From Surviving to Thriving: Strategies for Urban Farm Success

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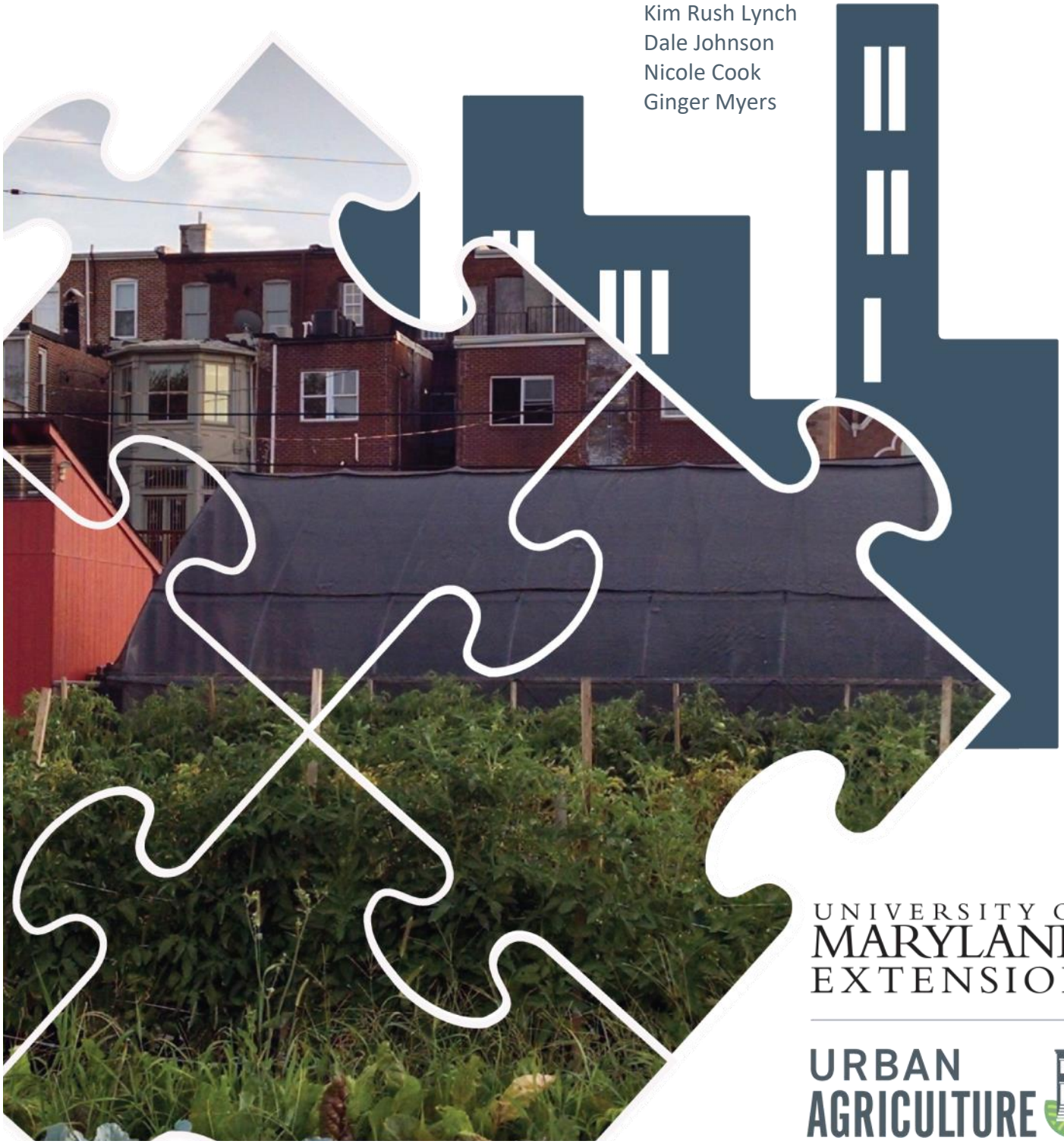

UNIVERSITY OF MARYLAND EXTENSION

URBAN AGRICULTURE

From Surviving to Thriving: Strategies for Urban Farm Success

1st edition

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From Surviving to Thriving: Strategies for Urban Farmer Success is a product of the local, regional, and state Extension faculty of the University of Maryland College Park Extension Program and the University of Maryland Eastern Shore 1890 Extension Program. This book is intended to assist urban farmers, growers, and their advisers in managing risk and planning for the increased success and stability of their urban agriculture ventures.

The information in this guidebook is for educational use. The guidebook includes introductory information about some of the regulations relevant to urban agriculture. Reasonable effort was made to ensure the accuracy of the information in this guide. However, content and interpretation of laws and regulations are subject to change. The effect of future legislation and interpretation cannot be predicted. This guide is not intended as legal advice. Each person should consult the responsible local, state, and federal agencies and an attorney before using this information to engage in business activity.

Material for this guide was researched and written by Neith Little, Kim Rush Lynch, Dale Johnson, Nicole Cook, and Ginger Myers, Extension field faculty at University of Maryland Extension (UME). Graphic design and layout were done by Susan Barnes, UME Western Maryland Research and Education Center. The logo for the UMD Extension Urban Ag program was designed by Trish Moore, UME Baltimore County Office.

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Introduction

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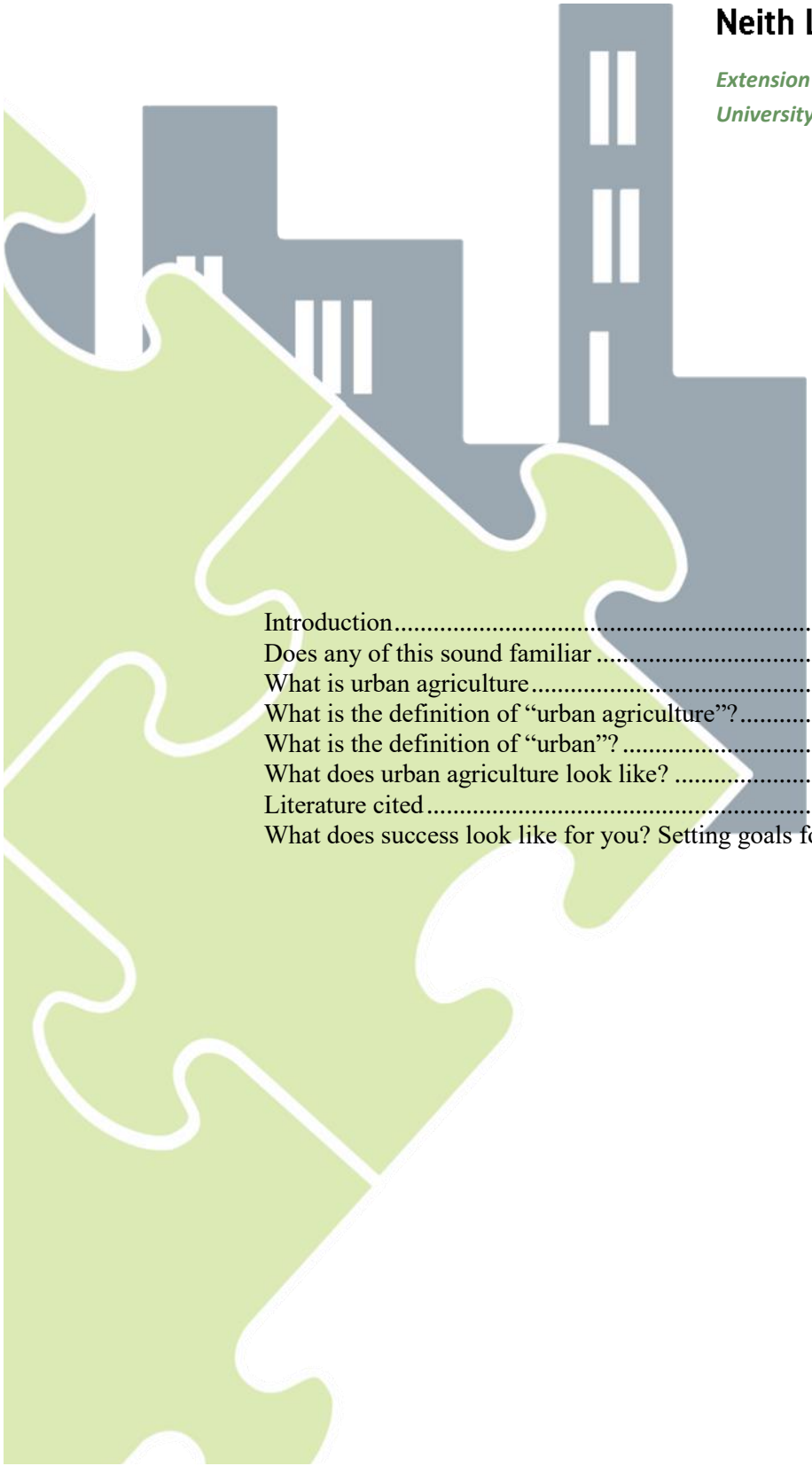

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Introduction

It's been raining for weeks, the weeds are strangling your crops, it seems like there are fewer customers at the farmers market every week, your landlord just called to say your rent is going up, your summer helpers decided they would rather work indoors, and on top of it all that unrealistic Extension Agent keeps bugging you to write a business plan.

Does any of this sound familiar?

If it does, you're not alone. Surviving the day-to-day challenges of farming can be overwhelming, leaving you exhausted and struggling to remember why you started in the first place.

As Extension educators with a combined 96 years of experience working with farmers, we have seen a lot of farmers struggle with this paradox. We want to see farmers succeed, and we've seen too many burn out or go out of business. That's **why we wrote this book**, to help you figure out how to move from *reactive crisis* management to *proactive* **risk management**.

> ***Risk management***
>
> *Risk management is proactive planning so that you can make the most of opportunities and minimize the impacts of threats.*
>
> *For example, adopting preventative pest management strategies can reduce the impact of pests when they do occur, reducing the impact of a threat. Conducting market research can enable a grower to identify which crops and products are in high demand relative to their supply, enabling the grower to take advantage of an opportunity.*

We also recognize that, compared with rural farmers, urban farmer face unique challenges. Urban farmers often produce a dizzying number of different crops at multiple small locations; draw income from alternative enterprises like agritourism and value-added crops; and want to use their farms to achieve diverse financial, social, and environmental goals.

That's why it was important to take the time to **listen to urban farmers** about what has worked and what has not worked for them. In focus groups, we asked urban farmers what financial success looks like to them, what strategies have helped them achieve their goals, and what strategies did not work as well for their urban farming realities. **We incorporated that input**, as well as results from surveys and interviews of urban farmers in Maryland, outcomes from learning activities at Urban Farmer Field Schools, and input from urban farmer on the rough draft of this guidebook, **to craft the tools and information you'll find in the following pages**.

The purpose of this guidebook is to help current and aspiring urban farmers move from crisis management to proactive risk management. As an urban farmer or urban ag entrepreneur, it's easy to spend all your time putting out metaphorical (or literal!) fires, triaging your To Do list, and chasing that fabled big grant or trendy new crop that you hope will solve all your financial problems. But by investing the time to clarify your goals, and what steps you need to take to achieve them, you will be better able to achieve financial stability and prevent yourself from burning out.

If you're new to urban agriculture, please read the "What is urban ag?" section next.

But **if that sounds too introductory**, please skip to page 8 to work through the Goal Setting exercise, which will help you make the most of this guidebook.

What is urban agriculture?

Interest is high in urban agriculture, with many not-for-profits, businesses, municipalities, and individuals launching urban agriculture ventures. These individuals and organizations engage in urban agriculture to achieve a range of lofty private and public goals: to improve their own health and economic situation, to improve food access in their communities, to create income and jobs, to beautify their communities, to educate about gardening and farming, to create a feeling of community, and to provide ecosystem services for their communities (Santo, Palmer, & Kim, 2016).

But what is urban agriculture? How is urban agriculture defined by government agencies and researchers? What does urban agriculture look like in real life? What production systems and business models do urban producers use?

What is the definition of "urban agriculture"?

Urban agriculture has been most concisely defined by Wagstaff and Wortman (2013) as *"all forms of agricultural production (food and non-food products) occurring within or around cities."*

Government agencies and the peer-reviewed literature have reached consensus on this broad definition of urban agriculture, **which includes all production in or near cities of plants or animals, whether for personal use or for sale, whether soil-based or hydroponic** (Diekmann et al., 2016; FAO, 2016; Hendrickson & Porth, 2012; Oberholtzer, Dimitri, & Pressman, 2014; USDA, 2016). Agricultural production near cities is further defined as "***peri-urban agriculture***" (Diekmann et al., 2016; Hendrickson & Porth, 2012; Oberholtzer et al., 2014).

What is the definition of "urban"?

Because urban agriculture includes a broad variety of agricultural production systems unified solely by their **location** in and near urban areas, defining "urban" becomes necessary to defining "urban agriculture."

Most definitions of urban and rural areas are based on measurements of **population density** and **land use**, but different branches and agencies of the United States government use slightly different thresholds and scales to delineate between urban and rural areas (John & Reynnalls, 2016). Both the USDA-Economic Research Service and the Office of Management and Budget define rural and urban at the county level (Cromartie & Parker, 2018; Donovan, 2015). This can be helpful in identifying counties where land prices and markets are likely to be influenced by nearby metropolitan areas (Heimlich & Anderson, 2001), and thus where agriculture might be considered "peri-urban." However, for the purpose of defining urban agriculture, the US Census Bureau's Urbanized Areas and Urban Clusters are more useful (Ratcliffe, Burd, Holder, & Fields, 2016), because they are defined and mapped at a more fine-grained scale (Figure1).

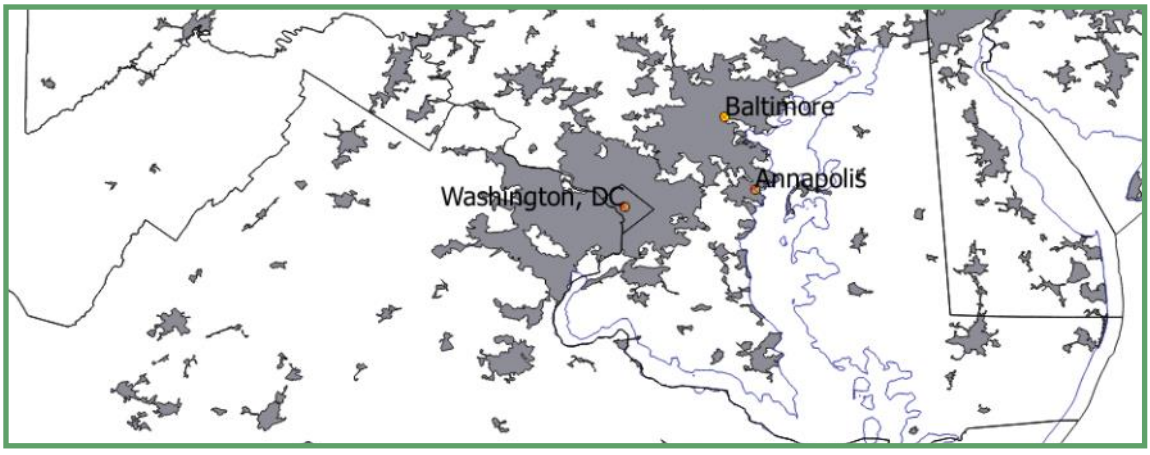

Figure 1: Urbanized Areas in Maryland, as defined by the US Census Bureau. Map made by Neith Little, using open-access mapping software Grass GIS and TIGERLINE shapefiles provided by the U.S. Census Bureau

What is urban agriculture? continued...

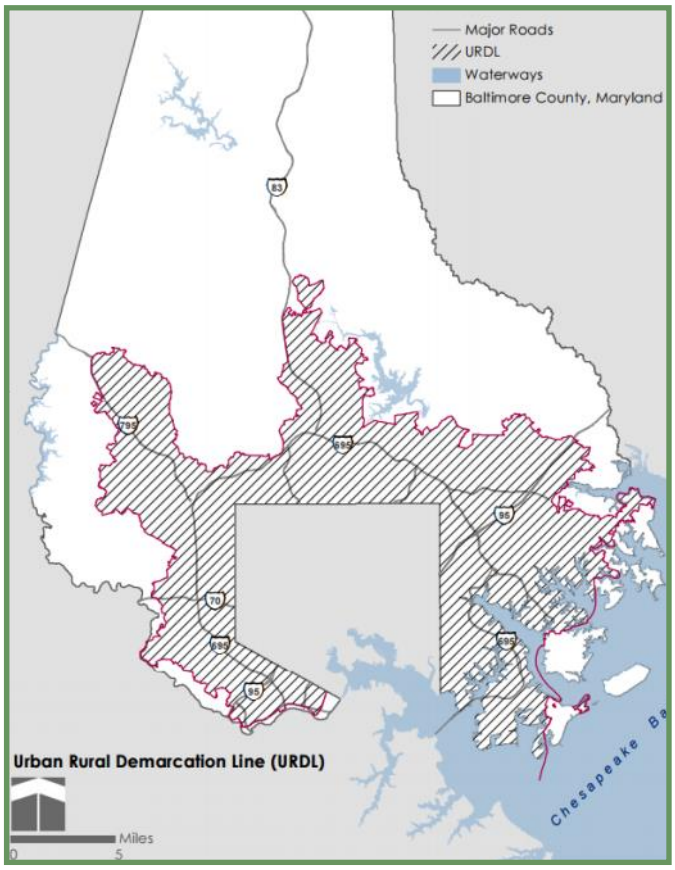

Figure 2: Urban Rural Demarcation Line in Baltimore County, MD, as mapped by the Baltimore County Planning Department

At the local level, zoning boards often differentiate between locations prioritized for urban development or for rural open space preservation. These zoning maps can also be helpful in defining urban agriculture (Figure 2).

What does urban agriculture look like?

Urban agriculture encompasses a broad spectrum of production methods and business models. Production systems can be broadly categorized as

1. Ground-based outdoor urban gardens and farms (Figure 3)
2. Hydroponic or aquaponic indoor production (Figure 4)
3. Rooftop gardens and farms (Figure 5)
4. Landscaping and nursery businesses
5. Urban livestock

More detail about different urban agriculture production systems will be covered in *Chapter 1: Urban Production Systems.*

Figure 3: Outdoor urban agriculture can be done in raised beds or containers, in-ground in native or imported soil, and in high tunnels or hoop houses. Picture taken at Whitelock Community Farm, Baltimore, MD by Neith Little, UMD Extension.

Figure 4: Basil grown hydroponically in a modified shipping container at Urban Pastoral, in Baltimore, MD. Photo by Neith Little, UMD Extension.

Figure 5: Okra growing on a retro-fitted green roof at Up Top Acres, in Washington, DC. Photo by Neith Little, UMD Extension.

What is urban agriculture? continued...

Similarly, urban agriculture encompasses a spectrum of business structures:

Many personal and community urban gardens exist, but for-profit and not-for-profit urban farms also grow crops for sale or distribution. Whether they are organized as for-profit or not-for-profit businesses, most urban farms include benefiting their communities among their goals. Not-for-profit urban farms might focus primarily on producing healthy, affordable food for their community, or on employing community members who face barriers to employment, while for-profit urban farms often use a "Robin Hood" business model, selling high-value crops to chefs and at farmers markets in order to be able to subsidize selling produce at affordable prices to their neighbors. Urban agriculture can be economically important to the grower, whether by producing food for personal use, creating supplemental income through a "micro-enterprise", or enabling urban residents to start businesses and become entrepreneurs.

Additionally, much grey area exists between gardening and farming. For example, "market gardening" is a term for a type of small-scale market-oriented production: growing a diverse variety of vegetables and fruits on small plots for direct marketing to local customers. And some community gardens are experimenting with Community Supported Agriculture subscription programs, whereby community members can access food either by the sweat-equity method of working in the garden, or by the market-based method of buying into the garden.

Those doing urban agriculture use a variety of words to describe themselves and the work they do, but usually government agencies and academics differentiate between gardening and farming by whether money changes hands. As soon as a product is sold for money, or a person is paid to do work, additional legal responsibilities begin to apply to an urban farm, related to regulations, taxes, and liability. More information about legal topics important to urban farmers will be covered in *Chapter 4.*

The rest of this guidebook will be written with urban farms in mind, with "urban farmer" defined as anyone who grows or raises agricultural products in an urban area, for sale, whether for-profit or not-for-profit.

What is urban agriculture? continued...

Urban farms usually "direct-market" what they produce, that is they sell directly to their customer through farm-stands, farmers' markets, CSAs, and direct sales to restaurants and institutional customers. Economies of scale, and proximity to customers, means that selling to wholesale distributors is less economically viable for small-scale urban farms than direct-marketing produce to urban customers. More information about markets and marketing of urban farm products to which urban farms sell their products will be covered in *Chapter 3: Marketing challenges and opportunities*.

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What does success look like for you? Setting goals for your urban farm

Having clear, concise, prioritized goals is the foundation of success. If you don't know where you want to go, you will not get there.

Having clear goals is also a necessary pre-requisite to risk management. There is no one right way to be an urban farmer, no one right set of choices for everyone, because everyone's situation, values, and goals are slightly different. Being able to verbalize what success looks like to you will help you weigh risks, rewards, and the time and resources available to you, and make informed decisions.

Please take the time to work through this section.

Start by putting your goals into your own words below, then use the prompts on the next page to refine your goals.

Then use the last page as work-space as you read the book to identify concrete actions you can take to work towards your goals.

For simplicity's sake, this section will use the word "farm" to refer to the urban agriculture operation. You could ask the same questions about a garden, landscaping business, or other urban agriculture endeavor.

In your own words, what is the purpose of your urban farm? What does success look like?

What does success look like for you? Setting goals for your urban farm continued...

Prompts to refine your goals:

What does financial success look like?

		Goal for five years from now	
	Current status	**Minimum necessary to continue**	**Ambitious but realistic goal**
Your salary			
Number of people employed			
Hourly wage of lowest paid employee			

What other large expenses does the farm income need to cover? _____

_____

What role should the farm serve in the community?

For example: employer, workforce development, gathering space, place where people can grow their own food, source of affordable food, source of high-quality food, education, beauty.

_____

_____

Who in the community should benefit from the farm? _____

_____

How should they benefit? _____

_____

What environmental services can the farm provide?

For example: storm water management; habitat for pollinators, birds, and other wildlife; shade; improved air quality

_____

_____

When these goals inevitably conflict, what is the one most important goal that you would be unwilling to sacrifice for the others? _____

_____

Use this space to re-write:

In your own words, what is the purpose of your urban farm? What does success look like? _____

_____

_____

_____

_____

What does success look like for you? Setting goals for your urban farm continued...

What actions will you take to work towards your goals?
For each chapter you read, come back to this page and write down one action you will take to improve the stability of your farm and get closer to achieving your goals.

Examples:

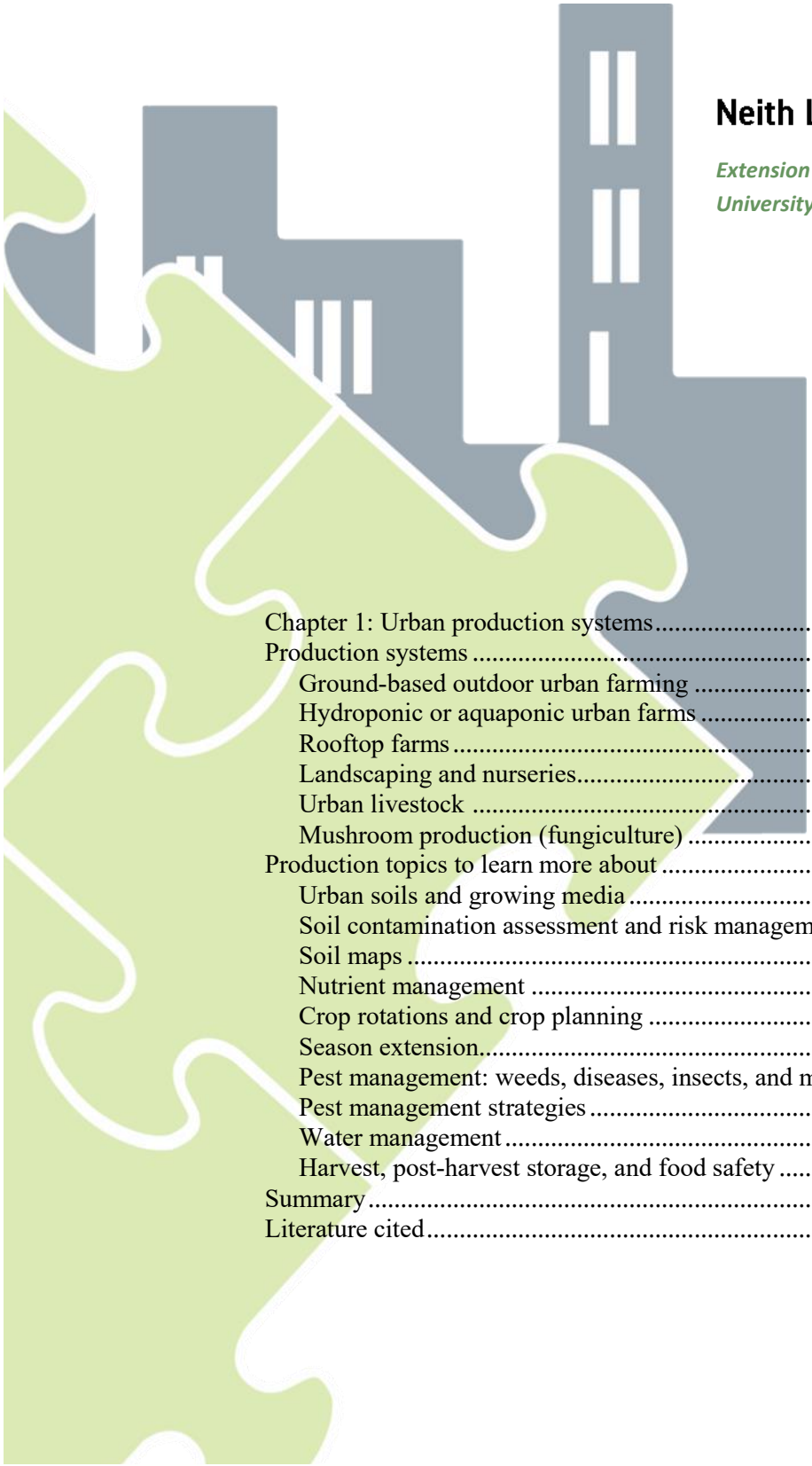
	What achievable, concrete action can you take?	How will this action move you closer to achieving your goals?	What steps do you need to take to achieve this action?
Chapter 1: Production systems	*Use row covers to exclude pests before flowering*	*Preventing insect damage will increase marketable yields, which will help me produce more food. It will also reduce the need for spraying, which will protect beneficial insects.*	*Purchase row cover fabric, read or watch videos about how to effectively use row covers, train others, monitor for pests getting past the row cover, remove the row cover before crops flower.*
Chapter 2: Economic assessment	*Fill out a cash flow spreadsheet*	*Identifying the points in the year when cash is short will help me know when financial problems will arise before they happen, which will help me plan ways to keep everyone employed.*	*Identify sources of income, identify expenses, gather data from last year if available, estimate where necessary, identify most helpful data to collect going forward.*

Write your own:

	What achievable, concrete action can you take?	How will this action move you closer to achieving your goals?	What steps do you need to take to achieve this action?
Chapter 1: Production systems			
Chapter 2: Economic assessment			
Chapter 3: Marketing			
Chapter 4: Legal risk management			
Chapter 5: The human element			

Chapter 1

Urban production systems



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Urban production systems

In agricultural contexts, the word **production** is used as short-hand to refer to all the activities involved in physically growing, raising, or making the **products** (vegetables, flowers, meat, eggs, hot sauce, an agritourism experience, etc.) that will eventually be sold. Important non-production agricultural activities include financial planning, marketing, complying with legal responsibilities, and managing human resources (see the other chapters of this guidebook).

This chapter will describe the types of **production systems** used in urban agriculture and introduce **important topics** that an urban farmer will need to consider to successfully produce a product for sale and manage production risks.

As described in the introduction, urban agriculture is diverse and includes a wide variety of production systems and business models. This chapter will focus on the scale and challenges most relevant to urban farmers and urban agriculture entrepreneurs who sell what they produce (whether for-profit or not-for-profit).

Figure 1: Outdoor urban agriculture can be done in raised beds or containers, in-ground in native or imported soil, and in high tunnels or hoop houses. Picture taken at Whitelock Community Farm, Baltimore, MD by Neith Little, UMD Extension.

Figure 2: Lettuce being grown in a high tunnel at Strength to Love 2, in Baltimore, MD. Photo by Neith Little, UMD Extension.

Production systems

Although any one individual urban farm might use multiple methods to grow crops and raise livestock, **urban agriculture production systems** can be broadly categorized as

- *Ground-based outdoor urban farming*
- *Hydroponic or aquaponic indoor production*
- *Rooftop farming*
- *Landscaping and nursery businesses*
- *Urban livestock production*
- *Mushroom production (fungiculture)*

A recent survey of urban farmers in Maryland found that the majority grew vegetables, fruits, and cut flowers in land-based production systems using raised-beds, in-ground growing, and high tunnels (Little et al. 2018). Across all production systems, the types of crops and livestock that fit most easily into an urban agriculture business are ones that are physically small, thrive in small spaces and challenging growing conditions, and have fast life cycles. The last point is important to maximize the amount of income or food produced per square foot. Slower growing crops (like fruit trees) or livestock (like oysters) can be important parts of an urban agriculture system, but their slow life cycles mean that they consume more space and time per unit of food produced than faster-growing crops and livestock.

Ground-based outdoor urban farming:

Ground-based outdoor urban agriculture is particularly common in cities with large amounts of vacant land, such as Baltimore and Detroit. Production practices

Urban production systems continued...

include growing in-ground in the native soil, on the ground (or even on pavement!) in imported **soil or growing media**, in raised beds or containers, and in high tunnels or hoop houses which are used to extend the growing season and protect the crops from extreme rain events (Figure 1 and 2). Most ground-based urban agriculture is used for diversified vegetable production, but some urban farms grow perennial fruits, and a subset of urban farms specialize in cut flower production.

Hydroponic or aquaponic urban farms:

Hydroponics means growing plants using water as the primary method of delivering nutrients. Hydroponic plants may be rooted in a small amount of non-soil growth medium, like a plug (Figure 3) or mat, or they may grow directly in the water.

Aquaculture is the practice of raising seafood in a defined space, for example raising fish in tanks or ponds or raising shellfish in cages in a bay.

A note about specialty ethnic vegetables: Urban growers may be particularly interested in growing specialty vegetable varieties featured in the cuisines of the ethnicities and cultures of the community around the urban farm. Learn more about specialty and ethnic crops here https://extension.umd.edu/resource/specialty-vegetables and in the references at the end of this chapter (Tubene and Myers 2008; Afantchao 2010; Mangan 2002).

Figure 3: Basil grown hydroponically in a plug floated in a foam mat on top of a tank of water, at Envista Farms at Southern Friendship Missionary Baptist Church, in Temple Hills, MD. Photo by Neith Little, UMD Extension.

Figure 4: Greens and fish grown aquaponically in a high tunnel using natural light, at University of the District of Columbia Food Hub, in Washington, DC. Photo by Neith Little, UMD Extension.

Figure 5: Collard greens grown hydroponically using both natural and supplemental artificial light at Envista Farms at Southern Friendship Missionary Baptist Church, in Temple Hills, MD. Photo by Neith Little, UMD Extension.

Figure 6: Basil grown hydroponically in a modified shipping container at Urban Pastoral, in Baltimore, MD. Photo by Neith Little, UMD Extension.

Urban production systems continued...

Aquaponics is a growing practice that combines hydroponics and aquaculture, where seafood is raised in tanks and filtered waste nutrients from the seafood are used to fertilize the plants.

Hydroponic or aquaponic urban farming is done in a wide variety of ways which differ in how much natural versus artificial light is used, and how the plants are suspended in the water. Plants may be grown in high tunnels using natural light (Figure 4), in greenhouses using both natural and supplemental artificial light (Figure 5), or indoors in buildings or shipping containers using solely artificial light (Figure 6).

Figure 7: Strawberries grown in a container on a rooftop at University of District of Columbia, Washington, DC. Photo by Neith Little, UMD Extension.

Figure 8: Okra growing on a retro-fitted green roof at Up Top Acres, in Washington, DC (note the Washington Monument in the background). Photo by Neith Little, UMD Extension.

Figure 9: Flowers growing on a retro-fitted green roof at Up Top Acres in Washington, DC. Photo by Neith Little, UMD Extension.

Figure 10: Plant nurseries and landscaping businesses located in cities are part of the urban agriculture. Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library.

Figure 11: Converting lawns to vegetable gardens is a popular trend, which edible landscaping companies are turning into a business model. Photo by Josh Rosenstein, Edible Eden, Baltimore, MD.

Urban production systems continued...

Figure 12: Urban agriculture can successfully integrate small livestock, such as rabbits or miniature goats. Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library

Common crops are microgreens, herbs, and leafy greens. A helpful analysis of the potential and limitations of artificial light is provided by a recent article by Pattison and colleagues (2018).

Greenhouse and indoor production is considered **Controlled Environment Agriculture**. **Zero-acreage farming** or **vertical farming** includes both production inside buildings and rooftop farming.

Rooftop farms:

Rooftop farms are most common in cities with high land and real estate costs, like Washington, DC and New York City. Some rooftop farmers build growing containers from scratch, but this may be limited to the edges of roofs where the existing architecture is strongest. Other rooftop farmers retrofit existing green roofs to produce crops for sale. Common crops are strawberries (Figure 7), vegetables (Figure 8), and cut flowers (Figure 9).

Landscaping and nurseries:

Landscaping companies, arborists, and plant nurseries located in cities are also considered a kind of urban agriculture (Figure 10). These types of businesses sometimes refer to themselves as part of "the green industry."

In addition to traditional landscaping companies, edible landscaping is a growing trend (Figure 11). Edible landscaping companies can be hired to build or maintain vegetable gardens and fruit plantings for private homeowners and for corporate or municipal buildings, the same way landscapers have traditionally planted and maintained ornamental plantings.

Urban livestock:

The types of livestock raised in urban areas are constrained by both space and local regulations. Some municipalities allow the keeping of some kinds of poultry (chickens, turkeys, quail, etc.), miniature goats, bees, or rabbits. More unusual, innovative "livestock" like fish, shellfish, earthworms (red wigglers, specifically), mealworms, snails, black soldier flies, and crickets are also raised by some urban farms. Be sure to check with your local zoning office and also find out what permits are required to keep animals in your area. For example, in Baltimore City, miniature goats are allowed with a permit, but other breeds of goats and sheep are not allowed. Please also note that local municipalities may regulate slaughter within city limits.

Learn more about raising the kinds of livestock suited to urban agriculture:
https://go.umd.edu/morelivestock

Urban production systems continued...

Figure 13: Mushrooms can be cultivated outdoors or indoors. The photo on the left shows mushrooms grown outdoors at Real Food Farm, Baltimore, MD and on the right is a display of mushrooms grown indoors by Sharondale Farms. Photos taken by Neith Little, UMD Extension

Poultry, goats, rabbits, bees, and composting earthworms are often integrated into outdoor urban production systems. For example, chickens might be allowed to forage for pests and vegetable scraps in a vegetable bed after harvest, and their droppings might become part of the nutrient input into the soil, whether by "direct deposition" or after composting the litter from the henhouse. Aquatic livestock are sometimes grown alone (aquaculture) or integrated into hydroponic crop production (aquaponics).

Integrating livestock and crop production systems has a lot of potential value for environmental and economic sustainability. However, when integrating livestock with crop systems food safety planning and nutrient management planning become more important.

Mushroom production (fungiculture):

Edible mushrooms can be cultivated outdoors on inoculated logs, or indoors on a substrate such as sawdust, grain, or compost. Outdoor production is popular with hobbyists and farmers who have small woodlots. Indoor production is more common among mushroom producers who specialize in growing mushrooms for sale and is particularly well-suited for urban agriculture that attempts to produce food indoors in underutilized buildings. For all mushroom production methods, success depends on careful attention to sterile procedures and inoculation methods.

Learn more about fungiculture:
https://go.umd.edu/moremushroom

Production topics to learn more about

Across production systems, there are several important **urban production topics** a grower will need to learn about and consider in their risk management planning:

- *Urban soils and growing media*
- *Soil contamination assessment and risk management*
- *Nutrient management*
- *Crop rotations and crop planning*
- *Water management*
- *Pest management: weeds, diseases, insects, and more!*
- *Season extension*
- *Harvest, post-harvest storage, and food safety*

There's a lot to learn. This section will give you a brief introduction to key concepts within each topic, to help you identify what you need to learn more about next.

Urban production systems continued...

Urban soils and growing media:

One of the common denominators I've observed among farmers who grow plants is that they will talk for hours about what they grow their plants in. Rural farmers? They complain about how many rocks they have in their soil and brag about their organic matter content. Ground -based urban farmers? They swap tips and tricks for building up healthy soil from construction rubble, reducing compaction, and avoiding contamination. Hydroponic urban farmers? They argue passionately about whether coconut coir plugs are better than peat moss plugs, or whether it's best to put the roots directly in the water (nutrient film technique) or in air with misted water and nutrients (aeroponics).

Whatever you grow your crops in, how well you understand it and manage it will have a huge impact on how well your plants grow.

What is soil? What is a growing medium?

Soil is the result of a mind-bogglingly long process wherein the rocks of the earth's crust are gradually broken down into very small particles by the environment and living organisms. Soil is made of tiny particles of rock (sand, silt, and clay are size classes of tiny rock particles), dead biological material (organic matter), and living organisms (from "macroinvertebrates" like worms down to microbes, fungi, and viruses).

In some places, growers are blessed with soil that is well suited to growing plants. In other cases, the native soil requires **amendment** with other materials to improve its ability to support life. Many outdoor urban growers have added so much organic matter in the form of compost or wood chips, that the "soil" they grow in might more accurately be called a growing medium. In some cases, growers start from scratch by importing soil from elsewhere or using a "soilless growing medium:" a mix of materials like peat, coconut coir, vermiculite, perlite, wood chips, course sand, or compost. Hydroponic or rooftop growers might use specialized growing media such as rockwool or clay pebbles (hydroton).

Historically, rural farmers grew in soil and plant nurseries grew in pots of soilless growing media. But, as in many other areas, urban farmers are trying new things and blurring the lines between what used to be distinct categories. Applied researchers are working hard to expand our scientific understanding of the growing media urban farmers use, and what best practices we can recommend.

If you are growing outdoors in soil, you'll probably need to learn about soil science: what size your soil particles are and how they affect how well your soil holds water and air, how your soil's chemical properties (pH, fertility, cation exchange capacity, organic matter) affect your crops, which organisms that live in soil are beneficial and which cause problems, and how you can work to improve some of these things. Various soil tests can tell you a lot about these soil properties.

If you are growing primarily in something other than soil, whether outdoors, in a high tunnel, or using hydroponics, you may be able to learn from the experience and research of the plant nursery industry. You'll still need to understand your growing medium's chemical properties, but you'll need to use tests designed for growing media, not soil. You'll also need to pay particular attention to your growing medium's salinity (electro conductivity) and the quality of the water you use. And when deciding what growing medium to use remember that, as in many parts of life, a mix is usually better than too much of one thing. Soil contamination assessment and risk management:

This topic brings up a lot of fear and strong emotions, which makes it extra important to make decisions using good information about how soil contamination works and about your specific situation.

What are soil contaminants?

Most contaminants of soil that might pose a risk to human health fall into one of two categories: the so-called "heavy metals" (lead, arsenic, cadmium, chromium, copper, mercury, selenium, zinc) and complex organic compounds (solvents, pesticides, creosote, petroleum). Heavy metals are naturally

Urban production systems continued...

occurring elements and are relatively easy to test for—many soil labs offer a test that will measure all of these metals for $40 to $100. Labs that offer tests for organic compounds are more rare, and the tests are more expensive and are specific to different types of organic contaminants.

Organic compounds eventually break down over time into smaller molecules, but metals are elements—they're as small as they're going to get in a human time-scale—so once they're in a soil you're pretty much stuck with them. On the other hand, some organic compounds can be taken up by plants' roots into the parts of plants that people and animals eat. But at normal soil pH most metal contaminants bind so tightly to the soil that plant roots cannot take them up. This means that if your soil has heavy metals in it, the most important risk management tactic is to keep the soil itself out of people's bodies: avoid growing crops who's edible portions contact the soil, and minimize dust that could be inhaled.

Knowledge is power

The good news is that soil contamination is very site-specific, and many sites are relatively fine. Surveys of lead in soils across Baltimore, MD have found that only a small percentage of sites surveyed have lead levels higher than the EPA's threshold of 400 ppm (Mielke et al. 1983; Yesilonis et al. 2008). This is likely because after the fire of 1904, Baltimore required most buildings to be made of brick, which is less likely to have exterior lead paint (interior lead paint is another story). Thus atmospheric deposition from leaded gasoline was probably the largest source of lead outdoors. Johns Hopkins University's Center for a Livable Future is in the middle of an ambitious Safe Urban Harvests study in Baltimore, so keep an eye out for updated data soon.

So does this mean you don't need to worry? No, this means that it's worth spending the money to test your soil for heavy metals so that you will know what you are dealing with. If you are early in the process of finding a place to grow, getting the soil tested for heavy metals will help you find a site to grow that has less metal contaminants. And if you already have a growing site, testing will give you information you need to decide whether you need to take steps to reduce your risk.

How much is too much?

This is the tough question, and unfortunately the answer is not cut and dry.

> *Even if you are farming in a rural area, depending on your site history it might be worth testing for heavy metals. Many old fruit orchards have high lead and arsenic contamination, because from 1890 to 1947 lead arsenate was commonly used as a pesticide in fruit orchards across the US (Schooley et al. 2008).*

Legally, there are no federal standards for acceptable levels of contaminants in agricultural soil. The EPA sets thresholds for contaminants in brownfield sites that must be cleaned up before being returned to public use (EPA 2001, EPA 2002), but they will be the first to admit that those thresholds were never intended to be used for agricultural decision-making (EPA 2011).

States and local municipalities sometimes set their own standards for soil contaminations. The Maryland Department of the Environment (MDE 2008) and the New York State Department of Environmental Conservation have set local Soil Cleanup standards (NYSDEC & NYSDH 2006). Baltimore City has a draft Soil Safety Policy for Food Production which requires growers who want to make food production the official zoned use of their site to first test for soil contamination and have a plan to reduce risks based on the results of those tests (Baltimore Office of Sustainability 2014).

When weighing the risk posed by soil contaminants at your specific site, consider federal and local standards, expected local background levels in uncontaminated soils, and whether children will be gardening at your site.

Urban production systems continued...

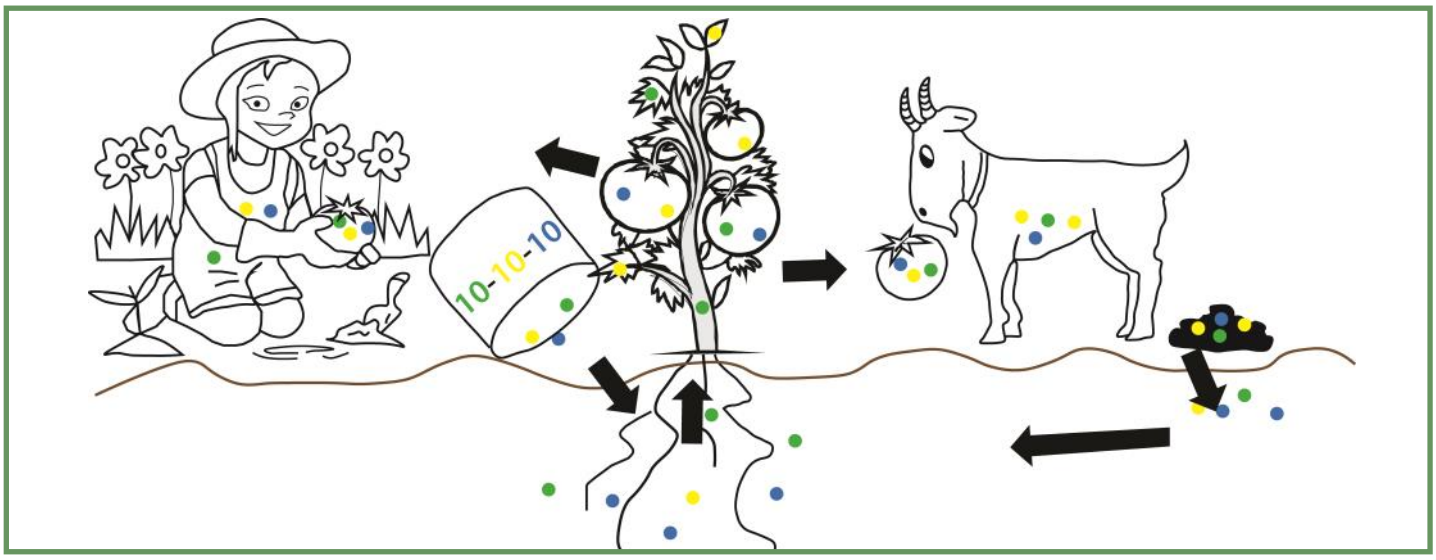

Figure14: Plants take nutrients up through their roots and use them to build their bodies, including the parts we and animals eat.

Risk mitigation

At the pH that is best for crop growth, metals bind tightly to soil particles (Brennan and Lindsay 1996; Elliot et al. 1986) and are unlikely to be taken up into the edible part of a crop (Brown et al. 2016; Chaney et al. 1984). Rice is an important exception to this rule, because it is prone to taking up arsenic into the rice grains (Wang et al. 2003).

This means that on sites with metal contaminants, the most important mitigation goal is to keep the soil out of people's bodies. Tactics that minimize how much farmers and gardeners are exposed to contaminated soil will also reduce the risk to customers. Relatively easy risk management strategies are to

- avoid growing crops where the edible portion contacts the soil (root crops, lettuce),
- keep bare soil covered with mulch, cover crops, or grass (under crops, in walkways, adjacent to growing areas),
- minimize how much you disturb the soil (low-till or no-till),
- avoid tracking soil into vehicles and living areas (wear gloves, use designated clothes and shoes for farming/gardening, wash dirty boots before leaving the growing area),
- in high risk situations (very high contaminant levels, children gardening, growing root crops or lettuce) grow in raised beds filled with a soil or growing medium that is known to be uncontaminated.

Soil maps:

If you grow outdoors, a map may already be available showing your soil's texture and other characteristics.

What about phytoremediation?

Over recent decades, many growers and researchers have been excited by the prospect of using plants, particularly sunflowers, to selectively take up contaminants from the soil and remove them (phytoextraction).

The bad news is that lead is usually so tightly bound to the soil that trying to extract it with plants would take centuries, and you'd still need to figure out what to do with all that contaminated plant matter.

The good news is that because lead binds so tightly to the soil, it is much more practical to phytostabilize, by adding organic matter and other materials to make the lead even less bioavailable and more dilute in the soil. For a good summary of the research, see Blaustein (2017).

Urban production systems continued...

This information can be a valuable resource to help you learn about and better manage your soil. The United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) offers a searchable online map of soils called the Web Soil Survey: http://bit.ly/3kmcfu0

Unfortunately, in urban areas it is common for construction to have changed the soil at a site since the mapping was done. This means that the Web Soil Survey is a good place to start, but you will need to determine whether the information it provides is still accurate for your site. Additionally, the Web Soil Survey was not designed to be accurate at very small scales. Fortunately, the USDA-NRCS is aware of this issue and has been working to conduct revised soil surveying specific to urban areas: https://go.umd.edu/NRCSurbansoils

Plants need nutrients, like nitrogen (N), phosphorus (P), and potassium (K), to build their bodies. Different soil amendments add different amounts and forms of nutrients to the soil.

Soil fertility amendments could be fertilizers, composts, manures, or other materials that contain plant nutrients. Fertility amendments for sale should come with a label that reports their nitrogen (N), phosphorus (P), and potassium (K) concentration, by weight. These three nutrients are needed by crops in large amounts and are sometimes referred to as NPK.

Usually the label will report the NPK concentration as three numbers. The first number is the nitrogen concentration, the second is the phosphorus concentration, and the third is the potassium concentration. Nutrients in commercial fertilizers tend to be concentrated and quickly available. Nutrients in compost and manures tend to be less concentrated, and in bigger molecules that become available over a longer period of time. Compost and manure also supply other nutrients and organic matter.

A fertility test can tell you what nutrients are already in your soil, and what nutrients you need more of. Soil and growing media use different test methods to measure fertility. Different tests should be used to measure the fertility of soils and growing media.

More accurately, in the US most fertilizer labels and recommendations are calculated as available nitrogen (N), phosphate (P_2O_5), and potash (K_2O) instead of elemental nitrogen (N), phosphorus (P), and potassium (K). But for pronounceability's sake the N-P_2O_5-K_2O ratio is often referred to as the N-P-K ratio. Because we pretty much all use the same system, you should not have to convert between available phosphate (P_2O_5) and elemental phosphorus (P), so you don't really need to worry about it. N-P_2O_5-K_2O and N-P-K should mean the same thing in most situations where you will encounter them. Unless you go to Europe, or into a research lab. Then all bets are off.

In Maryland, if you farm and sell at least $2,500 worth of crops per year, you are legally required to have an official nutrient management plan. To learn more about this rule, and how to get a nutrient management plan, go to http://extension.umd.edu/anmp

Learning more about how nutrients cycle through the soil, atmosphere, plants, and animals can help you improve your crops' growth and use purchased inputs most efficiently. To start with, know that nitrogen is particularly mobile in the soil, water and air, and that it exists in many different forms. This means that in places that get a lot of rain during the growing season (like the eastern United States), measuring soil nitrogen at any one moment will not tell you much about how much nitrogen will be available a month from then. So many soil tests will not report nitrogen measurements and will instead recommend adding nitrogen based on book values for how much nitrogen specific crops need.

Nitrogen is also often the nutrient that limits plant growth and is particularly expensive to purchase using organic amendments. So if growing using organic methods is important to you, you will need to learn about cover crops. Leguminous cover crops (beans and peas) fix nitrogen from the air and put it into the soil. Other cover crops can "catch" nitrogen left over in the

Urban production systems continued...

soil at the end of the growing season, and help hold it until the next spring. To learn more about cover crops, a good book to start with is Managing Cover Crops Profitably by Andy Clark. A free digital version is available online from Sustainable Agriculture Research and Education: https://www.sare.org

Nutrient management can be an intimidating topic, because it involves chemistry and math. But if you keep learning more every year, you'll find that understanding your crops' nutrient needs, what your soil provides, and what you add to it will help you grow better crops and spend your money more wisely.

Crop rotations and crop planning:

What is crop rotation and why would someone do it?

Imagine a simplified urban farm with three beds: A, B, and C. In bed A, you plant tomatoes, in bed B you plant collard greens, and in bed C you plant peas (Figure 15). Next year, out of habit, you do the same thing. And the same thing the year after that.

If you keep doing this year after year, eventually you run the risk of having diseases specific to each crop build up in the soil. But because each of these crops come from different plant families, many diseases that infect tomatoes do not infect collard greens, and vice versa. So a good strategy to prevent disease is to rotate your crops from bed to bed every year (Figure 16). This means that tomato disease agents left in the soil after year 1 will have no suitable host in years 2 and 3, and will be more likely to die off before tomatoes are planted again in year 4. This is crop rotation.

By rotating your crops like this, you not only reduce the risk of disease, you also take advantage of the fact that your peas are a nitrogen-fixing legume. Every year they pull some nitrogen out of the air and leave it in the soil. If you grow a crop that needs a lot of nitrogen, like collard greens, in a bed that had peas the previous year, the collard greens will benefit from the nitrogen that the peas left in the soil.

An advanced crop rotation plan will balance many factors like diseases and nutrient needs. To learn more,

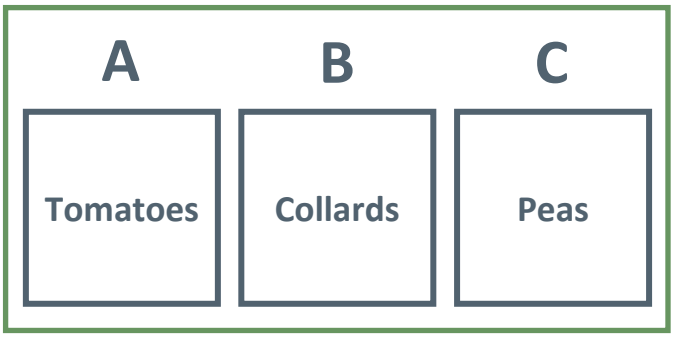

Figure 15: Start thinking about crop rotation by imagining you have three beds (A, B, and C), and you plant the same crop in each bed every year.

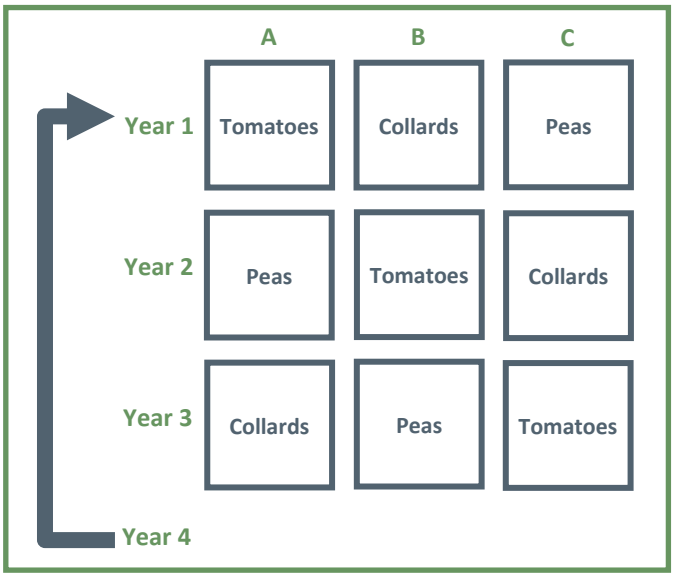

Figure 16: An example of a simple crop rotation design. Every year you shift which crop you plant in which bed. This helps break up disease and pest life-cycles, and helps replenish the nutrients in the soil.

a good book to start with is *Crop Rotation on Organic Farms,* by Charles L. Mohler and Sue Ellen Johnson. A free digital version is available online from Sustainable Agriculture Research and Education: https://www.sare.org

Less information is available about how to apply the principles of crop rotation to indoor production, but understanding what pests and diseases affect which families of crops is still valuable. The next topic, crop planning, is crucial for both outdoor and indoor farms.

Urban production systems continued...

> ***Community Supported Agriculture (CSA):***
> ***A type of direct-marketing where customers pay the farmer for a weekly box of produce throughout the growing season. Most CSA "shares" are paid up-front in the winter or early spring, but some farmers accept multiple smaller payments. Some urban growers use other terms like "produce subscription" or "Netflix for vegetables" to market a CSA share to customers who are unfamiliar with the concept.***

What is crop planning and why would someone do it?

In the Marketing chapter, you'll hear from Ginger and Kim that they encourage farmers to plan where you will sell your crops before you even plant them.

So let's imagine you plan to sell vegetables through a Community Supported Agriculture (CSA) weekly farm share. You want to deliver to thirty customers a box of at least three different kinds of fresh, delicious vegetables every Friday, from June through September. You can then plan backwards from this goal to figure out what you need to plant when, and how much of it! This is crop planning.

Seed labels and catalogs can be a helpful resource in this process. Some things to consider include

- the average frost dates in the spring and fall for your location (if growing outdoors),
- what crops are best suited to the cool parts of the season (lettuces, brassicas, and most herbs, for example) and what crops need the heat of summer to thrive (tomatoes, peppers, okra, and sweet potatoes, for example),
- which crops can be direct-seeded and which will need to be started earlier as transplants,
- how much space different crops take up and roughly how much produce you can expect each plant or square foot to yield,
- roughly how much time different crops need to produce their edible portion ("days to maturity" on a seed packet) and whether it will be possible to "succession plant" multiple crops in one spot at different times in the growing season.

Succession planting has two meanings:

1. **Growing multiple crops in the same space, but separated by time.** For example, you could plant spinach early in the spring, pick spinach leaves throughout the spring, pull up or till under the spinach in late spring, and plant tomato transplants in the spinach's place. The spinach cannot tolerate the heat of summer and will bolt and the tomatoes need the heat of the summer and cannot be planted outdoors before the last risk of frost, so you grow them in the same place in succession to maximize how much food you can produce per square foot.
2. **Planting the same crop in different places, but on multiple planting dates**, to stagger their maturity and harvest dates. For example, you could plant one row of cilantro every week in April, so that you would be able to cut big beautiful bunches of cilantro from each row in succession for your weekly farmers market in May.

Crop planning is important not just for CSA farmers, but also for other market outlets such as farmers' markets or contract growing. For example, farms that are associated with schools need to carefully plan how to deliver food during the school year, which is not the traditional growing season in the US! Tufts University offers a very helpful crop planning lesson module at https://nesfp.org/resources/crop-planning-module.

For crop planning in Maryland's climate, this color-coded planting calendar is a fantastic resource: https://go.umd.edu/plantingcalendar Urban farms that use high tunnels to extend the growing season and farms that use hydroponic methods to grow indoors will also find crop planning crucial.

Urban production systems continued...

In high tunnels or hoop houses, crop planning will help you efficiently use your limited sheltered space and work with the seasons. In particular, if you are trying to grow year-round, note that in northern and Mid-Atlantic climates even in a high tunnel plant growth slows dramatically in the winter. Farmers I've known who have successfully used their high tunnels through the winter have been careful to get their winter crops planted at just the right time in the fall so that the crop will have time to grow to the early edible stage before the cold sets in, and the high tunnel will then almost act as a stasis field through the coldest part of the winter—keeping the crops alive and fresh but not growing much more, so they can be harvested in the winter when few other sources of local produce are available. Elliot Coleman's books *Four Season Harvest* and *The Winter Harvest Handbook* are the foundational texts on season extension in cold climates. University of Delaware Extension has researched recommended planting dates for high **tunnels in our climate** region https://go.umd.edu/hightunnelplanting. **In hydroponic and aquaponic urban farming, efficiently producing** the most food per unit of space and time is crucial for covering the start-up, maintenance, and utility costs of a hydroponic system. In this case, the **succession planting** part of crop planning is particularly important. Successful hydroponic farmers spend time figuring out how long it will take their system to produce different kinds of crops, and how to stagger planting dates to enable them to harvest continuously.

For example, as an aquaponic urban farmer you might start a small amount of several different kinds of greens and herbs as plugs every week, so you can plant a few flats of new plugs in your float tank every couple of weeks and harvest a few flats every week for a farmers market (succession planting type 2 above).

Alternatively, a hydroponic or aquaponic grower selling a large amount of lettuce to a cafeteria every month might plant their entire growing space at one time on a date calculated so that the lettuce will be mature in time for the contracted delivery date. However, such a grower would need a large amount of space for plug production so they could be ready to plant again immediately after harvest (succession planting type 1 above).

In summary, crop rotation is an important strategy to manage production risks such as pest and disease pressure and nutrient deficiency. Crop planning is an important strategy to manage market risks, enabling you to plan what and when you grow with your end market in mind, and enabling you to take advantage of the opportunities offered by the lower supply of fresh, local vegetables in the early spring, late fall, and winter.

Season extension:

Growers producing food for the local market use a variety of methods to extend the growing season beyond what is traditionally possible in the local climate.

Season extension methods can be as low-tech as starting transplants indoors and laying inexpensive row cover cloth over small metal hoops to create "low tunnels."

High tunnels or hoop houses are mid-range options. As opposed to greenhouses, high tunnels are usually made of less expensive materials with flexible plastic coverings, in-ground or raised beds (as opposed to bench-top production), and passive heating and cooling such as row covers and roll-up sides. Some local zoning boards consider high tunnels as temporary structures (check your local rules first!). The relatively low construction and maintenance costs and the potential (with significant work!) to move a high tunnel to a new site if necessary have made high tunnels popular with urban farmers.

Penn State Extension has particularly good resources on high tunnel construction and management. And the

USDA-NRCS has offered incentive grants to help farmers build high tunnels to extend the growing season.

Greenhouses with permanent plastic or glass walls, supplemental lighting, and heating systems, are much more expensive and are mostly used at a small scale for

Urban production systems continued...

transplant production and at a large scale by plant nurseries to produce potted plants for sale to public customers or to landscapers and garden centers.

Indoor production could also be considered a form of season extension. There are also hybrids of the various methods, with some aquaponic urban farmers setting up their systems in high tunnels and ground-based urban farmers using double-envelope systems of low-tunnels within high tunnels to maximize the temperature differential between what the crop experiences and the outside temperature.

As a side-note, low tunnels are also a valuable pest-exclusion technique. They can be used to exclude pests that have a known, brief population surge every year or to give young crops a head start to outgrow pest pressure .

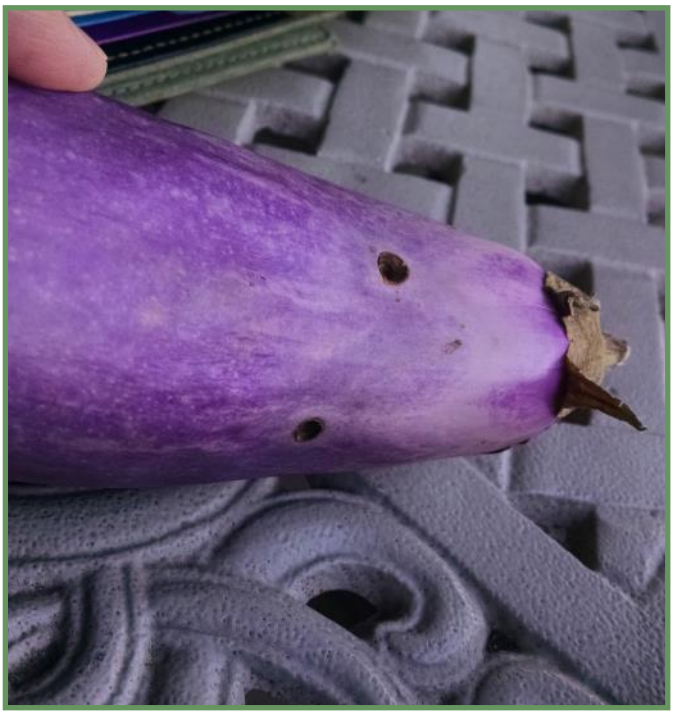

Figure 17: The holes in this eggplant are an example of the kind of cosmetic damage that insect feeding can cause. Photo by Neith Little.

Pest management: weeds, diseases, insects, and more!

Pests can quickly eat up an urban farmers' yields and profits—quite literally!

How to prevent and control pests is a huge topic; much bigger than can be satisfactorily covered here. This section will introduce the "big three" types of pests, basic elements of a pest management strategy, brief thoughts on how these pests and strategies apply to urban farming, and links to references where you can learn more.

The big three: Some people think of pests as specifically animals: insects, other invertebrates, and vertebrate critters like rodents, deer, and birds. Other times people will include weeds and diseases within the definition of "pests." All these kinds of pests can reduce crop yield, harm livestock, and cause cosmetic damage that makes fruit and vegetables undesirable to customers (Figure 17).

- **Weeds** are plants that compete with your crops for space, light, and nutrients. If you raise livestock, weeds might be a feed source, or certain poisonous weeds might be a risk to your animals. To help you identify weeds on your farm, I recommend either Weeds of the Northeast, by Uva, Neal, and DiTomaso or Weeds of the South by Bryson and DeFelice.

  Plant identification apps are also available, as well as Facebook groups: https://www.facebook.com/groups/156706504394635/

- Different **diseases** affect plants and animals. If you are growing crops in Maryland, University of Maryland's Plant Diagnostic Lab is an amazing resource for help diagnosing plant diseases: https://extension.umd.edu/plantdiagnosticlab.

  If you are raising livestock, the best resource on animal diseases is a veterinarian who is used to working with agricultural animals. If you are raising chickens and other poultry, UMD's small flock production website has some great introductory articles and videos on preventing and monitoring for poultry diseases: https://go.umd.edu/4154by9

Urban production systems continued...

- **Invertebrate and vertebrate pests** feed on crops and livestock and spread diseases. Invertebrate pests include things like slugs, nematodes, and mites, as well as true insects like thrips, aphids, grasshoppers, beetles, and caterpillars. On outdoor urban farms in Baltimore, particularly troublesome invertebrate pests include flea beetles (multiple species), squash bugs (*Anasa tristis*), harlequin bugs (*Murgantia histrionica*), the caterpillars of cabbage moths (*Mamestra brassicae*), and spotted and striped cucumber beetles (multiple species, can transmit squash wilt disease). In high tunnels and indoor production, aphids, thrips, whiteflies, and spider mites can quickly build up to high populations.
- When it comes to vertebrate pests on urban farms, everyone asks about rats. But anecdotally, what urban farmers have told me is that rats prefer to eat trash rather than vegetables. Rats may feed on fruit crops, particularly melons. In general though, I have found squirrels to be a bigger problem than rats for urban production, not because squirrels eat that much produce but because they appear to obsessively dig up any loose soil, killing small seedlings. An urban farmer named Clayton Williams taught me to use bird netting to exclude squirrels, and I have found that to work well (Figure 18). Mulch can also help deter squirrel digging behavior.
    - Deer, gophers, and groundhogs are also important vertebrate pests of urban farms. Excluding deer can be difficult and expensive, especially once they know something delicious is growing on your site. Jonathan Kays of UMD Extension has a comprehensive guide to deer exclusion options: https://extension.umd.edu/resource/managing-deer-damage-maryland-eb-354
    - When it comes to livestock, invertebrate parasites are the main concern. Sheep and goats, for example, are plagued by parasites. For more information, see UMD's small ruminant website: https://www.sheepandgoat.com/

Figure 18: Bird netting held up by small poles and staked down around the edges can protect small seedlings from being uprooted by squirrels. Photo by Neith Little.

    - Fish and other aquaculture "livestock" can also be infected by various diseases and parasites. To learn more, explore UMD's aquaculture resources at https://go.umd.edu/3k9T5aH

Pest management strategies:

Ideally, pest management follows a circular sequence of prevention, management, and learning (Figure 19).

What tools you use to prevent and treat problems will vary depending on whether you use organic methods, but the process of preventing, scouting for, treating, and reassessing is important for all growers.

Pest management strategies that urban growers use in particular include

- using row covers and high tunnels (with netting on the vents) to exclude invertebrate and vertebrate pests;
- using crop rotation to break disease and insect life cycles (can be challenging in small spaces);
- removing heavily infested crops and planting something from a different crop family;
- planting a diversity of crops;
- planting native plants to encourage beneficial insects such as predators of pests;

Urban production systems continued...

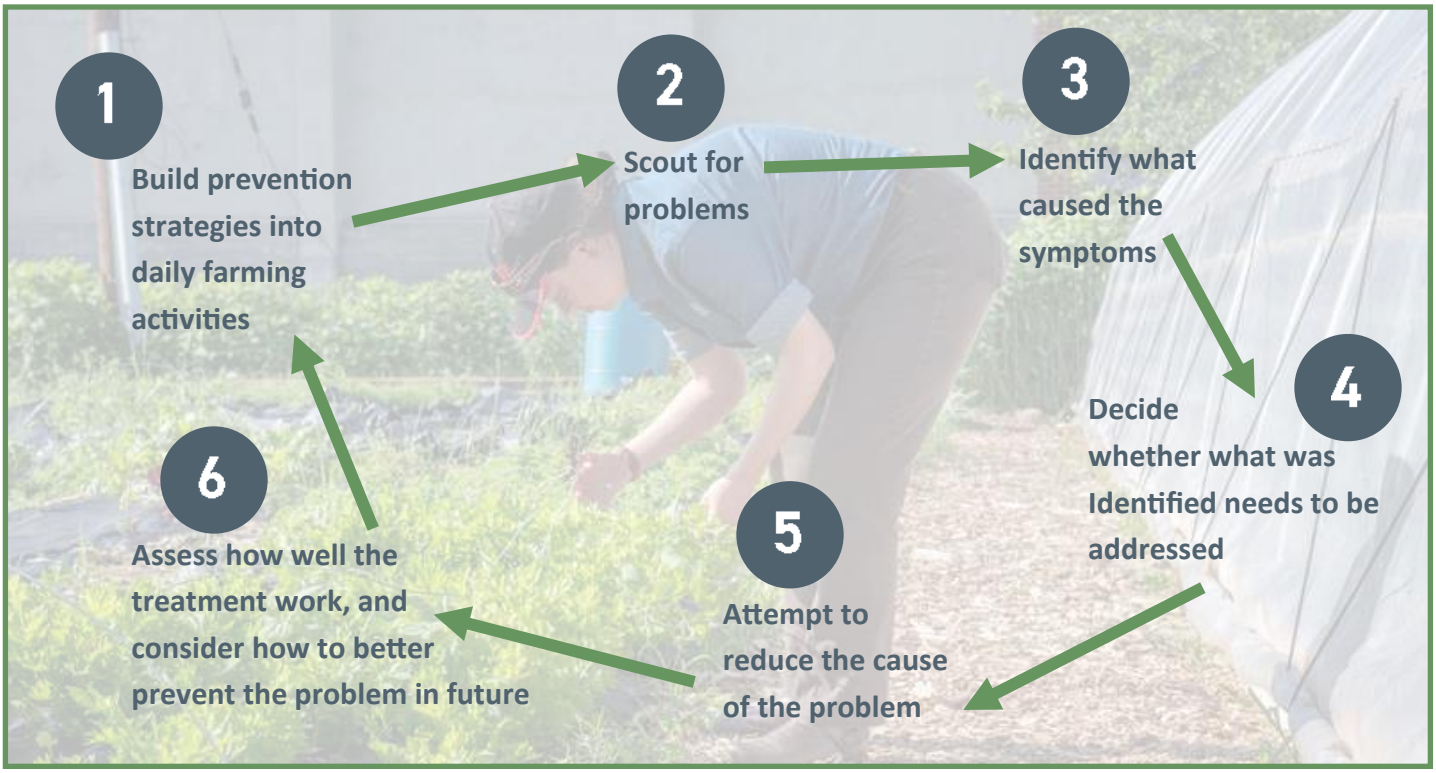

Figure 19: Pest management is an iterative process, in which you build prevention into your farming system, address problems as they arise, and learn how to better prevent those problems in the future. Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library.

- trap cropping and intercropping;
- mulching to reduce weed pressure;
- tarping or using the stale seedbed technique to kill weed seedlings;
- using insect traps to monitor infestations (be careful with baited traps, which can attract pests more than you want them to).

To learn more about pest management, here are the resources developed by UMD Extension:

- For ornamental, cut flower, and greenhouse production: http://extension.umd.edu/ipm
- For vegetables: http://extension.umd.edu/mdvegetables

Water management:

Most urban growers rely on municipal water for irrigation, which can be expensive. This makes using water efficiently especially important. On some urban lots, getting access to municipal water can be a big challenge.

Some growers also collect rainwater, and most growers I've spoken with want to. This is one of those practices that makes a lot of sense financially and environmentally, but makes food safety scientists nervous because of potential risks of contamination if rooftops or other surfaces exposed to birds and rodents are used for rainwater collection. Researchers and Extension Agents are working on improving our recommendations for best practices for utilizing rainwater and other "non-traditional" water sources. For now, the best risk management practices recommended are to apply collected rainwater using drip irrigation or another precise method to the soil surface, so that it does not contact the edible portion of crops.

Urban farm irrigation systems are hand-watering with hoses and watering cans, overhead watering using sprinklers in high tunnels, drip irrigation using flexible tubing with small holes or emitters both outdoors and in high tunnels, and recirculating water in aquaponic and hydroponic systems. Hand-watering requires the lowest

Urban production systems continued...

Figure 20: Drip irrigation pairs well with mulch to direct water to crop roots while reducing weed pressure. Relatively inexpensive timers are available to automate irrigation through drip or overhead systems. Photos taken by Neith Little at Carroll County office of University of Maryland Extension.

initial equipment investment, but over time costs a great deal of the growers' time. Over-head sprinklers in high tunnels can be useful for cooling crops like lettuce and discouraging pests like spider mites, but overhead irrigation can also increase disease pressure, especially for tomatoes. Drip irrigation pairs well with mulching and is considered the most efficient method, but it does require an investment in tubing, as well as annual maintenance to repair leaks and to roll up tubing before tillage.

Irrigation water testing can provide important information about minerals, pH, and salinity. This is particularly important for growers using high tunnels, greenhouses and hydroponic/aquaponic systems (Will and Faust 2010).

Harvest, post-harvest storage, and food safety:

How you harvest your crops and how you store them until your customers purchase them has an important impact on the quality of your product and on food safety risk management.

For most vegetables and fruits, especially leafy greens and herbs, harvesting first thing in the morning before the day gets hot is a good practice to prevent wilting and increase the shelf life of your produce. Tomatoes are an exception to this rule, because they are so susceptible to fungal and bacterial diseases. Avoid harvesting or otherwise disturbing tomatoes when the leaves are wet from dew or rain, because damaging the leaves when wet can increase the chance of infecting the tomato with a plant disease.

The appropriate temperature and humidity for storing harvested crops varies depending on the type of fruit or vegetable. In general, for optimal taste and shelf-life, cool-season crops like kale and cilantro, need to be kept cool and prevented from drying out while warm-season crops like tomatoes and basil should not be refrigerated or stored damp. Some crops, such as winter squash and sweet potatoes, benefit from a "curing" stage between harvest and eating.

In general, plant diseases do not infect human beings. But human diseases, such as E. coli or Salmonella, can contaminate produce. Basic food safety risk management practices include training anyone harvesting to wash their hands, cleaning and sanitizing tools for harvesting, storing produce at appropriate temperatures, restricting animals' access to places where fresh produce is growing, and waiting 120 days between applying manure and harvesting. To learn more about food safety, see the UMD Extension food safety page here: http://extension.umd.edu/foodsafety

Urban production systems continued...

Summary

Whether you grow vegetables, raise livestock, or culture mushrooms, taking the time to learn more about the topics in this chapter will help you better use the resources available to you to maximize how much you produce while minimizing the impacts of challenges like pests and weather.

Soils, growing media, and nutrient management are the foundation of a farm and understanding them better will unlock your plants' productive potential. Soil testing for metal contaminants can empower you to know whether you need to use best practices to protect the health of yourself and your customers. Crop rotation is a powerful tool for preventing pest and disease problems and improving the fertility of your soil. Crop planning will enable you to plan your production schedule to meet your marketing goals. Proactive pest management will help you prevent problems in the first place, and deal effectively with pest problems that do arise. Season extension offers affordable tools for protecting your crops from uncertain weather and climate, and growing crops at times of the year when market demand is higher. Harvesting at the right time of day and storing harvested crops appropriately will protect the results of all your hard work, and adopting good food safety practices will protect the health of your customers.

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Chapter 2

Economic assessment and risk management

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Economic assessment and risk management

Most of the work of a farm is in producing and marketing crops and livestock. But will this effort be economically viable? And what are the economic risks? These are questions that all farm businesses must answer regardless of whether they are for-profit or not-for-profit. To stay in business, the farm must be economically sustainable. To measure economic viability, this chapter will focus on two economic measurements – profit and cash flow.

What is profit?

Profit is the calculation of income minus expenses. Urban farms produce crops, livestock, and other products for sale which generates income. To produce these products, inputs are required such as seed, compost, feed, labor, machinery, structures, etc. Subtracting the expenses associated with these inputs from sales income results in profit.

What about not-for-profits?

Not-for-profit organizations need to understand their finances just as much as for-profit businesses do.

Not-for-profit organizations do make profits (or positive net income). The difference is that not-for-profit organizations do not distribute profit to the business owners or shareholders. Both for-profit companies and not-for-profit organizations can reinvest profit back into the business

The concepts and financial statements in this chapter are used by both for-profit and not-for-profit organizations. However, there are some differences in vocabulary and accounting logistics. Some of these differences will be pointed out throughout the text. For more financial management information specific to not-for-profit organizations, see the resource list at the end of this chapter.

Setting profit goals:

Sometimes farmers focus on production and marketing and at the end of a season hope that there is a sufficient profit. However, good managers will set profit goals right along with production and marketing goals and

Definition of profit

Income (also called **gross income** or **revenue**)

minus **Expenses**

equals **Profit** (also called **net income**)

focus on all three throughout the production season. How much profit do you want to make? Every farm business is different.

For some farm businesses, the owner/operator does not pay themselves a salary during the year as an expense. In this case, the profit must cover the owner/operator's time and management. Some businesses want to make enough profit so they do not have to borrow money to grow the business – to buy more land, structures, machinery and other capital items. The profit must also cover loan princpal payments which are not expenses. This is further explained in the section on cash flow.

Many small farms, including urban farms, are part time operations. Since the farmer has a full time job elsewhere to support themselves, they may have low expectations for farm profit or for the farm to give them a reasonable wage for their time. But "farming for nothing" soon discourages people.

So considering these and other issues, a farmer should set goals for how much profit they want to make right from the beginning. Then, meeting this goal is dependent on the two factors - income and expenses.

Setting income goals:

Income is dependent on the amount of each agricultural product that you plan to produce and sell, as well as the market price for those products. So as you plan production and marketing you should also be setting your income goals. A good systemized approach for doing this is outlined in the book "The Organic Farmer's Business Handbook" by Richard Wiswall. Farmers are encouraged to get this book which goes into

Economic assessment and risk management continued...

> ***Restricted funds: a special kind of income***
>
> *Sometime income comes with restrictions on how it may be used. For example, most grants are awarded for specific purposes (specified in the grant proposal). If a grant is administered on a reimbursement basis, you will need to make the approved expenditures and then submit records of the expense to the granting agency for reimbursement. If the grant funds are entrusted to you, at the end of the grant period you will likely need to return any funds that cannot be shown to have been spent on the approved expenses. For examples of how financial statements can be modified to keep track of restricted and non-restricted funds, see the additional resources at the end of this chapter.*

much more detail than can be covered in this chapter.

Calculating expenses:

The other factor that affects profit goals is expenses. As mentioned before, expenses are associated with the inputs required for producing agricultural products. Income minus expenses equals profit. Expenses can be described in different ways but here we will describe three types of expenses – variable/operating, fixed/ overhead, and depreciation.

Variable/Operating expenses:

Variable/Operating expenses are directly tied to producing crops and livestock and usually increase or decrease proportionately to the increase or decrease in production. For example, if you decide to produce more crops, you will need to purchase more seed, fertilizer, and other crop inputs. If you produce more livestock, you will need to purchase more feed. So as you set your production goals, you should calculate the levels of inputs you need to purchase and these expenses will have to be subtracted from income to calculate profit.

Fixed/Overhead expenses:

You incur some fixed/overhead expenses that are not directly associated with the amount of agricultural products you produce. For example, expenses like property taxes, insurance, loan interest, utilities, and office supplies do not vary with the amount of crops and livestock produced. These are often fixed at a certain amount.

Some expenses may be both operating and overhead. For example, if you hire labor on an hourly basis and it fluctuates according to needs of production, then it is a variable/operating expense. If you have salaried employees that get a fixed wage, then it is a fixed/ overhead expense.

Depreciation:

Producing crops and livestock often requires machinery, structures, and other capital items which add to the expenses of the farm. Since these items last for several years, you do not subtract the entire cost for use of equipment and structures in the year they are purchased. Instead, you depreciate their value; that is, you prorate their cost over the useful life of the machinery and structures so you charge only part of the cost against each year's income. Sometimes this is referred to as a "non-cash" expense since you do not expend cash for the prorated depreciation cost, only for the purchase. Some farmers disregard depreciation in calculating profit since it is a non-cash cost. But doing so overstates the amount of profit. The profit looks good until you have to replace a worn out tractor or high tunnel. Then you realized the profit wasn't as good as it looked. Deducting depreciation each year helps you calculate the true profit.

Calculating the profit:

When you subtract out variable/operating, fixed/ overhead, and depreciation expenses from the income, the result is profit. With the profit, you can pay yourself (If you haven't already expensed a salary for yourself), grow the business, and pay down debt principal.

What is enterprise profit?

We have discussed profits in relation to the whole farm. Since you likely produce several agricultural products,

Economic assessment and risk management continued...

you can view each different crop or livestock enterprise as a separate profit center so you can determine which enterprises contribute more to the overall profit of the farm and which ones contribute less. You can then decide what to do with the less profitable enterprises. Calculating profits for individual enterprises is similar to calculating profits for the entire farm, with one difference. In your calculations, you include only income and expenses pertaining to the individual enterprise. This process is called enterprise budgeting. Methods for enterprise budgeting are also included in Richard Wiswall's book mentioned earlier.

Using an income statement to calculate and project profit

To calculate your farm profit from the past year or project the profit for the coming year, you summarize income and expenses on an income statement or projected income statement, sometime called profit-and-loss statement or statement of activities. The income statement should cover a given accounting period, usually the calendar production year.

Historical versus projected income statements:

Income statements should be constructed for both historical analysis of farm profits and projecting future profits. The past year is always a good baseline for projecting profits for the next year. Figure 1 illustrates an income statement for an example farm. It records the historical income, expenses, and profit for the past year and projections for the coming year.

Example farm income statement:

The example farm is a part time small urban farm where the owner works nights and weekends on a 10,000 square foot plot (a little smaller than ¼ acre) in the city. The plot is intensely cultivated with a variety of vegetables produced in high tunnels and raised beds early spring through the summer peak period and into the late fall. Much of the land is double or triple cropped during the year. The produce is marketed through a CSA, on-farm sales, and minor sales to local restaurants.

INCOME STATEMENT	Last year	This year projected
Income		
CSA subscriptions	6,000	7,800
On-farm market sales	4,000	5,000
Other sales	3,000	3,000
Total cash farm income	**13,000**	**15,800**
Expenses		
Seed	300	350
Fertilizer and compost	400	450
Pest management supplies	300	350
Boxes	200	250
Supplies	400	500
Repairs and maintenance	500	500
Insurance	800	800
Utilities	1800	1800
Marketing	400	400
Office supplies	300	300
Other expenses	400	400
Interest	200	200
Owners labor	5,000	5,500
Hired labor	0	0
Depreciation	1,000	1,000
Total expenses	**12,000**	**12,800**
Profit (loss)		
Profit (loss)	**1,000**	**2,000**

Fig. 1: Example income statement. The income statement records historical income, expenses, and profits and projects estimated income, expenses, and profits for the coming year.

Income - The income from three main marketing channels for last year is listed in the income sections – 10 member CSA ($600x10=$6,000), on-farm sales ($4,000), and minor sales to local restaurants ($3,000). Last year this farm brought in a total income of $13,000.

Economic assessment and risk management continued...

Expenses - The expense section first lists the variable/ operating expenses of seed, fertilizer and compost, pest management supplies, and boxes. Next comes the fixed/ overhead expenses of supplies, repairs and maintenance, insurance, utilities, marketing, office supplies, other expenses, and interest.

The owner/operator provides all of the labor for managing and working the farm and values this labor at $5,000. It is important for owner/operators to "pay themselves" for the work that they do. This can be accounted for by including it in the expenses like in this example. If a farm also hires other labor, this would be included on an additional line.

Depreciation is include as an expense for prorated cost of the high tunnel, equipment, and tools as discussed earlier. Total expenses last year were $12,000.

SCHEDULE F (Form 1040) — **Profit or Loss From Farming** — OMB No. 1545-0074

Department of the Treasury, Internal Revenue Service (99)

► Attach to Form 1040, Form 1040NR, Form 1041, or Form 1065.

► Go to *www.irs.gov/ScheduleF* for instructions and the latest information.

Attachment Sequence No. **14**

Name of proprietor | Social security number (SSN)

A Principal crop or activity | B Enter code from Part IV ► | C Accounting method: ☐ Cash ☐ Accrual | D Employer ID number (EIN), (see instr)

E Did you "materially participate" in the operation of this business during 2018? If "No," see instructions for limit on passive losses ☐ Yes ☐ No

F Did you make any payments in 2018 that would require you to file Form(s) 1099 (see instructions)? ☐ Yes ☐ No

G If "Yes," did you or will you file required Forms 1099? ☐ Yes ☐ No

Part I Farm Income—Cash Method. Complete Parts I and II (Accrual method. Complete Parts II and III, and Part I, line 9.)

1a	Sales of livestock and other resale items (see instructions)	1a				
b	Cost or other basis of livestock or other items reported on line 1a	1b				
c	Subtract line 1b from line 1a				1c	
2	Sales of livestock, produce, grains, and other products you raised				2	
3a	Cooperative distributions (Form(s) 1099-PATR)	3a		3b Taxable amount	3b	
4a	Agricultural program payments (see instructions)	4a		4b Taxable amount	4b	
5a	Commodity Credit Corporation (CCC) loans reported under election				5a	
b	CCC loans forfeited	5b		5c Taxable amount	5c	
6	Crop insurance proceeds and federal crop disaster payments (see instructions)					
a	Amount received in 2018	6a		6b Taxable amount	6b	
c	If election to defer to 2019 is attached, check here ► ☐			6d Amount deferred from 2017	6d	
7	Custom hire (machine work) income				7	
8	Other income, including federal and state gasoline or fuel tax credit or refund (see instructions)				8	
9	**Gross income.** Add amounts in the right column (lines 1c, 2, 3b, 4b, 5a, 5c, 6b, 6d, 7, and 8). If you use the accrual method, enter the amount from Part III, line 50. See instructions ►				9	

Part II Farm Expenses—Cash and Accrual Method. Do not include personal or living expenses. See instructions.

10	Car and truck expenses (see instructions). Also attach **Form 4562**	10		23	Pension and profit-sharing plans	23	
11	Chemicals	11		24	Rent or lease (see instructions):		
12	Conservation expenses (see instructions)	12		a	Vehicles, machinery, equipment	24a	
13	Custom hire (machine work)	13		b	Other (land, animals, etc.)	24b	
14	Depreciation and section 179 expense (see instructions)	14		25	Repairs and maintenance	25	
15	Employee benefit programs other than on line 23	15		26	Seeds and plants	26	
16	Feed	16		27	Storage and warehousing	27	
17	Fertilizers and lime	17		28	Supplies	28	
18	Freight and trucking	18		29	Taxes	29	
19	Gasoline, fuel, and oil	19		30	Utilities	30	
20	Insurance (other than health)	20		31	Veterinary, breeding, and medicine	31	
21	Interest (see instructions)			32	Other expenses (specify):		
a	Mortgage (paid to banks, etc.)	21a		a		32a	
b	Other	21b		b		32b	
22	Labor hired (less employment credits)	22		c		32c	
				d		32d	
				e		32e	
				f		32f	

33	**Total expenses.** Add lines 10 through 32f. If line 32f is negative, see instructions ►	33	
34	**Net farm profit or (loss).** Subtract line 33 from line 9	34	
	If a profit, stop here and see instructions for where to report. If a loss, complete lines 35 and 36.		
35	Reserved for future use.		
36	Check the box that describes your investment in this activity and see instructions for where to report your loss.		
a	☐ All investment is at risk. b ☐ Some investment is not at risk.		

For Paperwork Reduction Act Notice, see the separate instructions. Cat. No. 11346H **Schedule F (Form 1040)**

Figure 2: Internal Revenue Service Schedule (IRS) F (Form 1040) is the form required by the IRS to calculate and report profit for tax purposes. Note that this form is subject to change from year to year. You can access the up to date form at https://www.irs.gov/

Economic assessment and risk management continued...

Profit - Subtracting the $12,000 expenses from the income of $13,000 results in a profit of $1,000. Remember that the owner has already paid themselves $5,000 for their management and labor so this $1,000 can be used to pay principal payments on the loan and for growing the business.

The farmer has projected the income statement for the coming year. Income is projected to increase through adding 3 more CSA subscriptions and additional on-farm market sales. Increasing income will also increase some expenses because of the additional production. Profit is projected to increase from $1,000 to $2,000.

Calculating profits for taxes:

An income statement is the one financial form that is required by the Internal Revenue Services for all farm businesses. It is used to calculate profit for tax purposes. The IRS version of an income statement is Schedule F (Form 1040) Profit or Loss From Farming (Figure 2). Note that this form is subject to change from year to year. You can access the up to date form at https://www.irs.gov/

Notice that the two main sections of the Schedule F are Part I Farm income and Part II Farm Expenses. In Part I there are lines for various types of farm income. Most farm income is recorded on line 2, "Sales of livestock, produce, grains, and other products you raised. Part II is used for recording farm expenses. Notice that variable/ operating expenses and fixed/overhead expenses are intermixed on the form and that depreciation is on line 14. The IRS specifies methods for calculating depreciation which are often used by farmers for calculating depreciation for management purposes. To understand more about Schedule F and about tax depreciation calculation, refer to IRS publication 225, Farmer's Tax Guide (IRS 2018).

How to improve farm profits?

Generating profits should influence most decisions as a farm manager. Many things affect the level of profit. This, in turn, determines remuneration for the operator's management & labor, the growth potential of the farm business, and the ability to pay off debt. A good farm manager should ask himself/herself the following questions often.

- Am I making the most profitable use of my land and structures with the agricultural enterprises I have chosen?
- Are my operating inputs at the optimal level?
- Is my equipment the proper size for my farm?
- Do I acquire the most favorable terms on borrowed money?
- Does my borrowed money earn a rate of return greater than the interest rate I pay?
- Are my field operations timely?
- Do I plan and carry out good marketing strategies?
- Do I make good use of my time and hired labor?
- Do I take advantage of new technologies?
- Do I maintain good business relations with others?
- Do I manage my taxes to increase after tax income?
- Are my operator management and labor allowances reasonable?
- Am I allowing my farm operation to grow by putting back some of my profits into the business?

There is no one clear path to improving profits. Rather, profitability is a state of mind in which a farm manager carefully controls every aspect of the operation to make the most profitable and economic use of the resources available to the farm business.

What is cash flow?

Another important economic measurement is cash flow. Cash flow is closely related to profitability but there are significant differences. While profit is concerned with the income versus expenses for a production period such as a calendar year, cash flow is concerned about the ending cash balance on hand at given points of time during the production period, the "checkbook balance"

Economic assessment and risk management continued...

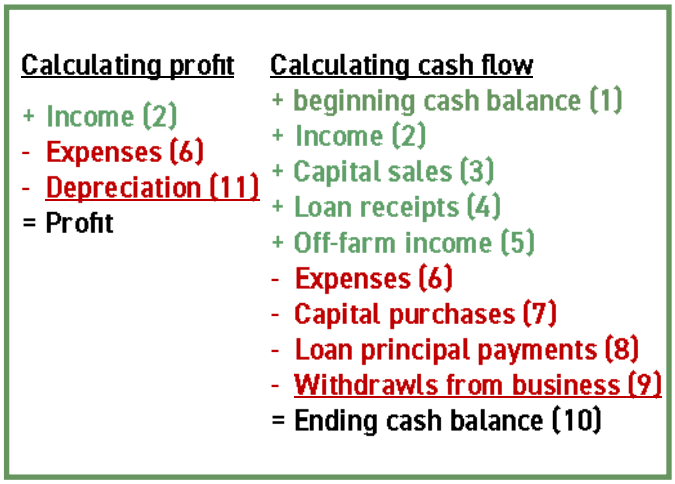


Figure 3: The calculations to determine profit and cash are similar, but include different kinds of income and expenses. The text of this section explains these differences, marked by numbers in the figure and the text to help you refer back and forth.

so to speak. Cash flow also considers cash inflows and outflows not include in calculating profit. Assessing cash flow can help you plan to have cash on hand at any time when you need it to both pay for seasonal expenses and to weather unexpected expenses and emergencies.

Cash flow periods:

Cash flow usually covers the same production period as the income statement but cash flow is almost always broken down into smaller time periods such as a quarter or a month. For each period, the cash flowing out of the business is subtracted from the cash flowing into the business to calculate the ending cash balance – the amount of money on hand at the end of each period. If the owner/operator is doing a business plan for the new enterprise, then the cash flow budget is part of the business plan. Many new farms fail, not because the new idea is bad or because profit is insufficient in the long term, but because there is not sufficient cash in the early stages of the project.

Income & expenses versus inflow & outflows:

A cash flow budget does not determine if the business is profitable. An income statement is required to determine profitability. There is a difference between income & expenses and cash inflows & outflows. Figure 3 contrasts these differences. In the following paragraphs, numbers in parentheses refer to lines in Figure 3.

In calculating profit and cash flow, both include income (2) and expenses(6). Since income and expenses are the major financial transactions of a business, there are great similarities in the two calculations. But there are also significant differences.

Cash flow does not consider depreciation(11). It is not a cash flow. You do not "write out a check" for it. It does not affect the ending cash balance.

However, cash flow considers closely related items – capital purchases(7) and capital sales(3), things that last more than one year. If you buy machinery or build structures, you don't expense the entire purchase price in the year you buy them, you depreciate them(11). However, you must have the cash to purchase these capital items. So capital purchases(7) are included in the cash flow. If you sell used machinery or other capital item, that is not income to include in calculating profit. You produce crops and livestock. You do not produce capital items and you are not in business to sell them. But when you sell a used capital item, cash flows into the business(3).

If the farm needs to buy a piece of equipment this year like a walk-behind tiller, the price of the tiller is included in the cash flow(7) because the entire cost has got to come from somewhere. If you don't have the money, then you may borrow money(4) to buy the tiller. This is not income like selling crops. When you are borrowing money you have to pay it back(8). When you pay the principal back, it is not like buying seed or fertilizer. You are trading cash for reduced debt. So loan principal payments(8) are only included in the cash flow, not in calculating profit. Interest on loans is an expense and is included in the expenses(6) of calculating profit and cash flow.

Sometimes money flows into the business from other sources(5) For example, you may invest some of your personal savings or wages from an off-farm job in the farm. This inflow is not the same as income for selling agricultural products so it is not included in calculating profit. But, it is a cash inflow to be included in calculating cash flow(5). Sometimes you will withdraw

Economic assessment and risk management continued...

INCOME STATEMENT	Last year	This year projected
Income		
CSA subscriptions	6,000	7,800
On-farm market sales	4,000	5,000
Other sales	3,000	3,000
Total cash farm income	13,000	15,800
Expenses		
Seed	300	350
Fertilizer and compost	400	450
Pest management supplies	300	350
Boxes	200	250
Supplies	400	500
Repairs and maintenance	500	500
Insurance	800	800
Utilities	1800	1800
Marketing	400	400
Office supplies	300	300
Other expenses	400	400
Interest	200	200
Owners labor	5,000	5,500
Hired labor	0	0
Depreciation	1,000	1,000
Total expenses	12,000	12,800
Profit (loss)		
Profit (loss)	1,000	2,000

		This year projected				
CASH FLOW	Last year	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Projected total
Cash inflow						
Beginning cash balance	500	1,400	5,300	5,150	6,450	500
CSA subscriptions	6,000	7,800	0	0	0	7,800
On-farm market sales	4,000	0	1,500	2,500	1,000	5,000
Other sales	3,000	0	1,000	1,500	500	3,000
	0	0	0	0	0	0
Capital sales	0	0	0	0	0	0
Loan receipts	0	0	0	0	0	0
Off-farm income	0	0	0	0	0	0
Total cash inflow	13,500	9,200	7,800	9,150	7,950	16,300
Cash outflow						
Seed	300	100	200	50	0	350
Fertilizer and compost	400	100	250	100	0	450
Pest management supplies	300	100	150	100	0	350
Boxes	200	250	0	0	0	500
Supplies	400	125	125	125	125	500
Repairs and maintenance	500	200	100	100	100	500
Insurance	800	400	0	400	0	800
Utilities	1800	600	300	300	600	1800
Marketing	400	100	100	100	100	400
Office supplies	300	75	75	75	75	300
Other expenses	400	100	100	100	100	400
Interest	200	50	50	50	50	200
Owners labor	5,000	1,000	1,000	1,000	2,500	5,500
Hired labor	0	0	0	0	0	0
Capital purchases	0	500	0	0	0	500
Withdrawals from business	0	0	0	0	0	0
Loan principal payments	1,100	200	200	200	200	800
Total cash outflow	12,100	3,900	2,650	2,700	3,850	13,100
Ending cash balance						
Ending cash balance	1,400	5,300	5,150	6,450	4,100	3,200

Figure 4: Income statement and cash flow for example farm. Note the differences and similarities between these two financial statements. Compare what is included here with the formulas in Figure 3.

money from the business (9) such as giving yourself a dividend from the profit. This is not the same as buying inputs so it is not included in calculating profit but it is included in the cash flow as a withdrawal from the business (9).

In summarizing cash flow, the yearly production period is usually broken down into quarters or months. For each of these periods, you begin with the beginning cash balance(1) You add income(2) and subtract expenses(6). You add capital sales(3) and subtract capital purchases (7). You add loan receipts(4) and subtract loan principal payments(8). You add off-farm income(5) and subtract withdrawals from the business(9). These calculations result in the ending cash balance for the period(10).

Example farm cash flow:

Figure 4 illustrates the cash flow for the farm in the previous example. The income statement is also included to contrast the similarities and the differences in these two financial statements. Compare these financial statements with the formulas in figure 3.

The second column of the cash flow shows the cash

flow for last year. At the beginning of the year there was a cash balance of $500. The sales income and production expenses are the same as they are on the income statement. But notice that depreciation for the high tunnel and equipment is not included in the cash flow because it is a non-cash allocation of these capital purchases. Notice also that there are loan principal payments for a loan that was received to purchase the high tunnel two years ago.

At the end of the year, the cash balance was $1,400, $900 more than at the beginning of the year. This does not say anything about the profitability of the farm. The income statement shows that last year's profits were $1,000. However, if a business is profitable, it is more likely to have a positive cash flow.

The farm's cash flow for each quarter of the coming year and the total for the year is projected in columns 3-7. The cash flow reflects the increase in income and expenses. Notice that the income and expenses vary across each quarter. For example, the CSA subscription payments are received in the first quarter while most of the on-farm market sales are in the second and third quarters. Most of the seed, fertilizer and compost, and pest management supplies are incurred during the second quarter while other expenses are incurred evenly across the quarters. In the first quarter a new tiller is going to be purchased for $500. The owner also plans on increasing their bonus at the end of the year by $500. Loan principal payments are decreasing since the loan balance has decreased in this amortized loan. The cash flow is projected at $3,300 at the end of the year.

Usefulness of cash flow:

The cash flow is one of the most useful tools a farm manager has for managing the business. The reason that a cash flow budget is useful is because it forces you to think through all production and marketing aspects of your business. As mentioned before, many businesses fail, not because the idea is bad or because long term profit is insufficient, but because of short term cash flow problems. In developing cash flow, you have to estimate the quantity of products you will sell and the prices that you will receive. You have to estimate when the products will be sold. To produce these estimates you will need to develop a marketing plan. You have to understand the production process completely in order to project costs. You have to understand the time-line for production. You have to know how much land, labor, machinery, and raw materials you will need and when you will need them. You have to know the prices for all of these inputs. You will also have to estimate storage and transportation costs to get your products to the market. You will have to estimate the timing of all inflows and outflows through the year. This tool helps you to understand the short term cash flow problems that often accompany new activities.

The cash flow will help you understand if you need to borrow money, how much money you will need to borrow, and when you can pay the loan back. A cash flow budget is a useful tool for explaining the financial implications of your enterprises to a lender from which you are applying for a loan. Most bankers or lenders will require a cash flow budget as part of a business plan.

Sometimes you may employ a financial advisor to help you complete the cash flow budget. The main purpose of a financial advisor is to help you lay out the cash flow budget and to help you think through the business. But it is important that you understand all of the numbers in the cash flow budget and how they were calculated because you are ultimately responsible for the success or failure of the business. If the business fails, it is likely because you did not do a realistic cash flow budget.

Computer spreadsheets such as Microsoft Excel are used to make the cash flow calculations easier to do. There are generic spreadsheet templates that can be adapted to your business. There are blank income statement and cash flow forms at the end of this chapter (Figures 5 and 6).

Economic assessment and risk management continued...

Solving cash flow problems:

Most farms at one time or another experience cash flow problems. The cash flow budget is one of the best ways to pinpoint these problems, but it will not solve cash flow problems, rather it reveals symptoms of problems. Measures can then be taken to deal with the actual problems. The following are some methods for dealing with cash flow problems.

Improve profitability - Cash flow problems may be the symptom of the greater problem of low profitability. In approaching cash flow problems, first analyze profitability. Increasing profitability is often the best way to remedy cash flow problems. Once the farm is profitable, you can then concentrate on cash flow problems. However, in adopting strategies to remedy cash flow problems, be sure these strategies do not adversely affect profitability. For example, borrowing money to solve a cash flow problem will result in additional interest expense that can hurt profitability. Treating cash flow problems at the expense of profitability is a short term remedy that may have detrimental long term effects.

Prevent the problem - It is important to identify cash flow problems before they occur. This "preventative medicine" will allow time to alter plans and remedy the problems by timing cash inflows and cash outflows. It's useful for determining the best method to maintain cash reserve. There is no one strategy that will work at all times. Rather, a combination of strategies is the basis for solving cash flow problems.

Consider alternative enterprises - Carefully look at the combination of enterprises on the farm. Perhaps another enterprise would increase cash flow while at the same time maintaining profitability. For example, putting a greater focus on spring vegetables may generate cash flow during a time when there are a lot of crop inputs to purchase. Value-added products and agritourism are other ways to create additional enterprises based on existing resources.

Managing expenditures - A very effective way to improve cash flow is through cost control, for example, postponing capital purchases. You should frequently check to see if levels of inputs are economical. Are the best seeds and seeding rates being used? Is fertilization at an economically optimal level or are you applying too much fertilizer? Can commercial fertilizer be reduced through better management of compost or livestock wastes? Would an investment in mulch pay for itself in reduced time spent weeding? Can labor be better utilized to decrease expensive capital outlays? Is there better machinery that would improve labor efficiency? Can machinery costs be cut through reduced tillage methods? Can repair bills be reduced through on-farm repairs? Can interest costs be lowered through better loan rates or timing of loans? Every cost should be scrutinized to determine if it can be reduced without adversely affecting profitability.

Improving marketing plans - Improving farm profitability should be the main goal in formulating a marketing plan. As mentioned before, poor marketing is one of the main reason for business failure.

Leasing or renting - The down payments and loan payments associated with purchasing land, buildings and machinery sometimes put a heavy burden on cash flow. Leasing or rental payments may be considerably lower and will free cash that is needed for other obligations. However, assess the impact of these leasing and rental arrangements on profitability of the farm operation.

Reduce business withdrawals - If you are withdrawing profits from this business for personal use, carefully review the amount you are withdrawing. Record all personal expenditures. Many individuals are surprised by how much they spend for personal living expenses. Distinguish between necessities and wants. Postpone unneeded personal expenditures. Base personal withdrawals on the performance of the farm business and/or off farm income. Be realistic in determining the amount of personal withdrawals the farm can support.

Economic assessment and risk management continued...

Off-farm employment - Rely more on part-time or full-time employment off the farm. Off-farm employment may also include health care insurance and other benefits. Carefully consider any additional expenses related to off-farm employment such as transportation, clothing, child care, etc.

Refinancing - Cash flow problems are sometimes caused by too much short term debt on the farm. For example, some farmers use credit cards or short term operating loans to finance long term assets. Normally credit cards or operating loans are used to purchase variable inputs such as seed, transplants, feed, fertilizer, compost, row covers, etc. Every effort should be made to pay off the credit card or loan balances as the farm produce is sold to minimize interest expenses. Credit cards or operating loans should not be used for long term assets such as equipment or structures because the receipts from one production period cannot be expected to cover the costs of assets that last several production periods. The idea of self-liquidating loans suggests that a proper financing program for loans would synchronize the input's life and pattern of earnings with the length of repayment schedule on the loan used to obtain the input. That is the reason that farm equipment is financed for five to seven years. Financing it for a shorter period may cause cash flow problems. If adverse weather conditions result in insufficient receipts to cover the operating loan, rolling this loan over to the next year may cause cash flow problems. Perhaps the loan should be refinanced over a longer period so the cash shortfall can be absorbed over several production periods. Refinancing can effectively deal with cash flow problems but sometimes it may just be buying time. If the farm is not profitable, refinancing is a warning flag to indicate the problem is being prolonged.

Liquidating assets - Selling capital assets is usually a more drastic measure for dealing with cash flow problems. However, it may be justified. Sell unprofitable assets first. Excessive personal assets, unused machinery, unproductive land, etc., are good candidates. Consider downsizing the operation through selling off excess capital, but only after doing an in depth long term financial analysis of the impact of these corrective actions. Do not sell assets without discussing it with creditors who have a lien on those assets.

Maintaining credit reserves - One should always maintain a credit reserve. If a farmer borrows to the limit, bills will accumulate and creditors will line up at the door. When experiencing cash flow problems let creditors know what is being done to solve the problems. Avoiding creditors may just aggravate the problem.

Maintain or improve credit scores - Check your credit score with the major credit bureaus to see if there are any weaknesses that will make it more difficult to get loans from lenders who rely upon these scores to make their loan decisions. Over time, it is possible to improve credit scores through good credit management. This will increase borrowing capacity.

Grants, fundraising, and recruiting investors - A grant or investment will not make an unprofitable organization profitable. Before applying for a grant or recruiting investors, start by working through the financial statements in this chapter. Ask yourself the following questions:

- How much is the shortfall between my current income and my current expenses?
- What expenses do I need to fund?
- How would my use of that funding change my operation to eliminate that shortfall after the funding has run out?

Any funder, whether a granting agency or a loan officer or an investor, will want to know how their funds will be used, and what their return will be on their investment. Loan officers and investors will expect their investment to be paid back with interest. Granting agencies will expect their funds to be used to make measurable impact on the issues specified in the grant Request for Applications (RFA) or Request for Proposals (RFP). In general, granting agencies like to fund new, exciting projects. Grants usually cannot be used to pay for annual

operating expenses, and almost no grants allow for capital purchases such as buildings, land, or large pieces of equipment.

Recordkeeping:

A manager of a farm needs a good record keeping system to analyze profit and cash flow. Many businesses will contract out their accounting to an accounting firm. These firms typically use generally accepted accounting principles and produce standardized financial statements including the income statement and statement of cash flow. However, it is too often the case that the main reason a farm hires an accounting firm is to file tax reports. While this is an important job of the accountant, managers who fail to use financial statements produced by the accountant may make poor financial decisions. Many small farms do not generate sufficient income to hire an accountant or bookkeeping. If this is your situation, then you must do the record keeping yourself. You can then turn the books over to the accountant at the end of the year to have tax reports filed. Some farmers even do their own tax reports to save money.

Recording financial transactions:

All income & expenses and inflows & outflows need to be recorded in a bookkeeping system. Farmers should set aside time each week and sometimes daily to do this. Each transaction should be recorded including the date, the amount, and the type of transaction according to the income statement and cash flow categories. Sometimes the process can be cumbersome. Richard Wiswall's book mentioned earlier provides ideas on how to simplify the process.

Which computer accounting program should I use?

Some farmers record incomes and expenses in a ledger book. However, many farmers now have computers that simplify the bookkeeping. Even inexpensive computer tablets have the capacity to do record keeping. Computer accounting programs range from inexpensive to expensive and from simple to use to complex systems requiring considerable knowledge of generally accepted accounting principles. Most computer programs generate basic financial statements but some also offer advanced analysis and planning tools. The right program for the business depends upon all the factors mentioned in this chapter and the accounting background of those in the business responsible for bookkeeping. QuickBooks and Quicken are two generic computer programs that many farmers use for their bookkeeping. Some farmers will consult with an accountant in determining the best program for the business. Incomplete records will result in a poor financial analysis of the farm. Keep accounting records up to date throughout the year through routine record keeping daily or weekly.

What accounting period should be used?

An accounting period summarizes revenue and expenses for a given period of time. It can be a calendar year or a fiscal year. A calendar year starts on January 1 and ends on December 31. The year can be further broken into quarterly or monthly periods. The fiscal year lasts for 12 months but begins on a day other that January 1. Fiscal accounting periods can also be broken into quarterly or monthly periods. As a rule, the accounting period follows the production cycle of the major enterprises of the business. For example, most crop and some livestock producers follow a calendar year because the production cycles of these enterprises begin and end during the calendar year and during the winter, the business activity slows somewhat. Farms or businesses should choose an accounting period which best accommodates their production cycle. Most will choose a calendar year.

Economic assessment and risk management continued...

Summary

Understand profit and cash flow is paramount to the success of the business. Profitability measures the amount of farm income generated from sales of goods and services over and above the expenses required to generate that income. An income statement is used to analyze profitability. A farm must generate a profit to survive in the long run. In calculating profit, farm managers often leave out expenses related to the value of their labor, management and investment. Not only must farm income cover the direct expenses of the business, but they also must cover these resources that are sometimes taken for granted. Cash flow relates the ability to meet cash obligations without disrupting the normal operation of the farm. It deals with the timing of cash inflows to meet the cash outflows. Cash receipts from crops and livestock sold rarely coincide with cash expenditures. A cash flow budget is used to analyze the timing of cash inflows and outflows. Most farms have periods when they are short of cash to pay bills. A credit reserve for borrowing money through these periods is needed to maintain the cash flow. Likewise, this money will have to be paid back. Cash flow planning helps to monitor these inflows and outflows. Profit and cash flow are both areas of concern for the farm manager. The operation that is strong in one of these areas is often strong in the other areas as well. Profitability drives cash flow. A profitable farm will usually overcome cash flow in the long run, while an unprofitable farm will nearly always develop cash flow problems. People often confuse profitability with cash flow and vice versa. Some farm managers who experience cash flow problems think that their farm is not generating any profit. Likewise, some farm managers who have a positive cash flow have the impression that their operation is profitable. Neither of these assumptions is necessarily true. You cannot equate profits with cash flow.

Additional resources and literature cited

- **Agricultural business planning**
  - *The Organic Farmer's Business Handbook: A Complete Guide to Managing Finances, Crops, and Staff—and Making a Profit*. By Richard Wiswall. Published in 2013 by Chelsea Green Publishing.
  - Business Planning section of UMD Extension's Beginning Farmer Success website: https://extension.umd.edu/newfarmer/new-farmer-topics/business-planning
- **Financial management specific to not-for-profit organizations**
  - Managing restricted funds: https://www.propelnonprofits.org/resources/managing-restricted-funds/
  - Finance Unlocked for Nonprofits: https://www.wanonprofitinstitute.org/finance/
  - Non-profit financial management resources from the National Council of Non-profits: https://www.councilofnonprofits.org/tools-resources/financial-management
  - Nonprofit accounting: https://www.accountingcoach.com/nonprofit-accounting/explanation
- **Taxes for farms**
  - *A short intro: Understanding your federal farm income taxes*, by Harper and Kime, Penn State Extension. https://extension.psu.edu/understanding-your-federal-farm-income-taxes
  - *A more detailed resource: Small Farm Tax Guide*, by Utah State University Extension. https://ruraltax.org/small-farm-tax-guide
  - *From the horse's mouth: Publication 225: Farmer's Tax Guide. 2018*. Department of the Treasury, Internal Revenue Service. https://www.irs.gov/pub/irs-pdf/p225.pdf

Economic assessment and risk management continued...

INCOME STATEMENT	Last year	This year projected
Income		
CSA subscriptions		
On-farm market sales		
Other sales		
Total cash farm income		
Expenses		
Seed		
Fertilizer and compost		
Pest management supplies		
Boxes		
Supplies		
Repairs and maintenance		
Insurance		
Utilities		
Marketing		
Office supplies		
Other expenses		
Interest		
Owners labor		
Hired labor		
Depreciation		
Total expenses		
Profit (loss)		
Profit (loss)		

Figure 5: Income statement template. Editable versions of these spreadsheets may be downloaded from the digital version of this guidebook, available online at https://extension.umd.edu/urbanag

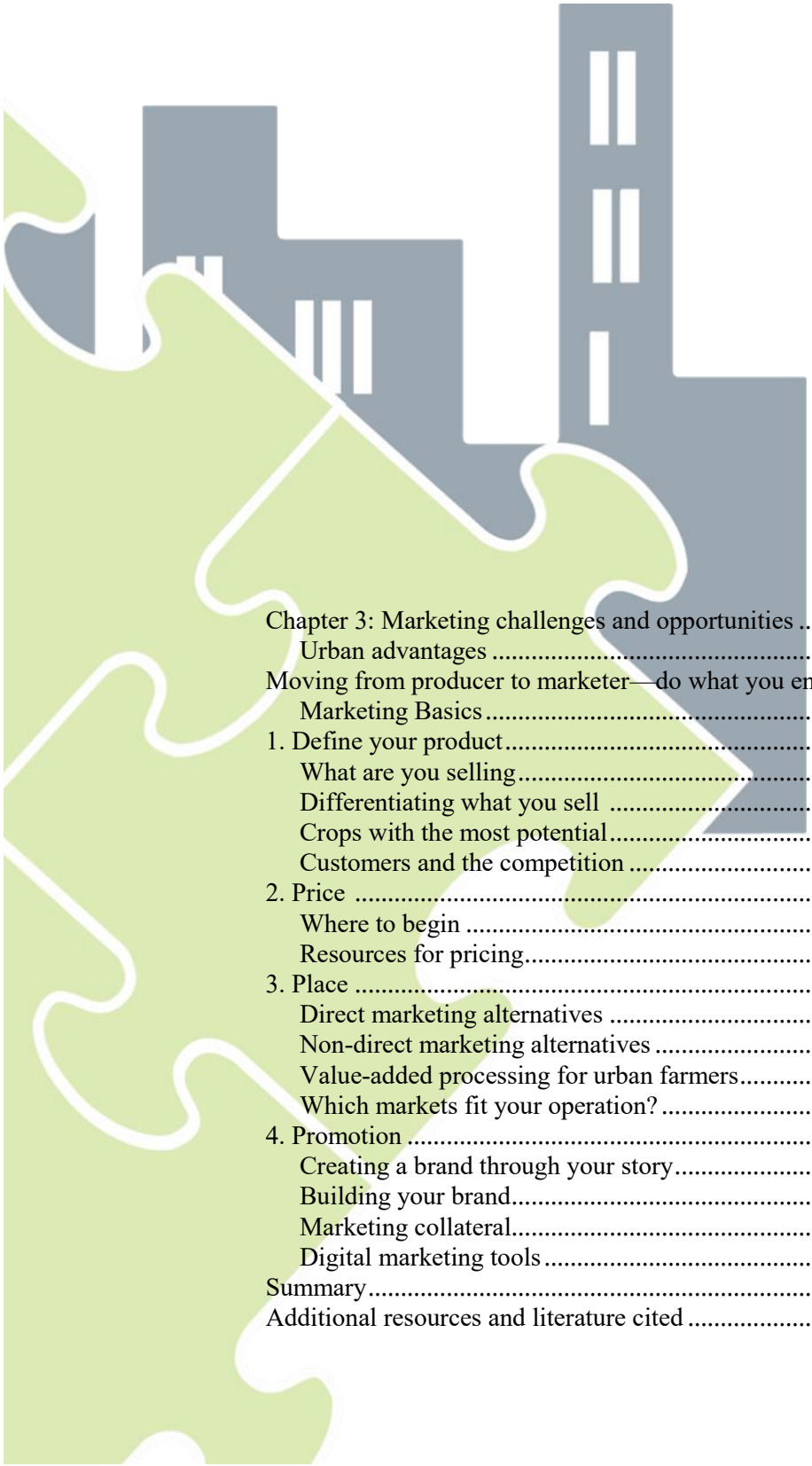
Economic assessment and risk management continued...

		This year projected				
CASH FLOW	**Last year**	**1st qtr.**	**2nd qtr.**	**3rd qtr.**	**4th qtr.**	**Projected total**
Cash inflow						
Beginning cash balance						
CSA subscriptions						
On-farm market sales						
Other sales						
Capital sales						
Loan receipts						
Off-farm income						
Total cash inflow						
Cash outflow						
Seed						
Fertilizer and compost						
Pest management supplies						
Boxes						
Supplies						
Repairs and maintenance						
Insurance						
Utilities						
Marketing						
Office supplies						
Other expenses						
Interest						
Owners labor						
Hired labor						
Capital purchases						
Withdrawals from business						
Loan principal payments						
Total cash outflow						
Ending cash balance						
Ending cash balance						

Figure 6: Cash flow template. Editable versions of these spreadsheets may be downloaded from the digital version of this guidebook, available online at https://extension.umd.edu/urbanag

Chapter 3

Marketing challenges and opportunities



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Marketing challenges and opportunities

There are many marketing opportunities for urban farmers. When agriculture can take place literally in the customer's backyards, this high visibility in a populated area can attract a wide variety of customers. Urban producers still face the challenge of competing with farmers from peri-urban areas that have more land, can produce greater volumes of product, and have lower cost of production.

Both urban and rural producers have the same set of problems:

1. Balancing the price that customers are willing and able to pay with the costs of paying yourself and your employees a fair wage.
2. Understanding and complying with regulations for both production and sales.
3. Dealing with unpredictable weather conditions.

Because of these challenges, pursuing the correct marketing channels can be just as important to the success of any farm enterprise as its production practices. Producers will need to understand and promote all the attributes of their products and develop a targeted market strategy. Implementing this strategy will require market research, detailed planning, and a plausible implementation schedule.

Figure 1: What makes your tomatoes different from all the other tomatoes your customers could buy? Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library.

Urban advantages:

A good marketing plan begins with a firm grasp on the benefits and attributes of your product. For example; you're not just selling tomatoes. You're selling local, vine ripened tomatoes (features) that are days fresher and more nutritionally dense (benefits) than tomatoes from the grocery store. For customers such as chefs, food truck vendors, or specialty food producers, urban grown products are miles fresher, support the B2B (Business to Business) community model and can help them differentiate their food items from their competition.

Food that is grown and consumed in the city contributes to the food security of urban populations. In times of abundance, this is often minimized. But in times of natural or man-made disasters, it can help fill the supply void. While urban production may seem small, urban farmers can maximize their production potential per square foot more so than their rural neighbors. Small plots can be micro-managed for fertilization and water applications to maximize yields.

Moving from producer to marketer—do what you enjoy

While your marketing efforts are still in the growing stages, develop a marketing perspective that helps you find a comfort zone. Some farmers really like the challenges and social aspects of direct marketing. They enjoy talking with customers and other producers on a regular basis. Other farmers are perfectly happy staying on the farm and are uncomfortable with the idea of "selling."

If that's the case, then perhaps a spouse or other business partner would be better suited to handling your direct marketing venues. It pays to know yourself and be honest about which jobs you like best and which jobs you dread.

Marketing challenges and opportunities continued...

Figure 2: It takes a team to make any business successful. No one person has all the skills needed! Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library

Marketing basics:

The time-honored marketing tenets of who, what, when, and where to market any products still apply to marketing the products of urban growers. These tenets are often referred to as the 4Ps of marketing - product, price, place and promotion.|

1. **THE PRODUCT**: Exactly what are you going to sell? Define it in terms of what it does for your customer. How does it help your customer to achieve, avoid or preserve something? You must be clear about the benefits it offers and how the customer's life or work will be improved if he or she buys your produce.
2. **THE PRICE:** Exactly how much are you going to charge for your product, and on what basis? How are you going to price it to sell at retail? How are you going to price it at wholesale? How are you going to charge for volume discounts? Is your price correct based on your costs and the prices of your competitors?
3. **THE PLACE:** Where are you going to sell this product at this price? Are you going to sell directly from your own farm or through wholesalers?
4. **THE PROMOTION:** How are you going to promote, advertise, and sell this product –at this price, at this location? What will be the process from the first contact with a prospect through to the completed sale?

1. Define your product

Who will purchase your product and why? Determine who your customers are before you put in that seed order. What are their purchasing traits? What would make a shopper select your produce over that of the grocery store's or even another local grower? How does your product satisfy their wants or needs and translate into a sale?

What are you selling?

Producers see their products as the final result of their work. But, we are really seeking a different end product - a satisfied customer. Maximizing your sales potential requires producing the highest quality product. Your sales message is that "produce is not just produce." Your produce is "special" because of your production system, variety selection, and environmental stewardship.

Quality is a field to plate issue. Customers will purchase your products based on a set of expectations. They expect to pay a fair price, though probably higher than for conventionally grown produce, for a product that is always safe and of a certain quality and consistency with every purchase.

Once you can grow a consistently high quality crop, you can start to market your product. But what is your product? What are its benefits and features? Who is your target customer and why should they buy from you? So, what are you selling?

Differentiating what you sell:

The first step is to analyze your product from your customers' point of view. Remember, Gillette doesn't sell blades, it sells smooth shaves. 3M doesn't sell tape, it sells convenience and time. Begin by analyzing your product along four lines: What are its...

Concrete Features—These are the tangible things about a product that a buyer can see, hear, and feel. A car's leather interior, front-wheel drive, and racy style are good examples of concrete attributes, as is a good price or loan terms.

Marketing challenges and opportunities continued...

Does your product have a good fresh color, attractive packaging, and an informative label? Can you provide shipping and cooling of products if necessary that are in compliance with wholesale or cooperative markets?

Abstract Features—These are the intangible things about a product that you can't see, hear or feel, but which exist nevertheless. You can't see "good quality." It is a conclusion derived from an overall evaluation of the product's features by you and others. But that image is a powerful selling tool. Abstract features of ice cream include "rich taste" and "fattening."

Is your product locally grown under certified organic practices? Does your farm and family contribute to sustaining your local community? What are your products' other abstract features?

Functional Features—These are benefits created directly by the product. A car "handles well." A toothpaste "whitens teeth." A lending company gives "two-hour approvals." In each case, the benefit comes directly from the product to the buyer.

Is your product GMO free, untreated, or an heirloom variety? How does the nutrition levels in your product compare to similar products? How does it taste?

Psychosocial Features—These are psychological benefits that come to the buyer indirectly. A car which produces admiring looks from others, a cookie mix which makes a boy tell his mother, "These are sooo good." These features are important because we want others to approve of us and what we have. It was psychosocial pressures more than anything else that drove many women away from natural fur products.

Do your farming practices help save the Chesapeake Bay and preserve soil and natural resources for future generations? What are your products' other psychosocial features?

Note: Do **NOT** make medical claims about your product.

Figure 3: Consider what features motivate your customers to purchase your product. If you have a pollinator garden next to your vegetable patch, take photos and share them on social media as part of your marketing campaign. Photo by Edwin Remsberg, ©University of Maryland—AGNR Image Library.

Crops with the most potential:

One of the most common questions aspiring growers ask is, "What crops should I grow?" Unfortunately, the answer is not clear cut.

When choosing what to grow, it is important to balance what you can produce well, what your customers want, and what customers are willing to purchase at a price that will cover your costs. For urban growers with a food access mission, it may be necessary to raise some crops that can be sold for high prices to customers who can afford them (herbs, microgreens, etc.) in order to subsidize the costs of raising other more calorically dense crops destined for the community you are trying to serve. Alternatively, if job creation is a primary goal, you may need to focus more on high-value crops to pay good wages.

In an urban setting, space is a limiting factor, whether you are growing outdoors on a side lot or indoors hydroponically. So urban growers can benefit from choosing to raise crops and livestock that are physically small, thrive in small spaces and challenging growing conditions, and have fast life cycles. The last point is important to maximize the amount of income or food produced per square foot.

For those growing using organic methods, most organic buyers in this region have indicated that if a conventional produce item does well then its organic

Marketing challenges and opportunities continued...

counterpart has potential to sell as well. Also, crops which typically have few insect and disease problems are perhaps the easiest crops to produce organically.

Really knowing and understanding your product is the first step in determining your marketing strategies. Your ability to describe what products you sell, what they do, what makes them unique or special, who will buy them, and how much you will sell them for starts the marketing process. Focusing greater attention on matching your product's traits with customers' needs will result in greater marketing success.

Customers and the competition:

Do you know what your competition is up to? If not, you could be headed for trouble because ignorance isn't bliss when it comes to your competition. There is always competition. Even if you're the only urban grower in town, you face competition from the sale of other kinds of produce where your customers will spend their money instead of with you.

The first step to understanding your competition is to know who they are. This sounds easy enough, but it's more complicated than just listing your obvious competitors. There are really three types of competitors to study.

1. Competitors that sell similar products or who use marketing strategies similar to yours, such as low inputs producers or labels like pesticide-free.
2. Competitors that compete for the same customers' dollars – your target audience.
3. Future competitors. Your competition could be a new business offering a substitute or similar product that makes yours less desirable. Don't just research what's out there already. You need to constantly be on the lookout for new competition.

2. Price

Whether you're gearing up to sell at a farmers' market, through your roadside stand, or by private contract, you cannot thrive in business today without a pricing strategy. The price you set for your product must fall between two points: what the customer is willing to pay and your breakeven point (the point at which you start losing money).

Remember this golden rule when setting prices: perception is everything. How customers view your product or service and what they are willing to pay for it is based upon perceptions. In the end, customers will tell you loud and clear through their purchasing behavior whether or not your prices are too high, too low, or right on the money.

Where to begin:

Setting your price requires knowing who your customers are and what they are willing to spend on products like yours. It is vital to know your cost of production per item type since pricing below that will mean marketing at a loss. It also requires knowing your competition. You already have a vital piece of the puzzle for determining price from your earlier market research.

Customer demand. How many units of your product can you plan to sell over the production season? The demand for your product is driven by consumers tastes, consumer income, and the availability of other products like yours at different prices. What are your competitors charging for products or services similar to yours? Assess how your offerings measure up in terms of quality. Customers almost always do quality comparisons before they buy. If you only determine your competitor's price and then charge a little less, it's no guarantee of success. Being the lowest priced product on the market could create just the opposite effect, because for most customers, buying a product isn't just about price, but rather about value. These are competition-oriented approaches to pricing that you'll recognize:

- **Customary pricing.** This is when the product "traditionally" sells for a certain price. For example, packs of candy or chewing gum usually cost a predictable amount.

Marketing challenges and opportunities continued...

- **Loss-leader pricing**. This approach works on the premise of losing money on certain very low priced advertised products to get customers in the door who will buy other products at the same time. Grocery stores use the loss-leader approach, stacking sale items on the end of aisles so customers must pass shelves of other products before getting to them.

  Loss-leader pricing might also be used to sell off or stimulate interest in products considered to be in maturity or in a declining stage of their life cycle. For example, discounting prices in the final hour of a farmers' market can reduce losses from produce not sold that would not last until the next market.

  Once you have determined your price you may want to consider some special adjustments such as quantity, seasonal or cash discounts. Be cautious when using discounts or sales to attract customers. If you use them too often, customers will come to expect these lower prices all the time.

Resources for pricing:

Several sites on-line provide excellent resources for checking weekly produce prices based on regional markets. A link to these resources will be at the end of this chapter.

3. Place

Growers in Maryland have several marketing alternatives. Each alternative has characteristics that make it more advantageous for different types of producers. Important factors to consider when choosing a market or combination of markets include:

1. the volume of produce grown;
2. location of the grower;
3. the time available for marketing activities; and
4. product quality. Producers may be better able to use or develop more alternatives if they know the major characteristics of each marketing alternative.

Marketing alternatives for product may be classified as direct or non-direct markets. Direct markets involve producer interaction with consumers on a one-on-one basis, and include pick-your-own operations, roadside stands, and farmers' markets. Non-direct markets involve producer interaction with market intermediaries. The non-direct markets include processors, grower cooperatives, and retail outlets.

The discussion which follows explains the basic concepts of marketing, regardless of the market outlet, followed by an exploration of the characteristics, advantages and disadvantages of the principal non-direct or direct market outlet.

Direct marketing alternatives:

Using a direct marketing outlet allows growers to capture the retail dollar that consumers pay at other markets. To receive prices similar to those at retail outlets, growers must provide the same services as other retailers. Consumers, on the other hand, purchase from direct markets to buy high quality fresh fruit directly from producers at competitive prices. Locally grown foods and products are now unique and "special" to consumers simply because, by buying direct (e.g., local), consumers feel they can short circuit the industrial production and distribution systems, a source of food safety concerns and debatable production practices. The popularity of "local" is based on authenticity – real products, from real farmers.

Farmers' markets

Farmers' markets are an increasingly popular form of direct marketing. Farmers' markets differ from other direct marketing operations in that growers share insurance, advertising, and other marketing costs. Successful farmers' markets are very helpful in increasing the incomes of the vendors who participate in them. Maryland now has farmers' markets operating in every county and the City of Baltimore.

Producers who utilize farmers' markets usually fit into two categories: commercial (full-time) growers or part-time farmers. Full-time growers use the market as an alternative market or, in the case of the part-time

Marketing challenges and opportunities continued...

Figure 4: Roadside stands can be convenient for both producers and customers. But be sure to check local zoning and permitting rules. Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library

farmer, as a viable market outlet. In order to participate in a farmers' market, producers need transportation to the market site, selling tables, a cash box or register with change, price display signs, signs for any applicable certifications such as organic, various containers, certified scales or other measurement devices, and sales people.

Producers should carefully plan production of crops that are to be sold at a farmers' market. They should try to grow a wide variety of crops for availability as early in the season as possible.

Major advantages to producers who sell at farmers' markets include:

- Producers have limited liability for customers since they are not on the farmer's premises.
- Parking space, restrooms and other facilities are not the farmers responsibilities. These facilities are provided by the market.
- Attracting customers is a function of the market and farmers do not have to worry about advertising individually.
- Many markets accept federal food assistance benefits and have matching programs that allow low -income customers to purchase more with their benefits.

Some of the disadvantages include:

- Time required to transport and sell at the market takes away from the farm operation.
- Market hours are controlled by the policies set for the farmers' market which may not be ideal for individual producer. Also, advertising, or lack of it, is controlled by the market.
- Markets that are poorly located may not attract consumers and peddlers may operate to depress price.

Community Supported Agriculture (CSA)

Community Supported Agriculture (CSA) is a term that has come to describe a variety of direct marketing model with certain common characteristics, including:

- Emphasis on community and/or local produce
- One share is generally enough to feed a household of four or more.
- Shares are paid in advance by subscribers, providing farm capital for spring start-up costs.
- CSAs helps build agriculturally supported communities.
- Weekly deliveries or pick-up to members/subscribers.

CSA is a partnership between consumers and farmers in which consumers pay for farm products in advance and farmers commit to supplying sufficient quantity, quality, and variety of products. This type of arrangement can be initiated by the farmer (farmer directed) or by a group of consumers (participatory). CSA is sometimes known as "subscription farming," and the two terms have been used on occasion to convey the same basic principles. Subscription farming (or marketing) arrangements tend to emphasize the economic benefits, for the farmer as well as consumer, of a guaranteed, direct market for farm products, rather than the concept of community-building.

Most CSAs offer a diversity of vegetables, fruits, and herbs in season. Some provide a full array of farm produce, including shares in eggs, meat, milk, baked goods, and even firewood. Some farms offer a single commodity, or team up with others so that members receive goods on a more nearly year-round basis. A typical CSA will grow over 30 varieties of crops and

Marketing challenges and opportunities continued...

Figure 5 The variety of produce supplied in a weekly CSA share is one of the big draws for customers, and one of the big challenges for producers! Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library

harvest at least 7-12 crops per week!

Good communication is a hallmark of many successful CSAs. Many include recipe ideas with their weekly deliveries, especially early or late in the season when cool-season crops (beets, turnips, kale) are harvested. These crops may be unfamiliar to many consumers, who may be waiting for more familiar later-season crops. It is common for CSA farms to issue a newsletter in each share. The newsletter can provide facts about the farm, as well as update members on how the season is progressing and how the various crops are shaping up for harvest.

General advantages CSA operations for producers include:

- Guaranteed market
- Advanced payment provides working capital
- Allows better off-season planning
- By tailoring production to the market, greatly reduces crop waste
- Containers are re-used until they wear out.

Potential disadvantages to the producer are:

- Must educate consumers to eat seasonally
- Added labor of packaging and delivery
- Weather challenges
- What to grow/varieties − you like "big" sizes but customers want "small'
- Must be a "people" person

Selling on-line, a 24/7 opportunity

The USDA's first survey of Local Food Marketing Practices, conducted in 2015, found 167,009 U.S. farms sold $8.7 billion in edible food directly to consumers, retailers, institutions, and local distributors. Consumers accounted for 35 percent of these direct food sales, and retailers, 27 percent. Direct farm sales include both fresh foods and processed or value added products such as bottled milk, cheese, meat, jam, cider, wine, etc.

Although 73 percent of all farms in the survey reported internet access, only 8 percent sold product via on-line market places. Not too long ago, access to reliable internet service proved to be a barrier to on-line sales for farms in different parts of the country but, since three-quarter of the farms responding to the survey had access, that problem can't be the deterrent any longer. The popularity of sites like Amazon, countless retail sites, and the annual "Black Friday and Cyber Monday" shopping seasons, attest to the potential customer base that exist for on-line sales. So why aren't more direct marketing farms selling their products through on-line sales channels and engaging in e-commerce?

Electronic commerce (e-commerce) is a transaction for goods or services enacted on-line. It could be the sales of products, reservations, or providing a service all simply paid for on-line. E-commerce can be an attractive and very cost effective way to allow customers to shop anytime, anywhere, and on multiple devices. It can also allow you the flexibility to fulfill orders on your own time schedule. But like any other marketing channel, you need to consider both the positive and negative impacts launching on-line sales can bring to your business.

You should consider:

- What on-line tools will I use (e-commerce, website, social media, e-payment gateway, etc.)?
- Do I want to offer shipping and if so, what are the charges and carriers for that service?

Marketing challenges and opportunities continued...

- How will I promote my on-line sales?
- How will I accept on-line order and payments?
- What procedures will I need to implement to get orders processed quickly and efficiently?
- What's my costs/benefits equation?

A major component of e-commerce, and the one producers often reference that challenges them the most, is the need for customers to be able to make a payment on-line. Electronic methods of taking payments are called "gateways." The most common gateway is credit card processing. Third party merchant accounts are very secure but can be cost prohibitive for small businesses. Alternatives to a merchant account are Person-to-Person (P2P) payment services. These keep track of funds available to both the buyer and the seller. The buyer and seller (or service provider) both need to have an account with the P2P service. The most popular P2P service is PayPal, but others are now gaining market acceptance. On-line payment options are a must when considering developing your on-line store.

> *"With 90 percent of all online purchases made with credit cards, you literally cannot afford not to add this payment option to your site. If you've been hesitating to accept credit card payments online, the good news is that, as soon as you give your customers this option, you should see a noticeable jump in sales."*
>
> *Corey Rudl, Payment Options for On-line Shoppers, Entrepreneur*

Setting up and operating an on-line store for your products or services is a big job, but it can have big returns for your business. Internet sales are only growing, not contracting. If you think e-commerce is the next step for your business, here are some basic pieces of infrastructure you'll need to develop. Don't think you have to go it alone. Hire the technical assistance you need.

- WEBSITE
  A website is the cornerstone for a farm's online presence. Not having a website is like not have a phone number.
- SHOPPING CART SOFTWARE
  When offering multiple items on-line, a shopping cart helps. Check with your web hosting company or e-commerce platform provider to see what they offer.
- PAYMENT PROCESSING
  Figure out how you're going to take payment on-line.
- EMAIL SUPPORT
  You'll need to have an email address where customers can contact you if something goes wrong, they want to change their order, or arrange for pickup.

Setting up an e-commerce store doesn't need to be overwhelming as long as you've done your research and made informed decisions. Additional resources and publications supporting direct marketing opportunities are available on the University of Maryland Extension Agriculture Marketing website: https://extension.umd.edu/agmarketing

Best practices when working with chefs

If possible, dine at the restaurant you want to sell to so you can experience their menu and their facilities.

It would be a good idea to market to chefs before planting but this doesn't work unless you have photos or samples from storage. Your first contact with a chef may be just to gauge if they are interested in purchasing directly from a farmer.

Don't just show up at their kitchen door with your products. Call ahead and make an appointment. If you don't know who to ask for, request the Executive Chef. Don't call between 10:30 AM and 1:30 PM, this is their busy time of the day. The best time to call is between 2:00 PM- 4:00 PM.

Show up on time for your appointment. Bring two

Marketing challenges and opportunities continued...

samples of each item you would like them to consider. Bring your best products and do not charge for them.

Have your logistics in order. How will you bunch, pack, or case a product? Know your product- organic, sustainable, hormone and antibiotic free, how was it grown? Be able to tell your story. Bring your business card and contact information along to leave with them.

Have your invoicing and payment terms in writing and agree on a payment schedule or C.O.D. Discuss the need for a delivery charge on less-than-minimum orders, and the need for on-time payment. Ask what the restaurant's normal billing schedule is. Two weeks, 30, 45 or 90 days is common; can you live with that? Be sure your pricing still leaves room for the chef to make a profit.

Don't make promises you can't keep. Don't make promises you can deliver on Saturdays when you can't every Saturday. Or promise you'll have asparagus until middle to late summer. Be honest, be clear. The chef knows if he's worked with farmers, whether it's produce or livestock, that prices fluctuate. Be honest and communicate. Communicate and be clear on what you're able to do and how you're able to do it.

Weekly or biweekly check-ins. Let them know about supplies as weather dictates. Whether it's voice, text or email. It's probably best to send a product list through text or email and not voice because a chef has something to go off of when it's written down. Talking to farmers is great, but when it comes to product lists, it needs to be in a written format.

Since restaurants have limited cooler space, they require frequent deliveries and accept only limited volume per delivery. This means more invoices and paperwork.

Chefs need lead time. If they are aware of what you have and plan on it, they can get it on the menu and really showcase the items. If you show up with something new un-announced, it can be difficult.

Chefs want information about how to store and handle the products, shelf life, and ways in which the product can be used.

If you can't make a delivery, the delivery will be short of the agreed upon amount, or product isn't up to par, let the chef know right away so they have time to make menu changes.

Stay nimble with your products and in conversation with your chefs. What is a "hot" item this year may be different than a newer request for the next season. Be ready to source new varieties of seeds or meat cuts to keep up with chefs' menu changes.

Non-direct marketing alternatives:

Processors

Other non-direct marketing options for producers are fruit and vegetable processing plants. These plants have the capacity to process large quantities of produce. However, most processors will expect to purchase produce at wholesale prices, which may only be economically viable for the largest-scale urban growers. Additionally, at this time, there are a very limited number of processors specializing in organic products.

Producers usually contract to provide processing plants with a certain amount and quality of fruits and vegetables over a certain period of time. However, processors do not contract for all of their produce. Generally, they contract for about 60 percent, purchase 30 percent on the open market, and produce 10 percent of the total quantity needed. This allows processors the freedom to "play" the market and possibly receive the supplies at lower prices.

Good managerial capabilities are essential for a producer to provide the required amounts and quality of produce for a processing facility. Processors may control the production practices through the contracts and their field representatives.

Producer advantages associated with processor contracts are:

- Price and quantity contract agreements assure producers of a market.
- Production expertise is sometimes provided by the processor.
- Processors may provide harvesting assistance.

Marketing challenges and opportunities continued...

Producer disadvantages associated with processor contracts are:

- Prices received may be lower due to less risk.
- Quality standards may be stringent.

Cooperatives – marketing groups

With the volume requirements of most produce buyers, cooperatives may develop out of necessity. Objectives of produce marketing cooperatives are to secure higher prices, guarantee markets for produce and reduce input and handling costs for their members. Most fruit and vegetable cooperatives also provide various marketing services for their patrons including harvesting, grading, packing, cooling, storage, and transportation services. Cooperatives allow members to bring their produce to one location and pool their produce which allows producers to meet buyer requirements that they often cannot meet by themselves. However, some cooperatives also provide purchasing, pooling, processing, and bargaining functions for their members.

Some benefits that cooperatives provide are:

- Growers gain benefits of large volume marketing
- Often a sales specialist is available.
- Growers gain benefits of increased bargaining strength.
- Producers may reduce level of market risk.

Some disadvantages of cooperatives are:

- Producers lose some independence by selling through a cooperative.
- Members may only sell through the cooperative when prices are high and then use other marketing channels, which hurt cooperatives' reputations.
- More experienced, better producers might subsidize inexperienced producers, and, therefore, not reach their profit potentials.

Retail outlets

Large, value-priced retail businesses require large volumes of product at low prices, which is impractical and economically challenging for small-scale urban producers. However, some opportunities exist for small acreage urban producers who are willing to deliver fresh produce to targeted retail outlets.

With the popularity of locally grown produce, some **restaurants** purchase locally grown fresh fruits and vegetables. **Small independent grocery stores** are also potential contacts for sale of fresh local fruits and vegetables. Other potential markets may include exclusive **hotels**. Selling to these markets requires a truck to transport the merchandise, time to deliver to each location (as several will be needed to make delivery cost efficient), and the ability to deal with several buyers on an individual basis. Buyers and sellers usually negotiate prices and delivery times. These outlets require frequent low volume deliveries of a variety of produce. Institutional markets may purchase lower quality grades and not require specific containers.

Producers need to make contact with potential buyers in the winter months before the growing season in order to identify packing, quality, container, and variety requirements and to become acquainted with buyers.

Figure 6: Products like jams and pickles can be a good way to add value to produce that would otherwise sell at a low price or go to waste. However, food safety and labeling regulations are much more rigorous for value-added products than for fresh produce. Photo by Edwin Remsberg, © University of Maryland—AGNR Image Library.

Contact should again be made with the buyers prior to harvest in order to deliver samples and place orders. Growers should deliver the amounts and specified quality contracted on time. At the end of the season, producers should ask buyers what changes would

Marketing challenges and opportunities continued...

improve the operation. Consulting with buyers allows them to influence the operation and makes them more likely to purchase produce next season.

Advantages of dealing with retail outlets include:

- Growers may be paid at the time of delivery.
- Growers can negotiate price levels.
- Packing costs may decrease and special containers may not be necessary.
- Producers replace middlemen in the marketing process.

Disadvantages of dealing with retail outlets include:

- Superior quality produce may be demanded.

Comparing marketing options for vegetables

	Available Sales Opportunities				
Things to consider	**Direct: On-Farm, U Farmer's Markets, CSA**	**Produce Auctions**	**Marketing Cooperatives**	**Local Wholesaler, Local Grocers, or Restaurants**	**Regional Wholesalers, Chain Store Distribution Centers, Terminal Markets, or Brokers**
Production and Marketing Challenges					
Difficulty getting into the market	low	low	low-medium	medium	high
Marketing time required	high	low	low	medium-high	medium
Compatible with off-farm employment	yes	yes	somewhat	somewhat	difficult
Importance of product quality (especially shelf life)	medium	medium-high	high	medium-high	high
Investments: Time and Money					
Initial commitment level required	low	low	medium-high	high	high
Management level required	low	low	medium	high	high
Level of service buyers expect from individual growers	low-high	low	Low	high	high
Initial capital investments required	low	low	medium	medium-high	high
Postharvest equipment and facilities investment required	low	low	low	medium	high
Income and Potential					
Prices	high	variable	medium	medium-high	medium
Price stability	high	medium	medium	medium	medium
Product volume required	Low	low	medium	medium	high
Market/sales volume potential	low-medium	low-medium	high	medium	high
Likely further development potential	excellent	good	good	good	fair-good

Marketing Options for Commercial Vegetable Growers, University of Kentucky Extension, ID-134

Marketing challenges and opportunities continued...

- Producers need time and extra planning to develop client contracts and deliver produce.
- There is the possibility of high transportation costs per unit volume.

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. 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.

Information on food processing regulations, training courses, and food safety updates are available on the Maryland Rural Enterprise Development Center website: http://extension.umd.edu/mredc

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 on the Extension website. See marketing resources link at the end of this chapter for details.

Advantage of producing value-added products:

- Can be used to add value to produce that otherwise would sell for low prices (like cucumber) or might go bad quickly (like raspberries)
- Producing shelf-stable products can enable sales in the winter to even out cash flows
- Can provide an additional enterprise to employ more family members or employees

Disadvantages of producing value-added products:

- Food safety and labeling regulations are more challenging than for fresh produce
- Requires additional skills, equipment, and storage

Which markets fit your operation?

Producers must learn how to combine different market outlets that suit their production cycles in order to maximize profits. To do that, careful evaluation of what buyers want/need before making production decisions can help producers decide which market outlets are appropriate for their marketing plans and overall operations.

Here is a chart from University of Kentucky Extension that compares retail and direct marketing outlets, the resources required and their profit potential.

4. Promotion

Once you have established what your product is, where you are going to sell it, and how much you are going to sell it for, it's time to promote it. But what does that mean and entail for an entrepreneur?

Promotion is communicating with your customers about the benefits (most important) and features of your product with the intention of soliciting a purchase. It involves using a combination of marketing tools including your branding, digital media such as your website and social media, print media that may include business cards and flyers, incentives such as coupons and free samples, and even farmers market demos and customer appreciation events.

Creating a brand through your story:

How you will present "your story" to your target market? People buy from people. Your best branding asset is you! Before you think about a logo and other marketing collateral, you need to be able to tell your

Marketing challenges and opportunities continued...

story in a way that's concise yet compelling. Your story is your promotional foundation.

In "Made to Stick," authors Dan Heath and Chip Heath, state that there are five things you must do to ensure that your story "sticks" with consumers:

1. **Simplicity.** Keep your audience focused with the critical essence of what you do.
2. **Unexpectedness.** Creating surprise keeps your audience tuned in!
3. **Concrete.** Be specific and relatable and communicate your story in a way that your audience will understand.
4. **Credible.** Give details that help to paint the picture, but be authentic!
5. **Emotional.** When you make your story about your audience's needs and appeal to their emotions, they connect with you.

Think about what makes your farm business unique. Need help? Review your S.W.O.T. analysis from you business plan and pick your top three compelling strengths to highlight. This may include your production methods, unique location, and philosophy on why you grow and raise your food the way you do. It's also important to incorporate any community giving, testimonials or recognized news stories. Most of all, it's important to highlight what problem your unique business solves for your ideal customer. All of these strategies are a part of your relationship building portfolio that leads to sales.

Building your brand:

While you don't need to be a graphic designer or best-selling author, you do need to be thoughtful about how your present yourself. Not only will you tell your story through words, but images, too. The most widely used image will be your logo. There is no mistaking Target's bullseye or Apple's...well...apple. When you are working with a graphic designer to develop your logo, think about how it conveys your story. Also consider all of the applications where you may use your logo. The simpler the logo design the better as it will have more flexibility in terms of reproducibility across various types of marketing collateral from your social media profile to your farm store banner.

Marketing collateral:

Ideally, you will work with a design professional to create a few basic marketing pieces such as your logo, postcard card or rack card, and business card. Additional pieces may include a farm business profile or fact sheet (your unique story), product sheet, list of articles and news stories about your farm, and price sheet. Testimonials can be sprinkled through your various forms of marketing collateral, both print and digital. It is important to develop a stylesheet for your brand that coordinates with your logo and includes the colors, fonts, and images that you will use throughout your marketing collateral. You want people to identify anything that you produce - from your website to your product labels - with you and your farm.

Make sure that all of your print marketing collateral includes the following:

1. business name
2. business location
3. phone and email
4. logo
5. tagline
6. website
7. social media icons for the platforms you use (include your handle if it's short)

If you need help creating print media and you are on a budget, consider creating your promotional piece in Canva or another similar on-line graphic design platform with a variety of templates to suit your marketing needs. Canva is free (with nice upgrades for a price, of course) and easy for even the most graphic design challenged person to use and still produce a splashy, yet professional piece.

Digital marketing tools:

As mentioned earlier, if you don't have a website, you don't exist. Working with a website developer to create your website is well worth the investment, however

Marketing challenges and opportunities continued...

there are some low cost options on the market including user-friendly website builders such as Sitebuilder, Squarespace, Wix, Weebly, and WordPress. Your website will be a home base for all of your marketing information including promotional tools such as social media links, e-newsletters, YouTube videos, and even podcasts.

Website

There are several important factors to consider when creating a dynamic website. Remember that you only have a few seconds to capture someone's attention. Your website should have a clean, professional look and include your branding elements. A good website delivers your story and drives the viewer to jump on your "call to action." Here are ten questions to consider when building an effective website:

1. Does your domain name convey your farm business image?
2. Do your pages have a clean look with an appropriate amount of "whitespace" or are they cluttered?
3. Do you have your social media icons and newsletter sign-up button at the top of your homepage so it's easy for visitors to connect with you?
4. Is your navigation bar simple and easy to navigate? Does it appeal to your target audience, and is it effective in directing visitors to what they need?
5. Are you using concise, clear language for the average reader who may not know much about farming or your product?
6. Have you created compelling content that is written in small paragraphs with large, easy to read fonts and includes appropriate images?
7. Do you have a clear call to action?
8. Does your site reflect your branding, story, and personality?
9. Is your site mobile friendly?
10. Have you set up analytics on your website to track usership?

Before you publish any of your materials, including your website, be sure to run it by a few friends, family members, and business savvy professionals including your local agricultural marketing or business development specialist. Sometimes what we think is obvious is as clear as mud to others. In addition, search for your business name or the title of any website, blog, newsletter, or podcast you are considering in Google or another search engine to make sure it isn't already taken. You can also look at the State of Maryland's Department of Assessments and Taxation (DAT) searchable business database to see if your business name is already being used by another business. Once you settle on a business trade name, you will file it here as well.

Social media

Facebook, Instagram, and Twitter, Oh my! There are so many social media platforms available that it's challenging for a social media professional to stay on top of it, never mind a farmer. In order to determine how to tackle social media, ask yourself two important questions:

1. Who is my target market and what social media platforms are they using?
2. Which social media platforms do I enjoy most? If none of the above, then which do I feel most comfortable with trying?

Once you decide on a platform, check around and observe how other successful small farm businesses are using their accounts to leverage sales. Often this is the best way to get ideas for your own social media strategy. At Extension, we are big fans of R&D - Research & Duplicate. If you see a successful strategy, think about how you can incorporate it into your own social media marketing. We are not suggesting that you copy, but you can use other's work as inspiration. Regardless of what social media platform you use, here are some best practices:

1. Know your audience and what content appeals to them.
2. Develop a unique, authentic voice.
3. Be an expert. Be transparent.
4. Be consistent with posting.

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5. Mix-up educational with cultural and just-for-fun posts.
6. Use a variety of content including original and user-generated.
7. Give credit to authors and sources by "tagging" them.
8. Use hashtags (#) and handles (@) to increase engagement.
9. Post visual content (images, videos, GIFs, infographics).
10. Make sure images are optimized for both desktop and mobile.
11. Respond to fans (and haters) in a timely, positive fashion.
12. Get a few professional photos taken (headshots, products, farm).
13. Put your logo or website on images.
14. Use your headshot, logo, and farm images widely.
15. Use graphic design apps to create professional, eye-catching social media images.

Let's reiterate the importance of video in your social media toolbox. It's much more likely to generate engagement then a graphic. Taking it a step further, live videos earn more interaction than regular videos. Forget plain old text. It's not a priority for many social media platforms including Facebook's algorithms which heavily favor visuals because they gain more comments and shares. This trend is even more obvious as the pictorial Instagram continues to rise in popularity and has become the king of engagement. This is important to keep in mind when drafting posts and developing a social media planning calendar. If you have a Facebook page for your business, consider creating a Facebook Group which fosters natural interactions, something that Facebook algorithms encourage.

Graphic design for the graphic design software challenged

Let's face it. Not all of us have time to learn how to manipulate Photoshop. Fortunately, there are both desktop and online programs and phone apps with fantastic templates to assist you with your DIY graphic design. Many people rave about Canva, but there are others to consider including Word Swag and Adobe Spark. Ask your friends and colleagues and do your research as new programs continue to emerge. Having these tools in your back pocket on a rainy day will make creating your marketing materials more of a fun creative project than a laborious chore.

When drafting materials, it's important to use bold colors, unique images and illustrations, and don't discount using text as part of a graphic. If done well, text can be compelling and add interest. While it's best to use your own graphics, there are free, royalty free images available from online sources such as Unsplash and Pixabay.

The most important concept to keep in mind when creating graphics for your social media and other marketing collateral is the KISS principle (Keep It Simple and Straightforward).

Email newsletters: still one of the most effective marketing tools

While a sector of marketers claim that email newsletters are dead, others say it's here to stay. According to an article in Forbes in 2018, 59% of B2B marketers report that email marketing is their most effective channel for generating revenue. While some point to emails as spam, surveys show that people don't mind emails as long as they are relevant, interesting, and offer value. This is why more organizations are segmenting their email lists to target the content to the reader. In 2018, the Direct Marketing Association reported that "segmented and targeted emails generate 58% of all revenue."

There are many ways to begin building an email list. Keep a clipboard at your farmers market booth or farm stand. Have a sign-up button on your website, Facebook page, and in the bio of your Instagram profile. Also, many newsletter content management systems integrate with your website and social media accounts. Speaking of which, while you can develop email lists in your regular email service, consider a professional email

Marketing challenges and opportunities continued...

marketing system such as Constant Contact, MailChimp, and CakeMail to name a few.

How do you build your email list? Consider your target market and what they find interesting to read. Do they enjoy recipes? Food storage tips? Fun facts about your farm? On occasion, it's not a bad idea to ask your readers what they would like to hear more about as well as what they'd rather do without! Be sure to include graphics and videos because emails with these features tend to have higher open and click-through rates. Finally, make sure that subject line is catchy! September Newsletter may tempt your readers to hit "delete" while "Chris, Savor Summer at our Solstice Supper" may peak Chris' interest. And if you add the sun emoji (while we're thinking about the summer solstice), you're likely to get even more opens according to the latest marketing statistics. Emojis and including the recipients name in the subject line boost open rates.

Podcasts help percolate your fan base

While bloggers enjoy photography and writing, that's not everyone's strength. Some entrepreneurs are more at home with creating conversational environments. In the same respect, while some customers enjoy reading blogs, others would rather get the same information by listening to a podcast. In fact 17% of the U.S. population listens to podcasts weekly, and this figure is on the rise. What are some best practices to keep in mind? Before you begin to podcast, you need to pick a theme. It needs to be specific enough to generate interest and target your listeners, but also broad enough to give you enough content to discuss without painting yourself in a corner. Where to start? What are you most passionate and knowledgeable about? Once you settle on a theme, you will need to pick a title for your podcast. It must be catchy, but it also needs to include keywords that would rank in a search.

Once you have selected the name and theme, it's time to look into equipment and software. There are many choices with a variety of price points so do your research. Essentially, you will need a headset, microphone, and recording software. Record and edit your podcast, upload it to a hosting service like Podbean or Buzzsprout, and then list your podcast in directories like Apple Podcasts, Google Podcasts, and Spotify.

You are on your way to Podcastville!

Incentivize your customers

There are a few relatively simple ways you can incentivize new customers and retain existing patrons. Your incentives could include free samples at a farmers markets or community event (please check with the health department regarding sampling permits), a coupon in your monthly e-newsletter, or more expensive give-a-away schwag such as t-shirts, travelers mugs, or shopping bags. Regardless of which incentives you provide, think about what might interest your customers at a price point that you can afford and that is in alignment with your marketing goals.

Many customers are looking for an experience and more importantly, a community. Consider hosting a customer appreciation event either on-site or at a local venue if your space isn't conducive to hosting guests. Some farms have had great success with creating virtual communities through facebook groups and social media photo and video contests using farm products. Winners win more product AND are highlighted on your social media and in an upcoming newsletter. These contests are a win-win because they use existing customers to promote your farm's products and services. Remember, this is part of your marketing strategy so make it work for you.

Are my promotional tools working?

Now that you have a nice mix of tools in your promotional toolbox, you need to evaluate them from time to time to see which are most effective for your business. Social media has built in metrics to facilitate evaluation, while other tools will require you to set up a metric with a tracking system. For example, when you send your July email with a coupon (be sure to include an expiration date and a tracking code), track the

Marketing challenges and opportunities continued...

redemption rate and sales related to that coupon campaign. You will also need to factor in how much you spend on any particular marketing campaign. For the email coupon, that will be your time to develop the coupon and newsletter as well as the cost of the email marketing service for that month. If you posted any social media ads for cross promotional purposes, you will need to factor in your reach, sales, and costs of the ads when determining if the promotion was a good fit. At the end of the day, increased sales is the ideal indicator for success, however increased engagement can lead to more sales down the road which is one of the reasons why social media and newsletters can seem like a time sink without much return on investment. Regardless, they can be an important component of your relationship building strategy. Finally, if a promotional tool isn't working for you, feel free to tweak it or abandon it all together. It's important to make an adjustment before you are too far down the road to the point of no return.

Bottom line when developing your promotional toolkit: talk with your customers AND competitors, think outside the box, be flexible, and have fun!

Summary

Pursuing the correct marketing channels can be just as important to the success of a farm as its production practices. The four P's of marketing are product, price, place, and promotion. What are the benefits and attributes of your product? What price are you going to charge for your product? In what place will you sell your product? How will you promote your product to customers? To answer these questions, you will need to learn more and make decisions about many topics, including customer values, costs of production, market prices, direct and non-direct market outlets, branding, and digital marketing tools. Whether you are growing herbs for high-end restaurants or vegetables for your neighbors, taking the time to develop a marketing plan will help ensure that what you've spent so much time growing actually gets where you want it to go.

Additional resources and literature cited

To learn more about marketing, start with these helpful resources:

- **Agricultural marketing educational websites:**
  - Agriculture Marketing | UMD Extension: https://extension.umd.edu/programs/agriculture-food-systems/program-areas/farm-and-agribusiness-management/ag-marketing
  - Maryland Rural Enterprise Development Center: https://go.umd.edu/mredc
  - USDA Agricultural Marketing Service: https://www.ams.usda.gov/
  - Marketing | USDA Alternative Farming Systems Information Center: https://www.ams.usda.gov/
  - Marketing | Cornell Small Farms Program: http://smallfarms.cornell.edu/resources/marketing/
  - Marketing | Urban Agriculture | University of California, Agriculture & Natural Resources: https://ucanr.edu/sites/UrbanAg/Business_Management/Marketing/
  - Urban Agriculture | ATTRA (marketing section included): https://attra.ncat.org/urban-agriculture/
  - Business & Marketing | Urban Agriculture Manual | Community & Regional Food Systems Project: https://urbanagriculture.horticulture.wisc.edu/business-and-marketing/
- **Food processing and value-added products**
  - Myers, G.S. (2009) *Processing for profits: An assessment tool and guide for small-scale on-farm food processors*. Available at https://extension.umd.edu/resource/processing-profits
  - UMD Extension Food Processing module: https://extension.umd.edu/resource/food-processing-maryland
  - **Direct marketing**
  - Direct Marketing resources from UMD Extension: https://extension.umd.edu/resource/direct-marketing

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- **Pricing**
  - *Specialty Crops Terminal Markets Standard Reports*, published by the USDA Agricultural Marketing Service Shares prices for which specialty crops were sold at selected U.S. cities' terminal markets. Prices are differentiated by the commodities' growing origin, variety, size, package and grade.https://www.ams.usda.gov/market-news/fruit-and-vegetable-terminal-markets-standard-reports
  - *Maryland Market News, published by Maryland's Best*, Shares reports that contain pricing, volume, quality, and other market data on agricultural products in specific market areas.https://marylandsbest.maryland.gov/maryland-market-news/
  - *Fruit and Vegetable Prices*, published by the USDA Economic Research Service ERS shares estimated average prices for over 150 commonly consumed fresh and processed fruits and vegetables.https://www.ers.usda.gov/data-products/fruit-and-vegetable-prices.aspx
- **Selling online**
  - Rudl, C. (2003) *Payment Options for Online Shoppers*. Entrepreneur. Available online: https://www.entrepreneur.com/article/58384
- **Building your brand**
  - Business Database Search | MD Department of Assessments & Taxation: https://egov.maryland.gov/BusinessExpress/EntitySearch
  - Choose your business name | Small Business Administration: https://www.sba.gov/business-guide/launch-your-business/choose-your-business-name

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- Rowell, B., Woods, T., and Mansfield, J. (1999) *Marketing options for commercial vegetable growers*. ID-134. University of Kentucky Cooperative Extension Service. http://www2.ca.uky.edu/agcomm/pubs/id/id134/id134.pdf

Chapter 4

Managing legal risks to grow your urban farm

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Managing legal risks to grow your urban farm

Disclaimer: This chapter highlights common legal concerns that may arise in operating an urban farm. The information is for educational purposes only and does not constitute legal advice. Always consult a qualified attorney for legal advice pertaining to your specific legal concerns.

Introduction

Legal risk is associated with many of the day-to-day activities of all types of farms. For example, there are legal ramifications for not repaying an operating loan or failing to use appropriate safety precautions when using pesticides. Marketing agricultural products involves contractual commitments, and human issues associated with agriculture also have legal implications, ranging from employer/employee rules and regulations to inheritance laws. Urban farms can be presented with additional legal challenges because they exist in densely populated areas surrounded by private and commercial neighbors unlikely to be familiar with (or possibly simply intolerant of) the sights, sounds, smells and activities of farming, and because they are typically located in areas that were specifically not set up to support agricultural activities.

Additional legal risk for urban farms is generated by uncertainties about things like government policies and regulations related to land access and land use, noise and odor nuisances, water access and use restrictions and requirements, and additional food safety concerns. Failing to obey the laws and regulations can have serious consequences including fines, criminal penalties, and/or abatement orders. Understanding and keeping up to date with the laws will help you better manage the legal risks to your farm.

Action items:

Operating an urban farm requires compliance with a number of state or local zoning, permitting, licensing, and other regulatory requirements. These requirements could have a significant impact on your production and operating plans, and the costs to run your farm. To minimize the impacts and plan your production:

- ☐ Identify any zoning or building permits, waivers, variances or licenses that you are going to need and the costs to obtain them and to comply with them
- ☐ Identify any production regulatory requirements that could significantly affect your farm and the costs to bring your farm into compliance with them (e.g., waste handling and disposal requirements, worker health and safety plans and inspection requirements, environmental permits, food safety regulations, business licenses and food handlers' licenses)
- ☐ Identify regulatory requirements or industry standards for handling, storing, packaging, and distributing the farm's products
- ☐ Identify any property, sales or use tax requirements
- ☐ Identify insurance tools appropriate to your situation

Key terms

Legislation: Laws passed by a governing legislative body (Federal or State Government), including authorizing an administrative agency to write regulations to carry out the purpose of the laws

Statute: A law enacted by a legislative body

Regulation: The rules and procedures that agencies develop, implement, and enforce to achieve the goals of the laws

Municipality: A city or town with corporate status and its own government

Ordinance: Legislation enacted by a municipal authority

Preemption: A situation where a law enacted by a higher authority takes precedence over a law enacted by a lower authority

Managing legal risks to grow your urban farm continued...

Land access, zoning, and permitting

Land acquisition and access:

This manual assumes that you have been farming for some period of time and you are already utilizing land and/or property. Your right to access the land or property, however, may not be entirely secure, or maybe you've identified other land that you'd like to use to expand your farm. If you don't own the land outright or have a legal right to access the land, your farm could be in jeopardy. Not only might lack of legal access to land or property restrict available funding, but all of the investments that you've put into the land or property could be lost at any time.

In addition, using land that you do not own could constitute trespass and may result in civil and/or criminal sanctions against the trespasser(s). Unless you own the land or the property, you must acquire the rights to enter and to use the land to avoid trespass charges, compensation claims, and the loss of all the time and money put into the farm.

Types of property rights:

Ownership

Owning land gives the owner all rights to the property. The owner has the absolute power to enter the land and use it for any lawful purpose. The owner has the power to decide who else may enter the land, when they may enter and what they may do while they're on the land. The owner also is the only one with the right to sell the property. Purchasing a property is the most secure way to ensure future rights to the land, and to allow for more substantial investment in the property.

Owning property, however, creates obligations. For example, the owner will need to provide liability insurance on the property (see "Insurance" below). The property owner will also have to pay property taxes for the property. If the farm is run by a not-for-profit organization and the use of the land is considered charitable, it may be able to apply for a property tax exemption from the state. Additionally, both for-profit and not-for-profit farms might be able to reduce their property tax if their state or municipality offers an urban agriculture property tax credit (see "Tax Incentives for Urban Agriculture" below).

How do I find who owns the property?

All land is either privately owned or owned by a government entity (e.g., the city, the state or the federal government). Once you've identified the land you want to use, whether it's an empty lot, abandoned property or a neglected park, ownership of the property is a matter of public record. Usually your state's department of assessment and taxation, or your county's or city's planning or zoning department, or your county's registry of land deeds maintains records on every parcel of real estate within its jurisdiction. Usually the records are available online, although you might have to call or visit the appropriate office. They will, however, have the name of the property owner and the mailing address for the current owner.

For more information about how to locate the owner of a property, read Farmland Access in Urban Settings (Rosen et al. 2018). For land located in Maryland, watch the video How to Access a Farm's Land Records on Maryland's Agriculture Law Education Initiative's website at www.umaglaw.org for step-by-step instructions on how to access land deeds.

Lease

A lease is a contract that allows certain individuals and/or organizations to use land for a particular purpose for the duration of the lease. Because it is a contract that involves real property, most states' statute of frauds requires the lease to be in writing. It is important that the written lease includes specifics about how the leased property will be used. This will reduce the risk of claims of breaching the lease contract, which could lead to terminating the lease.

Managing legal risks to grow your urban farm continued...

Adverse possession

Adverse possession, otherwise known as "squatters rights," is a legal principle under which a person (a trespasser) who is possessing a piece of property—usually land—that's owned by someone else can be granted title to the property through a court action. This is only an option, however, in exceptional circumstances. The requirements have evolved over time and they vary between jurisdictions, but typically:

1. The trespasser's possession must be adverse (sometimes referred to as "hostile") meaning that the true property owner did not give permission for the trespasser to be on the land;
2. The trespasser's use must be actual, meaning that the trespasser physically occupied the land;
3. The trespasser's use must be open and notorious, meaning that the trespasser's occupation of the land was visible to passersby and known within the community; and
4. The trespasser's possession was exclusive, meaning the trespasser does not share control of the property with anyone else who isn't in privity with him or her, and it must be continuous for the number of years required by the state's statute of limitation. If all of the above conditions are met continuously for the required number of years, the trespasser can then file a court action to gain legal ownership of the property.

For questions about acquiring ownership of land through adverse possession, talk to an attorney.

The lease will also include the costs and duration of the lease as well as any renewal options. A lease gives the renter (the "lessee") the right to use the land. A long-term lease is a relatively secure agreement because the landowner (the "lessor") cannot change his or her mind about the agreement unless the renter doesn't fulfill the terms of the contract or the duration of the lease term ends.

Some cities offer lease initiatives for urban growers to lease pre-approved plots. And some communities have created Community Land Trusts (CLTs) to assist urban farmers (Yuen 2019). A CLT buys property to be held for the benefit of others—in this case it would be for preserving open space and allowing urban agriculture projects. The CLT then leases the land to urban farmers. Each CLT establishes its own criteria for a property to be eligible for protection and for the farm to eligible to lease the property.

For more information about leases, lease initiatives and CLTs for urban farms, read Farmland Access in Urban Settings (Rosen et al. 2018).

License

A license is written permission to enter and use another person's land. Licenses can be as general or specific as the parties choose. For example, a license can allow a particular community group to use the property for agricultural projects generally, or it can allow a group to enter onto the land only for the purpose of planting vegetables and exclude raising livestock. Licenses can be terminated at any time by the landowner, so this option is not as secure as a lease. It does, however, protect urban farmers from any claims of trespass, so long as they are operating within the limits of the license.

Easement

An easement allows for the use of land without owning it or developing it. Typically, an easement is a right of way. For example, urban farmers can arrange an easement with neighbors for permission to cross their yard to access an urban garden. Easements are often arranged if (1) there is no other way for urban farmers to access the garden plot or (2) if farmers have been crossing the neighbor's property without conflict for so long that it is implied that they have permission to do so.

Managing legal risks to grow your urban farm continued...

In some urban areas, conservation easements have been used to ensure long-term agricultural use of a parcel. Most often, the encumbered land (the land that is being used) was agricultural land before urban sprawl surrounded it. The easement "goes with the land." That means that no matter who owns the land, the terms of the easement govern the use of the land. So, through a conservation easement, a farm is protected for agricultural use forever. For more information about conservation easements for urban farms read Farmland Access in Urban Settings (Rosen et al. 2018).

City-supported land access programs:

"Vacants to Value" programs

Some cities have created programs to encourage individuals and investors to purchase blighted city-owned properties, for a relatively small amount of money. One such program is Baltimore's Vacants to Value Program. The city provides a map of the properties that are available for the program. When considering an application to purchase land through Vacants to Value, the city takes into account planned development in the area and the applicants' capacity to complete that development (i.e. the plans for the project and the applicants' ability to successfully achieve those plans).

"Side Yard" and "Mow to Own" acquisition programs

Some cities have programs that help residential or commercial property owners purchase vacant city-owned lots that are adjacent to their existing property either for very little money and/or for sweat equity. For example, St. Louis' "Mow to Own" program allows a property owner with a vacant city-owned property adjacent to his or her own property, which might be used for an urban agriculture project, to take immediate ownership of the lot for a nominal fee. If they continually maintain the lot for 24 months, they're eligible to be granted a deed to the property with a maintenance lien, which is removed after another 24 months if there are no findings of violations from the City's Forestry Division and no complaints. In Baltimore City, a 2011 side-yard policy allows home-owners to purchase adjacent vacant lots smaller than 1500 square feet for $500.

Temporary lot adoption

Baltimore's Adopt-a-lot program has been an entry point for many of the city's urban gardeners and farmers. It enables community members to adopt vacant, city-managed lots. The agreement is a license to use and maintain the space, not a lease, and must be renewed annually. Adopt-a-lot participants can also apply for water access, if available, for $120 per year. https://dhcd.baltimorecity.gov/nd/adopt-lot-program and https://dhcd.baltimorecity.gov/water-access-program

Land leasing initiatives

Baltimore City is piloting 5-year formal leases of city-owned land to urban farms through its Homegrown Baltimore land leasing initiative. The initiative provides growers with five-year leases, for $100 per year. In order to be eligible, growers must have one year of experience and demonstrate that their farms will be profitable. The lots remain available for sale and the city can revoke leases with 30-days' notice. More information is available from the Baltimore Office of Sustainability: https://www.baltimoresustainability.org/

St. Louis, MO has a Garden Lease Program that allows residents a 5-year lease for $1.00 a year giving the lessee control of the site, including fencing it off and building a community garden, until such time as the city is ready to develop the land.

Land use regulations and zoning:

Zoning and land-use regulations are how states and local governments control how land within their jurisdictions may be used. Some land uses will be allowed without a permit and others will require a permit, usually called either a "special use" or "conditional use permit" depending on the community. Permit applications usually allow land uses and structures on a case-by-case basis and typically require site plan approval, public meetings, and permit fees. Before licensing, leasing, or

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purchasing land, make sure the property is zoned for the planned use of the land, and research whether you will need a permit.

Zoning involves government agencies (typically at the local level) drawing zoning maps of cities that indicate which areas of the city are to be used for residential purposes, commercial purposes, industry, mixed-use, etc. Once these zones are designated, certain activities and structures are allowed or disallowed in each of the zones, such as where certain types of urban agriculture may be practiced, permissible lot sizes, whether commercial production is permitted, the type and number of livestock that may be kept, and the types of structures that can be built. Some codes also set standards for irrigation runoff, pesticides, sanitation, livestock slaughter, setback requirements, and aesthetics, among other things (Public Health Law Center; Vaage and Taylor).

Among the types of allowed structures in a zoning district, some are allowed as principal structures and others as accessory structures. Accessory structures are usually structures that complement the primary structure. For example, in a single-family residential zone, a single-family home will typically be permitted as a primary structure, but a shed or greenhouse will likely be an accessory structure.

In some communities, the zoning provisions do not specifically discuss or identify some or all structures in their list of permitted uses in various zoning districts. If that is the case in the community where your farm is located, you may be able to demonstrate that the structure you intend to use is similar to another type of use that is contemplated in your local jurisdiction. Keep in mind that in some jurisdictions if an activity or structure is not specifically allowed, that may mean it is prohibited.

At the same time, some activities may only be allowed as accessory uses to another allowed primary structure or activity on the property. For example, in some zoning districts, on-site agricultural sales may only be allowed as an accessory use to the primary permitted use of crop agriculture.

Zoning and permitting rules change over time in response to strategic planning and community advocacy. For up to date, local information you will need to consult your local municipality. In most municipalities, zoning and permitting information is housed in the city or county planning department. Enforcement of zoning and permit applications may be housed in other municipal departments. For example, in Baltimore City, livestock permit applications and enforcement fall under the Baltimore City Health Department, Office of Animal Control's Regulation of Wild, Exotic, and Hybrid Animals.

To find out what the rules are, it's usually best to start with the planning department. Be patient and professional when communicating with municipal staff, and know that, especially in large cities, front desk staff in departments other than the planning department may not be familiar with urban agriculture, or up to date on the latest zoning and permitting changes.

How do I find my city's zoning maps and building codes?

If you have not already done so, or if you are considering an expansion or a change in your operation, you will want to find out what city or county zoning regulations apply to the property. Local municipalities typically have zoning maps available for the public to review, often at city or county planning offices, or online. This is an important step before making any changes to the land. If you build something or start an activity that is not allowed by the zoning regulations you may be forced to remove your improvements and may even be fined.

For land located in Maryland, watch the video "Understanding and Participating in Local Planning and Zoning" on Maryland's Agriculture Law Education Initiative's website at www.umaglaw.org for information about how to find a parcel's zoning, and the video "How to Access a Farm's Land Records" for step-by-step instructions on how to find the liber (book) and

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Below is a resource list for zoning and permitting in some of Maryland's major urban areas. For updated links, see the digital version of this guidebook on our website here: https://extension.umd.edu/urbanag

	Incorporated Cities	Planning Departments
Anne Arundel County	Annapolis	Anne Arundel County Office of Planning and Zoning: https://www.aacounty.org/departments/planning-and-zoning/ Annapolis Planning and Zoning: https://www.annapolis.gov/398/Planning-Zoning
Baltimore City* *Baltimore is one of only three "Independent Cities" outside of Virginia. This means it operates essentially as a county.	Not applicable	Baltimore City Planning Department: https://planning.baltimorecity.gov/ Zoning maps: https://planning.baltimorecity.gov/maps-data/GIS Within the Planning Department, the Baltimore Office of Sustainability has helpful educational materials about urban agriculture zoning and permitting: https://www.baltimoresustainability.org/
Baltimore County	None, all administration is by county government	Baltimore County Planning Department: https://www.baltimorecountymd.gov/Agencies/planning Very helpful map searchable by address: https://bcgis.baltimorecountymd.gov/myneighborhood/
Frederick County	Brunswick, Frederick	Frederick County Department of Planning and Permitting: https://frederickcountymd.gov/4592/Planning-Permitting City of Frederick Planning Department: https://www.cityoffrederick.com/221/Planning Brunswick (search for Planning Commission): https://brunswickmd.gov
Howard County	None, all administration is by county government	Howard County Department of Planning and Zoning: https://www.howardcountymd.gov/Departments/Planning-and-Zoning
Montgomery County	Gathersburg, Rockville, and Takoma Park	Montgomery County Planning Department: https://montgomeryplanning.org/ Gaithersburg Planning and Code Administration: https://www.gaithersburgmd.gov/government/departments/planning-and-code-administration Rockville Planning and Development Services: https://rockvillemd.gov/159/Planning-and-Development-Services Takoma Park City Planning: https://takomaparkmd.gov/government/housing-and-community-development/planning-and-community-development/

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	Incorporated Cities	Planning Departments
Prince George's County	Bowie, College Park, District Heights, Glenarden, Greenbelt, Hyattsville, Laurel, Mount Rainier, New Carrollton, Seat Pleasant	Prince George's County Planning Department: http://www.pgplanning.org/166/Planning-Department Bowie Planning and Community Development Department: https://www.cityofbowie.org/149/Planning-Community-Development College Park Department of Planning, Community, and Economic Development: https://www.collegeparkmd.gov/159/Planning-Community-Economic-Development District Heights: https://www.districtheights.org/ Glenarden Planning and Economic Development: https://cityofglenarden.org/government/departments/planning-economic-development/ Greenbelt Planning and Community Development: https://www.greenbeltmd.gov/government/departments/planning-community-development Hyattsville Planning and Zoning: https://www.hyattsville.org/861/Planning-Zoning Laurel Planning and Zoning: https://www.cityoflaurel.org/ecd/planning Mount Rainier Zoning: https://www.mountrainiermd.org/departments/code-enforcement/zoning-and-property-info New Carrollton City Charter and Code: https://www.newcarrolltonmd.gov/government/city_charter_and_code

All zoning is local

The City of Baltimore, Maryland, established two Chesapeake Bay Critical Area overlay zones to guide development around the Chesapeake Bay and promote resource conservation. One of the zones allows a number of agricultural uses, including farms and produce stands, by right. Baltimore, MD, Zoning Code § 1A05.2 (2017).

The City of Salina, Kansas, has a zoning ordinance that allows accessory structures, such as greenhouses, in all zoning districts, but they cannot exceed 360 square feet and can be no taller than the primary structure or 16 feet in height, whichever is less. Salina Kan., Code § 42-58 (2017).

Elmurst, Illinois, bans hoop houses, but allows smaller low tunnels or low cold frames that are no taller than 3 feet and no bigger than 100 square feet in size.

folio (page) numbers, which you may need to locate your parcel on your county's zoning map.

Building Codes:

Building permits may also be required for structures to ensure construction and other standards are met. Construction codes—such as electrical, mechanical, plumbing and building codes—often overlap with zoning codes. Along with health, sanitation, and fire codes, they also lay out minimum standards to ensure health and safety. Keep in mind that, depending on your municipality's code, "structures" might include hoop houses, greenhouses, low tunnels, and compost bins. To be sure any structure you plan to build satisfies building or other construction permit requirements in your jurisdiction, contact your local planning office before beginning construction.

Other hyper-local building standards:

In addition to city or county zoning laws and construction codes, there are other potential restrictions that may affect your use of a property. Historic preservation councils, architectural review boards and other neighborhood groups may set covenants on properties. Make sure you're aware of any aesthetic or other standards those types of groups might require.

Water access and usage laws:

Access to a reliable water source is crucial for an urban farm. In urban areas, it's state and local laws that most affect water access and usage rights. Local governments, in particular, may have water regulations like water emergency restrictions, graywater usage rules and water service fees. You will have to work with your local utilities department(s) if a potential lot doesn't have established water inputs or isn't connected to a meter. Check to see if your local government has programs to help subsidize the cost of equipment installation and water usage.

Also be sure you know whether your city or state has any restrictions on water usage. For example, does the state restrict where and how rainwater can be collected or used? In 2016, Colorado became the last state to allow for residential rain barrel water collection, with restrictions on the number and size of the barrels and how the collected water could be used. The rain barrel allowance is, however, limited to residences and does not apply to non-residential urban farms and gardens (Cabot et al. 2016).

Check with your local utility company about local restrictions on water usage. And while you're talking with them, be sure to ask if your city has a rebate program or other incentive program to help purchase rainwater harvesting or water retention equipment and materials. A number of cities offer rebates for rainwater harvesting systems, including Gaithersburg, Maryland. Other cities provide rain barrels free of charge. For more information about government initiatives to encourage water conservation, see Good Laws, Good Food by the Harvard Law School Food Law and Policy Clinic, in the literature cited section.

You can also contact your local USDA Natural Resources Conservation Service (NRCS) office for both financial and technical assistance to help implement conservation practices, including water-use efficiency.

Those pesky nuisance claims:

A farm that fits within or is exempt from construction code requirements, zoning laws, and other building rules and regulations can still run into legal problems if its activities create a nuisance. Nuisance laws are intended to protect the rights of others to use and enjoy their property or to protect the general public health or safety of a community. A farm that creates a nuisance could be subject to a commonlaw court claim even if there is no specific law prohibiting the activity.

There are two types of nuisance claims: private nuisance and public nuisance. A private nuisance occurs when the farm's activities interfere with another person's enjoyment of his or her own land. Interference from an urban farm could include noise from animals, equipment or increased customer traffic, significantly increasing dust, introducing strong odors that are deemed to be "unpleasant," attracting pests, creating vibrations with equipment, creating changes in the water table, etc. To

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prevent liability for private nuisance, start by consulting your local planning and zoning codes. (See above for information about how to locate your local zoning codes.)

A public nuisance affects the public in general and is not limited to immediate neighbors. A farm with standing water that becomes a breeding ground for mosquitoes might be deemed a public nuisance. Keeping animals in unsanitary conditions can also constitute a public nuisance because it can lead to disease that may endanger the public. In order to prevent liability for public nuisance, it is important to be aware of any public health, welfare, or safety concerns that your farm might create.

Being proactive and informing neighbors in advance about your plans for your urban farm is one of the best ways to reduce legal risk. Surprising your neighbors or being indifferent to their complaints can often leave your neighbors feeling like their only option is to sue you to rectify the situation. Let neighbors know in advance that you are aware of relevant regulations, that you intend to be a good neighbor, and that you would appreciate them letting you know if they have any concerns (within reason) so that you can address them in a timely manner.

Production, handling, and distribution

Soil testing and **nutrient management** are covered in Chapter 1: Urban production systems. **Employment and labor** laws are covered in Chapter 5: The human element.

Food safety:

Food safety is an area of significant legal risk for farmers, and a culture of food safety must be a priority on your farm. Although federal regulation is a large component of the food safety picture, particularly for food products that travel across state lines, state governments have a great deal of authority to design flexible legal regimes with more appropriate regulations for small-scale operators that sell at local markets or within state borders. Federal and state governments

All nuisances are local

In Eugene, Oregon, chickens or goats that make noise longer than 15 minutes may be prohibited from the neighborhood. See Urban Animal Keeping, City of EUGENE, www.eugene-or.gov/farmanimals; see also Eugene Code (EC) 9.5250.

Seattle, Washington, doesn't allow "odors or fumes from an urban farm … to escape into the open air in such amounts as to be detrimental to the health of any individuals or the public, or noticeable, discomforting or disagreeable so as to offend the sensibilities of a reasonable individual at a distance of more than 200 feet from an urban farm." Seattle, Wash. Land Use Code chap. 23.42.051 (C).

Marysville, Washington, allows animals, but it requires "All houses, pens or enclosures where chickens, turkeys, geese, ducks, pigeons or other domestic fowl or rabbits are kept shall be kept clean and free from disagreeable odors. No organic materials furnishing food for flies shall be allowed to accumulate on the premises. All manure and other refuse must be kept in tightly covered fly-proof receptacles and disposed of at least once each week in a manner approved by the animal control officer. (Ord. 2404 § 1, 2002; Ord. 2013 § 34, 1995)." Marysville, Wash., Municipal Code 10.04.340 (available at https://www.codepublishing.com/WA/Marysville/).

Somerville Massachusetts' city health inspectors can issue fines if gardens or structures are attracting rodents. Sommerville, MA Code of Ordinances § 9-56

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share regulatory authority with respect to many aspects of food safety. Some food safety issues are primarily regulated by the federal government (such as meat and poultry inspection), while others are primarily within the state's jurisdiction (such as farmers market and restaurant regulations).

Federal food safety laws:

In general, federal regulations apply to all foods that are sold in interstate commerce (meaning across state borders) or foreign commerce, and states have the power to regulate most foods that are only sold intrastate (see "What's federalism got to do with it?" below for more information about the interplay between federal and state governments). With a number of specific exceptions, the U.S. Food & Drug Administration (FDA) has jurisdiction over processed foods, seafood, and food additives, while the U.S. Department of Agriculture (USDA) regulates fresh produce, livestock, poultry, and eggs. In January 2011, President Obama signed into law the Food Safety Modernization Act (FSMA), which was the first major overhaul to the federal food safety regime since 1938. There are two major parts of FSMA that are particularly important to small and local food producers. First, FSMA increases federal regulatory power over agricultural producers of fruits and vegetables, which were not heavily regulated in the past. The Act does, however, exempt many small-scale producers from most of its regulatory requirements. Agricultural producers who average annual gross produce sales of less than $27,528 over three years are not covered by FSMA's Produce Safety Rule (PSR). Operations that gross less than $550,551 annually and who sell a majority of their products in direct sales to consumers, restaurants, or retail stores, either within the state or within 275 miles of the farm or production facility, are exempt from the produce safety standards. They must, however, maintain records to support that they qualify for the exclusion or exemption.

Second, under FSMA, facilities that "manufactur[e], process, pack, or hold food" are now required to maintain an extensive hazard analysis and critical control point (HACCP) plan. Small-scale processors and facilities are exempt from the specific hazard control requirements laid out in the statute, and instead must submit modified hazard control plans to the FDA. Similar to the PSR standards, facilities whose operations gross less than $550,551 annually and who sell a majority of their products in direct sales to consumers, restaurants, or retail stores, either within the producing state or within 275 miles of the production facility, are subject to the modified hazard control requirements. In the case of a foodborne illness outbreak or incident involving an exempt facility, the FDA retains the authority to conduct more comprehensive inspections and reinstate some of the standard requirements vis-à-vis that facility.

Note, the above gross sales cutoffs have provisions to adjust for inflation. For updated numbers, see the FDA website: https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-inflation-adjusted-cut-offs

Information about FSMA and food safety laws is available at umaglaw.org

State food safety laws:

States share regulatory authority with the federal government in many areas, but states enjoy complete jurisdiction over farmers markets and other types of direct farm sales, retail sales, restaurants, and many types of small-scale agricultural production and processing entities. In any given state, a variety of government agencies may have collective responsibility for the safety of the retail and restaurant food supply, including, for example, agriculture departments, health departments, environmental protection agencies, consumer protection agencies and business licensing agencies. These state agencies (1) administer federal food safety programs (if the state has adopted a cooperative agreement with the federal government), (2) create, implement, and enforce state-level food safety regulations, and (3) provide guidance to industry participants on compliance with federal and state laws.

Food safety certifications:

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Urban farmers who sell fresh produce to large retailers or other distributors may also be required by those buyers to certify their fruits and vegetables through one of many third-party voluntary quality certification programs for agricultural producers like USDA's Good Agricultural Practices & Good Handling Practices (GAP and GHP) audit verification programs. Neither federal nor state law requires farmers to participate in third-party voluntary quality certification programs. Farmers agree to undergo the certification process in order to be able to sell to those buyers, and the certification requirement becomes a condition of the sales agreement; meaning that failure to obtain or maintain the required certification can be a basis for refusing to accept produce. In some cases, growers can negotiate with buyers for buyers to help cover the costs of obtaining certification. As always, it is recommended that you have an attorney review contracts before you sign them. Information about how to find an attorney in your area is provided below. More information about USDA GAP, GHP and GAP+, as well as the Harmonized GAP certification programs is available at https://www.ams.usda.gov/services/auditing/gap-ghp.

Food safety laws for processed, "cottage," or value-added foods:

There is no comprehensive set of guidelines to determine whether a product is "value-added." The term, however, generally refers to raw products that have had their value enhanced through some method of production (e.g., popped corn, jam, salsa) or marketing (e.g., gift baskets). If a product is "value-added," then three major areas of regulation become important:

1. labeling;
2. licensing and permits; and
3. food health and safety.

Because processed and value-added foods can carry a greater risk of contamination or adulteration, they are subject to a number of stringent federal, state and, in some cases, local laws. The Federal Food, Drug and Cosmetic Act (FDCA) gives the FDA authority to regulate processed foods that travel in interstate or foreign commerce (Food, Drug, and Cosmetic Act, 21 U.S.C. §§ 301-392 (2012)).

The FDCA has been amended over the years by various acts (including the Nutrition Labeling and Education Act and the Fair Packaging and Labeling Act) to create the full set of laws by which food producers must abide. First, producers are barred from selling adulterated foods (21 U.S.C. § 342 (2012)). FDA has defined adulterated foods and set out regulatory standards for good manufacturing practices to protect processed foods from adulteration or foodborne illness (21 C.F.R. § 110.5 (2012)).

States are able to create exemptions for small-scale producers that do not sell their products across state lines (products that are limited to intrastate commerce). Second, food producers are prohibited from selling misbranded food and must satisfy certain requirements for labeling of food packages (21 U.S.C. § 343 (2012)). They are required to utilize uniform labels for foods sold in interstate commerce (Nutrition Education and Labeling Act, 21 U.S.C. § 343-1 (2012)); for example, they must list the item's basic identity, nutrition, ingredients, and source information on the package label (21 C.F.R. §§ 101.3(a), 101.4, 101.5 (2012)). Additionally, food packages must clearly state the net quantity of contents and must not be deceptively sized (Fair Packaging and Labeling Act, 15 U.S.C. § 1453 (2012)). There are a number of exemptions and modified requirements in these labeling regulations (21 C.F.R. § 101.9(j) (2012)). Remember, the FDCA federal food safety laws for processed foods do not apply to foods that are only sold within the same state ("intrastate"). If you are selling processed food outside of your state, however, you will want to check out the resources listed below for more information about the federal food safety laws.

State food codes or food safety regulations and laws covering processing and selling "cottage" foods or value-added foods are generally more relevant to urban farmers. Cottage food businesses are typically small, in-

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home food processing entities that prepare only small-scale, non-potentially hazardous foods (i.e., foods that do not support pathogenic microorganism growth or toxin formation). FDA 2009 Food Code 1-201.10. Meat, dairy, and shellfish are all examples of potentially hazardous foods. Less obvious foods, however, such as low-sugar jams, cooked vegetables, and low-acidity pickles and salsa are also considered potentially hazardous because they can support viral or bacterial growth if not properly stored. In effect, if the food has the potential to cause harm to consumers when not kept under proper temperature and storage conditions, the food is considered "potentially hazardous."

Most states have carved out exemptions in their food safety laws allowing for the intrastate sale of non-potentially hazardous foods processed in home kitchens, either without obtaining a permit or at least without undergoing traditional permitting requirements. In other states, farmers selling value-added foods will have to comply with state and/or local licensing or permitting requirements.

The State of Maryland has adopted many of the federal regulations into state law. In order to sell value-added products at a farmers' market in Maryland, farmers are also required to obtain a "Producer Mobile Farmer's Market License." The license is required to sell all products covered by the state's "On-Farm Home Processing License" as well as meat and poultry certified by the Maryland Department of Agriculture. It is not necessary to obtain a Producer Mobile Farmer's Market License to sell eggs, non-processed fresh fruits and vegetables, non-potentially hazardous baked goods, and non-potentially hazardous jams and jellies. The City of Baltimore has separate licensing and permitting requirements from the state. Farmers selling value-added products are considered a "food service facility" within the city. In order to operate as a food service facility within city limits, producers of value-added products must obtain a license from the Baltimore Commissioner of Health.

For more information on complying with the Maryland Cottage Food Business Law, see the Maryland Department of Health website https://health.maryland.gov and consider taking the Maryland Food Ventures course: https://go.umd.edu/mfv

States also set the food naming and labeling requirements for foods that are sold strictly within their respective state (Fair Packaging and Labeling Act, 15 U.S.C. § 1461 (2012).

Although the naming and labeling requirements may be very similar to the federal rules, it is important to remember that foods sold intrastate are governed by state rules, not federal rules. The labeling requirements in Maryland are typical. They require the name of the product, name and address of the cottage food business, ingredients of the product in descending order of the amount of each ingredient by weight, net weight or net volume of the product, allergen information (as per federal labeling rules), nutritional information that complies with federal rules if a nutritional claim is made, and the statement (printed in 10 point or larger type) made by a cottage food business that is not subject to Maryland's food safety regulations (MD. HEALTH GEN. § 21-330.1(c)(2) (2012).)

Contact your Extension agents, your state department of agriculture, or your state or local department of public health for information about your state's food safety and labeling laws.

The costs of complying with federal and/or state and local regulations along with technical barriers and difficulties understanding regulatory obligations can create seemingly insurmountable obstacles to maintaining a successful farming business. Ignoring the laws, however, will not protect you. To reduce your risk of running afoul of food safety laws, you have to be proactive. To stay in business, you are going to have to actively seek information and advice about what the law requires as well as what your customers require, and get help if you do not understand the law or you need technical or financial assistance to bring your farm into

compliance.

Resources for food safety laws:

Your Extension agents are a good source for questions about the food safety laws that may impact your farming operation. You can also contact your state's department of agriculture. You might also check with your local food policy council, food hub or farmers markets in your area, and contact your state or local bar association to ask for a referral for an attorney who practices in food or agricultural law. Maryland Extension has a lot of helpful information about food safety rules for value-added food products on their Ag Marketing website: https://extension.umd.edu/resource/direct-marketing-and-value-added-products

For information about state laws covering meat, poultry and egg processing for small-scale producers, see "Good Laws, Good Food" by the Harvard Law School Food Law and Policy Clinic, in the literature cited section.

Information about FSMA's Produce Safety Rule is available at the following websites:

- The Produce Safety Alliance: https://producesafetyalliance.cornell.edu
- The U.S. Food and Drug Administration: https://www.fda.gov/food/guidance-regulation-food-and-dietary-supplements/food-safety-modernization-act-fsma
- The Agriculture Law Education Initiative website: http://umaglaw.org/

Contracts:

A contract is any agreement (written or oral) where the parties (the people making the agreement) exchange mutual promises in return for some sort of consideration (typically money or a good) or benefit (e.g., a service). Contractual arrangements in agriculture take many forms including financial agreements such as mortgages, insurance policies, leases and license agreements. Many state and federal farm programs are contractual in nature, and the production and sale of farm products is often accomplished and compensated for by contract for future performance and delivery, like a Community Supported Agriculture (CSA) member agreement. Even employment arrangements, although often not written, are treated as contracts.

Most states have what is known as "statutes of frauds," which require that certain types of agreements be in writing before they can be enforced. Examples of contracts that often must be memorialized in writing to be considered valid are agreements for the sale of real estate and agreements that cannot be performed within one year. The risk in a contractual arrangement is the failure of either party to perform. The legal issue in contracts is their enforceability if one party fails to perform on their promise ("defaults" or "breaches the contract"). Often, contracts specify what constitutes default and the remedies if default occurs. If the contract is unclear, the courts generally employ two types of relief for breach of contract: specific performance and damages. In the case of specific performance, the breaching party is ordered to remedy the default and fulfill the contract. If specific performance is not possible or reasonable, damages are awarded to compensate the offended party. Contractual nonperformance can have ramifications well beyond the scope of the contract itself. For instance, the inability to meet contractual financial obligations to a mortgage lender may result in debt restructuring, foreclosure, or bankruptcy. Deviation from the specification of a production contract may result in the refusal of a contractor to take delivery of the product. Contracts are designed to protect the interests of all parties to the agreement. Performance failure can be a major source of risk and result in severe financial consequences.

Marketing laws and social media:

Many farmers, including urban farmers, use a variety of tools, including social media, to market their farms and farm products. Be aware that there are federal and state advertising and marketing laws that do need to be followed when you're advertising, especially if you are making any health benefit claims or someone is

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endorsing your product. For more information about legal considerations for direct farm marketing, see the social media section of the recorded webinars available from MidAtlantic Women in Agriculture: https://go.umd.edu/womeninag

Taxes and related legal issues

Choice of business entity structure:

How you choose to structure your farm operation is an important risk management decision. But, choosing isn't always easy. There are several types of business entities, each with its own pros and cons, and states have different requirements for different business structures. Also, depending on where your farm is located, there could be different requirements at the municipal level as well. In addition, it can be difficult to switch your legal structure after you've registered your business. So, choosing correctly at the start is crucial. You need to consider your business and personal financial needs, risks and ability to grow. Your choice can significantly affect the way you run your farm business, impacting everything from liability to taxes to control over the farm and succession planning. What you have to decide is which structure gives your farm the most advantages to help you achieve your goals; whether it personal financial goals, organizational goals, or community impact goals.

In most states, you will register your business with your state's Secretary of State's office (unless you're a sole proprietorship or a general partnership because those businesses don't have to register), and in most states you can file online. Most states and many cities also have a business or economic development office that can provide information about choosing a business entity structure. For example, Maryland's Department of Commerce's website at https://businessexpress.maryland.gov/start has information about how to choose a structure, how to register your business, how to determine if you need a business permit or a license, how to establish a tax ID/Federal Employer Identification Number (EIN) and how to develop a business plan. The Ag Law Education Initiative's publication library has a guide to farm business structures under the Agricultural Liability section: https://umaglaw.org/publications-library/ Virginia's State Corporation Commission has information about the different types of business entity types at https://www.scc.virginia.gov/clk/busdef.aspx as well as links to information about how to register a business and how to submit required annual reports.

Below are brief descriptions of the most common types of business entity structures. For more information about the different types of business structures and choosing a business entity structure for your farm, see the additional resources at the end of this chapter, and, of course, speak to an attorney and/or accountant. Information about how to find an attorney is below in the "Additional Resources" section.

Sole proprietorship

A sole proprietorship requires no formalities whatsoever to form. It also offers no protections against liability. Selecting the sole proprietorship business structure means you're personally responsible for your company's liabilities. As a result, you're placing your own assets (e.g., you family's home or car) at risk, and they could be seized to satisfy a business debt or legal claim filed against you. It can also be difficult to obtain funding as a sole proprietor precisely because there is no protection for your assets.

Partnership

A partnership is owned by two or more individuals. It requires a signed agreement to define roles and percentages of profits. There are two types: general partnerships, where everything in the business is shared equally (the partners share equally in managing the business as well as the profits and losses); and limited partnerships, where only one partner has control of the business, while the other partners simply contribute to and receive only part of the profit as spelled out in the partnership agreement. Partnerships carry a dual status as a sole proprietorship or limited liability partnership

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(LLP), depending on the entity's funding and liability structure. A partnership allows the partners to share profits and losses and make decisions together within the business structure. The partners will, however, each be held liable for the decisions made, including the actions of the other business partners.

Limited Liability Company

A Limited Liability Company (LLC) is a hybrid structure that allows members of the LLC to limit their personal liabilities and protect their personal assets while enjoying the tax and flexibility benefits of a sole proprietorship or a partnership, depending on the number of members in the LLC. Under an LLC, members are protected from personal liability for the debts of the business, as long as they do not act illegally, unethically or irresponsibly in carrying out the activities of the business. The LLC itself pays no federal income taxes.

Corporation

Because the law holds that it is its own entity—separate from its owners—a corporation carries the least amount of personal liability risk. This means that creditors and customers can sue the corporation, but they cannot gain access to any personal assets of the officers or shareholders. The corporation also has its own legal rights. It can sue on its own behalf to recover damages. It can own and sell property, and can sell the rights of ownership in the corporation in the form of stocks.

There are several types of corporations:

- C corporations are owned by shareholders and are taxed as separate entities.
- S corporations avoid double taxation, much like partnerships or LLCs. Owners of S corporations also have limited liability protection.
- B corporations, otherwise known as "benefit corporations," are for-profit entities structured to make a positive impact on society. For more information about benefit corporations see https://www.bcorporation.net/en-us/
- Closed corporations, typically run by a few shareholders, are not publicly traded and benefit from limited liability protection.
- Not-for-profit corporations, exist to help others in some way and are rewarded by tax exemptions. See more about not-for-profit corporations below.

Cooperative

A cooperative is owned by the same people it serves. Its offerings benefit the company's members, who vote on the organization's mission and direction. Cooperatives offer tax advantages similar to an LLC. They're not usually taxed on dividends paid to members, so members are only taxed once on their income from the cooperative and not both individually and as the cooperative.

More about not-for-profit corporations

Many urban farms establish their farm as a not-for-profit organization because they want to give back to their community, and the federal and state governments encourage these charitable organizations by providing benefits to them. Not-for-profit organizations can be associations, trusts or corporations. The benefits of setting up a farm as a not-for-profit include a not-for-profit property tax exemption, the ability to apply for public or private grants (which don't have to be repaid) and to be able to request tax-deductible contributions. Incorporation (becoming a corporation) is necessary, however, to also limit the liability of your organization's board members and obtain personal liability protection for general and advocacy activities that are in line with the not-for-profit's mission.

Starting a not-for-profit corporation is just like starting a for-profit business—there are steps that you need to take to set your business up for success:

1. A key step is to clearly state the organization's charitable purpose in terms that will satisfy the requirements for not-for-profit state and federal tax-exemptions. Start by researching other not-for-profit farms' mission statements, especially farms that are similar to the one you want to establish. Then, be

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able to state the purpose of your farm, what population it will serve, and the role that your farm will play in your overall charitable mission. For example, the farm's income might directly support charitable activities like providing low-cost fresh food for the community or maybe the farm will provide education about agriculture. Fulfilling your farm's mission will be the reason behind every business decision made and action taken. It will also assist you in developing your business plan.

2. Research state laws and procedures for incorporating as a not-for-profit. You might start by asking your local library for resources on how to start a not-for-profit. There are lots of books on how to start a not-for-profit, for example, "How to Form a Nonprofit Corporation" by Anthony Mancuso walks you through all of the federal issues. Many not-for-profit groups successfully incorporate without legal assistance, while some do consult with an attorney and others rely entirely on an attorney's services.

3. Consider the pros and cons of utilizing not-for-profit status. The benefits mentioned above are balanced with a lack of individual ownership, which may be a concern for the day-to-day functioning of the farm and/or for farmers who want to pass land on to the next generation. The property of the not-for-profit corporation is owned by the organization and managed by its board of directors, not by any individual or group of individuals.

4. Write a business plan. A business plan explains in detail how your organization plans to accomplish its mission. It provides a way to review and plan operational issues, including the costs to start the not -for-profit, how the organization will obtain future funding, and how everyday activities will be managed such as who will be in charge of making decisions about what the farm grows or which growing practices the farm will use, etc. You will also need to include parts of your business plan in your federal application for tax-exempt status and future fundraising. You will need to demonstrate to funders that your organization is making a difference, so your business plan should include how you will determine the farm's impact and whether it's meeting its stated mission. Again, your local library may have resources to help guide you through writing a business plan. Also check with your local Extension Office to see what resources they may have. There are also resources available online to help people prepare business plans, and you might find that there is assistance also available through not-for-profit organizations or clinics whose mission is to assist small start up businesses.

5. Create your organization's bylaws. Bylaws set up the corporation and how it is to be run. They may incorporate much of what you set out in your business plan, but they will definitely include provisions for who is eligible to be on your board of directors, what the board members' duties and powers are, how members are elected and what is the process for removing a board member. Generally, you will need to file a copy of your bylaws as part of your articles of incorporation and to apply for federal tax-exempt status.

6. Choose a name for your not-for-profit and research to make sure it's not already being used. A simple online search is a good place to start. You can also search the U.S. Patent and Trademark Office's Trademark Electronic Search System (TESS), for free, to make sure that you aren't infringing on any trademark: https://www.uspto.gov/trademarks-application-process/search-trademark-database

7. Complete and file your organization's "articles of incorporation" as directed by the state. Usually it will be the state where the farm is located. Check your state's Attorney General or Secretary of State for information about what's required.

8. Get your Federal Employer Identification Number (EIN). You can apply for the EIN at the Internal Revenue Service's (IRS) website: www.irs.gov

(search for "Apply for an employer identification number").

9. Once you get your EIN, file for state and federal tax -exempt status. It's the federal determination made by the IRS that determines whether your organization qualifies as a 501 (c) (3) or other charitable tax-exempt organization recognized under the Internal Revenue Code (the federal tax laws). So, you will need to file for federal tax-exempt status in order to avoid state taxes. Seek assistance from a tax professional, especially starting out, to make sure you are filing the required documents by the required deadlines.
10. Appoint your organization's initial directors and hold an initial board meeting. Your board is crucial for fulfilling various positions and legal obligations within your organization. Typically, your board will start with at least 3 people and will grow as the organization grows.
11. As with any business, obtain the necessary business permits and licenses to carry out the activities of the farm.

Control

If it is important for you to have sole or primary control of the business and its activities, a sole proprietorship or an LLC might be the best choice for you. You can negotiate such control in a partnership agreement as well. A corporation, however, is constructed to have a board of directors that makes the major decisions to guide the business. A single person can control a corporation, especially at its inception, but as the business grows, so does the need to operate it as a board -directed entity. Even for a small corporation, the rules intended for larger organizations – such as keeping notes of every major decision that affects the company – still apply.

Capital investment

If you need to obtain outside funding sources, like investor or venture capital and bank loans, you may be better off establishing a corporation, which has an easier time obtaining outside funding than does a sole proprietorship. Corporations can sell shares of stock, securing additional funding for growth, while sole proprietors can only obtain funds through their personal accounts, using their personal credit or taking on partners. An LLC can face similar hurdles, although, as its own entity, it is not always necessary for the owner to use their personal credit or assets.

Licenses, permits and regulations

In addition to legally registering your business entity, you may need specific licenses and permits to operate. Depending on the type of business and its activities, it may need to be licensed at the local, state and federal levels.

Income taxes for for-profit businesses:

An owner of an LLC pays taxes just as a sole proprietor does: all profit is considered personal income and taxed accordingly at the end of the year. Generally, a business owner will want to avoid double taxation in the early stages. The LLC structure prevents that, and makes sure you're not taxed as a company and then again as an individual.

Individuals in a partnership also claim their share of the profits as personal income. Your accountant may suggest quarterly or biannual advance payments to minimize the end effect on your return.

A corporation files its own tax returns each year, paying taxes on profits after expenses, including payroll. If you pay yourself from the corporation, you will pay personal taxes, such as for Social Security and Medicare, on your personal return for what you were paid throughout the year.

Taxes for not-for-profit organizations

There is a lot of information about tax benefits for not-for-profits available on the Internet. For general education about tax treatment for not-for-profit urban farms, see the following:

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- Community Law Center, Inc.'s "Legal Tools for Urban Agriculture in Baltimore City": https://communitylaw.org
- The Sustainable Economies Law Center's UrbanAgLaw.org website NonProfit Urban Ag (has information about each type of tax exemption organizational structure as well as examples of applications submitted by urban agriculture organizations to obtain the desired exempt status): http://www.urbanaglaw.org/non-profit-urban-ag/
- Candid's GrantSpace website has lots of information about starting a not-for-profit organization, including a comprehensive state-by-state resource guide for starting a not-for-profit organization with links to not-for-profit associations, legal support resources, and government agencies: https://learning.candid.org/resources/knowledge-base/starting-a-nonprofit/

The 2018 Tax Cuts and Jobs Act eliminated the deduction for not-for-profit losses for individuals, partnerships, estates, trusts, and S corporations that operate a farm as a hobby or mainly for sport or recreation, or which have investment activity intended only to produce tax losses for the investors. Not-for-profit corporations other than S corporations, however, can still deduct the expenses of carrying on the activity. See IRS Publication 225. Always seek tax advice from an attorney and/or accountant.

Property tax incentives for urban agriculture:

Some states and cities have created tax incentives, like reductions in property taxes or tax rebates, to help encourage urban agriculture. Usually the state legislature passes an enabling statute allowing localities to choose to enact an incentive and giving the locality the authority to establish eligibility criteria, determine the process for granting and maintaining the tax incentive, and even set the amounts of the incentives. Contact your local economic development office, your state's department of commerce, your local bank, or your lawyer or accountant to find out if there is a tax incentive program for your area.

In Maryland, Baltimore City, Montgomery County, and Prince George's County have tax incentives for urban agriculture, but the conditions which qualify a property for those incentives are very specific and may not apply to all urban farms. Information about the Baltimore City urban agriculture tax credit is available from the Baltimore Office of Sustainability: https://www.baltimoresustainability.org/
The Prince George's County urban agriculture tax can be found by going to the following website and searching for CB-74-2015: https://princegeorgescountymd.legistar.com/Legislation.aspx
The Montgomery County urban agriculture tax credit can be found here: https://www.montgomerycountymd.gov/Finance/bill-31-16.html

Insurance

Insurance is one of the most important tools you can have to manage a variety of risks associated with having a farm, but it can be especially important to understand the layers of insurance protection that might be needed if you are farming in an urban area.

How does insurance work?

An insurance policy is a contract. Generally, the parties to the contract are the policyholder (the "insured") and the insurance company (the "insurer"), and the terms of the insurance contract spell out the rights and responsibilities (or "duties") of both parties. Basically, the insured's duties are listed in the conditions section of the policy and they include paying premiums on time, being honest and acting in good faith and not making any misrepresentations in applying for the insurance, notifying the insurer of any changes that are material to the protections ("coverage") provided under the policy (for example, if you add another vehicle that your employees use to do their work or you build a new addition onto a building you use for the farm), providing

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notice of a loss as set out in the policy (within a certain timeframe and through certain means) and cooperating with the investigation and legal defense of a loss or claim. Failure to fulfill any of the duties is grounds for breach of the contract, cancellation of the policy and forfeiture of the premiums paid. The insurer's duties are to also act in good faith and fair dealing in handling claims, to pay the losses suffered by the insured or a third party as a result of a covered risk, and under liability policies, to also defend or pay the legal expenses of an insured who is subject to a legal action for the covered risk.

Insurance policies are not the easiest contracts to understand. Ask other businesses for recommendations for insurance agents to contact when you're shopping for insurance. You can get quotes from different agents for no cost. And, although your insurance agent can provide information about what the policy covers, it is prudent to have an attorney review the policy to make sure it will be able to provide the protection that you want in the event of a loss. The legal costs and potential liabilities as well as the loss of your time in trying to get payment from the insurance company is worth the small fee that an attorney will charge to review your policy. The time to find out that your policy does not actually cover what you thought it did is not after a loss has occurred.

Mandatory insurance:

If you own a business, you may be legally required to carry certain insurance for your employees. Even if you're not required, however, it might be prudent to obtain coverage to protect your farm business against unforseen losses. Requirements for legally required employee insurance vary from state to state. Every state has a department or division of insurance and a department of labor. Check your state's insurance department and department of labor for information about your state's requirements.

Maryland's Insurance Administration is online here: https://insurance.maryland.gov/Pages/default.aspx

They keep a list of agricultural insurance providers, and have a helpful guide to agricultural insurance.

Unemployment

Unemployment insurance provides for payments of unemployment compensation to workers who have lost their jobs through no fault of their own. The IRS and state workforce agencies require most employers to pay federal and state unemployment insurance, which provides benefits to eligible workers who have lost their jobs. State criteria vary, but IRS requirements are generally standard. Under federal law, if your employees qualify as farmworkers, you're subject to Federal Unemployment Tax (FUTA) on the wages you pay them if you meet certain criteria. (See following column for link to IRS FUTA website for the most current requirements.)

Information about FUTA, including who must pay and how to figure out how much tax to pay, see IRS Publication 15. For a list of state unemployment agencies, visit the U.S. Department of Labor's website at https://oui.doleta.gov/unemploy/agencies.asp

Workers' compensation

Workers' compensation insurance provides income replacement and rehabilitation and medical benefits to employees who are injured at work. Workers' compensation benefits are secured by insurance policies, paid for by the employer. Because it is a no-fault insurance, employers are responsible for benefit payments regardless of what caused the on-the-job injury or who contributed to it. Most states require employers to obtain workers' compensation insurance. Although agriculture is one of the nation's most hazardous industries, about half of all states allow agricultural employers to provide little or no workers' compensation coverage for migrant and seasonal farmworkers.

If your state does not require workers' compensation insurance, but you would like to provide it, contact your state's workers' compensation division for requirements.

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If the insurance is not legally required and you choose not to carry it, still contact the division, as it may require you to carry out certain procedures, such as providing each employee with a written statement of non-coverage.

In Maryland, agricultural employers with less than three full-time employees or an annual payroll for full-time employees below $15,000 are exempt. Agricultural office workers, independent contractors on farms (other than migrant laborers), and owner-operators of large tractor-trailer vehicles are also exempt. Workers Compensation insurance can be purchased from a commercial provider or Maryland's state-administered fund.

Business liability protection:

Liability insurance is a part of the general insurance system of risk financing, It protects the purchaser of the insurance (the "insured") from the risks of liabilities imposed by lawsuits and similar claims. It provides legal counsel and pays the costs and any damages that might be awarded against the insured in the event someone sues or makes a claim that comes within the coverage of the insurance policy.

Commercial general liability (CGL)

A CGL policy is a standard insurance policy issued to business organizations to protect them against liability claims for bodily injury and property damage arising out of premises, operations, products, and completed operations; and advertising and personal injury liability (injury to mind or emotional injury).

CGL policies have different levels of coverage. A policy might cover premises liability, which protects the business from bodily injury or property damages that occur at the business' physical location. It may also include coverage for bodily injury and property damage that is caused by the farm's products (product liability).

Product liability

Covers the cost of defending claims in the event that a product from your farm causes injury or other damage to third parties.

For farms, product liability insurance protects them in case a food that they produce for sale harms a consumer. This is different than general liability insurance, which covers risks of bodily injury or property damage caused by direct or indirect actions of the insured, like a customer slipping on water in the greenhouse. Product Liability insurance covers the legal defense costs as well as paying any judgments that might be awarded against the farm, which, in the case of foodborne illnesses can be in the millions of dollars. Although food safety planning and good agricultural practices reduce the chance of a farm product making someone sick, they won't protect you from being sued and having to defend your business. In addition, many farmers markets require vendors to carry product liability insurance.

Employer liability

Covers financial loss if a worker has a job-related injury or illness not covered by workers' compensation.

Premises liability

Premises liability insurance protects the property owner from claims that a person was injured on the premises. If your farm business is located on your personal property, like your home, it is unlikely that your homeowners policy will provide protection in the case that a customer or visitor to the farm is injured while at the farm. Your farm business will need to be separately protected under a business liability policy. Premises liability coverage for businesses is often part of a CGL policy, but it can be purchased as a separate policy. Contact an insurance agent for information.

Errors and omissions (an "E&O" policy)

Covers errors and omissions made in financial reporting statements, as well as coverage for damages, resulting from the actions of its directors and officers. This policy is useful for businesses that have boards of directors, and investors. An E&O policy can be made part of a CGL policy or can be purchased separately. Contact an insurance agent for information.

Note that, depending on who owns the land on which your urban agriculture project is located, you may need to consider different ways of obtaining liability

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insurance. Any agreement allowing use of land (for example, a lease, license, etc.) should make clear which party is responsible for obtaining liability insurance. If the lease or license indicates that the farmer or urban agriculture organization will be liable for all activities conducted on the property, it will be the organization's responsibility to obtain liability insurance. It is likely to be much easier for the property owner to obtain private property insurance. This insurance can protect the property owner and the organization farming the land, as lessees or licensees, from the costs of any injuries caused on the site. If an organization is leasing land it will be important to check with the landowner to make sure that the agricultural project is covered by the landowner's private property insurance. If the property owner does not wish to obtain property insurance or if the organization is unable to obtain insurance, the organization may want to consider extra precautions such as fencing the property, if permitted, posting signs around the lot limiting open hours, and warning of hazardous conditions on the property. Cities do not provide liability insurance for city-owned property, but they also typically do not require the lessees or licensees to obtain their own liability insurance either.

For more information about liability insurance, read Goeringer (2015) "Understanding agricultural liability" and Goeringer (2014) "Premise's liability."

Commercial auto insurance:

Typically, auto policies for businesses ("Business Auto Policies" or "BAPs") include both liability and casualty protection for a company's use of cars, trucks, vans and other vehicles in the course of carrying out its business. This may include vehicles owned or leased by the farm, hired by the farm, or employee-owned vehicles used for the farm's business purposes. All automobile coverage is typically specifically excluded from all other general liability policies, so you will have to buy a separate policy to insure any vehicles that are used in your farm business.

Liability protection

This coverage helps pay for legal defense costs and/or another person's medical expenses or repair bills if one of your covered vehicles is involved in a car accident. Your personal auto policy will not cover the regular use of your personal car for business purposes. Just like your personal auto liability insurance, however, if you use vehicles to run your farm business, the cost of paying premiums for insurance protection in the event of an accident is miniscule compared to the potential costs of being sued or paying for damages. In addition, just like our personal vehicles, if you have business vehicles on public roads, especially if the business holds the title to the vehicle, in most states they will have to have at least a minimum of liability insurance to be on the road legally.

BAPs can be purchased from many insurance companies. Contact an insurance agent for information.

Casualty protection

Covers damage to your vehicles due to things like hail, vandalism, theft, or someone else causing an accident. For businesses, this coverage can help pay for repairs if your vehicle is damaged, and it can cover the cost of renting a vehicle to continue business operations while your vehicle is being repaired or you purchase a new one.

Property casualty protection:

First party property protection for structures, machinery, equipment, inventory (fire, hurricane, etc.)

Protects the things you need to run your farm business. It can pay for repairs or replacement of your business property if it's stolen, damaged or destroyed in a fire or natural disaster. Just like homeowners insurance, property protection for your business helps offset the costs of major repairs or having to replace expensive items that you need to keep your business operating.

Commercial Property insurance can be purchased from many insurance companies. Contact an insurance agent for information.

Crop insurance:

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Tort liability

Tort liability arises from the negligent or intentional infliction of damage to a person or to property. This type of liability is commonly insured under a general liability insurance policy. The simplest type of tort arises where someone is injured on a farm. Tort liability may also include employment torts, such as wrongful discharge, discrimination, or harassment. The effects of agricultural activity on the environment has both statutory and liability components. Adjacent landowners, communities, and public interest groups may use a combination of regulation and tort liability to influence agricultural activities. Traditional liability insurance policies may not cover pollution claims, and noncompliance with environmental regulations could result in severe civil or criminal penalties. Use of sound and safe production practices; education, certification, and licensing; third party audits; and compliance with statutes and regulations can mitigate the risk of tort liability. Accurate records of production activities, pesticide and fertilizer application; proper sanitation; and timely and appropriate response to adverse events, like spills or contamination, can provide evidence of reasonable care to protect workers, neighbors, and the environment.

Crop insurance protects against either the loss of crops due to natural disasters or the loss of revenue due to declines in the prices of agricultural commodities. It is federally supported and is sold and serviced by certain approved private-sector crop insurance companies and agents.

Whole-farm revenue protection (WFRP)

Provides a risk management safety net for farms of all sizes that produce two or more commodities. Coverage is provided under one insurance policy, and is available in all counties nationwide. This insurance plan is tailored for any farm with up to $8.5 million in insured revenue, including farms with specialty or organic commodities (both crops and livestock), or those like urban farms that are marketing to local, regional, farm-identity preserved, specialty, or direct markets.

For more information, visit https://www.rma.usda.gov/Policy-and-Procedure/Insurance-Plans/Whole-Farm-Revenue-Protection

The Noninsured Crop Disaster Assistance Program (NAP)

Covers commercial crops. There is no minimum size of an operation (meaning that small urban farmers can take advantage of risk protection for their commercial operations that traditionally would not have crop insurance available to them) in order to be eligible for NAP.

The 2018 Farm Bill re-authorized incentives for NAP coverage for socially disadvantaged, limited resource, or beginning farmers. Although NAP does not cover home gardens (because they are not ordinarily viewed as commercial enterprises), NAP does provide risk coverage for producers who may commercially produce small crop acreage in an area for local or direct markets.

Contact your local Farm Service Agency Service Center to learn about more about NAP coverage for your farm. You can locate your local FSA office and get more information about NAP at https://www.fsa.usda.gov/state-offices/index

Other types of crop insurance

Crop-Hail Insurance is a type of insurance that insures against crop damage caused by rain and hail, but it can also cover damage due to fire, wind, lighting, and vandalism. It typically protects crops that are still in the field and have yet to be harvested. Hail damage is not covered under the federal crop insurance program. Farms with large field crops in areas with high risk of hail damage typically purchase hail insurance.

Information about Crop Insurance is available at https://ag-risk.org/

Bonus reading

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What's federalism got to do with it?

The United States is governed using a system of federalism. Federalism means that both the federal and state governments have their own spheres of responsibility and authority. The federal government has a variety of powers, but its authority is limited by the U.S. Constitution. Anything outside the federal government's constitutionally-limited authority is left for the states to govern exclusively. In areas where the federal government has authority to govern, those federal laws will, subject to some exceptions, generally override state laws. Both the federal government and state governments have authority over urban agriculture issues.

Federal authority: The three most important powers that the federal government has in relation to urban agriculture issues are the authority to regulate interstate commerce, the taxing power, and the ability to attach conditions to federal funds given to states.

Federal preemption of state laws: As mentioned above, anything outside the federal government's constitutionally-limited authority is left for the states to govern. States have authority to pass laws regarding the health, safety, and morality of their citizens (referred to as the states' "police powers"). The federal government has the power to preempt state and local governments from imposing laws and regulations in areas in which the federal government has constitutional authority to act. Federal preemption can either be express or implied. Express preemption occurs when a federal statute explicitly states the intention of Congress to preempt state law. For example, states are preempted by the Nutrition Education and Labeling Act (NLEA) from imposing labeling requirements for processed and packaged foods that are not identical to the labeling requirements in the Federal Food, Drug and Cosmetic Act. The NLEA gives specific examples of the actions that are preempted and those that are not. Those that are listed as preempted in the NLEA are, thus, expressly preempted. Implied preemption occurs when the language and content of the law suggests Congress intended to preempt state law, but Congress has not clearly said in the law what it intends to preempt.

State & local government: The interplay between state and local governments works slightly differently. Local governments do not have any express authority under the U.S. Constitution. Instead, local governments have only the power given to them by their state under that state's constitution and statutes. All states have the same amount of constitutionally-derived power and authority, but determine on their own how to apportion this power between the state and local governments. Thus, while all states have the same amount of authority under the federal government, the amount of authority that states give local governments varies from state to state and sometimes from city to city within the same state. Because there is so much variation, this manual cannot lay out all of the specific authorities given to local governments in each state, but it will provide some examples of the different types of authority.

Urban farming in the 2018 Farm Bill:

The Agriculture Improvement Act of 2018, a/k/a "the Farm Bill," is an omnibus piece of federal legislation covering agriculture, conservation, rural development, research, and food assistance. It has been continuously reauthorized approximately every five years since 1933. What's in the Farm Bill directly affects how U.S. agriculture operates for the next five years. The 2018 Farm Bill officially recognizes urban farmers—from those with community gardens to those operating multimillion-dollar vertical farms—with the creation of both a new office at the USDA and a research, education, and extension initiative. Specifically, the bill creates the USDA Office of Urban Agriculture and Innovative Production. Congress created the office "to encourage and promote urban, indoor, and other emerging agricultural production practices." The bill:

- Provides for the assignment of a farm number for rooftop, indoor, and other urban farms.
- Provides authority to award competitive grants to operate community gardens or not-for-profit farms,

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educate a community on food systems, nutrition, environmental impacts, and agricultural production, and help offset start-up costs for new and beginning farmers.

- Establishes an Urban Agriculture and Innovative Production Advisory Committee.
- Establishes pilot projects to increase compost and reduce food waste, and create urban and suburban county committees.

The Farm Bill also establishes the Urban, Indoor, and Other Emerging Agriculture Production Research, Education, and Extension Initiative. This Initiative does the following:

- Authorizes competitive research and extension grants to support research, education, and extension activities for the purposes of enhancing urban, indoor, and other emerging agricultural production.
- Provides $4 million in mandatory spending for each fiscal year 2019-2023.
- Requires the U.S. Secretary of Agriculture to conduct a census of urban, indoor, and other emerging agricultural production.

USDA's website with info. about the Farm Bill is at https://www.farmers.gov/farmbill.

Tips on how to work with regulators and permitters:

Working effectively with the many agencies that regulate your urban farm is an important tool to have in your legal risk management toolbox. There is no downside to implementing a decisive strategy of consistent, constructive engagement with regulators, and creating relationships with people inside regulatory agencies before a problem arises. An avoidance or antagonistic approach to regulators, however, often does lead to needless and costly adversarial interactions and increased angst and anxiety on the part of the farm owner, and could wind up subjecting your farm to increased scrutiny or maybe stiffer penalties in the event of a violation.

Like you, most regulators take pride in the work that they do. Like you, they choose to serve the public good. And like you, they take seriously their role in ensuring a safe food supply and healthy environment for the public. And most farmers, in turn, are trying to do the right thing and meet the regulations that apply to their farm. As noted in the What if I Want to Change a Law? Action Item Box below, engaging often with your regulators from the start helps build trust. Most regulators aren't out to get farmers or put farmers out of business. Regulators have to eat, too. The vast majority of regulators view their job as finding solutions to problems. Developing a dialogue with the people who enforce the laws that impact your farming business and who can help you understand your options for solutions if and when a problem occurs "is the best path to complying with your regulatory burdens while running a profitable business."

And that honest dialogue shouldn't necessarily end should you receive a notice of a violation. If you receive a notice of non-compliance, it is certainly prudent to quickly obtain legal representation to protect your rights, however, as your attorney will surely advise you, the best way to manage the risks associated with an investigation is to be honest and cooperate with the regulatory body. Deceit and delay very rarely serve a farm that is under investigation. The only winners, then, are the lawyers who represent you in the protracted administrative proceedings and your competition who will seek to gain an advantage in the marketplace by publicizing your misfortune.

For more information about working effectively with regulators and permitters, see "Working With Regulators" and "Dealing with Regulators Tipsheet: An inspector, certifier or other regulator has made a decision I disagree with. What can I do?" from Farm Commons: https://www.farmcommons.org/

What if I want to change a law?

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Start by being plugged in or connected where you might not already be. Get to know some of the people who are writing the laws and enforcing the laws that uniquely affect your urban farm. Do you know anyone on the planning and zoning committee? What about the city's waste collection authority—who know about the city's requirements for disposing of pesticides? Do you know any of the inspectors from the department of health, who might be tasked with inspecting for compliance with a city's set-back requirements for small livestock structures? Talking with the lawmakers and regulators will help you learn what they think are the most important aspects of the laws, and they, in turn, might learn from you ways that the laws could be improved to support urban farms. Also, having a more than arm's length relationship with regulators helps build trust and cooperation between you and the enforcement agencies, and the agencies might be more likely to work with you to find a solution to problems.

Public outreach can also help build the social capital and community consensus necessary to make changes in local policy. Advocates of urban farming can provide forums for the discussion, negotiation, and evaluation of urban agriculture issues. The list of strategies/ approaches/forums/ways to engage community members and increase awareness, etc., is endless. Many communities have utilized a variety of strategies to engage community members and increase awareness about the benefits of urban agriculture and provided information about pertinent legal issues for urban agriculture. Advocates can engage community members in a variety of forums, from open community meetings to more targeted outreach. For more information about creating a "campaign for urban agriculture," see Good Laws Good Food Putting Local Food Policy to Work for Our Communities.

An attorney can help you understand and negotiate the procedural process for seeking to change a law or policy as well as help craft language for proposed changes. See above for information about how to locate an attorney in your area. When you interview attorneys, be sure to ask if they would like to volunteer all or some of their time to assist you. Many lawyers provide pro bono assistance for various causes they care about. It can also be a way to expand their client list. Or, if you have a law school in your area, you might contact the school to see if there are law students who could assist you, at no cost to you.

Additional resources and literature cited

- **General resources**
  - *USDA Urban Agriculture Tool Kit* (Feb. 2016): www.usda.gov/sites/default/files/documents/urban-agriculture-toolkit.pdf
    - Amanda Cather, *The Food Project*, *Urban Grower's Manual* (2008) https://thefoodproject.org/resources/manuals/
    - Cornell Small Farms Program, *Guide to Urban Farming in New York State* (Dec. 2012): https://smallfarms.cornell.edu/resources/guides/urban-guide-to-farming-in-ny/
    - Dig, Eat, and Be Healthy A Guide to Growing Food on Public Property: https://www.changelabsolutions.org
    - *Legal Tools for Urban Agriculture in Baltimore City*. (2015). https://communitylaw.org
- **Local resources**
  - **Cooperative Extension Agents**
    The Cooperative Extension System is a nationwide, non-credit educational network. Each U.S. state and territory has a state office at its land-grant university and a network of local or regional offices. Find your local Extension agent at https://pickyourown.org/countyextensionagentoffices.htm
  - **Food policy councils**
    A local food council, or food policy council, is an organization comprised of community members from various sectors within the food system including health officials, farmers, local food processors, local food distributors and retail outlets, farmers' markets, restaurants, farm preservation advocates, cooperative extensions and local

Managing legal risks to grow your urban farm continued...

government formed to facilitate partnership, provide learning and growth opportunities, and offer and promote policy recommendations that can improve local economic conditions for farmers and access to local foods.

You can find out whether there is a council in your area or how to start a council at https://connectourfuture.org/tools/ and http://www.foodpolicynetworks.org

- **Business structures and legal risk management**
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  - Crane, A, Gantz, G, Isaacs, S, Jose, D, Sharp, R (2013) *Understanding agricultural risks: Production, marketing, financial, legal, human. Extension Risk Management Education and Risk Management Agency*. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://extensionrme.org/Pubs/Introduction-to-Risk-Management-ENGLISH.pdf

- **Attorneys in your area**
  - Every state has a bar association to which every attorney who is licensed to practice in the state must belong. And, in larger cities, there are local chapters or associations that attorneys belong to. A search on the Internet for the name of your state and "bar association" will provide you with the website for your state's bar association. The same search can be done for your city. Contact your state and local bar associations, tell them you are looking for local legal assistance, and get information about their lawyer referral program.
  - Maryland agricultural attorneys are listed here: https://drum.lib.umd.edu/handle/1903/16374

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Chapter 5

The human element: rights and responsibilities, safety and stress

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The human element: rights and responsibilities, safety and stress

The human element of farming is too often overlooked, but vitally important. It is, after all, why many people farm in the first place: to feed people, to employ people, to provide a good quality of life for oneself and one's loved ones.

This chapter will help you learn how to proactively protect the physical and mental health of yourself, anyone else working on your farm, your customers, and your community. It will also talk about how to work towards the long-term sustainability of your farm by engaging your community and planning how you will pass the baton.

Many of these topics could benefit from a full chapter on their own, and much has been written about them already. This chapter will focus on putting these topics in the context of urban farming. Additional reading is recommended on the topics most relevant to your situation.

Physical health and safety

Physical farm safety risks are very specific to individual farms. Urban farms might need to consider safety related to small-scale **farm equipment**, hand-tool **ergonomics**, **heat and sun exposure**, **air quality, pest control products** (including organic sprays!), and **youth** on the farm. A farm task **safety audit** can help you think through tasks specific to your farm, and how to reduce the risk of injury. All farms should have an **emergency response plan**, and include it in trainings for workers and volunteers.

Mechanized equipment used on urban farms might include small vegetable tractors, walk-behind tractors, tillers, lawn mowers, weed whips, carpentry tools, and chainsaws. There is a lot to learn about how to use these tools safely, but the most important safety tip is to **take your time** and **take breaks** as needed. Tractors and power tools are unforgiving of the mistakes that you will make when you hurry or push yourself beyond exhaustion, hunger, and heat stress. **Never**, ever, try to clear a jammed tiller or mower with your hand.

Figure 1: NEVER clear a jammed or clogged piece of equipment with your hand. Photo by Neith Little, UMD Extension.

Tool banks or hardware stores that rent out power tools may offer safety classes for those borrowing tools. In the links at the end of this chapter, the Power Tool Institute has a great one-page safety tip sheet and Penn State Extension has guide to the most common riding tractor safety risks.

Ergonomic considerations will save you literal pain in the future. Back and shoulder injuries and chronic pain (work-related musculo-skeletal disorders) are common among farmers and farm-workers and can be disabling. But these injuries are preventable. You can practice good form and adapt tools and workstations to make lifting and carrying loads and performing repetitive physical work safer. For example, something as simple as choosing harvest totes with handles can make the tote easier to carry and reduce the risk of back injury. For more principles of ergonomics, and case studies of

adaptations, see *Simple solutions: Ergonomics for farm workers* by Baron et al. (2001).

If you are in a leadership position on your farm, it is important that you set a good example by proactively taking care of your body and working with others to lift heavy items. You might consider adopting a restorative physical practice such as stretching, yoga, or tai chi. Strength training in the off season, particularly of the core muscles, may also help prevent back strain.

Implementing health and safety measures is wise, but certain minimum measures are required by law. Maryland Occupational Safety and Health (MOSH), a division of the Department of Labor and Licensing Regulation, sets and enforces standards for workplace safety and health. MOSH standards for agricultural work largely mirror the federal Occupational Safety & Health Act standards, which set the baseline measures to reduce and manage safety risks associated with use of heavy machinery (e.g. tractors) and also include basic requirements for hygiene and drinking facilities. Specific regulations are listed in OSHA Part 1928: Occupational Safety and Health Standards for Agriculture. See the links at the end of the chapter for this reference, as well as articles to help you understand whether you are complying with MOSH standards.

Heat-exposure and sun-exposure are health risks for anyone who works outdoors. Safety precautions are necessary to reduce the risk of life-threatening illnesses such as heat stroke and skin cancer. Everyone, regardless of skin tone, can be at risk of developing skin cancer, and should take precautions to minimize sun exposure.

The risk of heat-related illnesses is increased by high humidity and inside high tunnels. Certain individuals may be at higher risk of experiencing heat-related illnesses, including older individuals, infants, and people with circulatory or heart conditions. The Occupational Safety and Health Administration (OSHA) has published a chart to guide employers in managing the risk of heat-related illness. For more and up-to-date information, visit https://www.osha.gov/SLTC/heatstress/index.html

In urban areas, **air quality** is an additional risk to consider when working outdoors. Air pollutants such as ozone and particulate matter vary from day to day depending on weather conditions such as wind speed and atmospheric inversions. The US Environmental Protection Agency (USEPA) monitors air quality and offers an online Air Quality Index forecast: https://www.airnow.gov/

When using **any pesticide**, even products labelled for use on organic farms, you **must** follow the instructions on the label. The label should include safety precautions to take.

Certain pesticides are only available for purchase to people who have undergone advanced training: these are called **Restricted Use Pesticides.** In Maryland, people who are allowed to purchase Restricted Use Pesticides must be certified by the Maryland Department of Agriculture.

Other, **general use** pesticides are available for sale "over the counter" so to speak. These include organic products commonly used by urban farmers, such as neem oil, *Bacillus thuringiensis* (BT), kaolin clay, and concentrated vinegar. These products should still be

Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning
91°F to 103°F	Moderate	Implement precautions and heighten awareness
103°F to 115°F	High	Additional precautions to protect workers
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures

Figure 2: Heat risk management guidance table from OSHA

treated with respect and used according to labelled instructions. Farms or businesses that use pesticides likely will need to comply with the Worker Protection Standard (WPS). For a quick introduction to your responsibilities under the WPS, see the UMD Extension factsheet "What Farmers Need to Know about the Worker Protection Standard" by Little and Everhart (2019).

If **youth** are an important part of your urban agriculture work, it will be important to consider their safety, and what learning and working experiences are developmentally appropriate for their ages. Penn State Extension has a very helpful article on children and safety on the farm, with a table showing appropriate farm work tasks and safety risks to consider for different age ranges (Murphy 2014).

Keep in mind that the federal Fair Labor Standards Act and other state laws impose limits on child labor, such that minors may only work outside of school hours and youths under 16 are generally limited to nonhazardous job duties. Hazard-based limitations are set by age brackets and may require prior certification or training. For more information, see Child Labor Laws in Agriculture: What You Need to Know.

Additionally, soil contamination is a risk that disproportionately affects youth. So testing for metal contaminants like lead is advised in particular for farms and gardens where youth will be visiting and working. For more on soil contamination risk management, see the Production chapter.

For the above risks, and for others more specific to your own situation, a safety audit can help identify sources of risk and ways to reduce that risk. The article linked above on youth on-farm safety has a template for one kind of safety audit, that helps the reader walk through the steps of a specific activity to identify where injuries could occur. Another kind of safety audit template is a checklist of common farm safety risks (Runyon 2009).

Proactively planning to reduce safety risks as described above is meant to prevent injuries and emergencies. But the final step in being prepared is to have an emergency response plan, and to clearly communicate that plan to visitors and as part of employee and volunteer trainings. Look back at the topics described above and consider which could result in an emergency situation at your farm or garden. What would you need on hand to respond to that situation effectively? What actions would you and others on your team need to take to protect people's safety? For example, if you needed to direct emergency first responders to your location, do you know the street address of the location where you work? Does everyone on your team know the address? Is it visible from the road?

First aid training might be worth pursuing. If you want to be able to respond with first aid in an emergency situation, be sure to keep your first aid certification current and understand the duty of care that you enter into once you begin administering first aid (Williams 2017). A wilderness first aid class might be more relevant to the types of injuries and illnesses you could encounter working outdoors, such as heat stress and sprains.

Mental health and stress management

"I need to fix the problem, I don't have time to de-stress." That's how I felt about stress management until very recently.

However, no matter how hard you work, life is going to continue being stressful. And farming can be a particularly stressful profession: long hours of both physical and social labor, with unpredictable weather and financial challenges.

The chronic stress of dealing with these challenges can, over time, negatively affect your physical and mental health. When you remain constantly in a "fight-or-flight" stress response state for a long period of time, the elevated levels of stress hormones in your body can cause long-term changes in your body that increase your risk of heart attack or stroke.

The human element: rights and responsibilities, safety and stress continued...

And if you spend all your time on the farm feeling worried, angry, frightened, and discouraged, over time you will no longer want to farm. The pressure and risk of burnout is greater the higher-stakes your farm goals are, whether your goals are to make a full living from farming or to address big systemic problems in your community through your urban agriculture work.

This means that problems on the farm require a two-pronged approach: both working towards solving the root cause of the problem and working to take care of yourself regardless of the outcome. Regularly working to get your mind and body out of stress mode is a productive use of your time.

University of Maryland Extension has gathered farm stress and mental health resources online: https://extension.umd.edu/FarmStressManagement

For help finding a health-care provider relevant to your needs, check out the Maryland Network of Care website: https://portal.networkofcare.org/Sites/Maryland They have a surprisingly intuitive web-tool for finding mental and behavioral health care providers and not-for-profits.

Health insurance

Finding and paying for health insurance and health care is an enormous challenge for entrepreneurs.

Many farmers say that getting health insurance coverage for their family is the primary motivation for someone in the family working off-farm. A national survey of farmers found that 41% of farm households get their health insurance from an off-farm employer, 28% directly purchase a private policy, and 24% use a public health insurance program such as CHIP, Medicare, or Medicaid. Patching together health insurance coverage from among the many options available can be confusing and expensive. In 2016, farm households paid, on average, $659 per month on health insurance premiums (Becot and Inwood 2019).

For those farmers who are employers themselves, finding a way to support their employees' health care can be an even bigger challenge. The **Small Business Health Options Program (SHOP)** is a program through the federal Health Insurance Marketplaces to help small businesses offer health insurance to their employees. **Health Reimbursement Accounts** are another option that offers the employer tax advantages (Pippidis 2018).

Despite the challenge, health insurance is a very important risk management tool. Farming is a physically taxing profession, and an injury or illness can quickly put the future of the farm in jeopardy.

University of Maryland Extension gathers health insurance information for farmers online here: https://extension.umd.edu/programs/family-consumer-sciences/health-insurance-literacy/farmers. In particular, the article "Farm Operations and Health Care Insurance" by Maria Pippidis, does a good job of explaining the options and key concepts.

Employees and volunteers

A farmer has certain responsibilities towards anyone working on their farm, which are legally defined by local, state, and federal labor laws.

It is important to understand that there are important legal differences between employees and volunteers. Additionally, for profit businesses are not supposed to accept volunteer labor, and even not-for-profit farms may run into legal trouble with volunteers and unpaid interns.

But wait, you say, farms host volunteers all the time! Some farms offer "sweat-equity" CSA shares which discount the share price in exchange for volunteer work on the farm. Other farms offer unpaid "internships" or "apprenticeships," occasionally providing lodging and food to these interns. And, famously, the WOOF program matches voluntourists with organic farms around the world.

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However, labor laws, like the minimum wage and workers compensation rules, generally do apply to farm interns and volunteers. There are good reasons why we have labor laws. They are meant to protect workers from exploitation, abuse, and unsafe working conditions.

You might have the best of intentions towards people working on your farm. But good intentions are not enough. Whether your farm is organized as a for-profit or not-for-profit, failing to understand and comply with labor laws exposes your farm to legal and financial risk.

If your farm has **employees, volunteers, interns, apprentices, or anyone who works in exchange for food or lodging**, you should learn more about labor laws and consider how to manage your farm's responsibilities and risks. Conversely, **if you are a farm worker**, it's also a good idea to learn more about your rights under labor laws. Even if your farm has no paid employees, it's worth learning more about labor laws.

Here are three references that will help you learn more:

- For a **short introduction** to agricultural labor laws, start with ***A guide to agricultural labor laws: How best to comply with the relevant federal and Maryland state standards***, by Pons (2014): http://umaglaw.org/publications-library/
- For **Maryland-specific** agricultural labor laws, read ***Maryland farm internships and labor laws*** by Everhart (2016): http://umaglaw.org/publications-library/
- For a longer discussion of how labor laws affect interns and volunteers on **sustainability-focused farms**, including **non-profit farms**, read ***Managing risks of farm interns and volunteers***, by Hannum and Armstrong (2016): chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://farmersmarketlegaltoolkit.org/wp-content/uploads/2017/11/FC_Interns-and-Volunteers-Guide-Federal.pdf
- Hiring and retention:

Every urban farm or garden depends on a handful of committed people fighting for its continued existence. Unfortunately, garden manager positions are usually unpaid and paid urban agriculture positions are often funded by temporary grants. This leads to burnout and turnover among the people the farm depends on most.

One part of addressing this problem is to use some of the risk management strategies identified in the marketing and financial chapters to work towards better financial stability for the farm and those it employs.

Additionally, clear communication and effective training can help reduce stress on the farm and improve job satisfaction.

See the list at the end of this chapter for resources on hiring the right person in the first place, how to conduct interviews, training new employees, and the tax and legal paperwork when you hire your first employee.

Customers, protecting their safety and your liability

When you sell a product, you have a responsibility to the safety of the person to whom you sell it. Selling food or agritourism experiences requires particular safety precautions, legal compliance, and liability considerations.

Every farm should assess **food safety** risks and adopt practices to reduce those risks. Basic food safety risk management practices include training anyone working on the farm to wash their hands, cleaning and sanitizing tools for harvesting, storing produce at appropriate temperatures, restricting animals' access to places where fresh produce is growing, and waiting 120 days between applying manure and harvesting. Good Agricultural Practices is a voluntary certification program. The Food Safety Modernization Act is a federal-level food safety regulation which is mandatory for farmers above a certain sales threshold. To learn more about food safety, see the UMD Extension food safety page here: http://extension.umd.edu/foodsafety

The human element: rights and responsibilities, safety and stress continued...

Customers may visit the farm to purchase at a farm stand, pick up a CSA share, or enjoy an **agritourism** experience such as pick-your-own or on-farm events. Many urban farms serve as community gathering places and experience a large volume of foot traffic. Clear signage and well-marked paths are important to guide farm visitors to the places where they should be, and steer them away from places where they might get hurt or trample produce.

In addition to doing your best to protect the safety of all visitors to your farm, it is a good idea to consider purchasing premise liability insurance. The Agriculture Law Education Initiative has helpful **guides to understanding farm liability**: http://umaglaw.org/publications-library/

The Maryland Insurance Administration has both a **guide to farm insurance** and a **list of insurance agencies that offer farm insurance**: https://insurance.maryland.gov/

Neighbors and community engagement

Community engagement is particularly important for urban farms, because urban farms have more neighbors in closer proximity than rural farms, and because community benefit is central to the mission of many urban farms.

Neighbor relations, because you can't not:

Whether for-profit or not-for-profit, outdoors on a vacant lot or indoors using artificial lights, an urban farm by definition is surrounded by neighbors. Having a good relationship with those neighbors can at minimum prevent nuisance complaints, and in worst case scenarios can save the farm when emergencies strike or developers come knocking. Get to know your neighbors, and be a good neighbor yourself. Be aware of farm activities that might disturb neighbors, such as smells, noise, and traffic and work to minimize their impacts. Beyond that, cultivate relationships with neighbors and listen to their input on ways the farm can be an asset to the community. When conflicts do arise, consider making use of mediation services, such as those offered by the Maryland Department of Agriculture.

Figure 3: Urban agriculture businesses where customers come onto the property, such as garden centers, farm stands, and agritourism operations, should consider purchasing premise liability insurance. Photo by Neith Little, UMD Extension, taken at Walther Gardens, Baltimore, MD.

Community engagement, if you want to do something about food deserts:

Many people get into urban agriculture because they have a deep desire to solve problems they see in the world, particularly the paradox of hunger in the midst of plenty. Different people call this problem by different names: "food deserts," "healthy food priority areas," "food swamps," "food apartheid," "food mirages." These different terms are part of an on-going conversation about the history and causes of why some communities have grocery stores full of staple foods and fresh produce and some communities do not.

This conversation has been explored more thoroughly by others and additional reading is recommended at the end of the chapter, but it is important to recognize that the existence of hunger in the United States is a complex social issue that goes far beyond access to grocery stores. A common first instinct is to think "I will grow more food, and sell it, and that will help solve the problem of food deserts." But in 2019 in the United States we produce plenty of food. Food deserts are not caused by a shortage of food, but by much more complex interactions of who owns land, who has access to education and jobs, and the history and politics of how things got that way. So if an urban farmer's

The human element: rights and responsibilities, safety and stress continued...

primary goal is to address food access in a community that does not have it, they will need to do more than just grow food and sell it, they will need to work on community economic development and community empowerment. That requires real community engagement work.

The first challenge someone embarking on a community engagement effort will encounter is that other people are people. Anyone who cares passionately about their community will already have **their own ideas** about what it needs, and will probably **already be working** towards the changes they want to see, investing their limited free time in their own community work. So it is unrealistic, to say the least, to expect to find engaged community members who will take up your ideas and invest their time and energy into making them happen as you envisioned them.

Community engagement, honestly undertaken, means recognizing other people's agency and being prepared to build something together that will surprise you. It's hard work, it takes time, and it requires very different skills from those needed to grow food or run a business. Cooperative community development is the kind of work Extension has done for the past 100 years, and our colleagues who take this part of our work most seriously have written down how they do it. Rutgers has a particularly helpful collection of training materials on how to conduct collaborative community assessments, which is a great place to start: https://njaes.rutgers.edu/evaluation/resources/needs-assessment.php

Transition planning

Transition planning, also called succession planning or estate planning, means having proactive conversations about whether and how your farm has a future beyond you.

For a **community urban farm**, transition planning might include

- working to improve the common problems of burnout and high turnover among not-for-profit farm managers and leading volunteers;
- identifying and training future leaders;
- building consensus among community members about the value and purpose of the farm in that community;
- establishing a not-for-profit organization that can be responsible for the farm long-term;
- and finding ways to protect the land as green space through re-zoning, purchase, or a land trust

For a **for-profit urban agriculture business** - whether a back-yard market garden, a high-tech indoor growing operation, or an independent garden center – transition planning might include

- evaluating whether the business has the potential to continue beyond the management of the current owner;
- brainstorming what the current owner would see as a positive outcome (scaling down, selling the business to fund retirement, getting bought out by a larger company, seeing the business continue under new management);
- quantifying the net worth of the business;
- talking with the people with an interest in the business (heirs, partners, long-time employees, investors, community members) about what their expectations and hopes are for the future of the business;
- if operating as a sole proprietorship, considering other business structures that might better facilitate transferring the business to new owners;
- figuring out how the business fits into the owner's will;
- and learning about state and federal estate taxes.

All types of farms will need to do three things:

1. **Clarify goals.** What is the main purpose of the farm currently? For what purpose does it need to continue beyond current management?
2. **Make good recordkeeping routine.** This kind of planning will pay off even in the short-term, if the

farm manager has an emergency and needs to ask for help temporarily.

3. **Seek help from an attorney and an accountant.** An attorney's advice will be invaluable when dealing with wills, estates, business incorporation, and more. A tax accountant will be invaluable to both for-profit and not-for-profit organizations.

For more resources on farm succession planning, see the end of this chapter.

Summary

Managing the human part of a farm is likely to be the most complex part of a farmer's work, and is likely to require skills outside the prior experience of many farmers.

- Plan how to minimize physical health and safety risks, including equipment-related injuries, heat and sun, air quality, and pesticides.
- Learn about your legal responsibilities to protect the safety of everyone working on your farm, but in particular youth and employees.
- Invest time in stewarding your own mental health and explore health insurance options for small businesses and self-employed individuals.
- If your farm has employees, volunteers, interns, apprentices, or anyone who works in exchange for food or lodging, you should learn more about labor laws and consider how to manage your farm's responsibilities and risks. Conversely, if you are a farm worker, it's also a good idea to learn more about your rights under labor laws. Even if your farm has no paid employees, it's worth learning more about labor laws.
- Consider food safety risks and risks to visitors to your farm, and explore liability insurance options. For small farms liability insurance is often less expensive than you would expect!
- Cultivate good relationships with your neighbors, and if your urban farm is mission-focused be prepared to dig deeply into the work of community engagement.
- Plan for the future of your farm with transition planning, including identifying what the farm's future could look like after you leave it, keeping good records, and seeking help from an attorney and accountant.

Additional resources and literature cited

Updated clickable links are available in the digital version of this guidebook at https://extension.umd.edu/urbanag

- **Physical health and safety:**
  - **Power tool safety**, from The Power Tool Institute: https://www.powertoolinstitute.com/
  - **Riding tractor safety**, from Penn State Extension: https://extension.psu.edu/national-safe-tractor-and-machinery-operation-program-manual
  - ***Ergonomics** for farmworkers*, by Sherry Baron, Cheryl F. Estill, Andrea Steege, and Nina Lalich. (2001), published by US Department of Health and Human Services, Centers for Disease Control and Prevention: https://www.cdc.gov/niosh/docs/2001-111/pdfs/2001-111.pdf
  - Working in outdoor and indoor **heat** environments, United States Department of Labor, Occupational Health and Safety Administration: https:/www.osha.gov/SLTC/heatstress/index.html
  - **Heat illness** and agriculture, by Dennis Murphy (2014), Penn State Extension: https://extension.psu.edu/heat-illness-and-agriculture
  - Remember **sun safety** in the field, by Charles Schwab and Janis Stone (2017), Iowa State University Extension: https://store.extension.iastate.edu/product/4993
  - US Environmental Protection Agency (USEPA) **Air Quality Index** forecast: https://airnow.gov/
  - Maryland Department of Agriculture **Pesticide** Regulation. https://mda.maryland.gov/plants-pests/Pages/pesticide_regulation.aspx

The human element: rights and responsibilities, safety and stress continued...

- Farm and ranch **safety audit.** Guide M-117. Runyon, C. (2009) New Mexico State University Cooperative Extension Service. https://aces.nmsu.edu/pubs/_m/M117.pdf
- Can you be sued for performing **First Aid**? Williams, M. (2017) https://www.cprcertified.com/blog/can-you-be-sued-for-performing-first-aid

- **Laws about workplace safety on the farm:**
  - Little, N.G. and Everhart, S. (2019) What Farmers Need to Know about the **Worker Protection Standard.** University of Maryland Extension Factsheet. https://extension.umd.edu/resource/what-farmers-need-know-about-worker-protection-standard
  - **Child** labor laws in agriculture, what you need to know, by Ashley Ellixson, on the Maryland Risk Management Education Blog: http://agrisk.umd.edu/blog/child-labor-laws-in-agriculture-what-you-need-to-know?rq=Child%20labor
  - **Children** and safety on the farm, by Dennis Murphy (2014), Penn State Extension: https://extension.psu.edu/children-and-safety-on-the-farm
  - Article on required **sanitation facilities** by Sarah Everhart, on the Maryland Risk Management Education Blog: http://agrisk.umd.edu/blog/is-your-hand-labor-operation-is-legal?rq=hand-washing
  - Farmers, are you complying with **MOSH standards**? By Sarah Everhart, on the Maryland Risk Management Education Blog: http://agrisk.umd.edu/blog/farmers-are-you-complying-with-mosh-standards?rq=MOSH
  - Is my farm exempt? **OSHA** confusion continues, by Kristi Kress Wilhelmy, on the Maryland Risk Management Education Blog: http://agrisk.umd.edu/blog/is-my-farm-exempt-osha-confusion-continues?rq=osha
  - Occupational Safety and Health Administration (OSHA) Part 1928: **Occupational Safety and Health Standards for Agriculture** https://www.osha.gov/laws-regs/regulations/standardnumber/1928

- **Mental health and stress management**
  - Farm **Stress** Management. University of Maryland Extension. https://extension.umd.edu/FarmStressManagement
  - How to cultivate a productive mindset. Michigan State University Extension. https://www.canr.msu.edu/resources/how_to_cultivate_a_productive_mindset
  - Maryland Network of Care: https://portal.networkofcare.org/Sites/Maryland
- **Health insurance**
  - Health insurance information for farmers, University of Maryland Extension: https://extension.umd.edu/programs/family-consumer-sciences/health-insurance-literacy/farmers, In particular, the article "Farm Operations and Health Care Insurance" by Maria Pippidis, does a good job of explaining the options and key concepts.
- **Employees and volunteers**
  - Maryland **farm internships and labor laws**, by SarahEverhart (2016), University of Maryland Agriculture Law Education Initiative: http://umaglaw.org/publications-library/
  - A guide to **agricultural labor laws**: How best to comply with the relevant federal and Maryland state standards, by Pons (2014) University of Maryland Agriculture Law Education Initiative: http://umaglaw.org/publications-library/
  - Managing Risks of **Farm Interns and Volunteers**, by Hannum and Armstrong (2016). Farm Commons: www.farmcommons.org
  - **Farm employee management**, by O'Rourke (2014), Iowa State University Extension: https://www.extension.iastate.edu/AGDm/wholefarm/html/c1-70.html, Covers hiring the right person in the first place, how to conduct interviews, and training new employees.
  - **Tax and paperwork checklist for hiring a farm employee,** by Armstrong (2014), Farm Commons: www.farmcommons.org

The human element: rights and responsibilities, safety and stress continued...

- **Customers, protecting their safety and your liability:**
  - **Food safety,** UMD Extension: http://extension.umd.edu/foodsafety
  - **Farm insurance,** Understanding agricultural liability: Premise's liability, by Paul Goeringer (2014): http://umaglaw.org/publications-library/
  - Maryland Insurance Administration: https://insurance.maryland.gov/
  - A Consumer Guide to Farm Insurance, by the MD Insurance Administration: https://insurance.maryland.gov/Consumer/pages/ConsumerPublications.aspx
  - List of insurance companies, by the MD Insurance Administration: https://insurance.maryland.gov/Consumer/Documents/publications/farminsurancecompanylist.pdf
- **Neighbor relations and community engagement:**
  - Maryland Department of Agriculture, Agricultural **Conflict Resolution** Service: https://mda.maryland.gov/Pages/acrs.aspx
  - Guides to **collaborative community needs assessments**, collected by Rutgers University Extension: https://njaes.rutgers.edu/evaluation/resources/needs-assessment.php
  - **Engaging communities** section of Cornell Small Farms guide for urban farms: https://smallfarms.cornell.edu/2017/05/02/3-engaging-communities/
- **Hunger and food deserts**
  - Buczynski, A. B., Freishtat, H., & Buzogny, S. (2015). Mapping Baltimore City's Food Environment. Baltimore, MD. https://mdfoodsystemmap.org/wp-content/uploads/2015/06/Baltimore-Food-Environment-Report-2015-1.pdf
  - Lappe, F. M., Collins, J., & Rosset, P. (1998). World Hunger: 12 Myths. Grove Press.
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  - Rise and Root Farm blog, by Karen Washington: https://www.riseandrootfarm.com/karen-washington
  - Crensen, M. A. (2017). Baltimore: A Political History. Baltimore, MD: Johns Hopkins University Press.
  - Baltimore's Strange Fruit, film by Eric Jackson and Maddie Hard: https://blackyieldinstitute.org/baltimores-strange-fruit/#:~:text=Baltimore's%20Strange%20Fruit%20is%20a,personal%20narrative%20and%20social%20commentary.
  - **Succession / Transition planning:**
  - The Farm Transition Planning section of the Ag Law Education Initiative's publications website has helpful articles on choosing an attorney, talking with family members about estate planning, understanding estate tax law, calculating net worth, using conservation easements, and even navigating divorce. http://umaglaw.org/publications-library/

Does any of this sound familiar?

It's been raining for weeks, the weeds are strangling your crops, it seems like there are fewer customers at the farmers market every week, your landlord just called to say your rent is going up, your summer helpers decided they would rather work indoors, and on top of it all that unrealistic Extension Agent keeps bugging you to write a business plan.

If you recognize yourself in the above paragraph, you're not alone. Surviving the day-to-day challenges of farming can be overwhelming, leaving you exhausted and struggling to remember why you started in the first place.

The purpose of this guidebook is to help current and aspiring urban farmers move from crisis management to proactive risk management. As an urban farmer or urban ag entrepreneur, it's easy to spend all your time putting out metaphorical (or literal!) fires, triaging your To Do list, and chasing that fabled big grant or trendy new crop that you hope will solve all your financial problems. But by investing the time to clarify your goals, and what steps you need to take to achieve them, you will be better able to achieve financial stability and prevent yourself from burning out.

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NORTHEAST EXTENSION RISK MANAGEMENT EDUCATION

USDA United States Department of Agriculture National Institute of Food and Agriculture