



# GUIDE TO URBAN FARMING

in New York State



Published by the Cornell Small Farms Program

*Edited by Hannah Koski*

Free Download: [www.nebeginningfarmers.org](http://www.nebeginningfarmers.org)



# Acknowledgements

*The Guide to Urban Farming in New York State* was written in December 2012 as a Master of Professional Studies master's paper by Hannah Koski for the Department of Horticulture at Cornell University, under the guidance of committee members Anusuya Rangarajan and Scott Peters. It was updated in 2016 by Elizabeth Gabriel and Molly Riordan.

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 and challenges of urban farmers.

Thank you to all of the organizations and individuals who participated in an initial survey to facilitate the writing of the *Guide*, and who provided feedback, suggestions, and additional resources throughout its writing. Your enthusiasm and engagement are deeply appreciated. To all of the organizations whose resources and services are included in the *Guide to Urban Farming in New York State*, thank you for sharing your resources and for your support of those who are working to build a more sustainable and equitable food system.

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Or use the Feedback Form, included in the *Guide to Farming in NYS*, available online at <http://nebeginningfarmers.org/publications/farming-guide/>.

# Introduction

Not since the Victory Gardens of the First and Second World Wars has the United States seen such a resurgence of urban agriculture. Farms and gardens are popping up everywhere – on windowsills and balconies, on rooftops and in vacant lots, in schoolyards and in public parks, and the list goes on. As city dwellers become increasingly concerned with the origins and safety of their food, of the equality of their food systems, and of the strength and self-sufficiency of their communities, urban agriculture is bound to grow and to catch the public and political eye, as rural farming has done for decades.

This guide has been created in response to this new agricultural space, and to the new faces of city farmers whose needs may not in all cases parallel those of rural farmers.

This guide is a collection of resources available to urban farmers in New York State, and covers a variety of topics. It is intended to promote the start-up and prosperity of urban farming businesses, and to make easier and more economically feasible the production of food and farm products in urban environments. The guide is a compilation of fact sheets, each with a revision date in its right corner. All links included in the *Guide* were accessible at the time of that revision date.

Your feedback is strongly encouraged and will be fundamental in the continued shaping and development of this guide. Please feel free to send comments and suggestions to the Cornell Small Farms Program, 15A Plant Science, Cornell University, Ithaca, NY 14853.

Happy growing!

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# Part One: Making Urban Farming Possible



# 1 – Codes and Regulations

## Guide to Urban Farming in New York State

### Codes and Regulations

Until recently, city codes, zoning laws, and other regulations have largely ignored urban agriculture. However, these codes and regulations can intentionally and unintentionally regulate urban farming activities in a myriad of ways, such as by regulating the construction of structures, including chicken coops or greenhouses, the ability to keep livestock, gain access to public lands and municipal facilities, transport and distribute urban grown food and so on.

Municipal codes and regulations are unique to individual towns or in some cases, counties. While general codes for some New York State counties can be accessed online through websites such as Municode (<http://www.municode.com/>) and General Code (<http://www.generalcode.com/ecode360/NY>), the most effective approach is often contacting agencies in your town or county. Starting with your local Cooperative Extension can help streamline your research. Each county in NYS has an Extension office (<http://cce.cornell.edu/>). Another helpful resource may be NYS Agriculture & Markets (<http://www.agriculture.ny.gov/cg/CGResources.html>), which has county and regional offices.

For New York City's zoning resolution, visit <http://www.nyc.gov/html/dcp/html/zone/zonetext.shtml>. Because these codes often impact urban farming indirectly and might be difficult to decipher, urban farmers should also consider discussing their plans with local farming organizations or other farmers.

### The Urban Agricultural Legal Resource Library

The Urban Agricultural Legal Resource Library, a project of the Sustainable Economies Law Center (<http://www.theselc.org/>), provides general information and resources about agricultural legal topics as they pertain to urban farmers. These include planning and zoning, building codes, food and health regulations, employment law, homeowners' associations, and non- and for-profit urban agriculture issues and models. Visit <http://www.urbanaglaw.org> for more information.

See Factsheet #2, Advocacy and Planning, for information about changing zoning codes to support urban agriculture.

# 2 – Advocacy and Planning

## Guide to Urban Farming in New York State

### Sustainability Plans

Cities across New York State have developed sustainability plans to address climate change, food insecurity, and other challenges confronting governments today. The Sustainability Plans for the ten regions of New York can be found at: <http://www.nyserda.ny.gov/All-Programs/Programs/Cleaner-Greener-Communities/Regional-Sustainability-Plans>. Some examples of city-wide plans are:

- New York City’s PlanNYC 2030 at <http://www.nyc.gov/html/planyc2030/>;
- The City of Syracuse’s Sustainability Plan at <http://www.syracuse.ny.us/sustainabilityplan.aspx>;
- Buffalo’s Green Code at <http://www.buffalogreencode.com/>.

Additionally, New York Department of Environmental Conservation launched a Climate Smart Communities initiative that, among other pledges, commits to enhancing the farms, orchards, and ecological communities of New York Start (<http://www.dec.ny.gov/energy/76483.html>).

### Tools for Advocating for Urban Farming

Given the recent attention of city governments to sustainability, now is the perfect opportunity to advocate for urban farming and its incorporation into the planning process. When advocating for zoning and ordinance changes that support urban farming, certain planning tools can help:

- *Food charters* (a document that describes a community’s agricultural policy, food distribution channels, food access, sustainability, and other issues relating to food to help guide advocacy strategy)
- *Food policy councils* (a group of stakeholders that examines a local food system and how it might be improved)
- *Community food assessments* (an assessment of community food security, including the locations and incidences of food deserts and strategies for increasing community food access, nutrition, etc.)

Additional information on these and other advocacy and planning resources is provided in *Urban Agriculture: Growing Healthy, Sustainable Places* by Kimberly Hodgson, Marcia Caton Campbell, and Martin Bailkey (American Planning Association, 2011).

Also see *What’s Cooking in Your Food System: A Guide to Community Food Assessment* by Kami Pothukuchi, Hugh Joseph, Hannah Burton, and Andy Fisher (Community Food Security Coalition, 2002), available for free download at [http://www.downtowndevelopment.com/pdf/whats\\_cooking.pdf](http://www.downtowndevelopment.com/pdf/whats_cooking.pdf). This resource provides information on community food assessments, from planning to designing, carrying out, and applying research results.

The American Planning Association’s National Centers on Planning features several food system planning resources and publications at <https://www.planning.org/resources/ontheradar/food/>.

The Resource Centres on Urban Agriculture & Food Security (RUAF Foundation) is international in focus, and provides resources to integrate of urban farming and planning, including monitoring and evaluation methods to measure the impact of urban agriculture. Visit their website at <http://www.ruaf.org/>.

In 2011, the Turner Environmental Law Clinic compiled a report for Georgia Organics surveying the zoning ordinances for sixteen U.S. cities that have incorporated urban agriculture into land use planning. The publication, “Urban Agriculture: A Sixteen City Survey of Urban Agriculture Practices across the Country” is a helpful starting place when advocating for zoning changes, and is available at <http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/pdf>

## **The Carrot City Initiative**

The Carrot Initiative examines the role of design in enabling urban food production, and features a database of over 100 case studies of urban agricultural projects worldwide, as well as the *Carrot City: Creating Places for Urban Agriculture* by Mark Gorgolewski, June Komisar, and Joe Nasr (Monacelli Press, 2011). For more information and to view the Carrot City database, visit <http://www.ryerson.ca/carrotcity/>.

# 3 – Engaging Communities

## Guide to Urban Farming in New York State

Urban farms require community participation and buy-in to survive and thrive. Without community buy-in, community and commercial farmers can be vulnerable to vandalism or more organized forms of community resistance. More importantly, community engagement helps align farm services with the needs and desires of neighborhood residents.

Common barriers that hinder community acceptance of urban farming include a lack of familiarity with urban farming; negative impressions of the appearance of urban farms; concerns about pests, vandalism, and/or the safety of eating farm food; fear that farms replace other valued development; seeing urban farms as projects introduced by “outsiders” who exploit neighborhood resources; and concerns about the long-term sustainability of urban farms. Urban farmers overcome these barriers and garner support by employing a range of strategies.

### Tips for Engaging Communities

Each community is unique and the approaches necessary to engage the community may vary from place to place based on cultural backgrounds, multicultural relationships, neighborhood dynamics and more. While there are recommended approaches for engaging communities in urban farming projects and effective ways to encourage community members to be involved, it is important to know your community and develop an approach that will be most successful there. This is of particular importance if urban farmers or project leaders are not residents of the neighborhood where the urban farm is being developed and/or are racially or culturally different than the majority of residents. The perception that an urban farmer is an “outsider” can lead to feelings of distrust or exploitation. Newcomers to community should dedicate themselves to building strong relationships, involving community members from the beginning and empowering them to be involved. To engage your community:

- Gain entry into a neighborhood
  - Ensure the site selected for an urban farm is not actively used for other purposes and, ideally, provides an opportunity to improve abandoned land
  - Take steps to gain an understanding of the neighborhood context (including the history of the neighborhood; challenges and assets)
  - Avoid assumptions about what local residents desire and identify ways the urban farm can provide services that they want and value
    - Discuss the farm with residents, actively soliciting community-wide input from youth and adults
  - Attend community meetings and become actively involved in efforts important to the neighborhood
  - Forge relationships with community leaders or groups. Encourage them to promote the idea for the urban farm and find areas where you can work together to achieve common and complementary goals
  - Avoid perceptions that an urban farm is an “outsider project” by demonstrating dedication to the neighborhood through active community involvement and relationship building
    - Consider implementing an urban farm in the community where you live or move to the neighborhood where you would like to start the farm
- Introduce the idea for an urban farm
  - Include local residents in the process of planning the urban farm
  - Share examples of other urban farms via photographs and tours
  - Proactively address concerns about urban farming and explain potential benefits for the neighborhood
  - Use multiple forums to present the idea for the urban farm, including community meetings and engaging residents who live in direct proximity to the potential farm site
- Engage the neighborhood

- Create a welcoming environment at the farm site that promotes a sense of belonging and ownership
  - Encourage open access, such as by maintaining an open gate or no-fence policy and locating entry points where visible and easily accessible
  - Host open houses, volunteer days, community BBQ's, events for youth or families, etc.
  - Have a diverse group of people involved in leadership roles on the farm including age, experience, race, culture and personalities
- Create opportunities for residents to be involved with the urban farm
  - Encourage contributions from community members to share their stories and knowledge
- Provide opportunities for local residents to access farm produce; for farms with a mission of providing food for the neighborhood, ask residents what types of food they want to eat and convenient times/locations for distribution, and ensure food is affordable
- Communicate with residents to maintain a positive and active relationship
- Maintain and beautify the urban farm to meet residents' expectations for their neighborhood's appearance, including creating a sense of permanence in the space in the off-season and opportunities for all ages and physical abilities to participate

## **Motivating Factors for Engagement**

Below is a list of potential motivating factors for community engagement. This list is not comprehensive and does not include all motivational factors that encourage community members to become involved with urban farming projects. It is, however, a helpful start to creating a successful community engagement strategy.

- Social factors (forming friendships, socializing, education & youth development, cultural integration)
- Environmental factors (Increased biodiversity, including provision of habitat for pollinators, reduced air pollution, reduction in the “urban heat island effect”, increased rainwater drainage, recycling of organic waste, environmental education)
- Economic factors (job creation, increase in property values)
- Health factors (physical activity, improved access to nutritious, fresh food)
- Voluntarism (desire to contribute)
- Food Supplementing (supplementing regular diet with fresh produce and other farm products)
- Gardening (enjoyment, lack of gardening space, cultural traditions)

## **Tips for Farming with Neighbors**

Urban agriculture takes place in close proximity to neighbors and within communities. Furthermore, the success of an urban farm is often dependent on the support of those neighbors and communities. In order to gain and maintain that support, urban farmers must be careful to minimize disturbance or annoyance to others, such as by:

- Acting in accordance to community standards of aesthetics by keeping things tidy, keeping less attractive equipment and structures away from streets and pedestrian rights of way, keeping compost piles contained, and planting flowers or other decorative plants;
- Maintaining farm sites by picking refuse up on a regular basis, mowing, controlling weeds in pathways, repairing and maintaining fences and structures, and so on; and
- Preventing nuisance conditions such as loud noises or offensive odors by carefully maintaining compost and other organic fertilizers, applying manure, fish emulsion, or other fertilizers in accordance to neighbor activities, and properly keeping urban livestock (see Factsheets #30-33, Urban Livestock, Chickens and Other Poultry, and Beekeeping).

It is also important to build relationships with individuals, local elected officials and local groups and organizations to ensure community involvement in the farm. These are important for maintaining farm site security (see also factsheet #26, Site Security).

Consider attending neighborhood community group meetings to learn more about any neighborhood concerns or issues, or ask if you could make a presentation explaining your farm project. Or, host occasional farm tours and volunteer days to get neighbors more involved in your work.

Also explore creative ways that you might give back to your community, such as donating unsold produce after a market day, hosting gleanings to help with end-of-season clean-up, or offering free hands-on workshops.

## **Resources**

Melissa N. Poulsen, MPH & Marie L. Spiker, MSPH, *Integrating Urban Farms into the Social Landscape of Cities* (RD Johns Hopkins Bloomberg School of Public Health, July 2014)

Christina Snowdon's study, *Urban Agriculture and City Farms and their Role in Community Engagement* (Murdoch University Institute for Sustainability and Technology Policy, 2010). See abstract and further resources at <http://www.cityfarmer.info/2011/04/19/urban-agriculture-and-city-farms-and-their-role-in-community-engagement/>

Growing Food and Justice For All Initiative (GFJI) is an initiative aimed at dismantling racism and empowering communities of color and/or low-income through sustainable, local agriculture: <http://growingfoodandjustice.org>

*Growing Urban Agriculture: Equitable Strategies and Policies for Improving Access to Healthy Food and Revitalizing Communities*, Policy Link, 2012 ([https://www.policylink.org/sites/default/files/URBAN\\_AG\\_FULLREPORT.PDF](https://www.policylink.org/sites/default/files/URBAN_AG_FULLREPORT.PDF))

# 4 – Land Access and Tenure

## Guide to Urban Farming in New York State

### Land Access

Lack of accessible land can be one of the greatest constraints to urban farming, and finding growing space often requires creativity on the part of urban farmers. Empty lots, utility rights of way, private backyards, parks, institutional land (schools, hospitals, churches, prisons, universities, senior homes), and rooftops are all examples of vacant land that might be reclaimed for agricultural use.

Upon seeing vacant land with agricultural potential, urban farmers should take note of the street addresses on either side of the site and cross streets of the block. With this information, farmers can check with local tax assessors and Departments of Finance to view tax maps and property records to determine the site parcel number. This number will allow farmers to look up the site's ownership history and most recent owner, who can then be contacted to discuss use of the land.

*The Essential Urban Farmer* by Novella Carpenter and Willow Rosenthal (Penguin Books, 2011) provides additional information on locating, contacting, and communicating with property owners and purchasing vacant land.

### Land Banks

New York State has recently passed legislation to enable cities to establish land banks to manage vacant land. Check with your local city government to see if your city has a land bank, and if so, gather information what properties are available, their zoning designations and land use histories, and any special programs to encourage their purchasing. For example, Syracuse maintains an online list of available city-owned properties and purchasing incentives at <http://www.syracuse.ny.us/BuyProperty.aspx>.

### Land Tenure

Though outright purchase of land is preferred, land values, particularly in urban centers, are often prohibitively high. As such, many urban farmers resort to long-term contractual agreements and lease agreements, outlined above.

If unable to secure a long-term lease, consider using temporary or moveable cultivation practices, such as growing in raised beds or containers and using temporary structures such as hoop houses. The Garden State Urban Farm in Newark, New Jersey, for example, uses an entirely portable farming system called Earth Boxes (see Factsheet #12, Container Gardening).

To protect urban farmland, consider partnering with a land trust. Land trusts are non-profit organizations that actively work to conserve land, such as by their stewardship of land through purchase, lease, or easements. More information on land trusts and a listing of land trusts by state is available from the Land Trust Alliance at <http://www.landtrustalliance.org/>

### Land-Linking Services

There are some recent efforts to make land more accessible to urban farmers, such as:

- **The Open Accessible Space Information System (OASIS)** in New York City, provides maps of land use patterns including open spaces, property information, transportation networks and more, in an effort to help individuals and groups better understand their environments can be found at <http://www.oasisnyc.net/>

- 596 acres in New York City that helps individuals connect with vacant land in their community through a variety of services, including making municipal information available through an online interactive map of city-owned vacant land, and consulting services for people in New York City and in other cities interested in starting projects on vacant land. Visit <http://596acres.org/> for more information.

## Land Use Agreements

In most instances, urban farmers will lease or otherwise use land under contractual agreement, rather than outright ownership. In such cases, creating a land use agreement can lessen property owner concerns and improve the likelihood that s/he will permit urban farming on the site. The Urban Agricultural Legal Resource Library, a project of the Sustainable Economies Law Center, outlines important elements of land use agreements for both public and private land and sample land use agreements, at <http://www.urbanaglaw.org>.

## Government Land

Housing Authorities Transportation Departments or Authorities can also serve as sources of land for urban farmers. In New York City, for example, the NYC Housing Authority is planning a 1-2 acre farm site on government land. Information on this project is available at <http://www.nyc.gov/html/nycha/html/community/garden.shtml>.

ChangeLab Solutions *Dig, Eat and Be Healthy: A Guide to Growing Food on Public Land* offers more general guidelines for engaging with government entities to gain access to public land: [http://www.changelabsolutions.org/sites/default/files/Dig\\_Eat\\_and\\_Be\\_Happy\\_FINAL\\_20130610\\_0.pdf](http://www.changelabsolutions.org/sites/default/files/Dig_Eat_and_Be_Happy_FINAL_20130610_0.pdf)

## Rooftop Access

There is no formal process to link urban farmers with building owners. Most successful rooftop farmers simply approach individual property owners until they find someone who is willing to host a project. It is important to recognize that not all buildings can support the weight of a farm or garden project, and certain structural considerations must be taken into account. See Factsheet #13, Roof Top Farming, for more information and resources.

## Sample Lease Agreement

*This simple lease agreement is a starting point. Additional sample lease agreements and more information about leasing are available from Land for Good at <http://www.landforgood.org/resources.html>. For more detailed leases, consult an attorney.*

This lease is entered in this \_\_\_\_ day of \_\_\_\_\_ between \_\_\_\_\_, landlord, and \_\_\_\_\_, tenant. The landlord leases to the tenant to use for agricultural purposes \_\_\_\_\_ acres of pasture and \_\_\_\_\_ acres of cropland, and the following building: (list or attach a list) located in the Town of \_\_\_\_\_ and County of \_\_\_\_\_ and commonly known as \_\_\_\_\_ Farm.

The tenant will pay the landlord \$ \_\_\_\_\_ per year (or other specified time period) with payment to be made as follows: \_\_\_\_\_. The tenant will also pay all the costs of planting, growing and harvesting crops grown on the land. The tenant will be required to maintain and repair fences, tile drains, and diversion ditches, and make ordinary repairs to maintain buildings and equipment used, and pay for utilities such as electricity and water (if relevant) during the period of the lease. The landlord will pay the taxes, fire insurance on buildings, major repairs or improvements, such as new fence, ponds, drain tiles, diversion ditches, etc.

The tenant will follow recommended conservation and agronomic practices in working the land. No green or growing timber may be harvested from the property by the tenant. The landlord has the right to inspect or enter the property at any time.  
\_\_\_\_\_ may be adjusted annually to account for increases in taxes, insurance or other costs of ownership.

This lease shall be for \_\_\_\_ years beginning (date) \_\_\_\_\_ with automatic renewal for (how long): \_\_\_\_\_ (years) unless either party gives written notice to the contrary at least 3 months (90 days) before the expiration of the current rental period. The rental rate may be adjusted annually to account for increases in taxes, insurance or other costs of ownership.

Any meadow land plowed for annual crops will be re-seeded to a perennial forage crop at the end of the lease period (unless the lease has been automatically renewed). Any differences between the landlord and tenants as to their rights and obligations under this lease that are not settled by mutual agreement shall be submitted to an arbitrator or other such person who has authority to make a final decision. It is agreed that the stipulations of this lease are to apply to and bind the heirs, executors, administrators, and assigns of the respective parties and is made and executed in duplicate.

In witness whereof the parties have signed this lease on this date of \_\_\_\_\_.

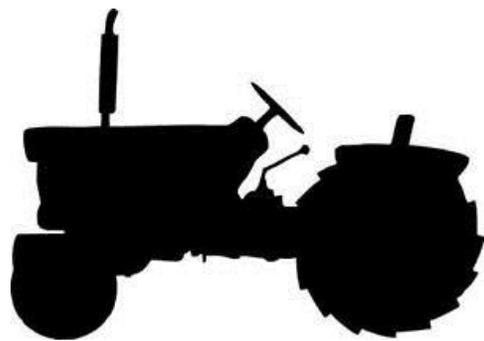
Landlord \_\_\_\_\_

Tenant \_\_\_\_\_

Witness \_\_\_\_\_

Witness \_\_\_\_\_

## Part Two: Farming in Urban Centers



# 5 – Site Renovation

## Guide to Urban Farming in New York State

### Blacktop, Concrete, and Structure Removal

Farmers will often have to deal with existing blacktop and concrete surfaces when preparing vacant lots or other sites for urban farming. In such instances, farmers can choose to plant into containers or raised beds on top of these surfaces, or opt for removal of the blacktop/concrete. There are several online resources available to guide someone through the process of blacktop or concrete removal, or farmers can hire private companies. It should be noted, however, that removal and dump fees can be expensive, and this high cost should be taken into consideration when deciding a course of action, particularly in the case of short-term or tenuous lease agreements.

### Deconstruction Services

Deconstruction is an alternative to demolition that minimizes solid waste, reduces environmental impact, and the products of which are often tax deductible. Additionally, companies and organizations will often remove salvaged materials from the site as donations. Organizations offering deconstruction services and who may be able to assist with blacktop, concrete and structure removal in New York State include:

- Buffalo ReUse – 296 E. Ferry Street, Buffalo, NY, 14208, contact at (716) 882-2800 or [info@buffaloreuse.org](mailto:info@buffaloreuse.org), visit online at <http://www.buffaloreuse.org/>,
- ReUse Action – *Serving the Buffalo / Niagara Region of New York*, contact at [www.reuseaction.com](http://www.reuseaction.com) or (716) 949-0900
- Built it Green! NYC (Queens) – 3-17 26th Avenue, Queens, NY, contact at (718) 777-0132 or [astoria@bignyc.org](mailto:astoria@bignyc.org), visit online at <http://www.bignyc.org/>,
- Built it Green! NYC (Brooklyn) – 69 9th St. Brooklyn, NY, contact at (718) 725-8925 or [govanus@bignyc.org](mailto:govanus@bignyc.org), visit online at <http://www.bignyc.org/>, and
- Fingerlakes ReUse - 2255 North Triphammer Road, Ithaca, NY 14850, contact at (607) 257-9699, visit online at <http://fingerlakesreuse.org/>.
- DEC Case Studies: Climate Smart Waste Reduction and Materials Reuse, <http://www.dec.ny.gov/energy/72967.html>

# 6 – Soil Contamination

## Guide to Urban Farming in New York State

### Contamination in Urban Soils

Farmers wanting to cultivate unfarmed urban soils should be aware of possible soil contamination, whether by physical debris or chemical or other toxins. Physical debris, such as blacktop, glass, and gravel, can be identified and removed much more easily than chemical, heavy metal, or other contamination.

### Determining Soil Contamination

Before beginning any urban farming project, it is important to identify soil contaminants by:

1. Evaluating your land-use history, as well as the history of nearby properties, and
2. Performing a soil test, including a test specifically for heavy metals.

When evaluating your land-use history, some possible starting points are city planning departments, local historical associations, previous owners and older neighbors. Soil tests should be repeated at least yearly, and farmers should consider a plant tissue test to evaluate the amounts of heavy metals (lead, arsenic, and mercury in particular) being taken up by crops.

### Soil and Plant Tissue Testing Services

Soil testing services in or near New York State offering heavy metal testing include:

- **Cornell University Nutrient Analysis Laboratory**, online at [cna.cals.cornell.edu/](http://cna.cals.cornell.edu/), Form S on the Forms page ([http://cna.cals.cornell.edu/forms/pdfs/CNAL\\_Form\\_S.pdf](http://cna.cals.cornell.edu/forms/pdfs/CNAL_Form_S.pdf))
- **Brooklyn College Environmental Sciences Analytical Center**, online at [brooklyn.cuny.edu/web/academics/centers/esac/services/soil.php](http://brooklyn.cuny.edu/web/academics/centers/esac/services/soil.php)
- **UMASS Amherst Soil and Plant Tissue Testing Laboratory**, online at [soiltest.umass.edu/](http://soiltest.umass.edu/)

Farmers should take care to follow the soil sampling procedures provided by each service. For a list of laboratories certified by the NYS Department of Health Environmental Laboratory Approval Program (ELAP), visit [wadsworth.org/labcert/elap/comm.html](http://wadsworth.org/labcert/elap/comm.html). Farmers should be careful when switching between laboratories, since procedures may differ across labs. A “Guide to Soil Testing and Interpreting Results” is available from the Cornell Waste Management Institute at [cwmi.css.cornell.edu/guidetosoil.pdf](http://cwmi.css.cornell.edu/guidetosoil.pdf).

### Heavy Metal Levels and Safety Guidelines

Though there are currently no specific regulations or guideline values specifically for garden soils, A&L Eastern Laboratories, Inc. in Richmond, Virginia provides a helpful chart for interpreting soil tests and safety guidelines for gardening in contaminated soils, by type and level of most common urban soil heavy metal contaminants. A PDF containing this chart and other information about heavy metal soil contaminants is available at [al-labs-eastern.com/forms/Heavy%20Metal%20Interpretation.pdf](http://al-labs-eastern.com/forms/Heavy%20Metal%20Interpretation.pdf).

## Heavy Metal Levels and Safety Guidelines (cont'd)

Heavy Metal	Typical Levels for Non-Contaminated Soils	Unsafe for Leafy or Root Vegetables	Unsafe for Gardens and Contact
Arsenic	3 to 12 ppm*	>50 ppm	>200 ppm
Cadmium	0.1 to 1.0 ppm	>10 ppm	>50 ppm
Copper	1 to 50 ppm	>200 ppm	>500 ppm
Lead	10 to 70 ppm	>500 ppm	>1,000 ppm
Nickel	0.5 to 50 ppm	>200 ppm	>500 ppm
Selenium	0.1 to 3.9 ppm	>50 ppm	>200 ppm
Zinc	9 to 125 ppm	>200 ppm	>500 ppm

\*ppm = Parts Per Million

Note that these are general guidelines and that actual toxicity and unsafe levels will be affected by soil texture, pH, and organic matter. For soils with heavy metal levels unsafe for gardening or contact, call your city's Health Department or the New York State Department of Environmental Conservation ([dec.ny.gov/](http://dec.ny.gov/)) regarding removal.

### Farmer and Community Safety

It is important that farmers keep in mind that people are exposed to soil contaminants primarily by physical exposure to the soil itself, and especially by breathing soil dust. Farmers and urban farm site visitors should follow safety precautions, as outlined in Factsheet #7, Dealing with Contaminated Soils, to minimize exposure.

### For More Information

The Cornell Waste Management Institute (CWMI) provides several resources about soil contamination, including “Sources and Impacts of Contaminants in Soils” and “Soil Contaminants and Best Practices for Healthy Gardens,” both available for download from the Institute’s website at [cwmi.css.cornell.edu](http://cwmi.css.cornell.edu). See also the CWMI Healthy Soils, Healthy Communities website at [cwmi.css.cornell.edu/healthysoils.htm](http://cwmi.css.cornell.edu/healthysoils.htm) and [http://cwmi.css.cornell.edu/Soil\\_Contaminants.pdf](http://cwmi.css.cornell.edu/Soil_Contaminants.pdf), which provides various resources about soil contamination and remediation.

The University of Louisville also offers a practical guide to gardening in contaminated urban soils, including information on the sources and dangers of soil contamination, on soil testing and determining soil safety, and remediation options. This publication, “Urban Agriculture and Soil Contamination: A Guide to Urban Gardening” is available for free download under Practice Guides at [louisville.edu/cepm/publications](http://louisville.edu/cepm/publications).

The United States Department of Agriculture’s National Resources Conservation Services (NRCS) provides a website about urban soil issues at <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/urban/>. This website includes links to relevant sites and related resources, including the “Urban Soil Primer,” a comprehensive guide to urban soils available for free PDF download. Printed copies of the Primer can be requested by calling (888) 526-3227 or emailing [NRCSDistributionCenter@ia.usda.gov](mailto:NRCSDistributionCenter@ia.usda.gov).

The United States Environmental Protection Agency’s “Evaluation of Urban Soils: Suitability for Green Infrastructure or Urban Agriculture” (publication number 905R1103, 2011) is a guide to the evaluating the suitability of urban soils and to remediation and coping strategies, available for free download at [water.epa.gov/infrastructure/greeninfrastructure/upload/Evaluation-of-Urban-Soils.pdf](http://water.epa.gov/infrastructure/greeninfrastructure/upload/Evaluation-of-Urban-Soils.pdf).

The Resource Centres on Urban Agriculture provides a practical guide to “Soil Contamination and Urban Agriculture,” produced by Alexandra Heinegg, Patricia Maragos, Edmund Mason, Jane Rabinowicz, Gloria Straccini and Heather Walsh and available for download at [ruaf.org/sites/default/files/guideonsoilcontamination.pdf](http://ruaf.org/sites/default/files/guideonsoilcontamination.pdf).

# 7 – Dealing with Contaminated Soils

Guide to Urban Farming in New York State

## Mitigation vs. Remediation

This factsheet outlines both mitigation and remediation strategies for dealing with contaminated soils. Mitigation (coping) strategies involve reducing human exposure to and/or plant availability of contaminants even though they remain in the soil, such as by safe gardening practices and the use of raised beds. Remediation strategies involve removing contaminants, either through biological treatments that break down contaminants, or through physical treatments that remove contaminants that cannot be broken down by biological practices.

## Tips for Dealing with Heavy Metal Contaminants

Once urban farmers have determined their soil safety, and decided to pursue production, there are simple precautions you can take to minimize your exposure to contaminants and toxicity to plants.

- Plant crops away from building foundations, painted structures and heavily traveled roads;
- Remove obvious contaminants such as scrap metal and construction materials;
- Use mulch and cover crops to minimize exposure to contaminated dust, and to maintain high levels of organic matter;
- Because concentrations of heavy metals are highest in roots and leaves, avoid planting and eating leafy or root vegetable crops in soils with heavy metals above typical;
- Lime, compost, or amend soil to keep pH close to neutral, or even slightly alkaline, and ensure adequate draining to reduce the mobility and availability of lead and heavy metals;
- Do not use plants grown in contaminated soil for compost;
- Work in the garden only when soil is moist or damp;
- Wear gloves, long sleeves and pants while gardening to prevent skin exposure;
- Wash hands after gardening;
- Wash all vegetables thoroughly; and
- Remove gardening shoes and garments before entering the home, and wash gardening clothes separately from other clothing.

## Mitigation and Remediation Strategies

There are physical, biological, and non-remediation strategies available to urban farmers dealing with contaminated soils. When deciding how to deal with soil contamination, farmers should consider cost, effectiveness, and time frame to determine the strategy that best suits their needs.

“Urban Agriculture and Soil Contamination: A Guide to Urban Gardening” by Allison Houlihan Turner from the University of Louisville provides a helpful overview of different coping and remediation strategies and is available for download from <http://louisville.edu/cepm/publications>, under Practice Guides.

## Non-Remediation (Mitigation) Strategies

The most popular non-remediation strategies for urban farmers dealing with soil contamination are raised bed and container gardening (see Factsheets #11 and #12, Raised Beds and Container Gardening).

One study of gardens in Roxbury and Dorchester, MA, demonstrated the effectiveness of raised beds in reducing exposure to contaminated soil, and found that raised beds require regular maintenance in order to achieve exposure reduction. Recommended maintenance includes removing the top 3-5 cm of soil and replacing it with compost every year (Clark, Hausladen and Brabender 2008).

Soil excavation (removing contaminated soil) is another non-remediation strategy, but is not recommended. The high cost of removing contaminated soil and purchasing clean soil and amendments, often make excavation prohibitively expensive. Additionally, farmers are faced with the added problem of disposing of contaminated soil.

## Physical Remediation

Strategies for physical remediation include excavation, soil washing, and soil vapor extraction. These are often both effective and timely, but are high-cost and unfeasible for most urban farmers. Additionally, disposal of contaminated soil can be difficult and expensive.

## Biological Remediation

Strategies for biological remediation include microbial remediation, phytoremediation, fungal remediation, and compost remediation.

These strategies are often inexpensive, but require an extended time frame. Biological remediation strategies are still being developed by the Environmental Protection Agency and private companies, and their effectiveness still being researched.

*Youarethecity*, a research practice in New York City, has developed a Field Lab at La Finca del Sur in the Bronx, where team members are planting, monitoring, and harvesting several plant varieties known to remove toxins from soil. This project is intended to make phytoremediation research accessible and pertinent to the public, and to urban gardeners in particular. For more information, including postings of phytoremediation workshops at La Finca del Sur, visit the Field Lab blog at <http://newyork.thecityatlas.org/category/atlas-lab/brownfield-remediation/> or <http://www.youarethecity.com/>.

*Youarethecity* published “[Brownfields to Greenfields: A Field Guide to Phytoremediation](#),” which is distributed at related workshops. The guide is available for free download at [youarethecity.com/pdf/fieldguideyouarethecity.pdf](http://youarethecity.com/pdf/fieldguideyouarethecity.pdf).

## For More Information

The Cornell Waste Management Institute, Resource Centres on Urban Agriculture (RUAF), and University of Louisville each provide information on best practices and crops for safe gardening in contaminated soils (see Factsheet #6, Soil Contamination for website links).

The Environmental Protection Agency also has a website on Urban Agriculture & Improving Local, Sustainable Food Systems, which features “[Brownfields and Urban Agriculture: Interim Guidelines and Safe Gardening Practices](#)” and downloads and information from the two-part webinar series, “Brownfields and Urban Agriculture Reuse.”

Both are freely available at <http://www.epa.gov/brownfields/urbanag/>, along with several other resources about brownfield clean up. “[Evaluation of Urban Soils: Suitability for Green Infrastructure or Urban Agriculture](#)” (EPA publication number 905R1103, 2011), includes remediation and coping strategies, available for free download at <http://water.epa.gov/infrastructure/greeninfrastructure/upload/Evaluation-of-Urban-Soils.pdf>.

There are also several organizations that host workshops about soil contamination and managing contaminated soils, such as Cornell Cooperative Extension (<http://www.cce.cornell.edu/>) and the Northeast Organic Farming Association of New York (<http://www.nofany.org/>). See their event listings for workshops and details.

## Literature Cited

Clark, Heather F., Debra M. Hausladen, and Daniel J. Brabender. “Urban Gardens: Lead Exposure, Recontamination Techniques, and Implications for Remediation Design,” published in *Environmental Research*, Volume 107, Issue 3, 2008.

# 8 – Air and Water Pollution

## Guide to Urban Farming in New York State

### Air Pollution

Because airborne heavy metals and particulates are not likely to be absorbed by plants through their leaves, urban air contamination is not considered a major concern for urban-grown food. The exception is for farm and garden sites close to freeways, as freeway driving can produce toxic tire dust. In these instances, farmers should consider using a closed growing method, such as greenhouse production, or other barriers.

In all instances, regardless of proximity to freeways, all crops should be washed thoroughly before sale or consumption to remove any contaminants settled on plant leaves.

It should be noted that airborne particulates will settle on soils and contribute to soil contamination, and urban farmers should follow the precautionary measures and safe gardening practices outlined in Factsheet #7, Dealing with Contaminated Soils.

For more information about air pollution, visit the United States Environmental Protection Agency's website on air and radiation at <http://epa.gov/air/> and the New York State Department of Environmental Conservation's website section on Chemical and Pollution Control at <http://www.dec.ny.gov/>.

### Water Pollution

Plants can absorb contaminants and toxins from their water sources, and using contaminated potable water for washing crops can also make produce unsafe to eat. To determine your water safety, follow these steps (from the *Essential Urban Farmer* by Novella Carpenter and Willow Rosenthal, Penguin Books, 2011):

1. Learn about your water table, and particularly how high it is, by contacting your local water district office. If it is high enough to be reached by plant roots, plants could absorb toxins.
2. Evaluate your land-use history, and particularly any previous industrial or factory activities in your area that might have polluted groundwater sources.
3. If a city or regional company supplies water, contact the company for data on heavy metals and other types of water contamination.
4. Get your water source tested.

### Water Testing Services

Cornell Cooperative Extension's "Water Quality Information for Consumers" website provides many resources about water testing and contamination and home treatment at <http://waterquality.cce.cornell.edu/>.

Cornell University also provides a listing of certified potable and non-potable water testing laboratories in New York State, available for download at <http://www.gaps.cornell.edu/weblinks.html>.

The University of Missouri Extension provides a guide to interpreting water analysis report results at <http://extension.missouri.edu/p/WQ101> (Copyright 1993 to 2011 University of Missouri. Published by [MU Extension](#), all rights reserved).

# 9 – Climate Considerations

## Guide to Urban Farming in New York State

### Climate Considerations

Resource Centres on Urban Agriculture and Food Security (RUAF) states that globally, cities produce about 70 percent of greenhouse gas emissions. The urban population worldwide is expected to double by 2030 with much of this urban growth taking place in developing countries. Accordingly, about 90 percent of the expected increase in greenhouse gas emissions will be from the rapidly growing cities in developing countries (World Bank, 2010). The World Bank also states that cities not only are main contributors to climate change and suffer most of its impacts but also hold important competencies to act on climate change (e.g. authority over land-use zoning, regulation of energy supply and industrial emissions, waste management and water services).

New York State’s climate is very diverse. It is not uncommon that just ten miles away, you could move from one microclimate to a completely different one. Urban climates, in particular, are warmer than their rural surroundings and often full of microclimates. The University of Georgia College of Agricultural & Environmental Sciences provides an overview of microclimates at <http://ugaurbanag.com/content/microclimate>.

According to the EPA, annual mean air temperature of a city with 1 million people or more can be 1.8–5.4°F warmer than its surroundings, and the difference can be as high as 22°F in the evenings (<http://www.epa.gov/hiri>). As such, the climate of an urban farm may be very different from that identified on the USDA Hardiness Zone Map (<http://planthardiness.ars.usda.gov/>). Urban farmers should consult with other growers in their area to learn more about their neighborhood’s growing conditions.

For more information about the climate in a particular area of NYS, check the Northeast Regional Climate Center website: [www.nrcc.cornell.edu/index.html](http://www.nrcc.cornell.edu/index.html) or call 607-255-1751.

### Climatic Factors that Impact Crop Growth

Climatic factors that impact crop growth include minimum temperatures, hardiness, frost-free dates, growing degree-days, precipitation, air drainage, and wind exposure. You can learn more about these factors on the Northeast Beginning Farmer website at <http://nebeginningfarmers.org/farmers/land/land-environment-facilities-tutorial/>.

Additionally, extreme weather events—the increased frequency and severity of rain events, hail, tornadoes, drought, hurricanes, extended periods of previously abnormally high or low temperatures—can impact plant health, yield, soil erosion and more. The following provide general information on extreme weather and its impact on farms:

- The National Wildlife Federation’s “Can Soil Save Us?” argues for cover cropping to reduce the effects of changing climate: <http://www.nwf.org/~media/PDFs/Water/2015/Drought-and-Flood-Report-Final.pdf>
- University of Minnesota Extension has a comprehensive resource for coping with many types of extreme weather: <http://www.extension.umn.edu/extreme-weather/>
- Clean Wisconsin’s “Seeds of Change” report quantifies the impacts of extreme weather on farmers to better illustrate the threat of extreme weather: <http://www.cleanwisconsin.org/wp-content/uploads/2014/12/ag-report-extreme-weather-climate-change-clean-wisconsin-web.pdf>

## Climate-Appropriate Urban Farm Planning

For more information on climate-appropriate urban farm planning, see:

- The Cornell University Garden Ecology Project's "Garden Planning Handout," with approximate best planting dates for vegetables and cover crops in the New York City area, available at <http://blogs.cornell.edu/gep/files/2012/09/Garden-Planning-Handout-1bb9z11.pdf>; and
- Bronx Green-Up's "NYC Gardener's Calendar," which includes information on planting, published in the GreenThumb Gardener's Handbook (p. 29) and available for download at [www.greenthumbnyc.org/pdf/gardeners\\_handbook.pdf](http://www.greenthumbnyc.org/pdf/gardeners_handbook.pdf)

## Growing Methods for Climate Adaptation

Urban farms can help mitigate changing climate conditions and also prepare for resiliency to these conditions through a variety of farming approaches that sequester carbon, reduce storm water runoff and make use of "waste."

For additional information on these approaches, refer to Factsheets:

- 11 – Raised Beds
- 13 – Root Top Farming
- 14 – Intensive Techniques
- 15 – Hydroponics
- 23 – Composting
- 28 – Rainwater Harvesting

# 10 – Season Extension

## Guide to Urban Farming in New York State

### Season Extension

Structures such as row covers, low and high tunnels, cold frames and greenhouses are ways that urban farmers can extend their growing season and increase yields and profits. Urban farmers must, however, adhere to all municipal building and construction codes when designing and building structures, and should consider the permanency of their land tenure. Hoop houses and high tunnels, for instance, are much more portable than permanent greenhouses.

### Types of Season Extenders

The following information is from the National Sustainable Agriculture Information Service publication, “[Season Extension Techniques for Market Gardeners](#),” which provides information about cultural and other season extension techniques as well as sources of equipment, supplies, and other information, available for download or purchase at <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=366>.

#### Floating Row Covers

Floating row covers are made of spun-bonded polyester and polypropylene fabric that is permeable to sunlight, water, and air, and provides a microclimate similar to the interior of a greenhouse (giving 2 to 8°F of frost protection). They are typically placed directly over crops without support. The exception is when covering crops with tender growing points, such as tomatoes, in which case low tunnels should be used. Floating row covers come in light, medium, and heavy weights, with sizes ranging from widths of 3 to 60 feet and lengths of 20 to 2,550 feet.

#### Low Tunnels

Low tunnels are heavy-weight floating row covers made of clear or white polyethylene that are supported by wire hoops. These offer many of the same advantages of floating row covers, but are not permeable to air or water and are more labor-intensive.

#### Cold Frames

Cold frames are low structures used to protect crops in cold weather. They traditionally rely on solar heat, though more recently developed models can include heating systems. Though cold frame work well in protecting crops and can be more durable than row covers or low tunnels, construction costs of cold frames are high compared to plasticulture systems, which provide many of the same benefits.

#### High Tunnels

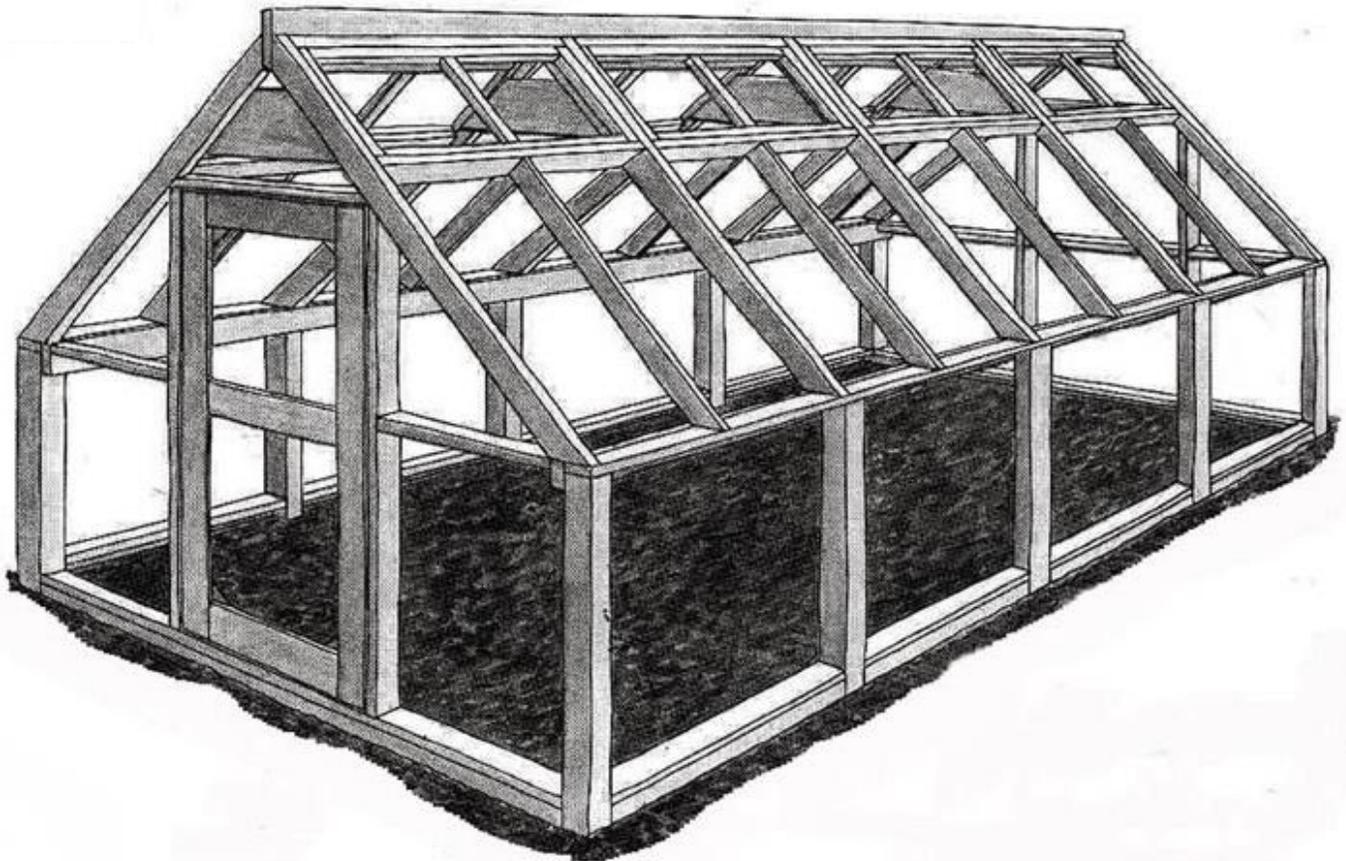
Also called hoop houses, high tunnels are typically arched or hoop-shaped frames covered with clear plastic and high enough to stand in or drive a tractor through. High tunnels are usually solar heated, and do not require additional energy sources. Compared to greenhouses, high tunnels are relatively inexpensive, ranging in price from \$1.50 to \$3.00 per square foot.

Penn State University offers information and several resources for purchasing, building, and using high tunnels at <http://extension.psu.edu/plants/plasticulture/technologies>.

For urban farmers growing in raised beds, the Samuel Roberts Noble Foundation provides simple instructions for building a small hoop house on an existing raised bed for less than \$90 at <http://www.noble.org/ag/horticulture/minihoophouse/>.

## Greenhouses

Greenhouses are similar to high tunnels, but are traditionally more durable and permanent, and use either glass or greenhouse-grade plastic to protect crops and capture heat. Greenhouses also typically use a heating source in addition to solar energy, as well as automated heating and cooling systems. These systems allow farmers to plant a greater variety of crops throughout the year.



# 11 – Raised Beds

## Guide to Urban Farming in New York State

### Benefits of Raised Beds

A raised bed is a bed that has been raised above the surface of the ground and that allow for in-soil, above-ground planting. Raised beds can be boxed or unboxed, and edged with a variety of found materials, such as bricks, stone, wood, or cinderblocks. However, it is important to evaluate that source and safety of any found materials, as debris such as bricks and wood can contain toxic substances and contaminate soils.

Raised beds allow urban farmers to grow food despite soil contamination, and to plant atop blacktop or concrete, without undergoing costly excavation projects. Raised beds, and portable beds or containers in particular, also help urban farmers deal with temporary land tenure, and require less investment than in-ground planting.

Though more time consuming and expensive, boxed raised beds are generally more aesthetic and are more easily protected against rodents, such as by lining their bottoms with hardware cloth or chicken wire.

For information about other above ground planting techniques, see also Factsheet #12, Container Gardening.

### Finding Affordable Supplies

Supplies for building raised beds can be expensive, and urban farmers might save money by considering alternative suppliers of tools and materials. Again, all found or salvaged materials should be evaluated for their safety.

### Tools

Tool libraries exist across New York State and often allow urban farmers to borrow tools for no cost (for more information about tool libraries, see Factsheet #29, Affordable Supplies). Urban farmers might also use services such as Craigslist or Freecycle (both online) to source free or inexpensive tools, or rummage at salvage yards and stores.

### Materials

Craigslist and Freecycle, as well as salvage yards, can also be good sources of affordable materials for constructing raised beds. Organizations offering deconstruction services often have affiliated salvage stores, which might sell reclaimed wood or other usable architectural pieces.

Salvage stores in New York State include:

- **Built it Green! NYC** (<http://www.bignyc.org/>)  
Astoria Warehouse: 3-17 26<sup>th</sup> Avenue, Queens, NY, [astoria@bignyc.org](mailto:astoria@bignyc.org), (718) 777-0132  
Gowanus Center: 69 9<sup>th</sup> Street, Brooklyn, NY, [gowanus@bignyc.org](mailto:gowanus@bignyc.org), (718) 725-8925
- **ReHouse Architectural Salvage** (<http://www.rehouseny.com/>)  
469 W Ridge Road, Rochester, NY, [rehouseinfo@rehouseny.com](mailto:rehouseinfo@rehouseny.com), (585) 288-3080
- **Buffalo ReUse** (<http://www.buffaloreuse.org/>)  
296 E. Ferry Street, Buffalo, NY, [info@buffaloreuse.org](mailto:info@buffaloreuse.org), (716) 882-2800
- **Fingerlakes ReUse** (<http://fingerlakesreuse.org/>)  
2255 North Tripphammer Road, Ithaca, NY, (607) 257-9699

*Green Eco Services*, a privately maintained blog, provides a list of stores selling reclaimed wood and salvaged building materials in New York. This listing, however, is not maintained and all businesses should be contacted before visiting. This list is available at <http://www.greenecoservices.com/reclaimed-wood-salvage-fsc-timber-ny/>. When sourcing materials for raised beds, avoid any painted or treated wood, which may contain toxic substances.

## **How to Build Raised Beds**

There are several online resources for farmers interested in building their own raised beds, as well as commercial do-it-yourself kits for easy assembly.

One of the most comprehensive online resources for farming with raised beds is The Samuel Roberts Noble Foundation's "*Permanent Raised Bed Gardening*" manual, a guide to all aspects of raised beds, including information on bed layout and site selection, site preparation, bed designs and assembly instructions, soil preparation, irrigation recommendations, plastic mulch application, planting techniques, fertilization, and more. This manual is available at <http://noble.org/ag/horticulture/raised-bed-gardening/>.

*The Essential Urban Farmer* by Novella Carpenter and Willow Rosenthal (Penguin Books, 2011) includes an entire chapter devoted to constructing raised beds, detailing how to build both boxed and unboxed raised beds appropriate for urban environments.

YouTube (<http://www.youtube.com/>) also features several videos about using raised beds in urban farming, such as those offered on the *Garden Girl TV: Urban Sustainable Living Channel* at <http://www.youtube.com/user/GardenGirly/>.

# 12 – Container Gardening

Guide to Urban Farming in New York State

## Containers for Urban Farming

Like raised bed gardening, container gardening is an above-ground technique. Containers come in a variety of forms, are typically smaller than raised beds, and allow for the planting of only one of a few plants, and are easily portable. Containers are also often used with soilless growing mediums, such as potting mixes. Container gardening shares many of the benefits of growing in raised beds. It allows urban farmers to manage soil contamination and plant atop blacktop, concrete, or other spaces unsuitable for in-ground production. Given the portability of containers, container gardening also allows farmers an option for dealing with temporary land tenure.

Additionally, urban farmers can tap into the urban waste stream to yield a myriad of affordable container options. Riverpark Farm in Manhattan, for example, grows food for the Riverpark Restaurant in recycled milk crates. Other urban farms are planting in plastic wading pools or recycled wooden pallets.

In New Jersey, Garden State Urban Farms maintains an entirely portable farm by planting in EarthBoxes, a commercially developed container gardening system that claims to double the yield of conventional gardens. For more information about EarthBoxes, see the company website at <http://www.earthbox.com/>.

Sole Food Street Farms in Vancouver, BC has developed a system of containers that can be moved with a pallet jack or forklift for easy reconfiguration of urban space while eliminating contact with pavement and contaminated soils: <http://solefoodfarms.com/how-we-grow/>

## Container Considerations

When choosing a container type, three main considerations are volume, drainage, and material. All containers should allow adequate drainage, without draining too quickly. For volume, the bigger is typically the better, and farmers must take into account the root depth of their crops. For materials, and particularly when using recycled or salvaged containers, it is important that they contain no toxic substances. Painted or treated wood, plastic containing solvents or high-density polyethylene (HDPE), and metals should be avoided.

## Extension Resources

The Iowa State University Extension offers a two-page factsheet on container vegetable gardening, including suggested cultivars for container production, available for download at <https://store.extension.iastate.edu/Product/Container-Vegetable-Gardening>.

Cornell Cooperative Extension of Rockland County also offers a factsheet on container gardening, including information on fertilizing and potting mix recipes, at <http://rocklandcce.org/resources/outdoor-container-gardening>.

# 13 – Roof Top Gardening

## Guide to Urban Farming in New York State

### Benefits of Roof Top Farming

Roof top farming is the cultivation of produce and other crops on the roof of a building. Farming on roofs enables the use of otherwise underutilized space for food production, and roof top farms reduce urban heat by absorbing solar radiation and reduce pressure of stormwater on sewer systems by absorbing rainfall runoff.

In New York City, urban farmers practicing roof top farming might be eligible for the NYC Green Roof Property Tax Abatement Program, which offers a one-year tax abatement of \$4.50 per square foot of green roof, with a maximum abatement of \$10,000 or building tax liability, whichever is less. For design and filing requirements, download [http://www.nyc.gov/html/dob/downloads/pdf/green\\_roof\\_tax\\_abatement\\_info.pdf](http://www.nyc.gov/html/dob/downloads/pdf/green_roof_tax_abatement_info.pdf), or email questions to [greenroofandsolar@buildings.nyc.gov](mailto:greenroofandsolar@buildings.nyc.gov).

### Services and Training

**Brooklyn Grange**, a commercial roof top farm with acreage in Brooklyn and Queens, offers consulting, design and installation services for people interested in roof top farming. Visit <http://www.brooklyngrangefarm.com/> for more information, or contact [info@brooklyngrangefarm.com](mailto:info@brooklyngrangefarm.com).

**Eagle Street Rooftop Farm in Brooklyn** is a 6,000 square foot green roof organic farm that offers free public programming and workshops. For more information, visit <http://rooftopfarms.org/> or contact [Education@RooftopFarms.org](mailto:Education@RooftopFarms.org).

**Farming Up** is an organization planning a large-scale roof top farm in New York City, and has conducted research on growing media for roof top farms and how it affects plant nutrient density. Research results are freely available on the organization's website at <http://www.farmingup.org/>.

Other organizations host occasional rooftop farming classes or workshops. See Appendix A for organization information, and check event calendars and postings for more information.

### Roof Top Farming Publications

There are several factors to consider when designing, installing and maintaining a roof top farm, from engineering requirements to buildings codes.

Before embarking on a roof top project, consult guides such as:

- “**Guide to Setting Up Your Own Edible Rooftop Garden**,” published by Alternatives and the Rooftop Garden Project in Montreal, Canada, 2008 (available for free download at [http://archives.rooftopgardens.ca/files/howto\\_EN\\_FINAL\\_lowres.pdf](http://archives.rooftopgardens.ca/files/howto_EN_FINAL_lowres.pdf), and
- “**DDC Cool & Green Roofing Manual**,” prepared for the NYC Department of Design & Construction Office of Sustainability Design by Gruzen Samton Archives LLP, 2005-2007 (available for free download at [www.nyc.gov/html/ddc/downloads/pdf/cool\\_green\\_roof\\_man.pdf](http://www.nyc.gov/html/ddc/downloads/pdf/cool_green_roof_man.pdf)).
- “**Green Roofs and Rooftop Gardens**,” published by the Brooklyn Botanic Garden as part of the Handbook series, available for purchase at [http://www.bbg.org/gardening/handbook/green\\_roofs](http://www.bbg.org/gardening/handbook/green_roofs).
- **Eagle Street Rooftop Farm's Annie Novak's “The Rooftop Growing Guide”** offers advice from a seasoned rooftop grower: <http://www.amazon.com/The-Rooftop-Growing-Guide-Transform/dp/1607747081>

# 14 – Intensive Techniques

## Guide to Urban Farming in New York State

### Intensive Growing Techniques

Urban farming often occurs in small spaces, and is otherwise constrained by the limited availability of land. As such, many urban farmers adopt intensive growing techniques to maximize productivity. Intensive growing techniques include:

- **Succession planting** – Replanting in the same area to keep all parts of the garden in production;
- **Intercropping** – Planting fast and slow growing crops in the same row at the same time;
- **Vertical planting** – Growing crops on trellises or other supports to use space efficiently; and
- **Intensive spacing** – Growing crops as closely together as possible to maximize use of space. With intensive spacing, plants also act as “living mulches” that reduce weed pressure and water evaporation. Keep in mind, however, that overly close spacing and limiting pruning can result in reduced airflow and plant disease.

More information on intensive growing techniques is available in the GreenThumb Gardener’s Handbook, available for download at [www.greenthumbnyc.org/pdf/gardeners\\_handbook.pdf](http://www.greenthumbnyc.org/pdf/gardeners_handbook.pdf).

### Small-Plot Intensive (SPIN) Farming

SPIN Farming is an intensive growing system that promotes high-productivity techniques and focuses on small farmer profitability, claiming that it is possible for SPIN farmers to gross \$50,000 per year on just half an acre. For more information and to purchase SPIN learning guides, visit <http://spinfarming.com/>.

### Square-Foot Gardening

Urban farmers growing in raised beds might consider Square Foot Gardening, a raised bed growing system that involves planting in grids to maximize space use and productivity. For more information, visit the Square Foot Gardening Foundation’s website at <http://www.squarefootgardening.com/>, or see Mel Bartholomew’s *All New Square Foot Gardening: Grow More in Less Space* (Cool Springs Press, 2006).

### Other Resources

Several organizations, such as East New York Farms! (<http://www.eastnewyorkfarms.org/>), offer occasional workshops in intensive growing techniques and related concepts such as trellising. See Appendix A for organization information and check event calendars and postings. Though not in New York, an excellent example and resource of intensive urban production techniques is Growing Power ([www.growingpower.org](http://www.growingpower.org)), which provides hands-on training, on-the-ground demonstration, and outreach and technical assistance.

*Sustainable Market Farming: Intensive Vegetable Production on a Few Acres* by Pam Dawling (New Society Publishers, 2013) is a detailed manual of small-scale organic crop production that includes information on intensive growing techniques, as well as season extension, profitable enterprise business skills, and more. Visit the book’s website at <http://sustainablemarketfarming.com/>.

# 15 – Hydroponics

## Guide to Urban Farming in New York State

### Hydroponics in Cities

Hydroponics is a method of growing plants in water, without soil. Plants are typically grown in a solution of water and nutrients in containers such as buckets, tanks or tubes. Though systems vary in complexity, the solution is usually aerated using a pumping system.

### Urban Hydroponics Facilities and Resources

- **Gotham Greens**, with facilities in New York City and Chicago Illinois, grows pesticide free produce in climate-controlled rooftop greenhouses. Their products are sold to restaurants, groceries and cooperative markets.
- **Bright Farms**, with facilities in PA, MO, VA, and IL, was designed to conserve land, water, eliminate agricultural runoff and reduce greenhouse gas emissions by reducing transport needs. Each facility grows a diversity of vegetables and greens using hydroponic systems.
- **Boswyck Farms**, though no longer in production, has an array of resources on their website, (<http://www.boswyckfarms.org/>)
- *How-To Hydroponics*, 4<sup>th</sup> Edition, by Keith Roberto, Futuregarden, 2003
- *Hydroponic Food Production: A Definitive Guidebook for the Advanced Home Gardener and the Commercial Hydroponic Grower*, 6<sup>th</sup> Edition, by Howard M. Resh, CRC Press, 2002
- *Hydroponic Food Production: A Definitive Guidebook of Soilless Food-Growing Methods*, 6<sup>th</sup> edition, by Howard M. Resh, Woodbridge Publishing Company, 2001

### New York Hydroponics Stores

- **Hydroponic Garden Centers, Inc.** (<http://growhome.com/>)  
146-47 Horace Harding Expwy, Flushing, NY, (718) 762-8880
- **Hydroponic Shops of America** (<http://www.hydroponicshopsofamerica.com/>)  
2606 Erie Boulevard, East Syracuse, NY, (615) 251-2516
- **Indoor/Outdoor Gardener** (<http://www.hydroponicsnewyorkcity.com/>)  
8223 5th Avenue, Brooklyn, NY, (718) 836-2402
- **Planted Earth Hydroponics** (<http://www.plantedearthhydro.com/>)  
120 Vestal Avenue, Endicott, NY, (607) 239-6207  
Triphammer Marketplace, 2255 N. Triphammer Rd., Ithaca, NY, (607) 319-0918
- **Upstate Hydroponics & Garden Supply** (<http://www.upstatehydroponics.com/>)  
3092 Lake Road, Horseheads, NY, (607) 483-9199

# 16 – Mushrooms

Guide to Urban Farming in New York State

## Growing Mushrooms in Urban Environments

Mushrooms have a great potential for two aspects of urban agriculture. They can consume organic “wastes” often abundant in urban areas such as coffee, sawdust, woodchips, compost, etc while producing a delicious and nutritious food.

Additionally, in a separate application from food production, certain species can be used to “clean” toxins from a contaminated site. This process is known as myco-remediation.

In urban environments, mushrooms are unique in their ability to be highly adaptable and able to grow in small spaces, indoors and out. This factsheet provides some of the basic background on the use of mushrooms the urban landscape and resources for further study of this topic. Visit [www.CornellMushrooms.org](http://www.CornellMushrooms.org) for more detailed factsheets and videos on mushroom cultivation.

## What are mushrooms?

Mushrooms are in the kingdom fungi, which also includes yeasts and molds. These are highly adaptable, fast growing organisms that digest materials in their environment and reproduce through microscopic “spores” that are dispersed into the air. There are several types of mushrooms that have various strategies for living in their environment, including decomposer/saprophytic (which break down organic materials), mycorrhizal (which form beneficial exchanges with plants), and parasitic (which feed of plants and animals). For the purposes of this factsheet, we are focusing on decomposing/saprophytic mushrooms for our purposes.

## Key Terms

A **mushroom** is the fruiting body of the organism, or the part we eat. The mass of white tissue that fruits these is known as **mycelium**. The food source that the mycelium grows into and uses for energy is called a **substrate**. When cultivating mushrooms for any purpose, a grower purchases mycelium from a company (like a seed company), which is called **spawn**. The process of bringing mycelium into contact with the substrate is called **inoculation**.

## Special Considerations

It is critical to note that mushrooms are *extremely* sensitive to their environment, acting like a sponge and soaking up almost anything in their path. This means that especially in urban environments, its important to ensure that the substrate (soil, woodchips, etc) **is free of contaminants if the mushrooms are intended for consumption**.

Also important is to engage in proper identification techniques before consuming any mushroom. There are many resources to help with this. While the likelihood of mushroom poisoning is actually very low, it’s important to know what you are working with. Be especially cautious when working with children. **“When in doubt, throw it out!”**

## Growing Edible Mushrooms

While there are many possibilities to choose from, the easiest mushrooms to grow for home or sale are **Oyster** (*Pleurotus* spp.), **Shiitake** (*Lentinula edodes*), and **Red Wine Cap** (*Stropharia rugoso-annulata*). As the table below shows, oyster mushrooms grow on the widest range of materials. Shiitake prefers hardwood logs or sawdust, which may

prove hard to find in the city. Stropharia can be integrated into existing garden beds that are mulched, provided the soil is free of contaminants.

Species	Grows on:	Notes:
Oyster ( <i>Pleurotus</i> spp.),	coffee grounds, sawdust, straw, shredded paper, spent brewery grain,	Often grown indoors; need to create a “recipe” to balance carbon/ nitrogen ratio for each
Shiitake ( <i>Lentinula edodes</i> )	hardwood logs, compressed sawdust blocks	Grown indoors or outside under shade. Source logs from arborists/city public works.
Red Wine Cap ( <i>Stropharia rugoso-annulata</i> )	woodchips or straw mulched beds	Can be grown indoors or out in combination with other cropping systems.

Visit [www.CornellMushrooms.org](http://www.CornellMushrooms.org) for factsheets specific to each of these species.

### Using Mushrooms for Myco-Remediation

Many people get excited at the prospect of using mushrooms to “clean up” contaminants in the urban environment. While there has been considerable research into this, its important to remember that each site must be treated on a case-by-case basis and the applications must be thoroughly planned and monitored by laboratory testing. Just inoculating a site with fungi is no guarantee of success.

Common Contaminant	Species shown to be effective	Notes
Pesticide residues, oil and gasoline products	Oyster, Red Wine Cap, Agaricus spp, others	Mycelium phase, not fruit, is most important
Heavy Metals	Turkey Tail, Galerina spp, many others	These become toxic, as heavy metals cannot be broken down

### Further Resources

Visit [www.resources.cornellmushrooms.org](http://www.resources.cornellmushrooms.org) for a comprehensive list of articles, videos, research, and more.

# 17 – Urban Orchards

## Guide to Urban Farming in New York State

Increasing the urban tree canopy can directly help offset carbon dioxide emissions entering the atmosphere, decrease storm water runoff, increase shade and reduce the urban heat island effect, provide habitat and improve local air quality. Though typically the species planted to increase the forest canopy are not edibles, fruit trees offer many of the same benefit as other species, while also providing produce and opportunity for urban enterprise. Fruit trees are adaptable and can be grown in sloping and space-constrained areas. Though tree crops require annual pruning, fertilizing, and harvesting, they tend to be much easier to care for than vegetables and are perennial, so just one tree could provide hundreds of pounds of fruit for many years. With this amount of produce, there is ample opportunity for addressing issues of food scarcity, creating job opportunities and urban farm business potential. In contrast to vegetables, trees may also provide a crucial buffer between eaters and the kinds of toxic compounds that exist in urban soils.

### Urban Orchard Example Organization/Projects

**Urban Orchard Project**, a non-profit in the United Kingdom is creating lush cities swathed in fruit and nut trees. They work in partnership with communities to plant, manage, restore and harvest orchards in urban areas to help people rediscover the pleasure of eating home-grown fruit. [www.theurbanorchardproject.org/](http://www.theurbanorchardproject.org/)

In Boston, there are about forty urban orchards located on the grounds of historical houses, farms, public lands and in community gardens, schoolyards or wild areas. Each orchard is mapped and can be read about in more detail by visiting, [www.bostonnatural.org/urban-orchards.htm](http://www.bostonnatural.org/urban-orchards.htm).

**The Vancouver Fruit Tree Project** harvests extra fruit from backyard fruit trees and redistribute it to community groups, <https://vancouverfruittree.com/>

**The San Francisco Urban Orchard Project** assists with planting and maintenance of publicly accessible fruit trees. The program has planted fruit trees in several locations throughout San Francisco, including food insecure areas and an orchard within Golden Gate Park, <http://sfenvironment.org/article/managing-our-urban-forest-types-of-urban-agriculture/urban-orchards>

**FruitTreesNY**, part of the TreesNY program, is planting urban orchards across the Five NYC Boroughs. TreesNY also offers workshops on pruning and maintaining trees, <http://www.treesny.org/fruittreesnewyork>

### Tree Fruit Species

General fruit tree guides can be applicable when choosing fruit tree species to plant in the city. One such guide from Cornell University can be found here: <http://www.gardening.cornell.edu/fruit/homefruit/homefruit.pdf>.

Other considerations:

- Choose dwarf varieties because urban soils tend to be compacted and growing space may be limited. Dwarf varieties are also much easier to harvest from overtime since they do not grow as tall as regular varieties.
- Choose fruit that people like and are familiar with, especially if urban food production is a new concept in your community. In time, you may be able to plant less common fruits.
- Consider more than just trees: brambles (such as raspberries and blackberries) and beach plums (*Prunus maritima*), a deciduous shrub, are excellent options for the urban environment.

# 18 – Going Organic

Guide to Urban Farming in New York State

## Why Organic?

Organic practices are particularly important in urban environments, where limited land often requires intensive use and chemical inputs, such as fertilizers and pesticides, can contribute to soil contamination and water system pollution. Additionally, organic crops can demand a higher market price, important for farmers aiming to maximize profits from small parcels of land.

## Becoming Certified

Regardless of whether you use organic practices, if you have farm sales of more than \$5,000 per year you cannot legally sell your products as *organic* unless your farm has been officially certified.

If you sell less than \$5,000 per year of product and would like to use the word “organic” in your marketing, you must adhere to organic practices even though there is no certification process required. To learn more about this, download the PDF of Small Scale Organics from [www.kerrcenter.com/publications/small-scale-organics.pdf](http://www.kerrcenter.com/publications/small-scale-organics.pdf).

You can find the list of all certifying agencies by going to the USDA’s National Organic Program website at [www.ams.usda.gov/NationalOrganicProgram](http://www.ams.usda.gov/NationalOrganicProgram). You can use any agency listed. The two located in New York are:

- **NOFA-NY Certified Organic, LLC** (<https://www.nofany.org/>)  
840 Upper Front Street, Binghamton, NY 13905  
(607) 724-9815, [certifiedorganic@nofany.org](mailto:certifiedorganic@nofany.org)  
Scope: Crop, Livestock, Handling  
Accredited: 4/29/02
- **Natural Foods Certifiers (NFC)** (<http://nfccertification.com/>)  
119 A South Main Street, Spring Valley, NY 10977  
(888) 422-4632, [nfccertification@gmail.com](mailto:nfccertification@gmail.com)  
Scope: Crop, Livestock, Wild Crop, Handling  
Accredited: 10/08/02



## General Overview of Organic Regulations

Organic regulations are complex and ever-changing, which is why it is important to work with your certifying agency on everything that you do to assure compliance.

In general, you cannot use synthetic pesticides, antibiotics, or petroleum-based fertilizers. To certify a field as organic it must not have had pesticides or petroleum fertilizers applied for the past three years. To certify animals as organic, there are various transition requirements depending upon the animal species: dairy cattle, beef cattle, pigs, poultry, et cetera.

Great attention is paid to nurturing the soil by the use of composts, cover crops, rock minerals and natural fertilizers. Plant disease and pests are controlled through the use of crop rotations, resistant varieties, cultivation, biological and botanical pest control. Animal health is maintained with wholesome food, adequate shelter, access to the outdoors, and preventive health plans.

Documentation of field maps, adjoining fields, complaints, crop inputs used, yields, sales, feeds purchased, medications used, and equipment-cleaning logs must be kept to maintain your certification.

## Alternatives to Organic Certification

When deciding whether or not to become a certified organic producer, it is important to consider cost of certification and to what extent it will increase the marketability of your product(s). You can also consider alternatives to certification, such as **Farmers Pledge** (<http://www.nofany.org/farmers-pledge>) or **Certified Naturally Grown** (<http://www.naturallygrown.org/>).



The Organic Certification  
Process Flow Chart from  
nfccertification.com

# 19 – Pesticide Use Regulations

## Guide to Urban Farming in New York State

### Pesticide Use Regulations

When using pesticides, the *label is the law*. Make sure you read it! More information about pesticide use regulations, including the Pesticide Applicator Certification, is available online at [dec.ny.gov/chemical/298.html](http://dec.ny.gov/chemical/298.html).

Note that these pesticide regulations are for farmers applying pesticides to rented or owned property. Different regulations may apply for employee, intern, or volunteer application of pesticides. For more information, see the EPA's *How to Comply with the Worker Protection Standard for Agricultural Pesticides* at [epa.gov/oecaagct/epa-735-b-05-002.pdf](http://epa.gov/oecaagct/epa-735-b-05-002.pdf).

### Becoming a Certified Pesticide Applicator

A farmer using “restricted use” pesticides to protect crops and animals from pests on property *owned or rented* is considered a “private” applicator and must become certified by the DEC and show his/her pesticide license when purchasing these products. “General use” pesticides, considered to be safer and in general use, do not require applicator certification for purchase and use.

To be eligible for certification, you must have one season’s experience working with the crops, livestock or stored products on which you will use pesticides and be at least 17 years of age.

To become certified, you must take an exam based on information in the Pesticide Training Manual (Core Manual). Additionally, there are questions pertaining to the situation in which you use pesticides (category manual). You can obtain manuals through county Cooperative Extension offices. Cooperative Extension also offers pesticide applicator training programs or you may study on your own and make an appointment with the Department of Environmental Conservation to take the exam.

For information on manuals and training, contact your county Cooperative Extension office or call (607) 255-1866, email the Pesticide Management Education Program at [PMEP\\_Webmaster@cornell.edu](mailto:PMEP_Webmaster@cornell.edu), or visit [psep.cce.cornell.edu/certification/Certification.aspx](http://psep.cce.cornell.edu/certification/Certification.aspx).

For questions about the certification process and exams, call the Department of Environmental Conservation office in your region. Upon passing the exam, your certification is valid for five years. There is a fee for the exam and for certification.

### Recertification

During the five years that you are certified, you must obtain continuing education credits toward recertification. Credits can be obtained by attending meetings where pest management topics are discussed and credits offered. A course calendar can be found at <http://psep.cce.cornell.edu/certification/Recertification.aspx>.

Credits must be earned in more than one calendar year and consist of at least 25% category-specific training in each category of certification.

You are obligated to keep records of the credits you receive and turn in record sheets to Department of Environmental Conservation when they notify you that your license is about to expire. If you do not have the required credits, you will have to take the exam again.

# 20 – Soil Fertility

## Guide to Urban Farming in New York State

### Soil Fertility

Unlike rural farmers who can lay land fallow, the limited availability of urban land often requires that urban farmers keep plots in continuous production, which can lead to the eventual depletion of soil nutrients. Deliveries of nutrient-rich soil and soil amendments can be prohibitively expensive, and making compost or other amendments can be time-consuming or impossible to accomplish at the scale farms need. As such, urban farmers should follow certain best practices to maintain and enhance soil fertility while optimizing use of available space. These include crop rotation, cover cropping, and composting or fertilizing. See Factsheets #21 through #23 for more information about these practices.

### Soil Testing Services

\* Be sure you have read Factsheets #6 and 7 on Soil Contamination and Dealing with Contaminated Soils. There are different approaches to building soil fertility if the soils you have to work with are contaminated.

AgroOne Services will test soil for nutrients and pH and indicate amounts of lime and fertilizer needed. Soil samples can be mailed, shipped via UPS, or taken to Dairy One's sample pick-up points (see website), where you will fill out forms and pay for the testing. Your county extension office may also accept samples. Many Cornell Cooperative Extension offices can mail the samples for you, assist in analyzing results, take payment for testing or provide forms and boxes to farmers if they wish to mail their own samples. Results will be mailed in approximately two weeks. To contact the lab call (800) 496-3344 or visit <http://dairyone.com/analytical-services/agronomy-services/soil-testing/>.

### For More Information

The following organizational urban growers' manuals are great sources of information about maintaining soil fertility on urban farms:

- [GreenThumb's \(New York City\) Gardener's Handbook](http://greenthumbnyc.org/pdf/gardeners_handbook.pdf) – available as a free PDF at [greenthumbnyc.org/pdf/gardeners\\_handbook.pdf](http://greenthumbnyc.org/pdf/gardeners_handbook.pdf)
- [The Food Project's Urban Grower's Manual](http://thefoodproject.org/manuals) (Boston, MA) – available as a free PDF at [thefoodproject.org/manuals](http://thefoodproject.org/manuals)

### Low- or No-Cost Soil Amendments

It can be very beneficial to build relationships with local tree service companies and the municipal organization that collects leaves in your city or town. Tree service companies remove dangerous or unwanted trees and chop them up into woodchips, a very valuable carbon product for urban farmers. Woodchips are useful to delineate pathways and also assist with the decomposition of waste in a compost system. Leaf collection is a service towns and cities provide to residents and typically is the responsibility of a Department of Solid Waste, Highway Department or Department of Environmental Conservation. These facilities frequently stockpile the leaves in huge piles. This "leaf mulch" is an excellent soil amendment and often available for free pick-up by town residents. In some cases, delivery may even be available. Check with your local municipality to find out whether woodchips or leaf mulch are available.

### General Soil Health Resources

Information on general soil health is widely available, such as from the Cornell University Soil Health website (<http://soilhealth.cals.cornell.edu/>). The Cornell Soil Health Assessment Training Manual, also available from this website, is a comprehensive source of information about soil health testing and management strategies for improving soil health, including the use of cover crops, organic amendments, tillage, and crop rotation.

The Sustainable Agriculture Research and Education (SARE) publication, *Building Soils for Better Crops* (3<sup>rd</sup> Edition) by Fred Magdoff and Harold van Es, 2010, covers aspects of soil quality and practices for ecologically-based soil management and is available for free download or purchase at [sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition](http://sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition).

The Brooklyn Botanic Garden Handbook, “Healthy Soils for Sustainable Gardens,” is a helpful guide to all-things soil health, and is available for purchase on-line at [http://www.bbg.org/gardening/handbook/healthy\\_soils](http://www.bbg.org/gardening/handbook/healthy_soils).

NOFA-NY’s “Organic Soil Fertility and Weed Management” by Steve Gilman (2001) explains how to build soil fertility by well-planned and well-timed tillage, cover cropping, resting, and feeding, and is available for purchase at <http://www.chelseagreen.com/organic-soilfertility-and-weed-management>.

# 21 – Crop Rotation

Guide to Urban Farming in New York State

## Crop Rotation

Crop rotation involves rotating the planting of different crops, each with different nutritional needs, in succession in the same space. Urban farmers can use crop rotation to maximize productivity and simultaneously improve soil fertility, as well as to help protect against plant diseases and pest infestation.

A sample crop rotation, as suggested by Thomas J. Fox in *Urban Farming: Sustainable City Living in Your Backyard, in Your Community, and in the World* (Hobby Farm Press, 2011), might be:

1. Follow a heavy feeder (such as fruiting crops) with a light feeder (such as root vegetable crops);
2. Follow a light feeder with a nitrogen fixer you plan to eat (such as peas);
3. Follow a nitrogen fixer you plan to eat with a nitrogen-fixing cover crop (see below, Factsheet #22); and
4. Return to the beginning and plant a heavy feeder.

Because urban farmers traditionally have small land bases, however, crop rotation can be difficult on urban farms, and requires careful and detailed planning.

For more information on crop rotation, see *Crop Rotation on Organic Farms: A Planning Manual*, a Natural Resource, Agriculture, and Engineering Service (NRAES) publication edited by Charles L. Mohler and Sue Ellen Johnson, 2009, available for free download or purchase at <http://www.sare.org/Learning-Center/Books/Crop-Rotation-on-Organic-Farms>.

# 22 – Cover Cropping

Guide to Urban Farming in New York State

## Cover Cropping

Cover crops are not planted for harvest and consumption by people (though some cover crops are excellent sources of nutrients for livestock), but for a variety of beneficial purposes such as suppressing weeds, protecting against erosion, adding organic matter and building soil fertility. Because city farmers often cannot leave land fallow for extended periods, and do not have access to tractors or other mechanized equipment, the best cover crops for urban environments are annuals that can be easily incorporated into the soil, through winterkill or hand-powered methods of tilling, such as oats, field peas and buckwheat.

The Cornell University Garden Ecology Project, a community-research partnership based in New York City, provides an information sheet specifically for New York City and Tompkins County/upstate NY gardeners, but pertinent to all urban farmers, on cover crops for urban environments, available for download from the project website at <http://blogs.cornell.edu/gep/>.

The Sustainable Agriculture Research and Education (SARE) publication, *Managing Cover Crops Profitably* (3<sup>rd</sup> Edition), edited by Andy Clark, 2007, has general information on using cover crops for different purposes and includes charts and profiles of many cover crops with information on planting and management. This publication is available for download or purchase at <http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition>.

Cornell University's "Cover Crops for Vegetable Growers" provides a Decision Tool to help farmers decide which cover crop best suits their needs at <http://covercrops.cals.cornell.edu/decision-tool.php>.

# 23 – Composting

## Guide to Urban Farming in New York State

### Composting and Fertilizing

Compost is essential to maintaining an urban soil fertility program, as it adds organic matter, micronutrients, and beneficial microorganisms to the soil.

Urban farmers should be able to use organic fertilizers, such as fish emulsion and manure, and take care to prevent runoff into sewage systems. In the case of odorous fertilizers, urban farmers should carry out applications at times when it will be of minimal disturbance to neighbors.

### Tips for Urban Composting

Information about composting is widely available, including private or municipal composting services, but urban farmers producing their own compost must keep certain considerations in mind:

- Urban farmers may not have the space available to produce enough compost to meet their needs, and might consider seeking donated or purchased compost from other sources;
- Urban compost bins must be contained, aesthetically pleasing, and well-managed so as to prevent odors and minimize disturbance to neighbors; and
- Consider compost bins that are “rodent resistant” to prevent infestation by rats, mice and other animals. These include bins with openings no larger than ¼ inch, and bottoms should be lined with rodent screens, wire mesh or hardware cloth, again with no openings larger than ¼ inch. However, proper and careful management of any type of compost bin can eliminate risk of attracting rodents.

### Tapping the Urban Waste Stream

Restaurants, grocers, convenience stores, coffee shops, customers and neighbors are all great sources of waste for compost production and urban farmers can benefit from establishing regular pick-up or drop-off routines from these or other businesses and institutions.

### New York Composting Laws

The NYC Compost Project (see below) website provides information on local, state, and federal laws pertaining to composting and the handling of organic components of the waste stream.

### The New York City Compost Project

The NYC Compost Project is a citywide program developed by the city’s Department of Sanitation Bureau of Waste Prevention, Reuse, and Recycling in 1993 to provide education and outreach about composting to New York City residents, non-profit organizations, and businesses. The Project is executed by Department-funded staff at host sites in each borough, including the New York Botanical Garden in the Bronx, the Brooklyn Botanical Garden, the Lower East Side Ecology Center in Manhattan, the Queens Botanical Garden, and the Snug Harbor Cultural Center & Botanical Garden.

At each of these sites, the Project offers demonstrations, basic and advanced composting classes and a Master Composter Certificate Course. The Project website, <http://www.nyc.gov/html/nycwasteless/>, is a great source of information about composting, including composting guides and links to relevant resources. Additionally, the Project provides compost bins and worm composters to New York City residents at discount prices, also featured on the website.

For more information, visit the following host websites or contact NYC Compost Project hosts directly:

- **New York Botanical Garden in the Bronx** (<http://www.nybg.org/>)  
Email [compost@nybg.org](mailto:compost@nybg.org) or call the Compost Hotline at (718) 817-8543
- **Brooklyn Botanic Garden in Brooklyn** (<http://www.bbg.org/>)  
Email [compost@bbg.org](mailto:compost@bbg.org) or call the Compost Hotline at (718) 623-7290
- **Lower East Side Ecology Center in Manhattan** (<http://www.lesecologycenter.org/>)  
Email [info@lesecologycenter.org](mailto:info@lesecologycenter.org) or call the Compost Hotline (212) 477-3155
- **Queens Botanical Garden** (<http://www.queensbotanical.org/>)  
Email [compost@queensbotanical.org](mailto:compost@queensbotanical.org) or call the Compost Hotline at (718) 539-5296
- **Snug Harbor Cultural Center & Botanical Garden** (<http://snug-harbor.org/>)  
Email [compost@snug-harbor.org](mailto:compost@snug-harbor.org) or call the Compost Hotline at (718) 425-3558.

Each of these sites also provides general information and resources about composting in urban environments, helpful for any city farmer looking to produce his or her own compost.

### **Other Resources**

Earth Matter NY, Inc. is a non-profit organization that aims to promote composting in and around New York City through compost projects and learning centers at Governor's Island, in partnership with EcoStation NY, and Fort Greene. Earth Matter NY also offers consultations in areas including compost techniques and applications, troubleshooting, and bin building. For more information, visit their website at <http://earthmatter.org/>.

The Cornell Waste Management Institute provides information and links to relevant resources on composting, including small-scale composting, at <http://cwmi.css.cornell.edu/>. Their website includes a list of composting facilities across New York State.

Cornell Cooperative Extension of Tompkins County offers composting classes and workshops, as well as a ten-session Master Composter training, in Ithaca. Those interested can find more information and apply for the Master Composter training online at <http://ccetompkins.org/gardening/composting>. This website also includes composting resources such as "how-to" factsheets and videos.

### **Worm Composting**

Worm composting, also known as vermicomposting, requires significantly less space than traditional composting and keeps food scraps, which attract rodents or animals, out of the compost bin. As such, worm composting is well suited to smaller urban farming operations.

For information about worm composting, visit the Cornell Waste Management Institute website at <http://cwmi.css.cornell.edu/>, which provides links to many relevant resources, and Cornell University's worm composting page at <http://compost.css.cornell.edu/worms/basics.html>, which provides information on how to build and use your own worm composting bin. Commercial worm composting bins are readily available for purchase online.

# 24 – Waste Management

## Guide to Urban Farming in New York State

### Information on Waste and Waste Management

The New York Department of Environmental Conservation is the best source of information about all types of waste, including solid waste, organic waste, and toxic and hazardous waste, as well as recycling and composting information. Their resources include but are not limited to:

- A listing of solid waste management facilities;
- Information on the proper handling and disposal of special wastes, such as tires, used oil, and lumber pressure treated with chromated copper arsenate;
- Information on all aspects of hazardous waste management; and
- A list of composting facilities.

For this and more information, visit the Chemical and Pollution Control section of The New York State Department of Environmental Conservation's website at <http://www.dec.ny.gov/>.

The New York City Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling is a self-proclaimed “one-stop recycling, waste prevention, and composting resource” for New York City residents. Their website also includes general information about local, state, and federal laws and legislation that pertain to solid waste management including recycling, composting, source reduction, and handling and disposal of hazardous waste. Visit <http://www.nyc.gov/html/nycwasteless/> for more information.

The Cornell Waste Management Institute provides information about waste management with a focus on farm waste and organic materials, and includes information on the proper management and use of manure, compost, and sewage sludge to optimize soil quality and minimize health risks. Visit their website at <http://cwmi.css.cornell.edu/> or contact [cwmi@cornell.edu](mailto:cwmi@cornell.edu) for more information.

### Services

Most cities have local listing services where you can post unwanted materials, such as [Freecycle](http://www.freecycle.org/) (<http://www.freecycle.org/>) and the [ReUseIt Network](http://reuseitnetwork.org/) (<http://reuseitnetwork.org/>).

The [Blue Book Building & Construction Network](http://www.thebluebook.com/) (<http://www.thebluebook.com/>) allows you to search for recycling centers in New York that accept construction materials such as asphalt and concrete, to be broken down and re-used.

# 25 – Pest and Disease Management

## Guide to Urban Farming in New York State

### Best Practices for Pest and Disease Management

Even if municipal codes do not prohibit the use of chemical pesticides or fertilizers, urban farmers should practice certain best practices to manage pests and diseases organically and limit environmental impact on soils and local water bodies, as well as risk to neighbors. These include:

- Maintaining plant health by ensuring soil fertility and proper growing conditions;
- Keeping gardens free of weeds, and especially Brassica weeds such as shepherd's purse and yellow rocket, which can provide over-wintering for flea beetles;
- Choosing plants suited to soil, moisture, sunlight, climate, and other garden conditions;
- Choosing disease and pest resistant crops and cultivars;
- Practicing crop rotation and diversity;
- Practicing interplanting, or companion planting;
- Attracting or purchasing beneficial insects;
- Watering plants at the base to avoid wetting leaves, and watering early in the day;
- Not touching healthy plants after being in contact with diseased or damaged plants; and
- Removing diseased plants and in some cases (i.e. late blight), disposing of these by burning or by bagging and bringing them to a landfill.

For information about these and other organic pest and disease management strategies, see:

- *Resource Guide for Organic Insect and Disease Management* by Brian Caldwell, Emily Brown Rosen, Eric Sideman, Anthony M. Shelton, and Christine D. Smart (2005), freely available online at <http://web.pppmb.cals.cornell.edu/resourceguide/>; and
- *Growing Healthy Vegetable Crops: Working with Nature to Control Diseases and Pests Organically* by Brian Caldwell, Chelsea Green Publishing, 2011, available for purchase at <http://www.chelseagreen.com/growing-healthy-vegetable-crops>.

The Cornell University Garden Ecology Project's "Insect Research Update" offers pest management strategies specific to New York City area farmers and gardeners, available for download at <http://blogs.cornell.edu/gcp/Research-Update-Handout.pdf>. For diagnostic resources, information about common pests, and other publications about pests and pest management in the State, visit Cornell University's New York State Integrated Pest Management Program website at <http://nysipm.cornell.edu/>.

### Animal Pests

Food scraps are the main attraction for animal pests. Deter animal pests by keeping all food scraps and waste tightly sealed, and closely managing compost piles lined with hardware cloth. Also consider vermicomposting to keep food scraps out of open compost piles. Remove rodent habitats, such as piles of wood or lumber, and keep the perimeters of walls clear of shrubs and loose materials.

Lining the bottom of raised bed boxes with hardware cloth or chicken wire will protect crops from damage by moles and other burrowing pests. In other areas of the garden, laying hardware cloth under a thin layer of mulch can also help to prevent burrowing.

## **Deer**

Line paths and borders with deer-repelling plants such as alliums, aromatic herbs, and daffodils, and purchase scent and taste repellents, being sure to alternate repellents frequently. Fencing can also help to keep deer out of gardens. A 7- to 8-foot wire or plastic fence or single strand of electrical fencing are both effective and inexpensive, though urban farmers must be sure to adhere to city codes that might regulate electric fencing, fence height, or construction material (see Factsheet #27, Fencing).

## **Birds**

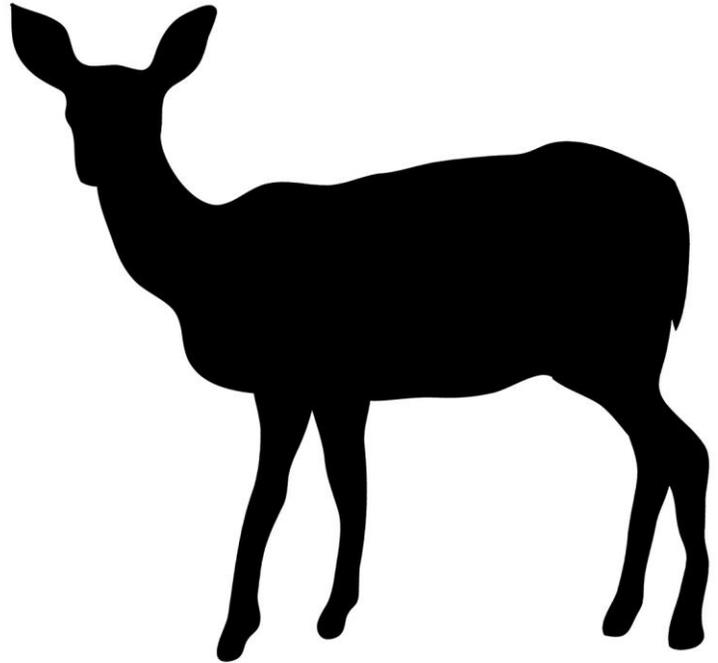
Purchase commercial bird repellents such as visual scare devices, sonic repellants, and taste aversions. Constructing small cages of aviary wire and placing them over vulnerable produce will protect crops not only from birds, but also from deer, raccoons, rats, and other animal pests.

When planting cover crops, cover newly planted seeds with row cover until the plants emerge to protect against birds. Remove the row cover as soon as plants are a few inches tall to avoid stunting their growth or creating favorable conditions for disease.

## **Organizational Resources**

Many of the organizations listed in the Appendix, such as the Brooklyn Botanical Garden, Just Food, and the Urban Roots Community Garden Center, provide resources and occasional workshops to teach urban farmers more about disease and pest management.

Check also with local Cornell Cooperative Extension offices, a listing of which is available from the Cornell Small Farms Program at <http://smallfarms.cornell.edu/contact/local-contacts/>.



# 26 – Site Security

## Guide to Urban Farming in New York State

### Dealing with Theft and Vandalism

Urban farms are often highly visible and accessible, and as such are vulnerable to theft, vandalism, and other destructive human activity. Successful urban farms and farming organizations, such as the Food Project in Boston, MA, suggest the following tips for minimizing these activities:

- Plant planter boxes outside of farm property and/or fencing with a sign indicating that people may help themselves;
- Locate appealing crops away from major streets and sidewalks, and where they are less visible;
- Plant a barrier of sunflowers or other tall crops to limit visibility of farm crops;
- Plan ahead and plant a little extra of popular or easily stolen crops, expecting some loss to theft;
- Clean up debris and lock up all tools and equipment;
- Invest in insurance as a way to recoup losses; and
- Put up fencing (see Factsheet #27 for more information about fencing).

Though all of these suggestions can help to prevent or minimize theft and vandalism, most urban farmers agree that building positive community relationships and promoting community involvement are the surest ways to keep an urban farm secure. See Factsheet #3 on Engaging Communities. Consider an open-gate policy in which all visitors are welcome to tour the farm, talk to passersby and neighbors as much as possible, inform people of plans and goals, or ask for community volunteers. An involved and supportive community will keep a watchful eye on its neighborhood's urban farm, and help to discourage any destructive activities.

# 27 – Fencing

## Guide to Urban Farming in New York State

### **Fencing**

Fencing can be an effective way to keep intruders and animal pests from entering an urban farm, but fence height and material should be considered carefully. Each fence style sends a certain message. Tall, chain-link fences provide a lot of security, but can be viewed as harsh by the community. Lower, less harsh fences, such as vegetative barriers, provide less security, but can help to foster community involvement and support.

Urban farmers must also take into account municipal ordinances, which might also regulate the height and material of fences. Many cities, for example, prohibit the use of chicken wire, wire mesh, or similar material for permanent fencing, as well as the use of barbed wire, broken glass, electrification or other device or material intended to cause injury.

Cities also limit fence height, often with different regulations for residential and non-residential districts. Check your city's ordinances online at websites such as General Code (<http://www.generalcode.com/ecode360/NY>) and Municode (<http://www.municode.com/>), or contact your city hall or website.

Other fencing considerations are cost, durability, and attractiveness. Fencing can be constructed from a variety of materials, from living material such as fruit trees or shrubs to cedar posts to salvaged materials. See Factsheet #29, Affordable Supplies, for a listing of re-use or salvage stores.

GrowNYC offers a factsheet on bollards and fences that includes information on ensuring that fences are securely placed. Find this and other publications at <http://www.grownyc.org/openspace/publications>.

# 28 – Rainwater Harvesting

## Guide to Urban Farming in New York State

### Benefits of Rainwater Harvesting

Rainwater harvesting in urban environments not only saves money on the water bill for urban farmers, but also has a positive environmental impact. Many US cities have a Combined Sewage Overflow system, which means that rainwater and sewage water use the same pipes. When there is a significant rainstorm the pipes can get overloaded with rainwater, and can lead to rainwater and sewage overflowing into waterways. Rainwater harvesting helps to keep stormwater out of the sewage system and in turn can help maintain the cleanliness of local water bodies. *Note* that rainwater should only be used for the purposes of irrigation or for cleaning equipment, but is not safe for washing produce.

### Rainwater Catchment Systems

Building a rainwater catchment system can be relatively simple such as digging swales or constructing a rain barrel catchment watering system. For those interested in building their own rainwater catchment system in New York State, good places to start include:

- **GrowNYC** in New York City provides a how-to manual and video for building your own rainwater catchment system, as well as a map, descriptions, and photos of existing catchment systems, available at <http://www.grownyc.org/openspace/rainwater>, and
- **New York City's Water Resources Group** is a coalition of greening and community groups that installs rainwater catchment systems across the city, and maintains a blog and listserv featuring news and updates about rainwater harvesting at <http://waterresourcesgroup.blogspot.com/>.

Before building a rainwater catchment system, check your city's building, construction and plumbing codes pertaining to water recycling systems. For example, the New York City Construction Code (2008) reads:

§ PC C101: Water recycling systems shall receive storm water captured from roofs and balconies, condensate reclamation systems, gray water discharge only of lavatories from public restrooms in commercial office buildings, and the treated effluent from an approved black water treatment system as regulated by Department of Mental Health and Hygiene. Recycled water shall be utilized only for flushing water closets and urinals, cooling tower makeup and irrigation systems that are located in the same lot as the water recycling system. Recycled water shall be considered potable. Such systems shall comply with sections C101.2 and C101.12.

Some towns and city departments promote rainwater collection by providing free or very affordable rain barrels. In Washington DC, DC Greenworks has partnered with the DC Department of Environment to provide training and installation of rain barrels ([dgreenworks.org](http://dgreenworks.org)). In Monroe County, NY the Soil and Water Department provides rainwater kits for private homes (<http://monroecountyswcd.org/Pages/Rainbarrel%20Program.html>). Rain Check, in Buffalo, NY, is a citywide effort to manage water where it falls and protect water quality and quantity. Individuals can submit applications for rain barrels.

### Other Resources

The **Save the Rain** program in Onondaga County, NY is a comprehensive stormwater management plan that provides information about and funding to the development of green infrastructure and stormwater mitigation techniques. For more information, visit <http://savetherain.us/>.

# 29 – Affordable Supplies

Guide to Urban Farming in New York State

## Tools and Equipment

In New York City, the **GrowNYC Grow Truck tool loan program** traverses all five boroughs and loans out both common and specialized garden tools, as well as other garden supplies. More information and an application to borrow tools are available online at <http://www.grownyc.org/openspace/growtruck>. For more information, email [growtruck@grownyc.org](mailto:growtruck@grownyc.org) or call (212) 788-7935.

**Farmer Pirates**, an urban farmer cooperative in Buffalo, shares knowledge and equipment, makes bulk supply purchases, and facilitates shared ownership of land. Visit <http://www.farmerpirates.com/> for more information.

Also consider shopping for tools and equipment at sites such as Craigslist (<http://www.craigslist.org/>) or Freecycle (<http://www.freecycle.org/>), or rummaging at salvage stores (see below).

## Tool Libraries

Tool libraries are often affiliated with public libraries, and provide tool loan services. Tool libraries in New York include:

- **Buffalo Olmsted Parks Conservancy's Tool Lending Library** (<http://bfloparks.org/>)  
84 Parkside Ave, Buffalo NY, (716) 838-1249, [info@bfloparks.org](mailto:info@bfloparks.org)
- **University Heights Tool Library** (<http://www.ourheights.org/uhtl/>)  
5 West Northrup Place, Buffalo NY, (716) 510-1745, [uhtl@ourheights.org](mailto:uhtl@ourheights.org)
- **Seaport Tool Lending Library in Manhattan** (<http://seaporttools.org/>)

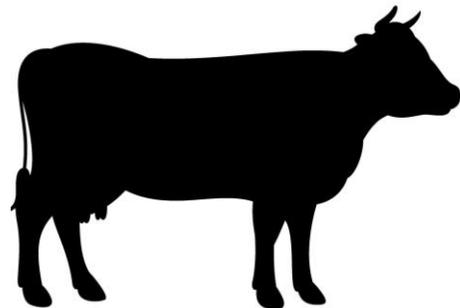
## Salvage and Re-Use Stores

Salvage and re-use stores can be great sources of affordable construction materials and tools.

- **Build it Green! NYC** (<http://bignyc.org/>)  
Astoria Warehouse, 3-17 26<sup>th</sup> Avenue, Queens, NY, (718) 777-0132, [Astoria@bignyc.org](mailto:Astoria@bignyc.org)  
Gowanus Center, 69 9<sup>th</sup> Street, Brooklyn, NY, (718) 725-8925, [gowanus@bignyc.org](mailto:gowanus@bignyc.org)
- **ReHouse Architectural Salvage** (<http://rehousesny.com/>)  
469 W. Ridge Road, Rochester, NY, (585) 288-3080, [rehouseinfo@rehousesny.com](mailto:rehouseinfo@rehousesny.com)
- **Buffalo ReUse Store** (<http://www.buffaloreuse.org/>)  
296 E. Ferry Street, Buffalo, NY, (716) 882-2800, [info@buffaloreuse.org](mailto:info@buffaloreuse.org)
- **Fingerlakes ReUse** (<http://fingerlakesreuse.org/>)  
2255 North Triphammer Road, Ithaca, NY, (607) 257-9699

The **Green Eco Services website** provides a list of stores that sell reclaimed wood, salvaged building materials, and used architectural elements in New York at <http://www.greenecoservices.com/reclaimed-wood-salvage-fsc-timber-ny/>. This listing, however, is not maintained and businesses should be called before visiting.

## Part III: Raising Urban Livestock



# 30 – Urban Livestock

## Guide to Urban Farming in New York State

### Livestock in Urban Environments

Urban farmers interested in raising livestock face challenges unique to their city environments. Space limitations restrict the number and type of livestock that can be kept. Close proximity to neighbors requires that farmers take care not to create nuisance conditions, such as excessive noise or foul odors, which might cause a disturbance. Lack of accessible feed, supplies, processing facilities and restrictive municipal ordinances also constrain the urban farmers' ability to keep livestock. The unique qualities of cities should be taken into careful consideration when choosing which livestock and breeds to keep.

Good places to start learning about raising livestock in urban areas are general books and publications (see Factsheet #50, General Resources). *The Essential Urban Farmer* by Novella Carpenter and Willow Rosenthal (Penguin Books, 2011) and *Your Farm in the City: An Urban-Dweller's Guide to Growing Food and Raising Animals* by Lisa Taylor and the Gardeners of Seattle Tilth (Black Dog & Leventhal Publishers, 2011) both feature overviews of raising urban livestock.

### Urban Livestock Resources

There are general resources featuring information about raising urban livestock available, such as:

- **Urban Farm Online** (<http://www.urbanfarmonline.com/urban-livestock/>), an on-line magazine featuring information on all aspects of urban farming, including beekeeping, chicken keeping, goat keeping and rabbit keeping;
- **City Farmer** (<http://www.cityfarmer.org/sublivestock.html>), published by Canada's Office of Urban Agriculture, though not updated regularly, features several good resources about raising urban livestock; and

YouTube also features several instructional and demonstration videos about raising urban livestock, such as:

- **How to Raise Urban Chickens** (Ioby Channel, <http://www.youtube.com/user/iobyvideos>)
- **Urban Goats** (Farm Raised Channel, <http://www.youtube.com/user/farmraisedchannel>)
- **Raising Rabbits** (New Survivalist Channel, <http://www.youtube.com/user/thenewsurvivalist>).

Local farming organizations will often be able to provide information about raising urban livestock, as well as recommend breeders and suppliers, and may host relevant classes or workshops. See the Appendix for organization information.

### City Ordinances

Each municipality regulates the keeping of livestock differently, and may also regulate activities related to raising urban livestock, such as building coops and housing structures, processing, and selling. Below are examples of some city ordinances relating to urban livestock in New York State. These are not all inclusive, and any farmer interested in raising urban livestock should contact his or her city clerk, local farming organization, Cooperative Extension or other source to clarify any and all relevant regulations and exceptions. To advocate for a change in your city's ordinances, some exemplary cities that support urban livestock are Austin, TX, Seattle, WA, Chicago, IL and Somerville, MA.

**The Urban Agricultural Legal Resource Library**, a project of the Sustainable Economies Law Center (SELC), includes general information about how food-producing animals might feature in city law, as well as suggestions for finding more information, <http://www.urbanaglaw.org/>. Additionally, many city ordinances are available through sites such as Municode, <http://www.municode.com/>, General Code <http://www.generalcode.com/ecode360/NY>, and Backyard Chickens <http://www.backyardchickens.com/atype/3/Laws>.

## Examples of New York State City Ordinances

City	Ordinance
<b>Albany</b>	<p>Chapter 115, Article VIII, § 115-31: No person shall keep, harbor, or shelter any farm animal or fowl within the City of Albany. For purposes of this article, farm animal or fowl shall include cows, cattle, horses, ponies, donkeys, mules, pigs, goats, sheep, chickens, ducks, geese, or other animals or fowl usually known as "farm animals or fowl," but not solely limited to the aforementioned and not including common household pets. <i>Exemptions with permission from the City Clerk include:</i> not-for-profit organizations that prove farm animals are being kept for educational purposes and after finding that the animals will be kept in such a manner as to not disturb the health and safety of the surrounding neighborhood; and commercial businesses that prove that the appropriate zoning requirements have been met for the district in which the business is located.</p>
<b>Buffalo</b>	<p>Chapter 341, Article II, § 341-11.1: It shall be lawful for any person to keep, permit or allow any domesticated chicken hens in any residential district under the following terms and conditions and after having received a license to keep said chicken hens from the City Clerk as prescribed herein under the following terms and conditions:</p> <ul style="list-style-type: none"> <li>A. No more than five chicken hens shall be allowed for each single-family dwelling or multifamily dwelling.</li> <li>B. No chicken hens shall be allowed in multifamily complexes, including duplexes, without the expressed written consent of the owner of the building and all tenants residing in the building other than the applicant.</li> <li>C. No chicken hens shall be allowed without the express written consent of all residents residing on property adjacent to that of the applicant.</li> <li>D. No roosters shall be allowed.</li> <li>E. Chicken hens are to be restricted to the rear or backyard of any lot in a residential zoning district or the rear or backyard of a residential use in all other zoning districts.</li> <li>F. Chicken hens shall be kept as pets and for personal use only; no person shall sell eggs or meat or engage in chicken breeding or fertilizer production for commercial purposes.</li> <li>G. Persons wishing to keep chicken hens within the City of Buffalo must obtain a license from the Office of the City Clerk after payment of an annual fee of \$25, and after inspection and approval of the coop and cage that chicken hens are to be kept in by an Animal Control Officer, pursuant to § 341-11.4 hereof.</li> </ul> <p>Chapter 511, Article XXII, § 511-115: It shall be unlawful for any person to stable, keep as a pet, or permit to remain any cloven-footed or hooved animal, such as, but not limited to, cows, goats, horses, pigs, or sheep, on any lot or premises within a residential district or business district as classified under Chapter 511 of the Code of the City of Buffalo, and in no case shall such animal be kept on the same lot or premises with a dwelling.</p>

## Examples of New York State City Ordinances (cont'd)

City	Ordinance
<b>Cortland</b>	Chapter 74, Article I, § 74-1: It shall be unlawful for any person, firm or corporation to own, harbor, keep, raise or maintain any pigeons, fowl, horses, cattle, sheep, goats, swine or other domestic or wild animals except cats and dogs, within the limits of the City of Cortland without first obtaining a permit from the Common Council of the City of Cortland and paying any applicable fees.
<b>Elmira</b>	Chapter 6, Article I, § 6-1: It shall be unlawful for any person to keep or cause to be kept any live fowl, such as, but not limited to, chickens, ducks and geese, within the corporate limits of the city. Chapter, Article II, § 6-2. It shall be unlawful for any person to keep or cause to be kept any farm animal, such as, but not limited to, cows, horses and pigs, within the corporate limits of the city.
<b>Geneva</b>	<p>Chapter 77, Article I, § 77-2: No person shall keep or harbor any bees in the city. Any beehive used or occupied by bees is hereby declared to be a nuisance; and it shall be unlawful to keep or maintain any such hive in the city.</p> <p>Chapter 77, Article I, § 77-3: No person shall keep or harbor any chickens, ducks, geese or other domesticated fowl in the city except in the AR, Agricultural Residential Use Districts and F Industrial Use Districts and not closer than 200 feet to any house, except the owner's, apartment building, church, school, hospital or any other building customarily used or occupied by human beings, such as but not limited to stores, hotels, restaurants, offices and factories.</p> <p>Chapter 77, Article I, § 77-4: No person shall keep or harbor any cattle, horses and sheep in the city except as follows: Cattle, horses and sheep may be kept in the city in the AR, Agricultural District if maintained not closer than 100 feet to any house except the owner's, apartment building, church, school, hospital or any other building customarily used or occupied by human beings, such as but not limited to stores, hotels, restaurants, offices and factories.</p> <p>B. Every person maintaining animals as permitted in Subsection A of this section shall keep clean and sanitary every shed, barn or structure housing said animals. Every such shed, barn or structure shall be thoroughly cleaned at least once every 24 hours and refuse from the same shall, when collected, be kept in airtight containers until disposed of in accordance with any other provisions of this Code.</p> <p>Chapter 77, Article I, § 77-5: No person shall keep or harbor any goats, pigs or swine in the city; and it shall be unlawful to keep or maintain any goat pen, pig sty or other building for the housing of goats, pigs or swine.</p>
<b>Ithaca</b>	<p>Chapter 164, Article I, § 164-2: A. Prohibition. No person shall keep, pasture, breed, raise, harbor, stable or maintain any bees, poultry, chickens, turkeys, ducks, geese or any other fowl or reptiles or any swine, horses, cows, mules, sheep, goats or any other animals, except domesticated pets, within the City. Exception. This section shall not apply to any educational, scientific or research institution maintaining, with adequate safeguards as to public health, safety, comfort and convenience, any animals or other creatures for scientific, medical or other research purposes.</p> <p>Chapter 164, Article I, § 164-3: No person shall allow any cattle, horses, goats, sheep, swine or poultry to be at large within the City.</p>

## Examples of New York State City Ordinances (cont'd)

City	Ordinance
<b>New Rochelle</b>	Chapter 89, Article VI, § 89-16: No person shall keep, permit, harbor or raise farm animals including but limited to those of the equine swine, bovine, ruminant and avian species, on a parcel of land comprising less than two acres with not less than one acre of land for each such animal and not less than 50 feet from the property line of an adjacent residential property within the jurisdiction of the City of New Rochelle.
<b>New York City</b>	Health Code § 161.19 Keeping of live poultry and rabbits. (a) No person shall keep a live rooster, duck, goose or turkey in a built-up portion of the City. (b) A person who holds a permit to keep for sale or sell live rabbits or poultry shall keep them in coops and runways and prevent them from being at large. Coops shall be whitewashed or otherwise treated in a manner approved by the Department at least once a year and at such other times as the Department may direct in order to keep them clean. Coops, runways and the surrounding area shall be kept clean. Health Code § 161.21 Yarding of horses, cattle, swine, sheep and goats. The yard in which horses, cattle, swine, sheep or goats are kept shall be fenced so as to prevent the animals from roaming. The yard shall be properly graded and drained and kept clean.
<b>North Tonawanda</b>	<p>Chapter 57, § 57-2: From and after the enactment of this ordinance, it shall be unlawful for any person, firm or corporation to harbor or maintain any animals or livestock within the limits of the City of North Tonawanda, New York. This section shall not be construed to apply to slaughterhouses and abattoirs that are covered in the provisions of other city ordinances.</p> <p>Chapter 57, § 57-3: From and after the enactment of this ordinance, it shall be unlawful for any person, firm or corporation to harbor or maintain any live rabbits or poultry in any yard, area, cellar, coop, building premises, public market or other public place in the City of North Tonawanda, New York, who does not possess an unrevoked permit from the City Clerk/Treasurer, as prescribed herein under the following terms and conditions.</p> <p>A. Exceptions for chicken hens.</p> <ol style="list-style-type: none"> <li>1) No more than five chicken hens shall be allowed for each single-family dwelling or multifamily dwelling.</li> <li>2) No chicken hens shall be allowed in multi-family complexes, including duplexes, without the express written consent of the owner of the building and all tenants residing therein other than the applicant.</li> <li>3) No chicken hens shall be allowed without the express written consent of all residents residing on property adjacent to that of the applicant.</li> <li>4) No roosters shall be allowed.</li> <li>5) Chicken hens are to be restricted to the rear or backyard of any lot in a residential zoning district or the rear or backyard of a residential use in all other zoning districts.</li> <li>6) Chicken hens shall be kept as pets and for personal use only; no person shall sell eggs or meat or engage in breeding or fertilizer production for commercial purposes.</li> <li>7) Persons wishing to keep chicken hens within the City of North Tonawanda must obtain a permit from the office of the City Clerk/Treasurer after payment of an annual fee of \$25, and after inspection and approval of the coop and cage that chicken hens are to be kept in by the Building Inspector.</li> </ol>

## Examples of New York State City Ordinances (cont'd)

City	Ordinance
<b>Rochester</b>	<p>Chapter 30, Article I, § 30-12: No person, firm, association or corporation shall bring into, keep, hold, offer for sale, sell or kill or allow to be kept, held, offered for sale, sold or killed in the City of Rochester any live animals, except animals for show or exposition purposes only, and except white mice, white rats, cats, dogs, horses, mules and donkeys.</p> <p>No person, firm, association or corporation shall bring into, keep, hold, offer for sale, sell or kill or allow to be kept, held, offered for sale, sold or killed in the City of Rochester any chickens, geese, ducks, doves or pigeons, turkeys or other animals or fowls, except persons holding a poulterer's license, without having a license therefor issued by the Chief of Police and under and pursuant to the provisions of this chapter; provided, however, that no license shall be required for any animals or fowls in transit through the said City; and provided, however, that nothing herein contained shall apply to slaughterhouses, cattle yards or any place where any cattle or swine are killed or dressed; and provided, however, that nothing herein contained shall apply to any cattle, sheep or swine brought into the City and directly transported to a slaughterhouse or cattle yard.</p> <p>Chapter 30, Article I, § 30-13: The raising of fowl for the purpose of selling the same is hereby prohibited within the City of Rochester.</p>
<b>Saratoga Springs</b>	<p>Article 6 § 101-19 Fowl at large. No person shall allow fowl to run at large in the Inside Tax District, but he shall keep the same in suitable houses and runways. § 101-20 Noise by fowl. No person shall harbor a crowing cock in the Inside Tax District.</p>
<b>Syracuse</b>	<p>Chapter 16, Article XVIII, § 12-62: No person shall keep within the city of Syracuse any animal which is deemed to include a reptile, bird and/or an animal of a species which is wild, ferocious, fierce, dangerous, poisonous or naturally inclined to do harm*...</p> <p>*In Chapter 16, Article XVIII, § 12-63, wild, ferocious, fierce, dangerous, and poisonous animals, birds and reptiles are defined to include cows, guinea hens, goats, sheep, and swine, excluding Chinese Potbelly pigs.</p>
<b>Utica</b>	<p>Chapter 2-5, Article III, § 2-5-56: A. No person shall have, or keep, or offer to sell any fowl within the City of Utica. "Fowl" includes any live chickens, geese, ducks, pigeons, or doves.</p>
<b>White Plains</b>	<p>Title V, Chapter 5-2, Article I, § 5-2-1: A. No live chickens, geese, ducks or other fowl shall be kept in the city unless they are securely enclosed in such a manner as to prevent them from straying from the premises of the person owning them.</p> <p>Title V, Chapter 5-2, Article I, § 5-2-2: A. It shall be unlawful for any person to allow any livestock which is under his ownership, care, custody or control to run at large.</p>
<b>Yonkers</b>	<p>Chapter 65, § 65-23: No person shall keep, cause or allow to be kept on, in or about any premises or property any poultry, fowl or other birds, except as hereinafter provided:</p> <p>A) It shall be lawful to keep for purposes of sale live poultry in a live poultry market.</p>

# 31 – Chickens and Other Poultry

## Guide to Urban Farming in New York State

### City Ordinances

Municipalities might outright prohibit the keeping of chickens and other poultry, prohibit the keeping of roosters, limit the number of birds that can be kept, or require permits or licenses to keep poultry. City ordinances might also regulate the building and management of coops and other housing structures, and local building codes should be consulted before any construction. See Factsheet #30, Urban Livestock, for information about city ordinances pertaining to keeping chickens and other animals.

Where it is lawful to keep chickens or other poultry, it is often still illegal to cause “nuisance conditions” that might people might find objectionable, such as excessive noise or odors. Urban farmers should take care to prevent these conditions by selecting quieter breeds and properly managing coops and other housing structures.

### Chickens in Urban Environments

Keeping chickens, and hens in particular, is an easy step toward developing an urban farming enterprise. An urban flock is relatively quiet, requires less space than other livestock, does not produce strong odors if properly cared for, does not require breeding for production, and does not demand significant labor, financial or other inputs. Urban farmers benefit from outputs including meat or eggs, as well as a rich source of fertilizer. Raising chickens in urban environments does, however, necessitate special considerations.

### Predators

Poultry are a prey species for many animals prominent in cities, such as cats, dogs, raccoons, and rats. As such, coops and housing should be secure and birds should only be allowed to “free-range” in areas that are properly penned/fenced. Chicken feed should be stored securely in sealed, metal containers to avoid attracting rodents.

### Noise and Odors

Chickens, and roosters in particular, can be noisy and their manure can create strong odors, both of which might constitute “nuisance conditions” illegal by law and disruptive to neighbors. Urban farmers raising chickens should opt for quieter breeds and not keep roosters, the latter of which are often prohibited by city ordinances. Urban farmers should ensure that coops and housing structures are well ventilated to remove the ammonia generated by their manure, and are cleaned regularly. Animal waste should be used or composted promptly and properly.

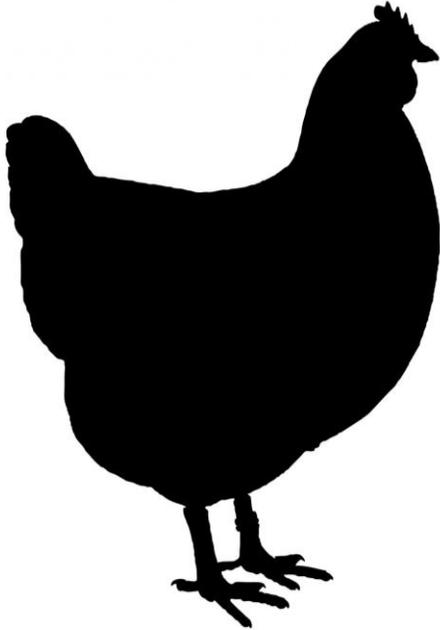
### Good City Breeds

Novella Carpenter and Willow Rosenthal, authors of *The Essential Urban Farmer* (Penguin Books, 2011), recommend raising Australorp, Black Star, Rhode Island Red, Araucuna, and Cochin breeds in urban environments because of their quiet natures, high productivity, and smaller space requirements. State extension offices around the country also offer advice on raising chickens in urban and suburban areas, as in this resource from North Carolina Cooperative Extension: [https://www.ces.ncsu.edu/depts/poulsci/tech\\_manuals/Backyard\\_Chickens.pdf](https://www.ces.ncsu.edu/depts/poulsci/tech_manuals/Backyard_Chickens.pdf).

# Resources for Raising Urban Chickens

## Chicken Keeping Classes and Organizational Resources

**Just Food**, a non-profit organization in New York City working to connect communities with local farms and providing several services to urban farmers, created the City Chicken Project as part of the City Farms Program. The Project is currently working with experienced urban chicken keepers in the City to create model projects for educational purposes. Just Food also provides the *City Chicken Guide*, available for purchase on their website, and hosts the City Chicken Meet-Up Group (<http://www.meetup.com/Just-Food-City-Chicken-Meetup-NYC/>). For more information, visit <http://www.justfood.org/> or contact [greg@justfood.org](mailto:greg@justfood.org) or (212) 645-9880 ext. 229.



**Bk Farmyards** is a coalition of urban farmers in Brooklyn that manages two acres of urban farmyard spread across several sites and that provides consultation and various educational opportunities for those interested in urban farming. These opportunities include The Chicken Farm at their Imani Garden, which serves as a training ground for apprenticeships in urban chicken keeping.

BK Farmyards also holds free City Chicken workshops every second Tuesday of the month from April through October, in conjunction with the **Just Food City Chickens Project**. For more information, visit <http://bkfarmyards.blogspot.com/> or email [Eggs@bkfarmyards.com](mailto:Eggs@bkfarmyards.com).

## Urban Chicken Keeping Books and Websites

The following books and websites provide helpful information about raising chickens in urban environments:

- *Keep Chickens! Tending Small Flocks in Cities, Suburbs, and Other Small Space* by Barbara Kilarski, Storey Publishing, LLC, 2003
- *A Chicken in Every Yard: The Urban Farm Store's Guide to Chicken Keeping* by Robert and Hannah Litt, Ten Speed Press, 2011
- *City Chicks: Keeping Micro-Flocks of Chickens as Garden Helpers, Compost Makers, Bio-Recyclers, and Local Food Producers* by Patricia L. Foreman, Good Earth Publications, Inc., 2010
- "Urban Chickens" (<http://urbanchickens.org/>) is a website filled with information on keeping backyard chickens in urban and suburban environments
- "Sustainable Poultry" (<https://attra.ncat.org/attra-pub/poultry/>) is an educational site sponsored by the National Center for Appropriate Technology (NCAT) featuring information on various topics pertaining to keeping chickens, including raising urban poultry.

## Urban Chicken Coops

Chicken coops and housing structures in cities must not only abide by various municipal ordinances, but must also often be adapted to small, urban yards. Below are some companies specializing in urban chicken coops and structures.

- **The Garden Coop** provides affordable do-it-yourself designs for backyard chicken coops, available for purchase and download on their website at <http://www.thegardencoop.com/>.
- **uBuilder Plans**, a company out of Missouri, sells “City Biddy Building Plans” for “City Biddy Chicken Coops,” designed for urban and suburban environments. For more information, visit <http://www.ubuilderplans.com/?q=node/5>.
- **Victory Chicken** is a company serving chicken keepers in New York City and offering chicken coops and other supplies, as well as a “starter” package that includes delivery and installation of a coop, three young birds, and two months of feed and supplies. For more information, visit <http://www.victorychickenco.com/> or contact [info@victorychickenco.com](mailto:info@victorychickenco.com) or (347) 803-0777.
- Online magazines including **Mother Earth News** ([www.motherearthnews.com](http://www.motherearthnews.com)) **Rodale’s Organic Life** ([www.rodaleorganiclife.com](http://www.rodaleorganiclife.com)) and **Modern Farmer** ([www.modernfarmer.com](http://www.modernfarmer.com)) and website [www.backyardchickens.com](http://www.backyardchickens.com) are all full of resources for the urban chicken farmer.

## Other Poultry

Cities often prohibit the keeping of pigeons, ducks, geese and other migratory birds. Additionally, poultry such as ducks and turkeys can be noisier than chickens, and might be more likely to create nuisance conditions. Be sure to consult your city’s ordinances, and to check with neighbors, before embarking on any poultry-keeping project.

If considering raising poultry other than chickens, start by talking with other area farmers already raising flocks, or consult with local farming organizations. Additionally, urban farming books such as *The Essential Urban Farmer* by Novella Carpenter and Willow Rosenthal (Penguin Books, 2011) provide general information about raising different urban poultry.

# 32 – Beekeeping

## Guide to Urban Farming in New York State

Bees are considered an indicator of environmental health. Honey bee populations in the last decade have severely declined, partly due to a phenomenon known as Colony Collapse Disorder (CCD). This phenomenon is due to a hive's inability to sustain itself after a sudden loss in colony worker bee population. While causes, aftermaths, and prevention of CCD are still being studied, some urban dwellers have decided to take matters into their own hands by relocating beehives to urban rooftops and balconies. Cities across the U.S. are beginning to allow urban beekeeping, though there are special considerations to take when setting up hives.

### City Ordinances

As beekeeping is a relatively new desire of city dwellers, there are relatively few municipalities that prohibit beekeeping, though most do enforce “nuisance laws” that regulate conditions that people might find objectionable, such as excessive noise or odors. As such, some municipalities put constraints on urban beekeeping activities, such as limiting the number of hives that can be kept and requiring beekeepers to register their hives, as is the case in New York City.

However, there are some municipalities that prohibit beekeeping altogether in New York State, such as Ithaca and Geneva. Several other ordinances make no explicit mention of beekeeping. Before beginning any urban beekeeping project, contact your city hall or a local beekeeping association to clarify any relevant regulations.

### New York City Ordinances

It is legal to keep bees in New York City, but beekeepers are required to register their hives with the New York City Department of Health and Mental Hygiene within 30 days of hive establishment and renew their registration annually. Registration and renewal forms are available at <http://www.nyc.gov/html/doh/downloads/pdf/ehs/ehs-beekeeping-guideline.pdf>.

### New York State Law

Under New York State law, Department of Agriculture and Markets, Article 15, all beekeepers regardless of municipality must report outbreaks of bee disease and pests.

### Tips for Keeping Bees in Urban Environments

When keeping bees in cities, certain best practices are recommended to minimize disturbance to neighbors and to prevent “nuisance conditions.” The New York City Beekeepers Association (NYCBA) suggests the following:

- 1) Hives should be kept as far away as possible from roads, sidewalks, and rights of way;
- 2) Hives should not be placed directly against a neighboring property unless a solid fence or dense plant barrier of six feet or higher forms the property boundary;
- 3) Hives should be situated so that bees’ flight paths do not intersect human rights of way. In some cases, this might require erecting a fence or other barrier to redirect bees’ flight;
- 4) Bees should be provided with a consistent source of fresh water to prevent them from seeking water from other sources where bees might be considered a nuisance;
- 5) Swarming should be prevented or minimized, and any hive with unusually defensive behavior or excessive swarming tendencies should be re-queened; and
- 6) Signs should be posted to alert passersby to the presence of hives.

To download the NYCBA’s Best Practices for Bee Keeping and for more information about urban beekeeping, visit <http://www.bees.nyc/nycbas-best-practices-for-beekeeping/>.

## Resources for Urban Beekeepers

### New York State Beekeepers Associations

Beekeepers associations and groups often provide educational resources, including classes, to interested beekeepers, are familiar with beekeeping ordinances, can refer beekeepers to trustworthy supply companies, and offer apiary services such as hive health diagnosis and swarm collecting. Below is a listing of New York State beekeeper's associations specializing in urban beekeeping.

- The Finger Lakes Beekeeping Club ([flbeeclub.com/](http://flbeeclub.com/))
- The New York City Beekeepers Association (<http://www.bees.nyc/>)
- The New York City Beekeeping Meet-Up Group (<http://www.nycbeekeeping.com/>)
- The Long Island Beekeepers Club (<http://www.longislandbeekeepers.org/>)
- Rochester Beekeepers (<http://www.rochesterbeekeepers.com/>)

### Beekeeping Classes and Workshops

In addition to classes offered by the beekeepers associations mentioned above, other organizations and groups offering beekeeping classes and workshops in New York State include:

- **HoneybeeLives** (<http://honeybeelives.org/>) in New Paltz and Brooklyn offers organic beekeeping classes and apiary services throughout Hudson Valley and in New York City. Class schedules and registration information are available online, or you can email [HoneybeeLives@yahoo.com](mailto:HoneybeeLives@yahoo.com) or call (845) 255-6113.
- **Urban Roots Community Garden Center** (<http://www.urbanroots.org/>) in Buffalo hosts occasional urban beekeeping classes. Visit their website, email [info@urbanroots.org](mailto:info@urbanroots.org) or call (716) 362-8982 for more information.

### Beekeeping and Urban Beekeeping Books

The NYCBA recommends the following texts as good resources for beginning beekeepers:

- *The Beekeeper's Handbook* by Alphonse Avitabile and Diana Sammataro, Cornell University Press, 2006
- *The Backyard Beekeeper: An Absolute Beginner's Guide to Keeping Bees in Your Yard and Garden* by Kim Flottum, Quarry Books, 2010
- *Beekeeping: A Practical Guide* by Richard E. Bonney, Storey Publishing, LLC, 1993
- Other recommended texts are listed in the NYCBA Best Practices guide

More urban beekeeping books include:

- *Urban Beekeeping: A Guide to Keeping Bees in the City* by Craig Hughes, Good Life Press, 2010
- *Bees in the City: The Urban Beekeepers' Handbook* by Alison Benjamin and Brian McCallum, Guardian Books, 2011

Additionally, with the rise in interest in beekeeping, there are organizations throughout cities in the US that offer to set-up and manage beehives on other people's land. In Washington, DC the DC HoneyBees provide this service (<http://www.dchoneybees.com/>). Another is Honey Love ([www.honeylove.org](http://www.honeylove.org)) in Los Angeles, CA.

# 33 – Aquaponics

## Guide to Urban Farming in New York State

Aquaponics is the combination of aquaculture and hydroponics. Hydroponics requires expensive nutrients to feed the plants, and also requires periodic flushing of the systems which can lead to waste disposal issues. Recirculating aquaculture needs to have excess nutrients removed from the system, normally this means that a percentage of the water is removed. This nutrient rich water then needs to be disposed of and replaced with clean fresh water. When combining aquaculture and hydroponics, the challenges of each individual system become beneficial to the combined system. Aquaponics can be simple or complex and vary in size depending on the system chosen, which is one reason why it can be implemented in an urban setting, where space can be limited.

The products produced in an aquaponics system are typically leafy plants, vegetables and fish. Green leafy vegetables and herbs such as lettuce, arugula, and microgreens have been shown to do well in an aquaponic system; popular fish breeds include tilapia, trout and catfish. In this system, bacteria in the water convert ammonia wastes from the fish into nitrates that can be used by the plants. The plants extract the water and nutrients they need to grow, cleaning the water for fish.

Advantages of aquaponics:

- Little soil is needed
- It is a largely organic process with no need for external fertilizer input or pesticides
- Farming can take place year-round
- The process conserves water
- Urban aquaponics centers could create jobs in cities

Aquaponics drawbacks:

- Expensive start-up costs
- Needs constant monitoring
- Not completely a closed chain process, since fish food is a required input
- Energy intensive

Resources:

*The Massachusetts Ave Project* in Buffalo, NY focuses on employing youth to work in the areas of Urban Farming and [Aquaponics](#), Healthy Eating & Accessing fresh local food, Supporting local farms and businesses, Sustainable food production and Social Enterprise. They offer workshops to the public on these topics as well. (<http://mass-ave.org/>)

*Sweet Water Organics* is an urban fish and vegetable farm in Milwaukee, WI. They offer an online mentorship resource to engage learners in aquaponics (<http://sweetwater-organic.com/>).

## Part IV: Making Urban Farming Profitable



# 34 – Business Planning

## Guide to Urban Farming in New York State

### What is a Business Plan?

A business plan is a document that summarizes the operational and financial objectives of a business and contains the detailed plans and budgets showing how the objectives are to be realized. Developing a business plan is essential to begin to analyze if your idea for a farm is realistic, achievable and in what time frame. Additionally, a business plan is often required to receive bank loans to start your business or convince private investors to invest in your farm. Whether you plan to setting up a not-for-profit or for-profit urban farm, a business plan is essential in planning the organization and laying out a strategic approach to getting started. A good business plan contains the following:

- Resumé or brief explanation of your background and relevant experience
- Information on your legal structure and management team
- Current balance sheet
- Your business vision, mission statement, key values, and goals
- Production plans
- Marketing plans
- Estimated start-up costs
- A projected income statement with a written explanation of your budget assumptions
- A projected balance sheet with a written explanation of your budget assumptions
- A sensitivity analysis showing the business's break-even point
- A one-to-two-page executive summary if your business plan is long (more than 10 pages)

### Helpful Publications for Writing a Business Plan

The NY FarmLink's publication, *Starting an Agricultural Business?*, is a pre-planning guide to help beginning farmers focus their thoughts before writing a business plan and is available online at [http://dyson.cornell.edu/outreach/extensionpdf/2004/Cornell\\_AEM\\_eb0408.pdf](http://dyson.cornell.edu/outreach/extensionpdf/2004/Cornell_AEM_eb0408.pdf) or by calling (800) 547-3276.

The Sustainable Agriculture Research Education (SARE) publication, *Building a Sustainable Business: A Guide to Developing a Business Plan for Farms and Rural Businesses*, includes sample worksheets and exercises to help beginning farmers develop a business plan and is available for free download or for purchase online at <http://www.sare.org/Learning-Center/Books/Building-a-Sustainable-Business>.

### Getting Help Writing a Business Plan

**Cornell Cooperative Extension** offices often staff a farm management or small business development educator who can help you develop a business plan. The type of programming in each county is unique, however, and you should contact your local office, which can be found online at <http://smallfarms.cornell.edu/contact/local-contacts/>.

**NY FarmNet** ([www.nyfarmnet.org](http://www.nyfarmnet.org)) has business plan writing publications in addition to several farm counselors throughout the state who offer free and confidential help on any topic of concern, including finances, farm changes, farm transfer, natural disaster, personal stress, family communication, and marital conflict.

**The New York State Small Business Development Center** ([www.nyssbdc.org](http://www.nyssbdc.org)) is a network of 23 regional centers delivering business counseling and training free of charge to New Yorkers who want to start a business or improve the performance of an existing business.

**The New York State License Center Business Wizard** website (<https://www.its.ny.gov/nys-license-center-business-wizard>) will help you find the New York State business permits you may need.

### **The Empire State Development's Entrepreneurial Assistance Program**

(<http://www.empire.state.ny.us/BusinessPrograms/EAP.html>) is part of New York State's economic development agency and has 9 centers across the state to provide specialized help to women, minority group members and persons with disabilities who are starting or operating an early stage business.

**The Federal Small Business Association** (<https://www.sba.gov/offices/district/ny/new-york>) is a federal agency with offices throughout the state providing counseling services and loan guarantees. They have a special emphasis area to work with women, minorities, veterans, and businesses involved in international trade.

**SCORE** ([www.score.org](http://www.score.org)) is a non-profit organization offering free advice and training using experienced volunteers. Check their website for chapters in your area.

**The Groundswell Center for Local Food and Farming**, based in Ithaca, NY, offers an eight-session Farm Business Planning Course, in collaboration with Cornell Cooperative Extension of Tompkins County and Alternatives Federal Credit Union's Business CENTS (Community Enterprise Network and Training Services). This course covers assessing resources, enterprise planning basics, financial planning and marketing. Visit <http://www.groundswellcenter.org/> or contact [info@groundswellcenter.org](mailto:info@groundswellcenter.org) or (607) 319-5095 for more information.

**Cornell Small Farms** offers 5-7 week long interactive, online business planning courses for farmers on topics such as marketing, financial planning and general business planning. Visit <http://www.nebeginningfarmers.org/online-courses/>

**The Greenhorn's Guide** is a unique resource for young, beginning farmers – not specific to urban farming. The goal of the publication is to help young people make the transition into a career of farming. It is a compilation of references about farming, including where to find an apprenticeship to how to preserve food and repair a tractor. An important aspect of the guide is that it seeks to forge a connection between young farmers and older farmers who are more experienced and can act as mentors. [www.thegreenhorns.net](http://www.thegreenhorns.net).

### **Business Planning Resources for Urban Farmers**

For urban-specific business planning information, "The Urban Farm Business Plan Handbook" from the Partnership for Sustainable Communities provides a framework for developing an urban farm on cleaned brownfields or vacant sites, and includes guidance on marketing, operating, and financial strategies. This handbook and affiliated worksheets are available for free download at <http://www.epa.gov/brownfields/urbanag/>.

Various urban farming educational programs such as **Just Food's Farm School NYC** (see Factsheet #50, General Resources) also provide information on urban farm business planning. Contact individual organizations for details.

# 35 – Business Structures

## Guide to Urban Farming in New York State

### Registering Your Business Name

It is recommended, but not required, that you protect your business name by registering it with your county clerk. This typically involves a fee of \$25-\$50 and helps prove the existence of your business in addition to preventing other business in the county from using your business name. This may also be required to open a business checking account.

### Business Structures

While most businesses start out as sole proprietorships or general partnerships, they may eventually find that the legal liability and tax consequences are more beneficial if operating under a different structure. To help understand the legal maze of business structures, the Department of Applied Economics and Management at Cornell has developed the publication *Doing Business in New York State: Structures and Strategies*, available online at [http://aem.cornell.edu/outreach/extensionpdf/2004/Cornell\\_AEM\\_eb0407.pdf](http://aem.cornell.edu/outreach/extensionpdf/2004/Cornell_AEM_eb0407.pdf).

New York State recognizes seven different business structures (excluding organizations such as churches and non-profits). A brief description of those structures is listed below:

- **Sole Proprietorship:** The simplest form of organization wherein an individual simply declares himself or herself a business operator. No paperwork is needed to file with government agencies to establish the existence of the business. The proprietor has unlimited liability for the actions and debts of the business.
- **General Partnership:** A partnership agreement between sole proprietors. No paperwork is needed to form this business and partners have unlimited liability.
- **Limited Partnership:** Also known as a silent partnership wherein an individual joins a partnership but stays out of the management aspects of the business. For remaining silent in the operation, that partner generally obtains the profits of an owner and does not have the legal liability of a full partner.
- **Limited Liability Company (LLC):** A partnership offering the limited liability of a corporation. Paperwork must be filed with the state to establish this form of ownership and management meetings must be held.
- **Business C Corporation:** Structure used by most companies. The business is operated by a management team that reports to a board of directors. Ownership of the business is in the form of stock and shareholders of that stock have different levels of control (ex. Class A, B, C, preferred, etc.). Shareholders have limited liability in the company.
- **Business S Corporation:** A corporation that is operated like a partnership and offers limited liability to shareholders. Paperwork must be filed with the state to establish this form of ownership and management meeting must be held.
- **Cooperative:** An organization owned by members who contribute equity toward the business and share in profits generated. This is formed by filing with the state and has similar governance as a C corporation. Voting is either one vote per member or in proportion to patronage of the cooperative. Members have limited liability. A new resource on the topic can be found at Green Horns web site, [www.thegreenhorns.net/guidebooks/cooperativefarming](http://www.thegreenhorns.net/guidebooks/cooperativefarming)
  - Farmer cooperatives are becoming more common and offer exciting potential for urban growers.
    - **Farmer Pirates** is a cooperative made up of farmers in Buffalo, NY. The cooperative structure helps farmers share resources and knowledge. <http://www.farmerpirates.com/>
    - **Shared Ground Farmers' Co-op** is a marketing and distribution cooperative owned by five farms in the Twin Cities, MN. The co-op markets sustainably grown produce and grass-fed meats direct to consumers, wholesale and retail accounts: <https://sharedgroundcoop.com/>

# 36 – Risk Management and Insurance

## Guide to Urban Farming in New York State

### Risk Management for Farmers

The primary goal of risk management and insurance is to protect your assets from claims and lawsuits that may result from injury to persons or damage to property from accidents that are associated with your business. Effective risk management depends on combined efforts and close communication between yourself and your insurance company. Look for an agent with whom you are comfortable, who is well known and respected, who understands agriculture and businesses, and who will work with you to reduce your potential for risk.

When considering your risks, be sure to review the list below and describe your risks completely to your agent. You will not need all of the types of protection listed below, but it is important to know your options when shopping for insurance. Match your coverage to your needs for risk management.

### Potential Coverage to Consider for Your Operation

- **General Liability Insurance:** Covers injuries to people and property for which your farm is judged liable and mitigates your losses from lawsuits.
- **Automobile Insurance:** Covers vehicle damage while in your vehicle or to another vehicle while traveling.
- **Home Owners Insurance:** Typically covers fire, theft, personal property, lightning, riot, aircraft, explosion, vandalism, smoke, theft, windstorm or hail, falling objects, volcanic eruption, snow, sleet, and weight of ice. Usually flood and earthquake need to be purchased separately.
- **Farm Insurance:** Covers barns, rental housing, equipment, animals, and other farm assets.
- **Workers' Compensation Insurance:** Required if you have employees or interns.
- **Product Liability Insurance:** For damages that may arise from the consumption, handling, use of or condition of products manufactured, sold, handled, or distributed by your business.
- **Contract Liability Insurance:** Covers the assumption of the liability of another party through a contract or facility use agreement. For example, you may be required to provide a certificate of insurance to buyers that includes \$1 million in product liability and additional insurance.
- **Environmental Pollution Insurance:** Covers clean-up of manure or pesticide spills.
- **Crop Insurance:** For weather, market, fire, pests, and other disasters. Options include: Multiple Peril Crop Insurance (50% yield loss), Adjusted Gross Revenue (50% income loss), or Non-Insured Crop Disaster Assistance.
- **Life Insurance:** To help your family in case something happens to the bread winner.
- **Health Insurance:** For yourself and family in case you are hurt and need medical care.
- **Business Interruption Insurance:** Will provide living expenses if you are hurt and cannot work.
- **Vendor's Insurance:** Will cover your liabilities if you are selling at a farmers' market or trade show.
- **Umbrella Liability Coverage:** A liability insurance policy. It provides extra insurance protection over and above your existing policies and typically carries a high deductible.

## Urban-Specific Risk Management and Insurance Information

For urban-specific risk management and insurance information, visit the [Urban Agricultural Legal Resource Library](http://www.urbanaglaw.org/), a project of the Sustainable Economies Law Center, at <http://www.urbanaglaw.org/>. This website provides information on liability, risk, and insurance as they pertain to urban farmers, such as coverage to consider when farming on government property or farming in private backyards and information on employment law regarding volunteers and interns.

The Urban Agricultural Legal Resource Library also provides information on how urban farmers can reduce the cost of insurance, such as by associating with or becoming a member of a land trust.

## Ways to Reduce Your Liability

Some ways that you can reduce your liability include:

- Keep your property in good repair, especially if you have people coming to your farm.
- Minimize or eliminate dangerous situations. These might include aggressive animals, uncovered holes in the ground, moving vehicles or equipment parts, sharp tools, etc. Fence off hazards wherever possible.
- When selling or serving foods, make sure all regulations from the Health Department and Ag and Markets are met and carry product liability insurance.
- All workers on your farm are required to be covered by Workers' Compensation, even if they work for free. So if you have volunteers, interns, or employees, you are required to carry insurance for them (the only exception is if your farm is set up as a 501(c)3 non-profit). Requiring all farm staff, interns and volunteers to sign a release waiver is a good precautionary measure. However, if an injury were to occur, these waivers don't often hold up in court.
- Test your water supply annually if your water is being used for washing produce, processing or drinking.
- Negligence is when you fail to take normal steps to eliminate hazards or you create a hazardous situation and fail to address it.
- Avoid making false statements or publishing incorrect information that may damage a person's reputation as this can result in libel suits. Be careful of advertising claims or comparing your operation to others in a negative way.
- Manage your production techniques according to recommended best management practices.

# 37 – Assessing Your Market Potential

Guide to Urban Farming in New York State

## Market Analysis: What is My Target Market?

A target market is a well-defined group of customers. Markets can be found within any broad category, such as consumers, businesses, industries, or institutions. Consumer groups, for instance, can be characterized by demographics, geography, lifestyle, values, leisure, or occupation. Business customers can be defined in terms of markets, products, management styles, distributions channels or size. Customer groups can be reached through a variety of marketing models for fresh or minimally-processed farm products, including Community Supported Agriculture (CSA's), farmer's markets, co-ops, retail at a storefront, direct consumer-buyer retail, or wholesale. Value-added product marketing includes the end consumers of your product/services and the businesses that may distribute and sell your product to the end user

Begin market planning by clearly identifying the market you want to target. Note that this may or may not be the market you are working with now. The idea here is to think creatively about how you plan your product mix to attract the customers that will give your business the cash flow, profit and growth it needs.

Start with a big piece of paper. Across the top write a brief description of your product as currently conceived. Next write your answers to the following four key questions:

1. Who will buy my product?
2. Why will they buy my product?
3. What will they pay for my product?
4. Where will they find this product?

When you are finished, step back and consider what you have learned. Write:

1. A brief, focused description of your target market,
2. An assessment of which aspects of your business need to change in order to attract this market, and
3. A list of what is involved with making needed changes.

## Product Development: What Am I Going to Market?

Once you have a clearer idea of who your market is and what they want, you must identify how your product meets their needs. Remember that products are continually fine-tuned as you better understand the needs of your customers and the mechanics of your business. The challenge is to think about your product from the perspective of your target market, both end consumer and channel customer. To help you do so, answer the following set of research questions:

1. What is my product?
2. What is the best method to package and present my product?
3. What need or niche does my product fill?

When you have finished answering these questions, summarize your answers into:

- A creative, market-informed description of your product, and
- A concept of how you will make your product meet the needs of your end consumers and channel customers while being competitively priced and profitable.

## **Market Positioning: How Does My Product Satisfy the Needs of My Market Better than My Competition?**

Market positioning is the way you communicate precisely the place your product holds in the marketplace. How you position your product in the mind of your customers determines how the product is perceived. Positioning is a strategic component of marketing. It ties together information about your product, your market, your competition and your industry. It is the answer to the very basic question: What business am I in? The “what’s for dinner” business? The “family vacation” business? Or you can distinguish yourself on the basis of the needs you fill, the services you provide, the distribution channel you use, or the pricing strategy you employ. Think about your product from the perspective of your customer and that of your competition. Note that buying usually comes down to a decision of choice: your task is to figure out how to make the customer choose your product over that of the competition.

Once you’ve thought about your product in this way, summarize your findings into a position statement of 50 words or less that answers two questions:

1. What business am I in?
2. Why will my customers want my product rather than that of my competition?

## **Market Connection: How Will the Market Know I Have What They Need?**

Making connections with your target market lets the customer know you have the product they need. Unless you are a direct-to-consumer marketer and seller, these connections are made with the assistance of intermediaries, or “channel businesses,” that warehouse, transport or sell your product to end-consumers. Independent warehouses and transportation companies provide distribution services for a fee. Wholesalers resell product to retailers, while brokers present the product in the marketplace for a commission. Retailers sell your product to the end-consumer.

Channel businesses are a key component of your marketing strategy. How a channel business warehouses and distributes products, how it targets consumers and how it features and merchandises goods all define its particular set of needs and resulting in buying criteria. To be an effective marketer, producers need to identify and understand the differences among channel markets and market their products accordingly. No single marketing program works for all markets.

Ask yourself the following questions:

1. What distribution channels are best suited to my product, my customers and my business?
2. What are channel cost/benefits?
3. What will it take to sustain market/channel connections?

Once you’ve asked yourself these questions, prepare a strategic response that answers the following:

1. What will it cost to reach each potential market segment?
2. Where can my business reach the best market at the least cost?
3. Which market and channel options should I develop now?

*This fact sheet was developed as part of Market Planning for Value Added Products by UNH Cooperative Extension in cooperation with NY Coalition for Sustaining Agriculture, and edited for clarity by the editors of this Guide, January 2016.*

# 38 – Pricing Your Farm Products

Guide to Urban Farming in New York State

## Know Your Costs and Price for Profit

Price is the dollar amount that you ask for sales of a product or a service. There are various costs that go into deciding what price you will charge for your product, including:

- **Variable costs (VC):** Costs of inputs such as fertilizer, seed, utilities, and labor. If you don't cover these, you will have to shut down in a short amount of time.
- **Fixed costs (FC):** Costs of ownership such as rent, equipment, depreciation, interest, repairs, taxes, and insurance. If you cover these you will meet your breakeven cost to the business, but have nothing left for yourself. Every item should contribute to ownership costs. If you don't cover ownership costs, you will have to shut down in a longer amount of time.
- **Profitable price:** the prices you must charge to cover variable and fixed costs, plus payment to yourself and money to reinvest in the farm to assure long-term viability.

## Value vs. Price

Many direct market farmers are afraid to charge what they need to in order to have some profit for themselves. You are providing more value to the buyer as you are closer to the customer.

## Value = Quality + Service + Price

Value can mean different things to different customers. Value does not always mean “the most quantity for the least cost.” Understand what your customers value through your marketing plan (see Factsheet #40). In some cases, customers might value things like knowing their farmer or availability of hard-to-get products, and might be willing to pay more than the average price. For example:

- Your buyers want a quality product that you can provide because you can grow varieties for flavor instead of travel characteristics.
- Your buyers want to know how their food was grown. They like the fact that they have a relationship with you. This takes time on your part, but they are willing to pay for it.
- You can introduce them to new products and ways to cook specialty items. This is education that they are willing to pay for.
- Fresh un-waxed products, less fuel used, and community support are also cited as reasons many consumers are willing to pay more for local products.
- You can charge more for early season products when customers are eager to taste the first fresh local strawberries or sweet corn, so strive for early sales.

## Calculations for Determining Price

### Cost and Profit Method

Add your variable cost + your fixed costs + profit needed for the particular product = Income. Divide this by the number of units produced = price/unit.

For example: If it costs you \$3,000 total variable costs and \$2,000 total fixed costs and you want \$2,000 of profit for a specific product then your total income from that product needs to be \$7,000. Divide this by the number of units produced, and you will have the price per unit ( $\$7,000 / 950 \text{ units} = \$7.38/\text{unit}$ ).

## Gross Margin Method

This method derives from the whole business sales, costs, and planned profit. This method is usually used by retail businesses that resell products. An example of gross margin method in a vegetable business might be:

- Know your total expected vegetable sales = \$10,000;
- Know your total fixed costs + desired profit = \$3,000 (this is the gross margin needed);
- Divide your gross margin by total sales:  $\$3,000/\$10,000 = 30\%$ ;
- Know your unit variable cost = \$5.00; and
- You divide the unit price by 1- 30% of the unit variable cost to determine the price ( $\$5.00 / (1-30\%) = \$5.00 / .7 = \$7.14$  per unit).

## Going Rate for Market Area

Many beginning farmers start out with a pricing strategy that reflects what everyone else is charging. While this is a good place to begin, it is not where you want to be forever. It is important to know your costs and price for profit.

## Plan for Profit

Sometimes it is better to sell fewer at the higher price than sell more at the lower price. For example, what if you price corn at \$3.50 per dozen according to your calculations, but your neighbor is charging \$3.00 per dozen? Can you still make a profit by lowering your price? If your margin on the \$3.50 is \$0.50 toward profit and you sell 300 dozen, that will give you \$150 in profit. You would have to sell 600 dozen if you sold at \$3.25 to get the same profit. For a 7% decrease in price you have to sell twice as much product.



# 39 – Finding Price Information

Guide to Urban Farming in New York State

## Price Information for Urban Farmers

When finding price information, it is especially important that urban farmers check local distribution outlets and with other area farmers, as crops produced and sold in urban centers often command different prices than those indicated by general price monitoring programs and resources, such as those provided below.

## Wholesale Price Information

Some wholesale prices are reported and can be accessed to provide a guide for pricing farm products. Wholesale prices are extremely low compared to retail prices you might get locally and should be considered a floor or minimum price. To determine prices for your products consider your costs and the retail price of other competitors.

## Produce Price Information

Price monitoring programs are conducted through the USDA's Agricultural Marketing Service ([www.ams.usda.gov](http://www.ams.usda.gov)). Links to reports containing wholesale market price information are available at <http://www.farmersmarketonline.com/marketwa.htm>. These reports are updated daily during the growing season.

Additional reports covering many other aspects of agricultural pricing are available by navigating to the “Market News and Transportation” section of the AMS website ([www.ams.usda.gov](http://www.ams.usda.gov)). If you click on Fruits, Vegetables and Specialty Crops, you will find the news portal with daily price information and a users' guide.

## Organic Produce Prices

An [Organic Produce Pricing Report](http://www.rodaleinstitute.org/Organic-Price-Report) is available from the Rodale Institute at [www.rodaleinstitute.org/Organic-Price-Report](http://www.rodaleinstitute.org/Organic-Price-Report). Organic Produce Pricing Data is available from the USDA at [www.ers.usda.gov/Data/OrganicPrices/](http://www.ers.usda.gov/Data/OrganicPrices/).

## Local Markets

It is important to check local outlets for price information. Ask other farmers about what they charge, ask buyers in your area what they would pay, visit retail outlets and note prices, shop at farmers' markets and see what products are selling for. Pricing should be based on your costs, being competitive, and on what the particular market area customer will pay for high quality local products. Offer high quality and differentiate your products to capture a higher price.

# 40 – Direct Marketing Options

## Guide to Urban Farming in New York State

### **Benefits of Direct Marketing**

The main attraction of direct marketing, compared with selling through traditional wholesale markets, is that you receive the full share of the consumer dollar and have more control over the price you receive for your products. Additionally, you have ample opportunity to tell the story of your product to the purchaser and for the to learn from you. But with direct marketing, you'll also incur extra costs – not the least of which is your time. Be sure to evaluate each option carefully as part of a farm business plan.

### **Farmers Markets**

Farmers markets are a good place to develop your marketing skills. Start by visiting markets in your area. Inventory what's available and note what does not sell out by the end of the day. Don't grow what doesn't sell unless you can clearly differentiate your product and have assessed it has a market.

Get a copy of the market rules. Some markets have strict rules as to what types of product can be sold, the distance products travel to market, if a farm owner must be present at each market, and many more. Determine if your business plans and goals match the market rules.

Be sure to study the customers. How many are there? What is their ethnicity? Are they young or old? Are they families or single buyers? Affluent or bargain shoppers? Ask shoppers and vendors what they like and don't like about the market.

To be successful, you need to enjoy interacting with people and be willing to invest the time it takes to pick, pack, transport, set up and sell. To maximize potential returns you need to sell for as long a season as possible. For produce vendors, this means growing a wide variety of crops. Farmers' markets sales alone may not generate enough money to make a living, requiring you to look at additional marketing strategies, but they can be a good place to start a business.

To find New York farmers markets near you, contact the Farmers Market Federation of NY at (315) 400-1447 or <http://www.nyfarmersmarket.com/> or visit the NYS Department of Agriculture and Markets' website at <http://www.agriculture.ny.gov/FandMSearch.html>.

### **On-Farm Sales**

On-farm sales can both enable urban farmers to incur a profit as well as to attract visitors to their urban farm sites, subsequently fostering increased visibility and community engagement.

To be successful, you need to enjoy having lots of people at your farm. Risk management and liability insurance is a must. Building loyal clientele is key, and may take many years. Your business plan must be based on realistic customer numbers and sales projections.

Keep in mind that some municipal codes and zoning ordinances prevent the sale of fresh produce and other farm products from residential and other districts. Be sure to check your city's ordinances before pursuing any on-farm sale endeavor.

## **Internet and Mail-Order**

If you develop unique, high-value products that are easy to ship, this strategy can complement your other direct marketing efforts. Packaging and shipping costs need to be considered but for products that are not bulky or heavy, this can be a profitable strategy. One easy option for getting started with internet marketing is to list your farm on the following free sites: [www.localharvest.org](http://www.localharvest.org) or [www.nyfarmersmarket.com/](http://www.nyfarmersmarket.com/).

## **Community Supported Agriculture**

Community Supported Agriculture (CSA) operations typically provide a weekly share box of produce to customers who pay for their shares at the beginning of the season, and the up-front money reduces financial and marketing risks for farmers, and customers share in production risks. CSA operations also increase public visits to, and the visibility of, an urban farm. For more information about running a CSA operation in an urban environment, see Factsheet #42.

## **Restaurant Sales**

Many chefs are looking for fresh, local products to feature in their menus, and urban farmers can benefit from the wealth of restaurants in urban centers. You will find that chefs are as busy as farmers. Develop personal relationships with chefs, find out what they want and what they are willing to pay. Grow those products for them for as long a season as possible. You need to offer consistently-available, high quality, clean products that are delivered on time. Restaurant sales need to be an intentional strategy, not a way to dump surplus product. Drawbacks include the need for small quantities of some items. Watch that delivery costs and time don't eat up profits, and be clear on payment terms. Once a relationship is solid, less face-time is needed.

## **Sales to Food Retailers**

Increasingly small food retailers are interested in sources of locally grown food. One option is to contact retail farm markets in your area. Many do not grow all they sell. Also, check out food cooperatives, natural foods stores, and independent groceries. Most will only pay wholesale prices found at regional markets.

Non-independent retailers, from convenience stores to super-centers, have purchasing requirements unique to their business. Some purchasing decisions are made at the local store level, but most require higher-level. Start with local store managers and head buyers of relevant departments.

Food retailers expect local prices to be in line with wholesale prices. Understand buyer expectations and prices before agreeing to delivery. Some may reject product on quality or because they have a better supply and price elsewhere. The advantage of selling to retailers is that you can move more volume to fewer buyers, reducing your marketing costs. The disadvantage is that it can be a fickle, price-driven market. Be sure to spread your risks.

## **Institutional Food Service Sales**

Some schools, nursing homes, hospitals, prisons, and other institutions can purchase local products. Many are part of a buying consortium and have a single goal: keep costs low. Meals can be pre-prepared or ready to serve, with few fresh items. Institutional food sales also come with institutional barriers, including regulations and requirements that dictate their purchasing practices. One way to tap institutional markets is to go through the distributors who sell to them. This adds a middleman and reduces returns. High quality, volume sales, standard packaging, and reliable delivery will be necessary to make this type of customer relationship viable.

## **For More Information**

For more information on direct marketing, contact the North American Farmers' Direct Marketing Association online at <http://www.farmersinspired.com/>.

# 41 – Marketing in Urban Environments

## Guide to Urban Farming in New York State

### Marketing in Urban Environments

The unique characteristics of urban environments offer some urban-specific market niches, such as producing crops that do not transport well, taking advantage of warmer urban micro-climates to produce crops earlier or later than the average season, and cultivating specialty crops in demand by local ethnic populations and markets.

*MetroFarm: Growing for Profit In or Near the City* by Michael Olson (TS Books, 1994) provides helpful business insights for urban farmers interested in urban market farming.

### Marketing to Improve Food Access

Urban farmers often aim not only to be profitable, but also to improve their community's and city residents' access to fresh, healthy, local food. Though each of those marketing options noted in the Cornell Small Farms Guide to Farming in New York State, Factsheet #26, does increase food accessibility for urban dwellers, other distribution options more directly intend to promote food justice.

Additionally, there are often designated funds available to subsidize projects that provide fresh, nutritious, affordable food to low-income or other underserved populations.

Mobile markets, for example, enable farmers to reach communities and areas that might not have a farmers market, grocery store, or other place to buy fresh and healthy food. *Capital Roots' Veggie Mobile*®, for example, operates Tuesday through Saturday and makes one-hour stops at assisted living centers, public housing projects, and other densely populated neighborhoods in Albany, Schenectady, and Troy (<http://www.capitalroots.org/programs/veggie/veggie/>).

Programs such as *Just Food's Fresh Food for All* improve access to food by connecting farmers within 250 miles of New York City with food pantries and other emergency food programs (<http://www.justfood.org/farmer-outreach/grow-nyc/fresh-food-all>).

The *GrowNYC Wholesale Greenmarket* not only makes local produce available to city retail stores, institutions and restaurants at competitive prices and quantities, but also includes food access initiatives such as the Fresh Food Box Program and YUM Fresh Food for Northern Manhattan (<http://www.grownyc.org/wholesale>).

# 42 – CSA in the City

## Guide to Urban Farming in New York State

### What is a CSA?

Community supported agriculture (CSA) is a direct marketing relationship in which farmers sell their products directly to consumers. Farmers receive payment up front at the beginning of the season, and CSA member receive a share of the farm's produce throughout the season. CSAs allow for greater early season capital, price control, and risk-sharing for farmers. There are many models for CSAs, and these and more general information is provided by the [Northeast Organic Farming Association of New York \(NOFA-NY\)](http://www.nofany.org/organic-farming/food-justice-program/csa) at [nofany.org/organic-farming/food-justice-program/csa](http://nofany.org/organic-farming/food-justice-program/csa). In cities, CSAs can provide urban farmers a relatively low-risk direct marketing option, as well as reduced transportation costs and opportunities for community engagement in their farm.

### Just Food CSA in New York City Program

Just Food's CSA in New York City program provides an array of resources for urban farmers interested in marketing via a CSA, including tipsheets and the Just Food CSA in New York City Toolkit. Note that these resources are specific to New York City residents and farmers participating in the Just Food CSA Network, but include some general information that is relevant to urban farmers statewide.

Just Food also hosts monthly CSA in New York City workshops on subjects including accepting food stamps, outreach, tracking member data, and more. Visit the Just Food website at [justfood.org](http://justfood.org) for details.

*The following information is provided by Just Food, and can be found in-full at the website provided above.*

### Size and Variety of CSA Shares

Because urban dwellers tend to have smaller households and dine out more frequently, urban CSA shares are often smaller than rural shares. Just Food offers the following guidelines for determining appropriate share size:

- Describe the size of your share in terms of **1)** number of items per week, **2)** number of people that the share could feed, or **3)** weekly dollar value of the share;
- Survey CSA members to determine the best share size for your farm;
- Conduct an end-of-season survey to determine if share size was appropriate and what produce members did and did not like, or what they would have wanted but did not receive.

### Share Pricing

Urban farmers should take the following three factors into account when pricing CSA shares:

1. Cost of production for the CSA, including labor, land, inputs, equipment, infrastructure, transportation, administration, health insurance, as well as long-term costs such as land tenure;
2. Wholesale and market prices of crops intended for the CSA share; and
3. Market rate for New York City and other city CSA shares.

### Distribution Sites

Things to consider when choosing a distribution site include a space to park without getting ticketed, a minimum number of stairs from the street to the distribution site, a secure storage space if intending to store supplies between distributions, and a space that is easily cleaned.

## **For More Information**

Just Food's Online Resource Center includes tipsheets with additional information about the CSA in NYC program and urban CSAs. Tipsheets are available in English ([justfood.org/farmer-outreach/online-resource-center](http://justfood.org/farmer-outreach/online-resource-center)) and Spanish ([justfood.org/farmer-outreach/spanish-language-resources](http://justfood.org/farmer-outreach/spanish-language-resources)).

Elizabeth Henderson's *Sharing the Harvest: A Citizen's Guide to Community Supported Agriculture* (Chelsea Green, 2007) provides information on crop planning, yield information, and budgeting for CSA planning, as well as a survey of varying CSA models across the country.

# 43 – Marketing Regulations

## Guide to Urban Farming in New York State

### Marketing Regulations

Urban Agricultural Legal Resource Library (<http://www.urbanaglaw.org/>) provides general information about food, agricultural, and health regulations for commercial farmers in urban centers. Note that individual cities may have unique regulations pertaining to the sale of farm products, and be sure to consult your city's ordinances. Below is a brief overview of New York State Agriculture & Markets marketing regulations as it applies to all State farmers.

### Selling Plants

If you sell plants for landscape use including bedding plants, perennials, shrubs and trees grown in a nursery or greenhouse, you will need to be licensed as a Retail or Wholesale Nursery, or Plant Grower by the NYS Department of Agriculture & Markets. A license is not required for the sale of cut flowers or houseplants. As a plant seller, your greenhouse or nursery crops are subject to inspection to protect the customer from potentially diseased or insect-infested plant materials.

For licensing information, contact the NYS Agriculture & Markets Division of Plant Industry (<http://www.agriculture.ny.gov/Licensing.html>) or call the Albany office at (800) 342-3464 or (518) 457-2087. Regional Inspectors will visit your production facility to inspect plants before you begin sales and thereafter annually. There is a fee for the license.

### Selling Produce

No licenses are required. Produce must be sold free of debris and in clean containers. Bulk displays are not subject to grading, labeling or packaging.

Some produce is subject to USDA grade and quality standards if packaged, including potatoes, apples, lettuce, and grapes. Grade, quantity of contents, name and address of producer are required on all closed packages. The NYS Agriculture & Markets enforces quality and grade standards. For grading information, consult <http://www.agriculture.ny.gov/FS/general/farmprods.html> for factsheets pertaining to each of the above crops.

### Slaughter and Sale of Farm-Raised Meats

A great source of information on marketing meat is “*A Resource Guide to Direct Marketing Livestock and Poultry*”, available at <http://smallfarms.cornell.edu/resource-guide-to-direct-marketing-livestock-and-poultry/>. Below is a brief summary of some regulations.

**Poultry exemption:** Farm-raised poultry is exempt from New York State and USDA inspection if the farmer raises and slaughters not more than 250 turkeys OR not more than 1000 of all other poultry (chickens, ducks, geese, etc.) per year. Four birds of other species are equivalent to one turkey. If you raise more than this per year, the birds must be processed in a licensed facility and stamped if for commercial/retail sale.

**Other Meats (beef, lamb, goat, pork):** These farm-raised meats must be processed in a USDA licensed facility if intended for commercial sale. These meats can be processed in a New York State custom exempt slaughter plant only if they will be consumed by the animal's original owner, employees, or non-paying guests. In other words, a live animal can be sold directly to the customer and then processed in New York State custom exempt slaughter plant. Such meat must be stamped “Not for resale.” Further processing of meat, such as making sausage, must be done in a USDA certified facility or certified processing facility or kitchen holding an Article 20-C license.

**Exotic Animals:** bison, deer, rabbits, and ratites must be slaughtered in a NYS custom exempt plant if the meat will be sold. Inspection is not necessary for retail sales (to end user). For questions about meat slaughter and sales, contact the NYS Department of Agriculture & Markets at (518) 457-4492.

## **Selling Fish**

Without any special permits, you may sell a fresh whole fish at your farm to a private customer. You may bring completely chilled fresh whole fish to a farmer's market and sell to a private customer. Keep fresh whole fish at 32°F with crushed ice or in a refrigerated unit.

For eviscerated fish, the entire gut contents must be removed and the fish must be thoroughly rinsed with fresh water that is 38°F or lower (water must be of public source or from a tested well.) Chill the fish to 32°F immediately. At this point, the fish can be frozen and kept in a frozen state for sale. Frozen eviscerated fish may be sold at the farm or at a farmer's market; fresh and properly chilled eviscerated fish may be sold at a farmer's market or at the farm.

Filleting fish or any similar processing requires an Article 20-C License at your farm or an off-farm facility that carries a current 20-C License. You may transport your fish to a 20-C facility and use it temporarily (usually for a rental fee). Such fish may be sold to individuals, stores, or restaurants if in a frozen state. Fresh fillet sales require an Article 28 Retail Food Store License. As of June 2010, an Article 20-C license fee costs \$400.00 and an Article 28 license fee costs \$250.00.

Rules and regulations surrounding aquaculture-raised fish are subject to change. Contact your regional [NYS Department of Agriculture & Markets Food Safety and Inspection Division](http://www.agriculture.ny.gov/FS/FSHome.html) office at (518) 457-4492 or <http://www.agriculture.ny.gov/FS/FSHome.html>.

## **Selling Eggs**

Egg cartons must be marked with grade and size. Eggs may be sold in bulk displays but grade and size must be indicated. Eggs should be washed and candled. Cartons must include the name and address of producer and the date packed. For a factsheet on egg sales consult <http://www.agriculture.ny.gov/FS/general/farmprods.html>.

## **Selling Honey or Maple Syrup**

These products are exempt from licensing if you do not add ingredients or repack. Production facilities must be clean and sanitary. If you make specialty flavored honey or maple products, you must have an Article 20-C License. Maple syrup is subject to grade identification. For more information on the sale of maple syrup, request Circular 947 from the NYS Department of Agriculture & Markets or visit <http://www.agriculture.ny.gov/FS/general/farmprods.html> for a copy.

## **Making and Selling Wine**

Regulations can be found at <http://www.sla.ny.gov/> (NYS Liquor Authority, Division of Alcohol Beverage Control, Albany). There are four types of winery licenses that apply to the following situations: 1) individuals who make wines without having a vineyard, 2) a retail facility that retails wines but is neither a producer or processor of grapes; 3) a farm winery (must have its own vineyard and processing facilities and any purchased grapes must be 100% New York grown); 4) a special farm winery that does not have its own processing facility but works with another established wine processing facility. Farm wineries may sell their own wine at their wineries, at farmers markets and to restaurants and retail stores in New York State.

## **Making and Selling Cider**

Cider requires an Article 20-C License for processing. Good manufacturing practices must be followed. Apples must be firm and washed. Pasteurization or ultra violet treatment is required. HACCP (Hazard Analysis Critical Control Point) plans are required for cider and juice processing facilities if selling wholesale. For information contact the Division of Food Safety and Inspection at (518) 457-4492 or online at <http://www.agriculture.ny.gov/FS/FSHome.html>.

## **Selling Milk**

The primary resource to familiarize yourself with in the development of your plant is New York State Department of Agriculture and Markets Circular 958 (Part 2), which covers the rules and regulations for operating a milk processing facility in NY.

Milk cannot be transported from a farm to a processing facility without a license and dairy products processed in your home kitchen or a commercial kitchen cannot be sold to the general public. You must have and maintain a certified milk processing plant on your farm if you plan to sell dairy products to the public.

Processing facilities are regulated by the [NYS Department of Agriculture & Markets Division of Milk Control and Dairy Services](http://www.agriculture.ny.gov/DI/DIHome.html) (<http://www.agriculture.ny.gov/DI/DIHome.html>). For more information, contact Matt Morgan at (518) 457-1772.

## **Selling Raw Milk**

Due to the potential liabilities of selling unpasteurized milk to the public, it is highly discouraged by the State and the Cornell University Department of Food Science. However, it can be legal. Your farm may sell raw fluid milk if you apply for permits and meet several additional tests and requirements that other milk processing facilities do not have to meet.

Hard cheese made from raw milk cheese may be sold to the public if labeled *raw milk cheese* and aged at least 60 days. A permit is still required. More information on selling cheese is available at the New York State Farmstead & Artisan Cheese Makers Guild website at <http://www.nycheeseguild.org/>.

## **Weights and Measures**

Farmers and vendors who are weighing their products for on-farm sales, at farmers markets, or in stores are required to have their scales certified by a local Weights and Measures official prior to their use for weighing out products. Additionally, many scales are not appropriate for commercial use. For a listing of approved devices, download the New York State Approved Devices Listing at <http://www.agriculture.ny.gov/wm/725.pdf>.

Local Weights and Measures officials may visit your business, farmers market, or other location of sale to inspect your weighing device at any time, and you may be fined for the use of unapproved or uncertified devices.

For more information about Weights and Measures, visit <http://www.agriculture.ny.gov/WM/WMHome.html> or contact:

NYS Department of Agriculture & Markets  
Bureau of Weights and Measures  
10B Airline Drive  
Albany, New York 12235  
(518) 457-3146

# 44 – Food Security and Access

## Guide to Urban Farming in New York State

### What are food security and food access?

Food security is the extent to which a person or family has sufficient, safe, nutritious food to maintain a healthy and active life. Food access, which is part of food security, is the state of having sufficient resources (including money, transportation, and knowledge) to obtain foods to maintain a nutritious diet (see World Health Organization definitions at <http://www.who.int/trade/glossary/story028/en/>).

Urban areas known as “food deserts” are areas where residents have limited food access due to their income, transportation options, and/or proximity to a full-service grocery store or other healthy-food retailer. These areas often have a higher degree of food insecurity than areas with better food access.

### Urban Farms and Food Security and Access

Urban farms have been proposed by many scholars and practitioners as a way to eliminate food deserts and increase food access and food security in underserved neighborhoods. (see for example, Brown, K. et al, “Urban Agriculture and Community Food Security in the United States: Farming from the City Center To the Urban Fringe,” February 2002, via [http://ocfoodaccess.org/wp-content/uploads/2013/08/Urban-Agriculture-Food-Security\\_CFSC-2002.pdf](http://ocfoodaccess.org/wp-content/uploads/2013/08/Urban-Agriculture-Food-Security_CFSC-2002.pdf)).

Below are five ways an urban farm can help contribute toward increasing food access and food security in its surrounding neighborhoods:

1. **Community Gardening:** community gardeners pay an annual fee to tend a plot to grow produce (and sometimes flowers, bees, or other products) for their own consumption, increasing household food security. Some cities and states allow sale of community garden produce, which might increase security/access more broadly, though the size of plots limits impact.
2. **Farming to supply emergency food relief centers (e.g. food pantries):** some nonprofit farms grow food for donation only, or may receive operations support from food emergency food relief centers to provide fresh produce or other goods for customers.
3. **Donating Food:** both urban and rural farms are in the practice of donating unsold food with a limited shelf-life to emergency food relief centers. Find a food bank near you through the Food Bank Association of New York State: <http://www.foodbankassocnys.org/find-food-bank.cfm>.
4. **Gleaning:** Some emergency food relief organizations also have a gleaning program, where organization staff will glean fields after the farm staff have harvested. While this is a low-effort option for the farmer, considerations include liability for non-farm staff on-site, ensuring gleaners glean unsaleable post-harvest product only, and managing the organization’s expectations of participation. Read about Cornell Cooperative Extension’s Gleaning Program at <http://smallfarms.cornell.edu/2012/04/02/gleaning-more-of-new-york%E2%80%99s-harvest/>
5. **Accepting SNAP, WIC, or SFMNP:** USDA runs three prominent food assistance programs which are described in detail below, and a great option for urban farmers selling at farmers markets.

## What is SNAP?

The **Supplemental Nutrition Assistance Program** (SNAP, formerly known as Food Stamps) is a federal assistance program which provides benefits to low-income households in the United States. These benefits are distributed via Electronic Benefits Transfer (EBT) cards, which work like debit cards.

Farmers can now accept EBT cards at farmers' markets, farm stands, and for community supported agriculture (CSA) memberships. Note that EBT cards can only be used to purchase foods for home preparation and seeds and plants for households to grow food. For more information about eligible items and the SNAP program, visit <http://www.fns.usda.gov/snap/>.

## Accepting EBT Cards

The number of farmers markets licensed to accept SNAP benefits is increasing nationwide. Note that the guidelines below are for sites with electricity. For sites without electricity, the New York State Farmers Market Wireless EBT Program, administered by the Farmers Market Federation of New York, provides wireless terminals for the JP Morgan or independent POS terminals. For more information or to apply for this program, contact Diane Eggert at (315) 637-4690 (after being approved by the FNS). Visit <http://www.nyfarmersmarket.com/ebt-and-creditdebit-machines/> for more information.

### For Farm Stands or U-Pick Operations:

1. The first step is to become licensed by the Food and Nutrition Service (FNS). Call the FNS at (877) 823-4369 to receive a paper application or apply online at <http://www.fns.usda.gov/snap/ebt/fm.htm> (apply under the designation of a farmers' market).
2. Mail your application and all required documentation, including the application signature page, to the address provided in the application.
3. Processing and approval may take up to 45 days. Once complete, you will receive a welcome packet from the FNS with your certification card. You will also receive a welcome packet from JP Morgan\* and an application for a state-sponsored EBT terminal.
4. Complete the JP Morgan application and mail it to the specified address. You should receive verification and manual vouchers (in case your terminal is or becomes temporarily inoperable) within 14-16 days. Note that farmers also have the option of having EBT cards added to their existing Point of Service (POS) terminals, though an initiation and/or monthly fees might apply.

\*JP Morgan is a global financial services firm and works with U.S. state governments to accept and process forms and payments from constituents, including electronic benefits transfers. For more information, visit <https://www.jpmorgan.com/pages/jpmorgan>.

### For Farmers' Markets:

The USDA FNS website <http://www.fns.usda.gov/ebt/learn-about-snap-benefits-farmers-markets> provides an overview of the steps required to take to accept EBT at market, grants that can help fund the program, and further resources. Here's an overview of how it works:

A farmers' market organization can become authorized as an EBT card retailer and accept EBT benefits on behalf of farmers and vendors in the market. Once authorized, the market is provided with a single wireless EBT machine free of charge, as well as wooden tokens or paper scrip, training, and promotional support.

At farmers' markets, EBT consumers swipe their cards at the EBT machine at a market manager's booth and receive \$1.00 or \$5.00 tokens or scrips. Individual vendors can accept these tokens or scrips in place of cash for eligible products. At the end of the market, vendors redeem their tokens or scrip with the market manager for full dollar value.

Market managers will be asked to complete a farmers' market EBT participation agreement and a service provider application. Farmers and vendors wanting to participate must also complete a participation agreement, to be submitted to the market manager.

For agreements and to apply, contact Diane Eggert at (315) 637-4690 (after being approved by the FNS). Visit <http://www.nyfarmersmarket.com/ebt-and-creditdebit-machines/> for more information.

For NYS farmers and markets, GrowNYC provides assistance. Visit their site at <http://www.grownyc.org/greenmarket/ebt>

### **For CSA Memberships:**

Become licensed by the Food and Nutrition Service (FNS), applying under the designation of retail merchant. Call the FNS to receive a paper application at (877) 823-4369 or apply online at <http://www.fns.usda.gov/snap/retailers/application-process.htm>. Follow the same steps provided for farm stands or u-pick operations.

Note that members paying for CSA membership with EBT benefits may need to be provided with alternate payment schedules, such as paying on each pick-up date.

### **Farmers' Market Nutrition Programs (WIC and SFMNP)**

The FMNP is associated with the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), and provides free supplemental foods, health care referrals, and nutrition education to low-income pregnant, breastfeeding, and non-breastfeeding post-partum women, as well as to infants and children up to five years of age who are at nutritional risk.

Additionally, the Senior Farmers' Market Nutrition Program (SFMNP) awards grants to states, territories, and federally-recognized Indian tribal governments to provide low-income seniors with coupons that can be exchanged for eligible foods at farmers' markets, roadside stands, and CSA programs. For more information, visit <http://www.fns.usda.gov/sfmnp/senior-farmers-market-nutrition-program-sfmnp>.

Farmers, farmers' markets, and farm stands can be authorized by the State to accept and redeem FMNP coupons. For more information about FMNP, visit <http://www.fns.usda.gov/wic/FMNP/> and <http://www.health.ny.gov/prevention/nutrition/fmnp/>, or contact Darrel Aubertine ([darrel.aubertine@agmkt.state.ny.us](mailto:darrel.aubertine@agmkt.state.ny.us)) or Kevin King ([kevin.king@agriculture.ny.gov](mailto:kevin.king@agriculture.ny.gov)).

### **Additional Resources**

Just Food's Online Resource Center features additional tipsheets with information about FMNP, Food Stamps, and Health Bucks, available in English (<http://justfood.org/farmer-outreach/online-resource-center>) and Spanish (<http://www.justfood.org/farmer-outreach/spanish-language-resources>).

# 45 – Value-Added Processing

Guide to Urban Farming in New York State

## Value Added Processing for Urban Farmers

For urban farmers whose production is limited by space or other constraints, value added processing provides a way to increase the profitability of harvest.

When deciding what product to produce and sell, research your target market and distribution outlets to determine demand, taking into account which foods and products are popular and/or desirable but difficult to find. You should also consider the cost of inputs, such as time, equipment, and raw materials, and select products that you can produce relatively inexpensively, so as to ensure a high enough profit margin and product viability.

The Penn State University Agricultural Marketing website has a Processing Page with resources to help you assess the potential profitability of your value-added venture at <http://extension.psu.edu/business/farm/marketing>.

For more information about value added processing and marketing in particular, see the University of Maryland Extension publication, “[Processing for Profits: An Assessment Tool and Guide for Small-Scale On-Farm Food Processors](#),” by Ginger S. Myers, available for free download at <https://www.extension.umd.edu/sites/default/files/docs/programs/agmarketing/ProcessingForProfits.pdf>.

## Becoming a Small Scale Food Processor

The Federal government, individual states, cities and municipalities govern the operation of food processing facilities, whether home kitchens or commercial facilities. Regulations differ from state to state and are determined by the type of food product being prepared and the processing methods used. When considering starting up a home or commercial kitchen, it is important to research which agencies regulate licensing of the product, inspection of the facility, foods allowed and not allowed to be produced in each facility, local zoning laws governing the use of the building, and building codes.

## Foods that Require a Processing License (Article 20-C License) in New York

This regulation applies to anything that is altered by cutting, baking, canning, preserving, freezing, dehydrating, juicing, cider making, pickling, brining, bottling, packaging, repackaging, pressing, waxing, heating or cooking, smoking, roasting, manufacturing. Requirements vary depending on product. A scheduled process must be developed which outlines recipe testing/formulation, critical control points (to avoid contamination and control hazards), processing steps, storage requirements, distribution and selling conditions/restrictions.

Assistance for developing a scheduled process is available from the NYS Food Venture Center (see below). For a complete list of products that require an Article 20-C license visit <http://www.agriculture.ny.gov/FS/general/license.html> or call (518) 457-4492.

## Food Safety

HACCP (Hazard Analysis & Critical Control Points) Plans are mandated by FDA regulations for certain products and processes, specifying procedures to be followed to minimize contamination and to minimize and eliminate chemical, physical and biological hazards when processing foods. HACCP plans are required for wholesale sale (not for retail) of seafood, dairy, meat and poultry products, as well as juice and cider processing facilities. Other sectors of the food industry are coming into voluntary compliance. For more information, visit <http://www.fda.gov/Food/GuidanceRegulation/HACCP/>.

## Home Processing Exemption

New York State allows non-hazardous foods such as candy, cakes not requiring refrigeration, cookies, brownies, two-crust fruit pies, breads and rolls, standard fruit jams and jellies, dried spices and herbs, and snack items to be produced in home kitchens. A review of processing procedures may be required for certain products before exemption is granted.

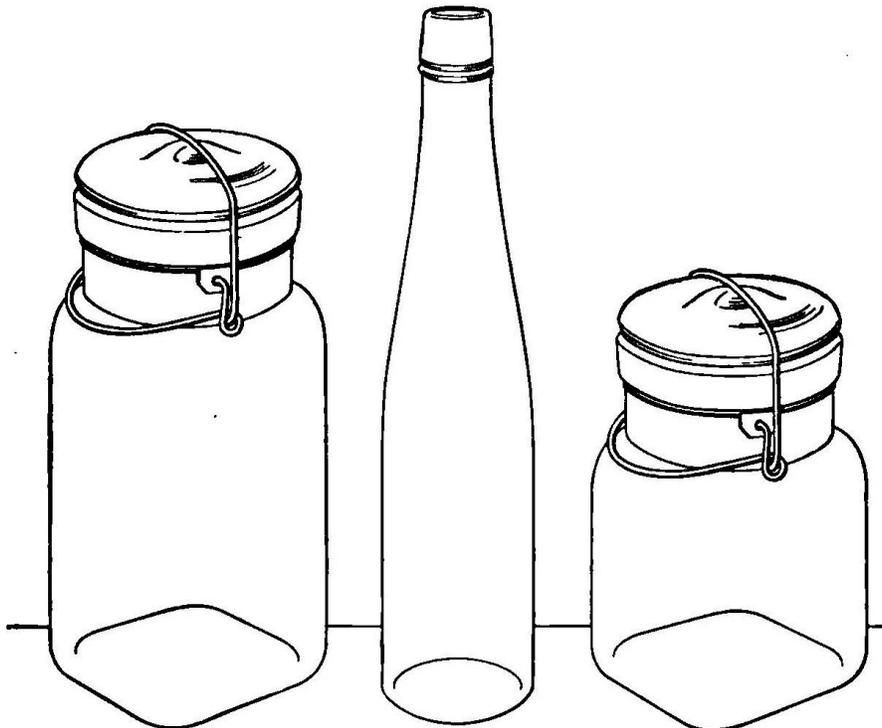
Anyone seeking a Home Processing Exemption must contact the NYS Department of Agriculture & Markets to obtain this certificate (<http://www.agriculture.ny.gov/FS/consumer/processor.html>). An annual water test for bacteria is required for all home processors on private water supplies. Internet sales are not allowed under this exemption.

Some types of foods may not be produced in a home kitchen, as mandated by federal regulations. These foods are considered potentially hazardous, and include:

- Low acid and acidified (pickled) foods packed in hermetically sealed containers must be registered with the US Food and Drug Administration (FDA),
- Meat products with more than 3% raw or 2% cooked meat ingredients in a completed product are regulated by the US Department of Agriculture (USDA), and
- Vacuum packaged and any other reduced oxygen packaged products.

## Zoning Regulations

Local municipal zoning and planning boards determine the scale of operations permitted in an establishment. They regulate the number of employees allowed on premises and whether a second separate kitchen facility is allowed to operate on site. Check with local building inspectors to determine what operations can take place in the kitchen chosen for food production. There are local building codes that govern the volume of business in a building and egress from a building, drainage issues such as back flow protection, and grease traps. Commercial equipment must comply with fire codes, FDA and USDA requirements as appropriate.



## Minimum Food Processing Facility Requirements for New York State

Procedure	Home Kitchen	Home Annex	Commercial
Inspection	Yes, potable water required (documented) – municipal or treated well water	Yes, potable water required (documented) – municipal or treated well water	Yes, potable water required (documented) – municipal or treated well water
Licensing	Non-potentially hazardous foods for wholesale market exempt from licensing by NYS Dept. of Agriculture & Markets (NYSDAM)	20-C license (NYSDAM separate cleaning, sanitizing, and hand wash facilities, Fee: \$400.00/2 years	20-C license ((NYDAM), Fee: \$400.00/2 years
Inspection Agency	NYSDAM (may request review of processing procedures by recognized processing authority – only normal kitchen facilities can be used)	NYSDAM (Dept. of Health – fresh-serve foods only, kitchen held to restaurant standards – see below)	NYSDAM (Dept. of Health – fresh-serve foods only, kitchen held to restaurant standards – see below)
Foods Allowed	Candy (non-chocolate, fudge), cakes not requiring refrigeration, cookies, brownies, two-crust fruit pies bread, rolls, fruit jams, jellies spices, herbs, snack items, baked goods (i.e. bread, rolls) for wholesale distribution	Any processed food, low acid and acidified foods packed in hermetically-sealed containers (must register and file with the FDA)	Any processed food, low acid and acidified foods packed in hermetically-sealed containers (must register and file with the FDA)
Foods Not Allowed	Cakes which require refrigeration, pies containing milk, eggs or meat products, chocolates, low acid/acidified foods	Meat products (if more than 3% raw or 2% cooked meat ingredients) – USDA regulated	Meat products (if more than 3% raw or 2% cooked meat ingredients) – USDA regulated
Zoning	Check with city/town zoning or planning board, issues include scale of operation, number of employees	Check with municipality zoning/planning board, 2nd kitchen may not be allowed on premise, issues include scale of operation, number of employees	Check with municipality zoning/planning board, issues include scale of operation, number of employees

## Basic Requirements for a Small-Scale Food Processing Establishment

### State of New York Department of Health (DOH): Restaurants

- Submit kitchen drawings before construction
- Three-bay sink with stainless steel drain boards or two-bay sink with a commercial dishwasher
- Separate hand washing/mop sink
- Washable materials on walls and work surfaces
- Restaurant grade, commercial tile floors (painted concrete not allowed)
- Commercial coolers/refrigeration
- Water from non-municipal water supply (must be tested quarterly)
- Review DOH “[Checklist for New or Remodeled Establishments](#)” (some locales require food worker certification)

## Basic Requirements for a Small-Scale Food Processing Establishment (cont'd)

### NY Department of Agriculture and Markets: Food Preparation and Processing

- Kitchen requirements based on food item(s) being produced (determined upon inspection)
- Easily cleanable, smooth work surfaces
- Non-absorbent, smooth and easily cleanable floors, walls and ceilings
- Review of processing procedures including hand washing, sanitizing, equipment sinks, water potability and food preparation
- Review\* NYSDAM Circular 951 – Pursuant to the Licensing of Food Processing Establishments, Circular 938 – Rules and Regulations Relating to Food Processing Establishments, and Circular 933 – Good Manufacturing Practices

\*Circulars are available through the local Department of Agriculture & Markets (10B Airline Drive Albany, NY 12235). Contact by phone at (518) 457-3880 or (800) 554-4501.

### Shared-Use and Incubator Kitchens

To reduce the cost of inputs and save money, consider using a shared-use commercial or incubator kitchen, or co-packer, listings of which are provided by:

- [Culinary Incubator](http://www.culinaryincubator.com/) at <http://www.culinaryincubator.com/>, and
- [Cornell University College of Agriculture and Life Sciences Department of Food Science](https://necfe.foodscience.cals.cornell.edu/kitchens-supplies/small-co-packers-commercial-kitchens/new-york) at <https://necfe.foodscience.cals.cornell.edu/kitchens-supplies/small-co-packers-commercial-kitchens/new-york>.

Not included in these listings but serving food entrepreneurs is the [Syracuse Community Test Kitchen](http://whitman.syr.edu/programs-and-academics/centers-and-institutes/falcone/programs/comtek.aspx), a program which trains participants in business planning, market research, recipe development, sensory analysis, and FDA requirements. For more information, visit <http://whitman.syr.edu/programs-and-academics/centers-and-institutes/falcone/programs/comtek.aspx>.

### Helpful Resources for Small-Scale Food Processors

For assistance in developing a scheduled process for your recipe or developing a processed food product, contact the New York Food Venture Center at the NYS Agricultural Experiment Station in Geneva at (315) 787-2259 or [necfe@cornell.edu](mailto:necfe@cornell.edu). Request the publication *Small Scale Food Entrepreneurship: A Technical Guide for Food Ventures* from Elizabeth Keller at (315) 787-2273 or [esk15@cornell.edu](mailto:esk15@cornell.edu), or access the online version at [http://www8.gsb.columbia.edu/rfiles/entrepreneurship/Small%20Scale%20Food%20Entrepreneurship\\_Initial%20Guide.pdf](http://www8.gsb.columbia.edu/rfiles/entrepreneurship/Small%20Scale%20Food%20Entrepreneurship_Initial%20Guide.pdf).

Product development, processing and distribution assistance is also available from Nelson Farms at SUNY Morrisville ([www.nelsonfarms.org](http://www.nelsonfarms.org)).

The USDA Sustainable Agriculture Research and Education (SARE) agency has published a plain-language guide to Value-Added Food Processing that is available online at <http://www.sare.org/Learning-Center/Topics/Value-Added>.

To learn about small scale food processing activities in New York State, join the [NYS Small Scale Food Processors Association](http://www.nyssfpa.com) ([www.nyssfpa.com](http://www.nyssfpa.com)) and become a member of Pride of New York ([www.prideofny.com](http://www.prideofny.com)).

# 46 – Record Keeping

Guide to Urban Farming in New York State

## Record Keeping

At a minimum your farm will need a record keeping system for tax and legal compliance. It is highly recommended that you also keep yield and other farm production records that might be useful to making decisions on the farm. For example, many growers keep weather logs so that they can evaluate their practices and yields and then make better growing practice and crop variety decisions for the coming year. Many tools are available as part of the Improving Profitability tutorial on the Northeast Beginning Farmer website at <http://nebeginningfarmers.org/farmers/achieving-profitability/profitability-tutorial/>.

## Paper Records

Many small and beginning farmers and businesses use the shoebox method of accounting. Keep all sales receipts in one folder, expense receipts in another, maintain a capital asset depreciation log, and you may have additional folders for farm yield or other data important to the year. The advantage of this system is that it is simple and easy to do. The disadvantage is that the data is not well organized so when you need farm information you often have to sort through piles of paper and do all computations by hand.

## Cornell Farm Account Book

Though geared more toward rural farmers, the Cornell Farm Account Book can be a helpful tool for organizing your finances. The advantage of the farm account book is that it is easy to understand and the information is well laid out in case you need to access it later. The disadvantage is that the information may not be laid out how you as a manager would like it, and it is still a hand-entry accounting system so entering farm information may take several hours per week. To order the Cornell Farm Account Book (\$20) or the Cornell Classic Farm Account Book (\$15) from CUP Services, write P.O. Box 6525 Ithaca NY 14850, call 800-666-2211, or e-mail [orderbook@cupserv.org](mailto:orderbook@cupserv.org).

## Excel Spreadsheets

If you can use a basic spreadsheet in Excel or a similar program, this is a good compromise between paper systems and more sophisticated recordkeeping program. If you don't need to generate invoices and have a relatively simple, small operation, a spreadsheet like this may serve your needs well for many years.

## Farm Records Service

Some farmers choose to mail all invoices to an accounting service where the accountant will enter the information into a computer records system, provide you with detailed monthly business statements, and perform all tax functions.

The advantage of this system is that it provides a person who does not have the time, understanding of accounting or computer skills the highest level of records information. The disadvantage is that this system has the highest cost and the monthly business statements take a few weeks to process and get back whereas the person utilizing an on-farm computer records system will have those statements in real time.

# 47 – Labor Information

## Guide to Urban Farming in New York State

### Labor Laws

Employers are required to have workers' compensation insurance on their workers if cash wages are or exceed \$1,200 in a year. If you host unpaid interns and apprentices on your farm, they must also be covered by workers' compensation (the training and/or room and board you provide them is valued in lieu of wages). The only exception to this is if your farm is a 501(c)3 non-profit organization. Download the Employers' Handbook at [http://www.goer.ny.gov/Employee\\_Resources/employee\\_handbook/2011Employee\\_Handbook.pdf](http://www.goer.ny.gov/Employee_Resources/employee_handbook/2011Employee_Handbook.pdf) for more information.

The Urban Agricultural Legal Resource Library (<http://www.urbanaglaw.org/>) provides additional information on employment law as it applies to urban farmers, including information on the use of volunteer labor and services.

### Minimum Wage

As of the revision date noted on this fact sheet, the Federal Minimum Wage is \$7.25/hour. The New York State Minimum Wage is also \$8.25/hour. This wage minimum applies to regular wage jobs and piece-rate jobs on farms with annual payroll over \$3,000. It excludes immediate family and minors under 17 years of age employed on the same farm as their parents or guardians who are paid on a piece-rate basis at the same rate as employees over 17.

### Finding Volunteers

Volunteer-matching websites such as **Get Dirty NYC!** (<http://getdirtynyc.com/>) and **Volunteer Match** (<http://www.volunteermatch.org/>) allow you to advertise your urban farm operation and recruit potential volunteers. Note that Volunteer Match is for use only by non-profits.

### Hiring Forms

Employers must keep an I-9 form from the US Citizenship and Immigration Service on file for all employees. The I-9 requires copies of documentation (a driver's license and social security card for most), however, the employer is not required to verify that these documents are valid. The form is available from **U.S. Citizen and Immigration Services** at <http://www.uscis.gov/portal/site/uscis>.

For more information about federal regulations for agricultural employers, download the IRS Publication 51, Agricultural Employers Tax Guide at [www.irs.gov/pub/irs-pdf/p51.pdf](http://www.irs.gov/pub/irs-pdf/p51.pdf).

### Payroll Service

Given the complexities and liabilities of properly administering payroll, it is recommended that small employers hire a payroll service from a local accounting firm. Though expensive, this frees the employer from the liabilities of missing a form deadline, improperly handling a payroll withholding account, and avoids the need to stay current with the various labor forms and regulations at both the state and federal level.

# 48 – Grant and Financial Opportunities

## Guide to Urban Farming in New York State

### Applying for Grants

An increasing number of grant programs are available to farmers from federal or state sources each with specific objectives. Grants fall into the three general types: 1) grants for business planning, adding value and increasing farm viability; 2) grants for on-farm research and demonstration projects that are mostly production oriented though some include marketing demonstration projects; and 3) grants for farm energy conservation, alternative energy, environmental protection and conservation, waste management, and community building. There is a different pool of grant opportunities for urban farms that are also non-profit 501(c)3 organizations. This guide does not focus on those opportunities, but some resources below may be of assistance.

Grants, however, are not a reliable strategy for growing your business. Grants may enable you to expand a particular aspect of your business to make your operation more viable or provide funding to try a new practice on your farm.

Grants are highly competitive so apply only if the project you are proposing clearly meets the grantor's objectives. Always find out what kinds of projects were funded in the past to determine if your project is in line with what has been funded.

It takes significant time and effort to write a winning grant proposal. Instructions must be followed precisely. Grants often require a cash or in-kind match that must be documented in the budget you propose. Grants will not be considered if they arrive late after the deadline for application. Deadlines for application submission and instructions are generally announced once a year. Most grants are not available on an ongoing basis.

Once you submit a grant, it may take 3 to 6 months to find out if your application was selected for funding. If funded, it also takes time to finalize the contract. Generally, you will not be reimbursed for money spent prior to receiving the signed contract. Grant contracts require that you write a report of the results and provide an accounting of how the money was spent; therefore, you must keep accurate records. Grants are also considered income for tax purposes.

The following grant opportunities pertain especially to farmers in urban centers. More general grant opportunities for farmers are also provided.

### Grant Opportunities for Urban Farmers

#### USDA AMS Local Foods Promotion Program (LFPP)

- Purpose: The Local Food Promotion Program (LFPP) offers grant funds with a 25% match to support the development and expansion of local and regional food business enterprises to increase domestic consumption of, and access to, locally and regionally produced agricultural products, and to develop new market opportunities for farm and ranch operations serving local markets.
- Eligibility: Entities, including urban farms, that support local and regional food business enterprises that process, distribute, aggregate, or store locally or regionally produced food products.
- Deadline: LFPP grants are usually announced in mid-March, with a due date 45 days from announcement.
- Information: Visit <http://www.ams.usda.gov/services/grants/lfpp> for detailed information.

## **USDA-SARE Sustainable Community Grants**

- Purpose: For community organizations to make direct connections between community revitalization and farming.
- Eligibility: Must be affiliated with Cooperative Extension, a municipality, a state department of agriculture, a college or university, a community organization, or other institutional entity. All applications must come from an individual within an organization. Unaffiliated individuals may not apply, and there is a limit of one proposal per applicant per year.
- Deadline: Submit applications on line in November for awards in the spring.
- Information: Visit <http://www.nesare.org/Grants/> for more information and for information about how to write a Sustainable Community Grant.

## **Wallace Center Healthy Urban Food Enterprise Development (HUFED) Grants**

- Purpose: To make healthier and affordable food available in low-income areas, increase market access for small- and medium-sized agricultural producers, and promote positive economic activities generated by attracting healthy food enterprises into underserved communities.
- Information: Offer small enterprise, large enterprise, and feasibility study grants, each with different purposes and awards. Visit <http://www.wallacecenter.org/hufed/> or contact [hufed@winrock.org](mailto:hufed@winrock.org) or (703) 531-8810 for more information.

## **US EPA Brownfields Program Grants**

- Purpose: Provide direct funding for brownfields assessment, cleanup, revolving loans, and environmental job training.
- Information: Provide assessment, cleanup, training, research, technical assistance, and other grants. Information for each grant type is available at [http://epa.gov/brownfields/grant\\_info/index.htm](http://epa.gov/brownfields/grant_info/index.htm).

## **United Way of New York City Seed Grants**

United Way of New York City has created an Urban Farms initiative and provides seed grants for Urban Farming through the Hunger Prevention and Nutrition Assistance Program (HPNAP).

- Purpose: Support the creation or enhancement of services in community-based organizations.
- Eligibility: Must be a community-based organization with 501 c. 3 status. More eligibility requirements are listed on the website provided below.
- Information: The grant implementation timeline is January 1, 2015 through December 31, 2015. For eligibility requirements, selection criteria, and application procedures, visit <http://action.unitedwaynyc.org/pages/urbanfarmseedgrants>.

## **Other Grant Opportunities for Farmers**

### **NYS Funding for Organic Certification**

- Purpose: Reimburse producers for a portion of their annual organic certification renewal costs; can apply annually (75% reimbursement up to a maximum of \$750).
- Information: More information is available from the [USDA National Organic Program](http://www.ams.usda.gov/nop) website ([www.ams.usda.gov/nop](http://www.ams.usda.gov/nop)) and forms can be downloaded from <http://www.agriculture.ny.gov/AP/Organic/>.

### **NYS Specialty Crops Block Grants Program**

- Purpose: Increase the competitiveness of specialty crops, encourage efficiency, partnerships, innovation, and new markets. The RFP includes many areas of focus including: packaging/labeling, environmental quality,

distribution, education and outreach, food safety, food security, marketing and promotion, product development, plant health and international trade. 2009 awards were solely focused on plant health.

- Eligibility: Funding available to non-profits, for profits, individuals, educational institutions, and government; however, individuals and businesses must partner with others.
- Information: Contact Jonathan Thomson at [Jonathan.Thomson@agriculture.ny.gov](mailto:Jonathan.Thomson@agriculture.ny.gov) or (518) 485-8902.

### **New York State Energy Research and Development Authority Programs**

- Purpose: Several programs, incentives and loans for farm waste management (biogas); improved energy efficiency; solar and wind generation; and innovative business practices for energy conservation, alternative energy, and energy use. Energy audits available.
- Information: For more information, visit <http://www.nyserda.ny.gov/> (for all programs and services, visit <http://www.nyserda.ny.gov/All-Programs>) or call (518) 862-1090.

### **USDA-SARE Farmer Grant**

- Purpose: Support on-farm research demonstrations, marketing innovations, value adding activities and other projects (capped at \$15,000; capital improvements limited to \$500 of total project cost; no match required).
- Information: For more information, visit [www.nesare.org](http://www.nesare.org), email [nesare@uvm.edu](mailto:nesare@uvm.edu) or call (802) 656-0471.

### **New York State New Farmers Grant Fund**

- Purpose: Help farmers improve farm profitability through one or more of the following goals:
  - Expanding agricultural production, diversifying agricultural production and/or extending the agricultural season.
  - Advancing innovative agricultural techniques that increase sustainable practices such as organic farming, food safety, reduction of farm waste and/or water use;
  - Creating or expanding partnerships with other entities such as farm operations, institutions or regional food-hubs for processing, selling and/or distributing agricultural products.
- Information: for more information, visit <http://esd.ny.gov/businessprograms/newfarmersgrantfund.html>

### **New York State's USDA Specialty Crop Block Grant Program**

- Purpose: To enhance the competitiveness of New York specialty crops by creating partnerships; fostering innovation; increasing efficiencies and reducing costs; and enhancing the long term viability of New York's specialty crop agricultural businesses and food systems
- Information: for more information, visit <http://www.nyfvi.org/default.aspx?PageID=2470>

### **Resources for Grant Writing**

The Foundation Center offers a comprehensive proposal writing online short course for purchase at <http://foundationcenter.org/> (see Get Started).

Non-Profit Guides are free online grant-writing tools for non-profit organizations, charitable, educational, public organizations, and other community-minded groups, available at <http://www.npguides.org/>.

### **Crowdfunding**

Crowdfunding platforms such as <http://www.kickstarter.com/>, <http://ioby.com/>, and <http://www.indiegogo.com/> offer unique opportunities for fundraising and receiving donations, usually via the Internet. Be sure to read Terms of Use and other guidelines before using a Crowdfunding platform.

# 49 – Financing an Urban Farm

Guide to Urban Farming in New York State

## Loans and Other Financing Options

The most ideal source of money for a new farm enterprise is your own cash. This is a tough option for many new businesses. Credit cards are far too risky. Loans, in conjunction with your own cash and an excellent business plan, are a viable option as well. Relying on loans entirely puts your farm dreams at risk. It is worth the patience to build up your own farm start-up account.

Generally, it is recommended that once your products have a clear demand and you are not able to keep up with sales, is it time to consider a loan or financing to allow more rapid expansion of the profitable aspects of your farm. If you reach the stage where you're ready for a loan, you will need to present potential investors or lenders with a solid business plan that exhibits a realistic strategy for paying it off (see Factsheet #34, Business Planning).

*The Farmer's Guide to Agriculture Credit* is available for download at <http://rafiusa.org/blog/the-farmers-guide-to-agricultural-credit/> and offers a more in-depth assessment of farm credit options.

## Commercial Banks

Most banks have a commercial lending department to handle business loans, but few banks have an agricultural lending department prepared to work with agricultural business. Check with your bank to see if they write agricultural loans. A partial list of New York banks with known agricultural lending departments includes:

- **Farm Credit** (multiple branch locations)  
[www.farmcrediteast.com](http://www.farmcrediteast.com)
- **M&T Bank** (multiple branch locations)  
(800) 724-2440, <https://www.mtb.com/personal/Pages/Index.aspx>
- **NBT Bank**, P.O. Box 351, Norwich, NY 13815  
(800) 628-2265, <http://www.nbtbank.com/home.html>
- **Community Bank** (multiple branch locations)  
(800) 388-4679, <http://www.communitybankna.com/>
- **Bank of the Finger Lakes**, 389 Hamilton Street, Geneva, NY 14456  
(315) 789-1500, <http://www.bankofthefingerlakes.com/>

## Micro-Enterprise Loan Funds or Revolving Loans Funds

Some county governments have micro-enterprise loan funds with attractive interest rates and repayment terms that can be used to finance urban farm operations. Organizations and banks handling microfinancing in New York include:

- **Capital District Community Loan Fund**, 255 Orange Street #103, Albany, NY 12210  
(518) 436-8586, <http://mycommunityloanfund.org/>
- **Alternatives Federal Credit Union**, 125 North Fulton Street, Ithaca, NY 14850  
(607) 273-3582 ext. 816, <http://alternatives.org/>
- **Cooperative Federal Credit Union**, three locations in Syracuse, NY: <http://www.cooperativefederal.org/>
- **PathStone**, 400 East Avenue, Rochester, NY 14607  
(585) 340-3300, <http://www.pathstone.org/>
- **Kiva Zip**, <https://zip.kiva.org/>
- **CDCLI Funding Corporation**, Inc., 2100 Middle Country Road Suite 300, Centereach, NY 11720  
(631) 471-1215 ext. 149, <http://www.cdcli.org/>

- **ACCION New York**, 115 East 23<sup>rd</sup> Street, 7<sup>th</sup> Floor, New York, NY 10010  
(718) 599-5170, <http://www.accionnewyork.org/>

The Farm Service Agency (FSA) also now provides [microloans](#) through the Beginning Farmer and Rancher Program. These are direct farm operating loans up to \$50,000 with a shortened application process and reduced paperwork and are designed to meet the needs of smaller, non-traditional, and niche-type operations such as urban farms. For more information, visit the FSA website at <http://www.fsa.usda.gov/> or call (315) 477-6300. To link directly to the New York State FSA website, visit <http://www.fsa.usda.gov/FSA/stateoffapp?mystate=ny&area=home&subject=landing&topic=landing>.

### **Investors**

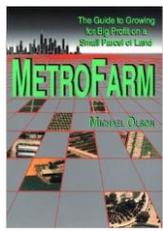
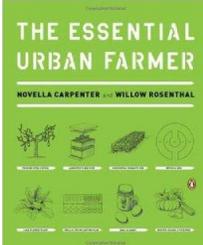
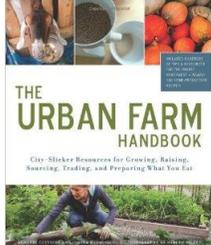
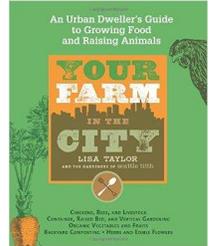
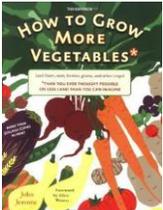
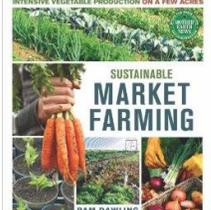
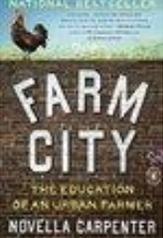
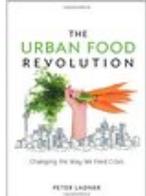
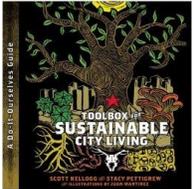
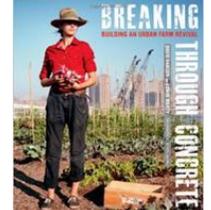
With the concept of “**Slow Money**” ([www.slowmoney.org](http://www.slowmoney.org)) gaining popularity, investor circles nationwide are forming to fund local food systems. Depending on your location and farm plans, you may be able to attract investors to fund start-up or expansion of your farm. You will need to check in with legal and tax advisors about the implications for your farm, and you will also need to crunch the numbers and write a business plan to determine whether this is a strategy that can work for you. Search online for “slow money”, “local investing opportunity networks” and “small farm angel investors” to learn more about the possibilities for your farm.

### **Residential Finance or Using Your Own Equity**

While many banks are unwilling to lend money to an individual to purchase a herd of goats, for example, almost all banks offer home equity loans and/or other personal loans that you could use for your agricultural business. Home equity and personal loans may carry higher interest rates than business or farm loans available through the above sources. Be sure to check rates and terms. Never finance a business using credit cards as interest rates are enormous and, if payments are not made, can quickly spiral out of control.

## Part V: General Resources

# Urban Farming Books

			<p><b><i>MetroFarm: The Guide to Growing for Big Profit on a Small Parcel of Land</i></b></p> <p>Author: Michael Olson TS Books, 1994</p>
	<p><b><i>The Essential Urban Farmer</i></b></p> <p>Authors: Novella Carpenter and Willow Rosenthal Penguin Books, 2011</p>		<p><b>Urban Farm Handbook: City Slicker Resources for Growing, Raising, Sourcing, Trading, and Preparing What You Eat</b></p> <p>Authors: Annette Cottrell and Joshua McNichols, Mountaineer Books, 2011</p>
	<p><b><i>Urban Farming: Sustainable City Living in Your Backyard, in Your Community, and in the World</i></b></p> <p>Author: Thomas J. Fox BowTie Press, 2011</p>		<p><b><i>Your Farm in the City: An Urban Dweller's Guide to Growing Food and Raising Animals</i></b></p> <p>Authors: Lisa Taylor and the Gardeners of Seattle Tilth Black Dog &amp; Leventhal Publishers, 2011</p>
	<p><b><i>How to Grow More Vegetables than You Ever Thought Possible on Less Land than You Can Imagine</i></b></p> <p>Author: John Jeavons Ten Speed Press, 2002</p>		<p><b><i>Sustainable Market Farming: Intensive Vegetable Production on a Few Acres</i></b></p> <p>Author: Pam Dawling New Society Publishers, 2013</p>
	<p><b><i>Farm City: The Education of an Urban Farmer</i></b></p> <p>Author: Novella Carpenter Penguin Books, 2010</p>		<p><b><i>The Urban Food Revolution</i></b></p> <p>Author: Peter Ladner New Society Publishers, 2011</p>
	<p><b><i>Toolbox for Sustainable City Living: A Do-It-Yourself's Guide</i></b></p> <p>Authors: Scott Kellogg and Stacy Pettigrew South End Press, 2008</p>		<p><b><i>Breaking through Concrete: Building an Urban Farm Revival</i></b></p> <p>Authors: David Hanson and Edwin Marty University of California Press, 2012</p>

# 50— General Resources

## Guide to Urban Farming in New York State

### Organizational Resources

- “Start a Farm in the City” by Rex Dufour, ATTRA: The National Sustainable Agriculture Information Service, 2009, available at <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=21>
- Just Food’s City Farms Toolkit available for purchase at <http://justfood.org/marketplace/tools>
- Just Food’s Online Resource Center, with English and Spanish-language resources, at <http://justfood.org/farmer-outreach/online-resource-center> and <http://justfood.org/farmer-outreach/spanish-language-resources>
- GreenThumb Gardener’s Handbook, available for download at [http://www.greenthumbnyc.org/pdf/gardeners\\_handbook.pdf](http://www.greenthumbnyc.org/pdf/gardeners_handbook.pdf)
- Syracuse Grows online urban farming resource directory at <http://syracusegrows.org/>
- GrowNYC gardening tipsheets at <http://www.grownyc.org/openspace/publications>
- The Urban Agricultural Legal Resource Library (<http://www.urbanaglaw.org/>), a project of the Sustainable Economies Law Center in Oakland, California
- Brooklyn Botanic Garden Handbook Series, available for purchase at <http://www.bbg.org>
- The Food Project in Boston, MA offers downloadable manuals on many facets of urban agriculture and product and program development., [www.foodproject.org](http://www.foodproject.org)
- Greenhorns has a wealth of resources on their site, [www.greenhorns.net](http://www.greenhorns.net)

### Governmental Resources

- United States Environmental Protection Agency (EPA) “Urban Agriculture & Improving Local, Sustainable Food Systems” website at <http://epa.gov/brownfields/urbanag/>
- United State EPA Urban Farm Business website at <http://www.epa.gov/brownfields/urban-farm-business-plan-worksheets>
- ATTRA: The National Sustainable Agriculture Information Service’s urban agriculture website includes resources on community gardening, local food, CSA’s and farms in the city at [https://attra.ncat.org/attra-pub/local\\_food/urban\\_ag.html](https://attra.ncat.org/attra-pub/local_food/urban_ag.html)
- USDA Urban Agriculture: An Abbreviated List of References and Resource Guide (2000) at [http://pubs.nal.usda.gov/sites/pubs.nal.usda.gov/files/urban\\_0.htm](http://pubs.nal.usda.gov/sites/pubs.nal.usda.gov/files/urban_0.htm)

### Websites

- City Farmer (<http://www.cityfarmer.org/>) and City Farmer News (<http://www.cityfarmer.info/>)  
A website and news stream about various urban agriculture topics worldwide.
- Urban Farm Online: Sustainable City Living (<http://www.urbanfarmonline.com/>)
- Resource Centers on Urban Agriculture and Food Security (<http://ruaf.org/>)

### Urban Farming Meet-Up Groups

Meetup is a network of local groups organized by individuals at no cost via <http://www.meetup.com/>.

- City Farming NYC
- Brooklyn Farmers/Gardeners
- Genesee Valley/Rochester Permaculture
- Brooklyn Permaculture
- Rondout Valley Permaculture

# 51 – Training & Education

## Guide to Urban Farming in New York State

### Urban Farming Training Programs

- Just Food Farm School NYC in New York City (<http://www.justfood.org/farmschoolnyc>) Two-year certificate program and individual advanced courses on a variety of subjects.
- The Radix Ecological Sustainability Center Regenerative Urban Sustainability Training (RUST) in Albany (<http://radixcenter.org/>) Weekend-long intensive workshop comprised of lectures and hands-on demonstrations on various urban farming subjects.

### Beginning Farmer Training Programs

A wealth of workshops and new farmer training programs exist throughout the State. Though most of these programs are not urban farming specific, many components are quite applicable to an urban farm.

- CRAFT: The Collaborative Regional Alliance for Farmer Training program is prevalent throughout NYS.
  - Hudson, Pioneer and Berkshire region: <http://www.craftfarmapprentice.com/>
  - Catskills: <http://www.catskillscraft.org/>
  - Finger Lakes: [www.groundswellcenter.org](http://www.groundswellcenter.org)
  - Eastern NYS: <https://www.glynwood.org/mid-hudson-craft/>
- NOFA- NY hosts workshops and farm field days across NYS for new-experienced farmers, [www.nofany.org](http://www.nofany.org)
- Cornell Small Farms offers an array of online courses for new and beginning farmers, [www.smallfarms.cornell.edu/](http://www.smallfarms.cornell.edu/)
- Groundswell Center for Local Food & Farming offers a 10-week in-person farm businesses course and opportunities at an incubator farm outside Ithaca, NY. <http://www.groundswellcenter.org/>
- New York Botanical Gardens offers workshops and certificate programs in landscape design, botany, horticulture and gardening; <http://www.nybg.org/adulted/>
- Stone Barns Center for Food & Agriculture offers both unpaid farm internships and longer-term apprenticeships for aspiring farmers as well as hosts the annual Young Farmers Conference in November, <http://www.stonebarnscenter.org/index.html>
- Hawthorne Valley Beginning Farmers Program offers field days and mentoring programs, <http://hawthornevalleyfarm.org/hudson-valley-farm-beginnings>

### Urban Farm Apprenticeships and Internships

- Bk Farmyards (<http://bkfarmyards.com/>) Adult Urban Farmer Training, Backyard Farms Training, and Chicken Apprenticeship
- EcoStation: NY (<http://ecostationny.org/>) Adult Apprenticeship Program at Bushwick Campus Farm
- Eagle Street Rooftop Farm (<http://rooftopfarms.org/>) On-site apprenticeships and internships

### Organizational Workshops, Classes, and Events

Several urban farming or related organizations offer workshops, classes, and events to help educate and support urban farmers. See the Appendix for more information and for organization contact information, or check individual organization websites and event calendars.

For a listing of Cornell Cooperative Extension offices across New York State, visit [http://www.cce.cornell.edu/learnAbout/Pages/Local\\_Offices.aspx](http://www.cce.cornell.edu/learnAbout/Pages/Local_Offices.aspx).

## Part VI: Appendix

## Urban Farming and Related Organizations/Programs in NYC

Organization	Services and Resources	Contact Information
GrowNYC <a href="http://www.grownyc.org/">http://www.grownyc.org/</a>	Greenmarkets, Wholesale Greenmarket, Grow Truck Tool Loan Program, Rainwater Harvest Plan, Gardening Factsheets	51 Chambers Street, Room 228 New York, NY 10007 (212) 788-7900
Just Food <a href="http://www.justfood.org/">http://www.justfood.org/</a>	CSA in NYC Program and toolkit, City Farms Program and toolkit, Food Justice Program, Farm School NYC, City Chicken Guide, Urban Farming Tipsheets, Workshops	1133 Avenue of the Americas Suite 1515 New York, NY 10036 (212) 645-9880 ext. 221 <a href="mailto:info@justfood.org">info@justfood.org</a>
GreenThumb <a href="http://www.greenthumbnyc.org/">http://www.greenthumbnyc.org/</a> (Program of the NYC Parks Dept.)	Gardener's Handbook, Structures Guidebook, Events and Workshops	49 Chambers Street, Room 1020 New York, NY 10007 (212) 788-8070 <a href="mailto:greenthumbinfo@parks.nyc.gov">greenthumbinfo@parks.nyc.gov</a>
Open Accessible Space Information System (OASIS) <a href="http://www.oasisnyc.net/">http://www.oasisnyc.net/</a>	Land Use Maps	The Graduate Center/CUNY 365 Fifth Avenue, Room 6202 New York, NY 10016 (212) 817-2033 <a href="mailto:oasisnyc@gc.cuny.edu">oasisnyc@gc.cuny.edu</a>
NYC Beekeeper's Association <a href="http://www.bees.nyc/">http://www.bees.nyc/</a>	Beekeeping Workshops, Best Practices Guide, Government Forms and Information	157 Broome Street, #3E New York, NY 10002 <a href="mailto:info@bees.nyc">info@bees.nyc</a>
Green Guerillas <a href="http://www.greenguerillas.org/">http://www.greenguerillas.org/</a>	Plant Giveaways, Community Organizing, Youth Tillers Program, High School for Public Service Youth Farm & Market, Brooklyn Community Garden Fund	232 E 11th Street New York, NY 10003 <a href="mailto:info@nycgreen.org">info@nycgreen.org</a> (212) 594-2155
New York City Community Garden Coalition <a href="http://nyccgc.org/">http://nyccgc.org/</a>	Monthly Meetings, Summer Garden and Urban Farm Tours, Annual Gardeners' Forum, Advocacy	323 East 11th Street New York, NY 10003 (347) 699-6099 Email via website
NYC Compost Project <a href="http://www1.nyc.gov/site/dsny/resources/initiatives/nyc-compost-project.page">http://www1.nyc.gov/site/dsny/resources/initiatives/nyc-compost-project.page</a>	Compost Demonstrations, Workshops, Tip Sheets, Technical Assistance, Compost Bins, Signage to Community-Based Composting Sites, Master Composter Certificate Course	Find contact information for individual requests at <a href="http://www1.nyc.gov/site/dsny/resources/initiatives/contact-nyc-compost-project.page">http://www1.nyc.gov/site/dsny/resources/initiatives/contact-nyc-compost-project.page</a>
DSNY Bureau of Waste Prevention, Reuse and Recycling <a href="http://www.nyc.gov/html/nycwastel/ess/html/home/home.shtml">http://www.nyc.gov/html/nycwastel/ess/html/home/home.shtml</a>	Compost, Mulch, Service Requests	Contact via website
EcoStation: NY <a href="http://www.ecostationny.org/">http://www.ecostationny.org/</a>	Bushwick Campus Farm and Greenhouse, Apprenticeships, Food and Social Justice Workshops, Farmers Market	130 Palmetto Street, Suite 350 Brooklyn, NY 11221 (646) 393-9305 <a href="mailto:Sean@EcoStationNY.org">Sean@EcoStationNY.org</a>

Brooklyn Botanical Garden <a href="http://www.bbg.org/">http://www.bbg.org/</a>	Urban Gardening Toolkit, Events and Workshops, Certificate Programs, NYC Compost Project Host	1000 Washington Avenue Brooklyn, NY 11225 (718) 623-7200 <a href="mailto:feedback@bbg.org">feedback@bbg.org</a>
Boswyck Farms <a href="http://www.boswyckfarms.org/">http://www.boswyckfarms.org/</a>	Hydroponics Workshops and Training, Hydroponics Consulting and Installation Services	38-01 23rd Avenue, Suite 203 Astoria, NY 11105 (929) 328-0570 <a href="mailto:info@boswyckfarms.org">info@boswyckfarms.org</a>
Eagle Street Rooftop Farm <a href="http://rooftopfarms.org/">http://rooftopfarms.org/</a>	Farmers Market, Workshops, Apprenticeships, Public Programming	44 Eagle Street Greenpoint, Brooklyn Contact via website
Added Value <a href="http://www.added-value.org/">http://www.added-value.org/</a>	Community Farm, Farmers Market, CSA, Composting Initiatives, Youth and Farm-Based Learning Initiatives	PO Box 310028 Brooklyn, NY 11231 (718) 288-6752
Brooklyn Grange <a href="http://www.brooklyngrangefarm.com/">http://www.brooklyngrangefarm.com/</a>	Farmers Market, Workshops, Rooftop Gardening Consulting Services	(347) 670-3660 <a href="mailto:info@brooklyngrangefarm.com">info@brooklyngrangefarm.com</a>
New York Botanical Garden <a href="http://www.nybg.org/">http://www.nybg.org/</a> and <a href="http://ow.ly/Ppj7U">http://ow.ly/Ppj7U</a>	Greenmarket, Workshops, Bronx Green-Up Program, NYC Compost Project Host	2900 Southern Boulevard Bronx, NY 10458 (718) 817-8700 <a href="mailto:bronxgreenup@nybg.org">bronxgreenup@nybg.org</a>
Farming Concrete <a href="http://farmingconcrete.org/">http://farmingconcrete.org/</a>	Interactive Garden and Harvest Map of NYC, Record Keeping Materials and Training	(347) 746-8314 <a href="mailto:gardens@farmingconcrete.org">gardens@farmingconcrete.org</a>
Earth Matter <a href="http://earthmatter.org/">http://earthmatter.org/</a>	Compost Projects and Learning Centers, Consultations, Workshops, and Networking	Contact via website
Queens Botanical Garden <a href="http://www.queensbotanical.org/">http://www.queensbotanical.org/</a>	Demonstration Gardens, Farmers Market, NYC Compost Project Host	43-50 Main Street Flushing (Queens), NY 11355 (718) 886-3800 ext. 200
The Snug Harbor Cultural Center and Botanical Garden <a href="http://www.snug-harbor.org/">http://www.snug-harbor.org/</a>	Heritage Historical Farm and Demonstration Site, NYC Compost Project Host	1000 Richmond Terrace Building P, Second Floor Staten Island, NY 10301 (718) 448-2500 <a href="mailto:info@snug-harbor.org">info@snug-harbor.org</a>
Queens Country Farm Museum <a href="http://www.queensfarm.org/">http://www.queensfarm.org/</a>	Adult and Children's Educational Programs	73-50 Little Neck Pathway Floral Park, NY 11004 (718) 347-3276 <a href="mailto:info@queensfarm.org">info@queensfarm.org</a>
BK Farmyards <a href="http://bkfarmyards.com/">http://bkfarmyards.com/</a>	Training Programs and Apprenticeships, Chicken Farm and Apprenticeship, Honey Farm, Workshops, Consulting Services	Contact via website
596 Acres <a href="http://596acres.org/">http://596acres.org/</a>	Land Use Maps, Advocacy Services, Land Access/Tenure Resources, Consulting Services	Contact via website (718) 316-6092

## Urban Farming and Related Organizations/Programs in Buffalo, NY

Organization	Services and Resources	Contact Information
Urban Roots Community Garden Center <a href="http://www.urbanroots.org/">http://www.urbanroots.org/</a>	Affordable Garden Supplies, Events and Workshops	428 Rhode Island Street Buffalo, NY 14213 (716) 362-8982 <a href="mailto:info@urbanroots.org">info@urbanroots.org</a>
Grassroots Gardens of Buffalo <a href="http://www.grassrootsgardens.org/">http://www.grassrootsgardens.org/</a>	Workshops	2495 Main Street, Suite 408 Buffalo, NY 14214 (716) 783-9653
Massachusetts Avenue Project <a href="http://mass-ave.org/">http://mass-ave.org/</a>	Youth Development and Education, Growing Green Urban Farm, Training and Workshops	271 Grant Street Buffalo, NY 14213 (716) 882-5327
GrowWNY <a href="http://growwny.org/">http://growwny.org/</a>	Urban Revitalization Projects, Topical Working Groups	Larkin Exchange 726 Exchange Street, Suite 525 Buffalo, NY 14210 (716) 852-2857 <a href="mailto:info@growwny.org">info@growwny.org</a>

## Urban Farming and Related Organizations/Programs in Ithaca, NY

Organization	Services and Resources	Contact Information
Groundswell Center for Local Food & Farming <a href="http://www.groundswellcenter.org/">http://www.groundswellcenter.org/</a>	Farm Enterprise Incubator (In Progress), Farmer Training, Sustainable Farming Certificate Program, Farm Business Planning Course	P.O. Box 6679 Ithaca, NY 14851 (607) 319-5095 <a href="mailto:info@groundswellcenter.org">info@groundswellcenter.org</a>
Ithaca Community Gardens (Project Growing Hope) <a href="http://ithacacommunitygardens.org/">http://ithacacommunitygardens.org/</a>	Events, Educational Programming, Web Resources List	P.O. Box 606 Ithaca, NY 14851 (607) 216-8770 <a href="mailto:ithacagardensboard@gmail.com">ithacagardensboard@gmail.com</a>
Gardens 4 Humanity (Tompkins County) <a href="http://ccetompkins.org/gardening/">http://ccetompkins.org/gardening/</a>	Neighborhood Gardening Services, Educational and Leader Training, Teen Programming, After School Programs, Affordable and Free Food Plants	Cornell Cooperative Extension Tompkins County 615 Willow Avenue Ithaca, NY 14850 (607) 272-2292 <a href="mailto:jd285@cornell.edu">jd285@cornell.edu</a> <a href="mailto:tompkins@cornell.edu">tompkins@cornell.edu</a>

## Urban Farming and Related Organizations/Programs in Rochester, NY

Organization	Services and Resources	Contact Information
NOFA-NY <a href="http://www.nofany.org/">http://www.nofany.org/</a>	Organic Certification and Resources, CSA Fairs and Factsheets, Events, Workshops, Conferences	1423 Hathaway Drive Farmington, NY 14425 (585) 271-1979 <a href="mailto:info@nofany.org">info@nofany.org</a>

## Urban Farming and Related Organizations/Programs in Other Cities

Organization	Services and Resources	Contact Information
Capital Roots <a href="http://www.capitalroots.org/">http://www.capitalroots.org/</a>	Urban Grow Center, Produce Project, Workshops, Gardening Factsheets	594 River Street Troy, NY 12180 (518) 274-8685 <a href="mailto:info@capitalroots.org">info@capitalroots.org</a>
Syracuse Grows <a href="http://syracusegrows.org/">http://syracusegrows.org/</a>	Online Resource Directory, Workshops	144 Eggers Hall Syracuse, NY 13244 (315) 443-4890 <a href="mailto:syracusegrows@gmail.com">syracusegrows@gmail.com</a>
Volunteers Improving Neighborhood Environments (VINES) <a href="http://vinesgardens.org/">http://vinesgardens.org/</a>	Binghamton Urban Farm Program, Farm Open Houses and Workdays, Summer Youth Employment Program	P.O. Box 3104 Binghamton, NY 13902 (607) 205-8108 <a href="mailto:vinesvolunteers@gmail.com">vinesvolunteers@gmail.com</a>
Radix Ecological Sustainability Center <a href="http://radixcenter.org/">http://radixcenter.org/</a>	Regenerative Urban Sustainability Training (RUST), Program, <i>Toolbox for Sustainable City Living</i>	Albany, NY <a href="mailto:sk@radixcenter.org">sk@radixcenter.org</a> (518) 605-3256