized, and searchable resource for individuals, communities, and organizations interested in urban agriculture.

Urban Agriculture Resources & Related Links
United States Environmental Protection Agency
www.epa.gov/brownfields/urban-agriculture-resources-related-links

Site provides resources related to urban agriculture.

UrbanAgLaw.org
www.urbanaglaw.org

A Sustainable Economies Law Center (SELC) website that offers a collection of resources on laws and regulations that regulate who, how, and where urban agriculture can occur.

Urban Ag News
http://urbanagnews.com

Urban Ag News seeks to provide its users with a basic understanding of the industry and to keep them informed of the latest technologies.

Notes

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