According to the National Gardener’s Association, twenty-five million U.S. households planted vegetable and fruit gardens in 2008, and these numbers continue to rise. From an organic vegetable garden at the White House to the preponderance of community gardens in nearly every major metropolis in the U.S., urban food production is shifting towards sustainable local sources. Planting gardens not only strengthens your community’s food security---it also supports your access to affordable and healthy food.

1. Gardens can be started at any scale, in any location, with any intention. The following toolkit is meant to act as a guide and reference for the new gardener, providing basic tips and tricks to get your urban garden growing.

- Community gardens
- Window gardens
- Kitchen gardens
- Herb gardens
- Container gardens
- Yard gardens
- Rain gardens
- Pallet gardens
- Guerrilla gardens
Recent research suggests that only 2% of America’s food is locally grown and nearly 12% of every dollar’s worth of food consumed at home comes from transportation costs. Gardens offer a logical, affordable and accessible link between food and table, and are rapidly becoming ubiquitous fixtures in the urban realm.

**INGREDIENTS**

- Space for planting
- Soil medium
- Positive drainage
- Solar access
- Plants

**INSTRUCTIONS**

1. Gardens can be configured in any number of ways, supporting both small-scale ventures and larger enterprises.

2. Even without access to land, gardens in the urban realm can be realized. Small window boxes, climbing vertical gardens, and rooftop gardens offer up alternatives to the traditional growing typologies. Barring these options, enterprising farmers can use either formal agreements or guerrilla gardening tactics to appropriate and then cultivate under-used public spaces.

3. Finally, urban food production can be supported simply by adjusting buying behaviors; in patronizing community supported agriculture groups, farmer’s markets, local farms, and food cooperatives that source local produce, consumers sustain productive urban landscapes.
Victory Gardens, born out of wartime food shortages, demonstrate a successful localized fresh food economy in the United States. During both World War I and World War II, citizens planted gardens in their backyards for their own consumption. The result was so successful that in 1943, Americans planted over 20 million Victory Gardens, and their harvest accounted for nearly a third of all the vegetables consumed in the country that year.

INGREDIENTS

- Any type of edible garden

INSTRUCTIONS

1. Consider your specific dietary needs. What do you typically buy from the store that you can grow yourself? How many fresh vegetables and fruits does your family eat on average? What would you need to grow and save to support your household for the entire year?

2. Use this information to develop a plan for your own garden, focusing on the types of food you will appreciate the most.

3. Start by planting things that you know you’ll eat--- this produce can reduce the grocery shopping you’ll be doing throughout the year.
Political and social activists recognize that access to healthy food is a basic human right, and have defined the term *Food Security* to address this issue. The New Orleans Food and Farm Network suggests that food security exists when “all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” This basic description of food security addresses both nutritional value and safety, while also ensuring that this food will be acquired in socially acceptable ways. Today, this notion of food security is used in development and humanitarian aid, and is used to help to determine equity in terms of food access.

1. Like food security, the term food justice addresses the notion that food access is a basic human right. The New Orleans Food and Farm Network calls food justice a condition where “every household should have an accessible way to get healthy food onto their table, which suits their family’s culture, regardless of race or income.” Because fresh food providers often import their products, many communities must rely on other entities and costly transportation infrastructure for food access. This disconnect routinely penalizes the poor, who are more likely to live in food deserts, or can’t afford to pay the high price of imported produce.

2. Spend some time getting to know the food landscape in your city. You should be able to find out where fresh food is coming from and who has access to that produce, while also identifying food deserts in your community. Work with local growers, activists and leaders to resurrect local food production and ensure widespread dissemination.

### Ingredients
- Grocery stores
- Farmer’s markets
- Growing space for farms
- Edible urban forests

### Instructions
COMMUNITY GARDENS

In urban areas where land is either scarce or prohibitively expensive, community gardens provide shared, low-cost space for urban gardeners. These lots are typically owned or leased long-term by individuals, community non-profits or cities, and divided into plots that can be rented to gardeners seasonally. While the structure of these gardens ranges from a highly-organized group farm model to an individualized backyard garden, most share a communal approach to gardening, including shared resources.

INGREDIENTS

• Shared land
• Shared tools and storage
• A common water source
• Raised beds or other marked spaces for individual plots
• A garden coordinator or collective organization
• A set of shared values and tenets for the entire garden

INSTRUCTIONS

1. While community gardens function much like individual gardens, there are a number of unique factors that improve efficiency and ownership in these group endeavors. These gardens often start off under the leadership of visionary individuals, who acquire land, ensure that appropriate permits and security is in place, advertise within the community and host information sessions that will get the garden started.

2. Under this leadership, a larger group will coalesce, often creating a set of shared operating standards, a fee structure, and chore lists. The clearing of the lot, build-out of the beds and acquisition of soil and tools typically unfolds at this stage.

3. As the garden develops, members participate in regular meetings, group workdays, or produce sales. A listserv or other shared communication device helps to connect garden members with each other and pertinent group information.
A CSA is a membership group that connects farmers directly to buyers. In this model, a farmer charges membership dues to subscribers before the growing season begins, which allows him or her to pay for the seed and labor that must be invested in a crop at the outset. As the growing season unfolds, each member gets a portion of the available produce generated on that farm, regardless of the quality or type of crop yields. While this model passes on increased risk to the shareholder, the entire community benefits from a fair and sustainable market for the farmer, and as a result, stronger ties to local food. Some CSAs offer optional farm chores or other forms of membership engagement, and can support a variety of products, including vegetables, fruit, eggs, flowers, meat, dairy and honey.

**INGREDIENTS**

- A farmer with a local farm and a diverse season of products
- Weekly member boxes
- A mechanism for delivery---either by truck or bike to the city for distribution, or to be picked up by each subscriber on the farm
- A plan for annual membership fees, anticipated membership benefits and any method of engagement by subscribers

**INSTRUCTIONS**

1. CSAs can be started with a nominal investment when paired with existing farms. The best partner candidates are small or mid-sized farms that produce a great variety of different crops and are near an urban center.

2. Some CSAs offer meat, flowers, honey, eggs or dairy in addition to vegetables and fruit, and many are selected for their organic farming practices. Each new CSA needs to determine its identity, products and core values at the outset.

3. Initial steps for transitioning a farm into a CSA involves the development of a business plan---including a fee structure for membership, an anticipated growing schedule, produce types and quantities, and a strategy for communication with members.
Fresh, local food can usually be found at farmer’s markets, where farmers sell their produce directly to buyers. These markets help to strengthen the link between local farms and urban or suburban customers, reinforcing interactions that allow buyers to get real-time information about their food. Farmer’s markets also help to illustrate regional differences and seasonal changes, because these markets typically sell what is grown at local farms from week to week.

**INGREDIENTS**

- A location: typically farmer’s markets are outdoor events, in an area with high visibility and enough space to support a number of unique farm stands.
- Signage
- Tables
- Farmers and their produce

**INSTRUCTIONS**

1. Successful farmer’s markets rely both on the regular patronage of locals and the spontaneous visitor. Established rain or shine dates, a stable location, and high visibility help to encourage an active market base.

2. The design and layout of the space helps to establish the character of the market and also to facilitate sales. For readability and good circulation, it helps to have a uniform layout for tables and booths, an ample dedicated walking path, and a single information booth to provide both resources and organizational leadership.

3. The market will evolve over time, and this individualization is an important component of place-based identity. Some markets host events, such as a recycle-thon, live music, or educational programs.

4. Once they are established, many markets invest in a single credit card processing machine, and then sell tokens or script that each of the farmers can accept instead of cash.
Like grocery stores, food cooperatives sell groceries to individuals. These co-ops typically have members who own and operate the stores, and most stock locally-grown and organic produce. These stores often sell bulk foods and offer discounts to members, as well as opportunities to work in the store.

**INGREDIENTS**
- A location
- A building
- A manager
- A cooperative membership
- Relationships with local producers

**INSTRUCTIONS**

1. Starting a food co-op is a long-term endeavor that will include membership support, capital, physical space, an inventory of goods, and ongoing relationships with growers and producers. A full-fledged business plan should be developed for each specific site, and there are many good models to consult before you begin. The appendix has several suggested food co-op resources.
Green jobs are created when employers offer workers decent wages to support sustainable initiatives. Although the notion of a green-collar job is a relatively new one, and is often paired with technology and the environment, it also fits squarely within the tenets of the urban farming movement. Green jobs are on the rise in the urban farming world, where numerous positions have been created to cultivate sustainable local crops.

• Positions for farmers that strike a balance between sustainable farming practices, adequate pay, and stable work

1. Regular jobs can be turned into green jobs by adjusting the compensation, type of work and work practices to improve overall sustainability. This sustainability should be evidenced in terms of the environment, cultural or social needs, and economics.
Your garden may have a specific product type, or it may support a variety of different products. Typical garden products include: flowers, seedlings, herbs, heirloom vegetables, eggs, and honey. You will need to look at regional climate data, available gardening space, the current season and your own dietary needs to determine what you will want to grow.

INGREDIENTS

- A climate hardiness zone map
- A plant selection guide or seed catalogue

INSTRUCTIONS

1. Using the climate hardiness zone map, identify the zone in which your garden is located. Use that data to help select plants from seeds or nursery starts, both of which will list the hardiness and planting schedules for your geographic area.

2. Consider starting small—test new products and techniques to see what works and what you like. As your garden grows over time, you will be able to make micro-adjustments to increase productivity.

3. Look on the seed package for the Latin name of the plant (which will help you find additional information in plant manuals), the growing conditions it needs, and the mature size of the plant. Acronyms are typically limited to the following: HHA is a half-hardy annual (a one-season heat-dependent plant), HA is a hardy annual (this plant is a single season plant that can survive a variety of growing temperatures), B is a biennial (a two-year plant) and P is a perennial (this plant can live for many years, unless it is called a “short-lived perennial.”)
YOU MAY HAVE A NUMBER OF DIFFERENT OPTIONS FOR WHERE YOUR GARDEN IS LOCATED, AND YOU MAY DISCOVER THAT CERTAIN ENVIRONMENTS ARE BETTER SUITED FOR DIFFERENT KINDS OF CROPS. SELECTING A SITE IS A FUNDAMENTAL COMPONENT OF FARMING SUCCESS—ONE THAT WILL LARGELY DETERMINE BOTH THE GARDEN’S PRODUCTION AND EXPERIENTIAL QUALITIES. YOUR INITIAL SITE ASSESSMENT WILL HELP YOU FORMULATE A PLAN FOR GARDEN TYPE AND PRODUCT TYPE, AS WELL AS DEFINE INFRASTRUCTURAL NEEDS.

• Tape measure
• Graph paper
• Pencil
• Regional gardening guides

1. Assess your space before you begin, observing where the existing patterns of sun, shade, drainage, and soil types occur. This will give you a better sense of what is needed, which plants will grow best in different areas, and how to mitigate existing environmental issues.

2. For each unique site, you will need to address accessibility, including walking paths within the garden and delivery of soil and materials, outdoor lighting, watering options, groundcover, and maintenance. You may want to design your garden for optimal functioning (for instance, placing herbs close to the kitchen where they will be used,) or for aesthetics, by integrating focal points or other experiential qualities.

3. If you have dogs or other animals, consider building borders or fencing.

4. Consider hardscaping and other groundcover strategies.

5. Take measurements and make a drawing of your plan before starting.
Solar access is a critical factor in every garden, and the amount of sunlight that your garden receives will determine the types of plants you will be able to grow on each site. Rather than wage a battle against the elements, challenge your planting strategy to work within these existing conditions and constraints.

If your site gets direct sunlight from the East, South and West, you will have many areas suitable for sun-dependant crops. Otherwise, you will likely need to lay out your crops in accordance with their solar needs and the available sunlight during the day.

If you have limited sunlight in your garden, do not despair. In addition to planting shade-tolerant plants, you can also improve solar access by either terracing or stacking pots vertically, so the garden takes advantage of sun from a specific direction, or by using mirrors and white surfaces to bounce and reflect sunlight within your space.

INGREDIENTS

- A compass
  or:
- A map with cardinal directions

INSTRUCTIONS

1. Determine the cardinal directions of your site by checking maps or surveys, or by using a hand-held compass. Identify North as well as the existing site conditions such as tall trees and surrounding buildings.

2. When the sun rises in the East, morning sunlight will be low in the sky. As mid-day sun hits the site, it will be coming from the South and high in the sky, sometimes, directly overhead. Late afternoon sun sets in the West, again low on the horizon. Although this pattern exists throughout the year, there are more daylight hours in the summer and the fewest in the winter months, and the sun reaches farthest north in the summer.

3. Now consider the sun’s path relative to the existing site conditions. Buildings and trees on and adjacent to the site will block sunlight during the day, and you should be able to map these shaded areas by looking at each of the cardinal directions and overlaying the diurnal and seasonal behavior of the sun.
Unless your garden uses xeriscaping or drought-tolerant, low-maintenance crops, you will need access to water for plant cultivation. If you have a roof on or abutting your site, you may be able to harvest rainwater runoff and store it for use over time. If you have access to the municipal water supply or a natural water body, you can connect directly to that source. Once you find a source for water, you’ll need to consider what system you will use to water your plants. These systems range from low-tech buckets to high-tech digital programmable automatic watering devices.

**INGREDIENTS**
- A water source, such as a roof and catchment tank
- A hose bib
- A hose, soaker hose, sprinklers or a drip system
- Any digital device for timing or automation

**INSTRUCTIONS**
1. Create a plan for dispersing water throughout the site. Consider areas where you will need more water than others, or whether the site can be uniformly watered.

2. Connect the water source to the planting areas, either with hoses or pipes. If you want to bury these lines, you will need to trench the pipes.

3. If you’re using a timer or automatic watering system, this should be connected to the water source.

4. Water regularly, and slowly. Gardens respond well to watering that completely saturates the sub-soil, which favors a few longer watering events rather than shorter periodic watering.

5. Think about accessibility and your daily routine. If you locate your water source in a central or easily accessed place, you’ll be more likely to make watering a regular part of your schedule.
Soil contaminants need to be addressed before planting any edible crops to avoid health repercussions. Contaminants range from heavy metals and petrochemicals to high levels of salt. Many small nonprofits offer free or low-cost soil testing; it may be worth researching these resources in your area. Once you test for soil contaminants, repeat this occasionally to monitor your situation and remediate as needed.

1. If you identify toxins in your soil, such as heavy metals or petrochemicals, you will need to either remove, remediate, or encapsulate the soil. If you choose to remove the soil, scrape away the contaminated layer of soil, which can be identified through testing. If you choose to remediate the soil using plants, you will need to do research to identify which specific plants pull those toxins from the soil, and then plant and harvest repeatedly. While this phytoremediation process can take years to cleanse the soil, it is the most natural and sustainable solution available. Finally, if you choose to encapsulate, lay down a root barrier and build raised beds on top of the contaminated soil. These raised beds should have high-quality organic soil from a reliable source.

2. Salty soils can be flushed with regular watering, and augmented with gypsum and organic matter. Other good soil amendments include compost, compost tea, humates, and composted manure. Earthworms should return to the soil with these additions, which will help to further improve the soil quality.
Healthy plants require a good supply of soil nutrients for proper growth. Animal manure is a great source of nitrogen and other important nutrients, as long as the manure comes from animals that are fed a natural diet and are not given artificial growth promoters or antibiotics. Exercise caution with the rates of manure application, both to prevent runoff and to manage methane emissions that occur as manure decomposes.

**INGREDIENTS**

- Manure: acquire manure, either from a local farm or from a nursery or garden center. Herbivore manure is best, coming from cows, horses, sheep, chickens or rabbits. Make sure that the manure comes from organically raised animals to avoid manure laced with antibiotics and hormones, and that it is composted, as new manure can burn plants.

- A shovel and pitchfork

- A wheelbarrow

- Compost

**INSTRUCTIONS**

1. Test your basic N-P-K and pH soil health before starting your garden, and from season to season. The results of your soil nutrient tests will tell you what fertilizers to use and whether your pH needs to be adjusted to allow the plants to absorb nutrients efficiently.

2. Apply no more than 10-15 pounds of manure per square yard.

3. Mix the manure with compost to integrate it into your soil.

4. If you buy the manure from a farm, you may need to heat it up and dry it out before using it. You can do this by covering it with a plastic tarp to solarize the material, killing potential pathogens.
The supports that you’ll need in your garden relate to the site and to the type of garden under cultivation. Consider your needs ahead of time, investing in infrastructure that will support your gardening activities. As you get to know your garden better, you’ll be able to adjust the garden infrastructure to accommodate changing needs over time.

**INGREDIENTS**

- Building materials for sheds, fencing or other supports
- Tools

**INSTRUCTIONS**

1. Important design considerations for garden infrastructure include durability, weathering, security, functionality, and aesthetics.

2. If you’re building both a tool shed and a fence, for instance, you may want to use the same materials or construction details to help the garden to read as a single space. It may be helpful to use standardized, off-the-shelf parts and connections, so if changes need to be made in the future, you’ll be able to readily find those elements.

3. If you’re on a budget or just want to divert waste from the landfill, salvage found materials for these building projects.
PEST CONTROL

Pests can be dealt with in a variety of ways, using organic or more toxic methods. In addition to sprays and traps, handpicking and companion planting can help to reduce pest problems. Starting out with healthy plants is a key component of fighting off pests; hardy starts with good soil, sunlight and water will generally be more likely to survive an assault.

INGREDIENTS

- Sprays (like Bt- Bacillus thuringiensis- or soapy water)
- Traps (tuna containers, small trays, boards)
- Marigolds
- Birds
- Sharp soil matter

INSTRUCTIONS

1. Identify the type of insect and the damage on the plant.

2. Slugs and snails tend to make holes of various sizes, working up the plant. They come into the garden at night, so you may need to handpick with a flashlight at dusk and dawn. Lay down boards or containers with beer inside to lure them, or repel them by broadcasting coffee grounds or sharp soil matter.

3. Caterpillars tend to start at the top of the plant, leaving behind dark green pellets and holes near the edges of the leaves. Handpicking and soapy water leaf spray help mitigate damage.

4. Plant marigolds at the start of every row, or in each bed or container garden, to detract pests.

5. Attract birds by providing feeders or habitat. These birds will eat a considerable number of insects as well.
Choosing a garden type is an important first step that lays the long-term foundation for your garden. Because it is fundamental to your final outcome, the investment of both time and money to develop initial infrastructure and intelligent relationships will be well spent.

1. Consider logical and intelligent companion planting strategies. Some plants may deplete nutrients from the soil while others may replenish those same nutrients. Other plants may have offset maturation times, which allows for increased efficiency from a single plot of land. Low-lying plants that need shade are best planted near taller sun-dependent plants. Planting certain flowers, such as marigolds, next to crops may attract predators away from your produce. In each of these cases, knowing something about the behavior of your plants and then finding an appropriate niche for that specific set of attributes is critical.

2. Consider where beds will be placed within the garden, being mindful of access, harvesting needs and proximity to other important infrastructure.

3. Consider the aesthetic quality of your garden--- what sorts of spatial conditions you envision will establish the height and sectional qualities of what you’re able to plant. Visual connections or disruptions may be planned for, as well as circulation and movement throughout the space.

**INGREDIENTS**

- Gardening books
- Seed catalogues
- A visit to your local nursery

**INSTRUCTIONS**

1. Consider logical and intelligent companion planting strategies. Some plants may deplete nutrients from the soil while others may replenish those same nutrients. Other plants may have offset maturation times, which allows for increased efficiency from a single plot of land. Low-lying plants that need shade are best planted near taller sun-dependent plants. Planting certain flowers, such as marigolds, next to crops may attract predators away from your produce. In each of these cases, knowing something about the behavior of your plants and then finding an appropriate niche for that specific set of attributes is critical.

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A flower garden provides food and habitat for butterflies and birds, a colorful visual backdrop, and a place to harvest valuable products. Flowers can be interspersed within vegetable gardens to reduce pests and attract pollinators, as well.

**INGREDIENTS**

- Seeds
- Soil
- A containment strategy

**INSTRUCTIONS**

1. Choose from hundreds of different varieties of flowers, including annuals, biennials and perennials.

2. Think about organizing your plantings for visual continuity or interest and a holistic color palette.

3. If you envision a year-round garden, you’ll need to stagger bloom cycles and cross-reference varieties. Also consider how a plant will look when it isn’t in bloom, and how it will last over time.

4. If you buy a packet of flower seeds and don’t use all of the seeds in one season, you can refrigerate the seed package and use it again the following year.
Seedlings can be cultivated from seeds in a garden or nursery, and then sold to or shared with other gardeners. While seedlings are usually far more expensive than starting seeds from scratch, the additional cost is often worth it if you want only a few plants (tomatoes, for instance), you need to have produce more quickly (seedlings give you a jump start on the growing season) or you hope to have better survival rates for your plants (plants are most susceptible to pests when they’re young.)

As a cultivator of seedlings, you can provide an important service to your gardening community by increasing the range and type of seedlings that are available.

**INGREDIENTS**

- Seed
- A greenhouse
- Small trays for soil
- Nutrient-rich potting soil, or compost

**INSTRUCTIONS**

1. Set out all of your potting trays and fill each container with soil.

2. Press your finger into the soil to create a small indentation.

3. Drop the seeds into the hole, according to the seed package directions.

4. Cover the hole, and water immediately.

5. Continue to water the seeds regularly, and keep the seeds warm during this phase. Your seeds need extra protection from the elements and from pests at this early stage, and can be kept in these containers until they are mature enough to sell or plant.
Herb gardens use relatively little space and produce high-yield crops, often year-round. Compared to vegetables and fruits, herbs command a costly per-unit weight. For relatively little work, you can grow your own herb garden and ensure that you’ll always have necessary cooking herbs on hand.

**INGREDIENTS**

- Solar access (herbs are sun-lovers)
- Herb seeds or seedlings
- Soil
- Pots or a garden space

**INSTRUCTIONS**

1. Plant your herbs according to the directions on the seed packet.
2. Treat these herb starts like any other new plant, with extra attention at the outset and repotting as needed.
3. Don’t over-water herbs, as many prefer dry soil conditions.
4. Provide plants with additional artificial light in the evening if they are planted indoors.
Farmers tend to prioritize taste over durability in urban vegetable gardens, which means that heirloom varieties are the obvious choice. These old varieties were cultivated and developed when backyard gardens were the norm, and thus are far better suited to this environment than larger enterprises. Heirloom vegetables often lack market-driven shapes, colors, and durability, but typically out-flavor the conventional seed varieties made by large companies.

**INGREDIENTS**

- Seeds or seedlings. Look at the heirloom varieties that were developed specifically for your region, or better yet, connect with a veteran gardener from your area to see if they will share their seeds.
- Soil

**INSTRUCTIONS**

1. Choose the varieties of vegetables you’re most likely to eat, and prioritize the produce that is either most expensive or tasteless when purchased from the grocery store.

2. Experiment with different varieties to see what works best for your location. For instance, you might plant several different tomato varieties one season to see which type you prefer. Take notes and learn from your experiences.

3. If you’re gardening on a small piece of land, consider planting container-specific varieties (like dwarf species) to conserve space.
2.14

**PRODUCT TYPE: EGGS**

Chickens are friendly animals, requiring little maintenance and attention aside from daily feeding. They enjoy eating scraps, picking through compost, and pecking in the dirt for bugs, and leave behind fertile droppings for your soil. Although chickens will decimate an existing landscape if you let them access it, they can be a wonderful addition to any backyard garden.

Because hens lay nearly one egg per day, and their eggs are a great affordable source of protein, they are valuable additions to households and cities. An initial investment of $1.50 per bird, paired with ongoing support, can produce more than 400 eggs over the course of one bird’s lifetime. After that, the same chicken can realize further value as a source of meat.

**INGREDIENTS**

- Chickens
- A chicken coop
- Chicken feed: this can be store-bought or scraps from your table and garden.

**INSTRUCTIONS**

1. Check with your local livestock regulations to make sure that it is legal to have the number and type of chickens you want.

2. You’ll need to prepare the holding area or habitat for your animals before you acquire them. Ensure that the structure is weather-resistant and offers some space for shade and rain protection. Think about security, access and your strategy for cleaning this space on a regular basis.

3. Acquire the chickens--- either as chicks or adults, recognizing that if you get the very little ones you’ll need to pamper them until they feather out. It is unwise to mix chickens after this initial acquisition, since the birds establish a pecking order and can be cruel to newcomers.

4. Check in on the birds regularly. You’ll need to provide food and water every day, and collect eggs every other day or so. You can get away with cleaning the cage on an as-needed basis.
Bees are increasingly disappearing from the urban environment, their populations inexplicably dwindling over time. In addition to creating honey, bees provide useful pollination for any urban farm. Providing habitat for bees in your garden is a real way to support the survival of this species, while also gleaning numerous material benefits.

**INGREDIENTS**

- A hive. This can be handmade, or ordered online and delivered
- Bees, including a Queen. Again, these can be ordered online and delivered
- A smoker, protective gear and tools for harvesting honey

**INSTRUCTIONS**

1. Check with your local city regulations to make sure that it is legal to house bees where you live.

2. Prepare the hive before you get your bees. There are many hive distributors online, and as many free sets of plans for hives if you choose to build your own.

3. Acquire the bees. Occasionally you can get them from other local farmers who have a surplus, or hunt down a nest in the wild.

4. Feed the bees as needed. Note that the dominant food source is currently corn syrup, which has been linked to low survival rates.

5. Check in on the bees regularly. You’ll need to grow their hive over time, or split it in two once it gets to a certain size. You can also harvest the honey and honey comb periodically during this time.
Plants have different requirements for temperature, water, and sunlight, so knowing when to plant specific fruits and vegetables can be tricky. Fortunately, there are a number of great online resources available to help determine planting times based on your region.

1. You will need to look up your hardiness zone, which is based on average temperatures and frost dates.

2. Once you have this information, you’ll be able to buy plants that are specifically suited to your region. Look on the back of seed packages or in gardening books to determine in which zones a given plant will thrive.

3. Typically native plants will be best suited to your local environment, but non-natives just need to match up with the map in order to survive.
Before you begin your garden, consider the maturation time for each plant. Prepare a plan for your garden that takes into consideration the duration of each variety and intelligent pairings. Remember that a garden can be an annual or seasonal project, and the phasing of plantings should reflect your intentions.

1. Would you prefer to start from seeds or seedlings? If you are going to start from seeds, you’ll need to order them ahead of time.

2. While seedlings are expensive, they help to jump-start a garden, and have the added benefit of successfully withstanding weather and pests.

3. Fast-growing plants can be companion planted with slow-growing plants to improve overall garden efficiency. For instance, radishes and carrots mature at different times and thus make good neighbors.
GARDEN TYPE: WINDOW BOX

If you don’t have the space or time for a larger garden, indoor window gardens allow for year-round growing. Provided you have a sunny, south-facing window and a few pots, you can grow herbs or small plants in a compact space. Because the planting area remains indoors, maintenance will be minimal, with no weeding or mulching required.

INGREDIENTS

- A sunny, south-facing window
- A container--- pots, buckets or even bags work well
- An artificial light source (this can be a normal fluorescent or incandescent bulb)
- Soil
- Seeds

INSTRUCTIONS

1. Prepare your container with soil medium. Whether you use store-bought potting mix or soil harvested from outside, you’ll likely want to augment this mix with compost. If you do incorporate store-bought soil, opt for the nutrient-rich organic potting soil, which will help plants thrive in small containers.

2. Decide what types of plants or herbs you’ll grow. Reliable indoor herbs include chives, parsley, cilantro, thyme, rosemary, basil, oregano, sage, and marjoram. Small vegetable plants that are well suited to indoor growing include sprouts, lettuce, cherry tomatoes, beans and peppers. Dwarf varieties help to conserve space.

3. Plant the seeds, water them regularly, and use additional hours of artificial light after the sun sets to stimulate growth.

4. Good drainage is critical for potted plants, and since these containers dry out quickly, water frequently.
GARDEN TYPE: CONTAINER

A deck, a porch, a patio or even a window ledge can support a container garden. Planting in containers is an efficient way to grow vegetables---as companion planting and vertical growing techniques help to maximize production in even a very small space. Large planters don’t require much square footage, are inherently modular, and allow for mobility even during a growing season. Refugees worldwide have for years grown container gardens in burlap sacks, and many gardeners in freezing climes view container gardening as a means of extending the growing season by bringing in plants at night. Common container garden plants include tomatoes, peppers, greens, lettuce, beans, onions, and garlic.

INGREDIENTS

• Containers of varying sizes
• Soil and compost
• Water
• Seeds
• Hand tools
• Trellis building materials
• Plant hangers

INSTRUCTIONS

1. Fill your entire space with an assortment of medium and large planters. This space should have access to at least six hours of sunlight daily, and can contain hanging pots as well as vertical trellis structures to increase available growing surfaces.

2. Add soil and compost to each of these containers.

3. Plant seeds or seedlings. Because space is limited, it makes sense to grow produce that would otherwise be expensive, unavailable or flavorless if bought from the store. Lettuce and salad mix, tomatoes, herbs, and green peas are all good options.

4. Water and weed as needed.
The average city front or back yard provides enough space to grow plenty of produce. Starting off small and converting a lawn to an edible landscape over time can reduce initial investment and allow for results-based learning. Many yards can easily support three or four beds, with only a 10 ft by 10 ft spatial commitment. Yard gardens require more time and effort than their smaller counterparts, and like any other garden, rely on sufficient solar access.

Learn from mistakes and successes each season. It may be helpful to move plants around in the garden over time, as pest reduction and the cultivation of soil nutrients both depend upon diverse seasonal crops.

**INGREDIENTS**

- A shovel or spade, and rake
- Fence-building materials if the site requires one
- Lumber and cladding for building raised beds
- Seeds and starts
- Access to water and sun
- Weed-free soil medium

**INSTRUCTIONS**

1. Assess your site to determine the placement of the yard garden. Sometimes this type of garden evolves over time, stretching from one area to another, and this development strategy can be planned ahead of time in phases if that is helpful to you. Good solar access (ideally south-facing areas), visual impact, circulation and access, water availability and security should be considered.

2. Lay out your garden, either by building raised beds, fencing or other containment strategies. If you intend to grow directly in the ground, you will need to mitigate any soil toxins (see Soil Toxicity) and existing plants. Weeds and deep-rooted plants can be reduced by solarizing the site first: stretch sheets of black plastic across the site for several months.

3. Plant out your garden, ensuring that you use companion planting strategies and dedicate enough overall space for the full-grown plants.

3. Weed, water, and harvest.
Historically, kitchen gardens were small plots of land near the kitchen, dedicated to the cultivation of herbs, vegetables and flowers that would be used most frequently by the household. The kitchen garden was differentiated from both the ornamental gardens of large estates and the large production crops of farms. Kitchen gardens often supplied a household with all of the fresh edible produce consumed under that roof.

In today’s urban areas, a kitchen garden has filled a similar void. These gardens are typically small yard gardens that help to augment the produce that a household eats. In this way, a kitchen garden is similar to a yard garden, except that a kitchen garden could still be considered a component of a larger landscape.

### INGREDIENTS
- Tools for forming raised beds or enclosure areas
- Building materials
- Seeds and starts
- Access to water and sun
- Weed-free soil medium

### INSTRUCTIONS
1. Assess your site to determine the placement of the kitchen garden. Good solar access (ideally south-facing areas), visual impact, circulation, access to the kitchen, water availability and security should be considered.

2. Lay out the garden either by building raised beds, fencing or other containment strategies. If you intend to grow directly in the ground, you will need to mitigate any soil toxins (see Soil Toxicity) and existing plants. Weeds and deep-rooted plants can be reduced by solarizing your site ahead of time. If you lay out sheets of black plastic over the site for several months, those plants will be killed.

3. Plant out your garden, ensuring that you use companion planting strategies and dedicate enough overall space for the full-grown plants. Choose the types of plants that you know you’ll use frequently.

4. Weed, water, and harvest.
GARDEN TYPE: ORCHARD

Edible perennials will bear food year after year, with very little maintenance. Fruit and nut trees provide all of the same benefits as their non-edible cohorts, including habitat, shade, and aesthetic value. These trees can be co-located to create a small orchard, or interspersed among other garden plants. Some citrus will do well even in a large potted plant, which allows for over-wintering indoors.

INGREDIENTS

• Trees. It helps to find out whether male and female trees are required to produce fruits, and then plant requisite pairings if needed. Otherwise, any number and variety of trees can be acquired.
• A shovel
• Watering system for the first year
• Tree gators

INSTRUCTIONS

1. Plant your trees individually, in the spring or early fall. Some varieties will need to be planted in the spring only, because newly established trees may not be hardy enough to live through the winter.

2. Dig a hole two times the width and depth of the root ball of the tree.

3. Lay the tree into the hole, drawing soil up around the base of the trunk.

4. Water regularly throughout the first year to ensure that the tree gets established. Tree gators, or the plastic bags that wrap around the trunk of a new tree and slowly leach water, help to reduce watering sessions.

5. Prune and harvest as needed.
Microlivestock--- or small domesticated animals that both consume and impact relatively little, make sense in an urban environment. These animals tend to have neutral or positive smells and behaviors, convert protein efficiently, don’t compact the soil, and take up relatively small amounts of space. Most types of microlivestock can scale up to suit your needs, with groups ranging from one or two animals to several dozen.

**INGREDIENTS**

- Animals: ducks, turkeys, chickens, rabbits and guinea pigs
- Habitat for the animals
- Food and water

**INSTRUCTIONS**

1. Different types of animals have varying needs, but raising livestock in the city typically requires the same fundamental steps.

2. Check with your local livestock regulations to make sure that it is legal to have the number and type of animals you want.

3. You’ll need to prepare the holding area for your animals before you buy them. Ensure that the structure is weather-resistant and offers some space for shade and rain protection. Think about security, access and your strategy for cleaning this space on a regular basis.

4. Acquire the animals--- either as babies or adults, recognizing that if you get the very little ones you’ll usually need to coddle them for a bit.

5. Check in on your livestock regularly. You’ll need to provide food and water every day. You can get away with cleaning on an as-needed basis.
GARDEN TYPE: PALLET

In locations where gardening is an ideal short-term solution, such as on a vacant lot awaiting development, or at a rental property, pallet planters offer an efficient mobile gardening strategy. Conventional pallets can be acquired for next to nothing, and outfitted with sides or fixed containers to hold soil medium. This planting area can then be used for gardening, with the understanding that the pallet can be moved at any time (even mid-season) without disruption to the plants.

Pallet planters are especially useful as a part of a larger city-wide effort. Because the pallets don’t often need to be transported, but to move them you will need access to a forklift, this solution may only work at a large scale. Regardless, this solution is particularly useful for enthusiastic gardeners without access to long-term land leases.

INGREDIENTS

- Pallets
- Containers or materials for a custom-built planting box
- Seeds and a watering strategy
- Soil

INSTRUCTIONS

1. Locate a site where you can garden— in addition to all of the other site analysis needed for a traditional garden (solar access, visual impact, circulation, water availability and security,) you will need to identify access for the forklift.

2. Drop the pallets at the site, and build out a containment strategy for the soil medium. This can be an array of containers (like pots) that are fixed to the pallet and have a built-up edge, or it can be a custom-built raised bed, including sturdy walls and drainage.

3. Add soil medium.

4. Plant seeds and starts, then water as needed.

5. If you need to move the pallets to another site, verify that the pallet is in good condition and that the containers on top of the pallet won’t move during transition.
When rain falls on an impervious surface (roofs, sidewalks, and roads,) it cannot soak into the ground, so the water moves towards the lowest point, usually a storm drain. The rain picks up dirt and debris, oil and gas, lawn fertilizers and pesticides, and chemicals from industrial and commercial activities.

A rain garden is designed to collect and infiltrate this storm water runoff before it can enter a drain. A rain garden is a shallow landscaped depression created by excavating existing soil and replacing some of it with porous material, like sand and gravel, and nutrient-rich material such as compost. The area is then restored with many kinds of plants.

INGREDIENTS

- Plants: check with your local garden store to determine which plants are best suited for your region and for intermittent water
- Oyster shells (if available in your region)
- Pea gravel
- Sand
- Soil/Compost
- Mulch

INSTRUCTIONS

1. Identify underground utilities to avoid digging into them.

2. Choose a rain garden site that is at least 10’ from the foundation of any structures on your site.

3. Remove the top soil layers in the area that you intend to use as a rain garden. Typically this is a 10’ by 10’ plot.

4. Dig up to three feet of soil, replacing it with gravel, shells and other drainage materials. This is the retention zone.

5. Add a top layer of compost and plant this new garden area with native plants. This is the detention zone.

6. Consider creating a berm around the pooling zone at the surface, and aim downspouts or other water sources at this rain garden.
GARDEN TYPE: RAISED BEDS

Raised beds are an important part of overall garden design, structuring circulation, plantings, and access. If your soil on site is either compacted or unsafe, raised beds allow you to import healthier soil. Moreover, these bottomless sand boxes feature enriched soil with compost and manure, fewer weeds and pests, warmer soil than the earth below, and a water drainage system that benefits from aerated soil.

Raised beds provide better accessibility to most individuals, because they are higher off the ground, creating a clear boundary for animals, hoses and children. Raised beds can be built from wood, found materials, concrete block, or even simple mounds of soil. Raised beds also allow for the infusion of healthy topsoil if you have a site with a sub-standard growing medium, such as clay, sand, or salty earth.

INGREDIENTS

- Wood slats
- (4) Wood posts 3’ by 4”
- Corrugated metal panels (3’ by the length of the side of the bed)
- Screws and a screwdriver
- A shovel and wheelbarrow
- Fill (both high quality growing medium and rocky or sandy soil)
- Wood cap

INSTRUCTIONS

1. Dig a shallow rectangular trench around the perimeter of the raised bed. The bed should allow you to reach across it (4’ in width,) and can be as long as you’d like for your site. Orient the bed on a North-South axis to get equal amounts of sunlight along the length of the bed.

2. Lay in the posts at each of the corners, and begin to attach the slats to those posts horizontally. This provides the framework for the walls. Wood should be rot-resistant, and not a reclaimed railroad tie.

3. Screw the corrugated metal panels to this wooden framework, ensuring that there are no gaps where soil can fall out. If you use a wall material other than corrugated metal, it should resist water.

4. If you have gophers or moles in your area, you’ll need to staple in wire mesh along the bottom of the bed before laying in soil.

5. Layer on 18” of gravel or sandy soil and then 18” of good soil.
Establishing a perimeter for your garden helps to define boundaries for other animals and humans, retains soil on site, protects plants from the wind, and can give tall plants a structural foundation to climb along. This edge condition can be achieved by planting beneficial border plants, or by erecting a fence.

Typical perimeters include wood stakes and twine, fences, chicken wire walls, trellises, bushes, and built-up mounds.

**INGREDIENTS**

- Fence-building materials
- Tools
- Plantings (if incorporated)

**INSTRUCTIONS**

1. Develop a perimeter strategy for your garden. This should be a site-specific solution, because gardens attract all kinds of various nuisances, and have different structural and aesthetic needs. You’ll need to consider the height of the perimeter, access, materiality, and your overall vision for the garden.

2. Build or plant out this border. If you are erecting a fence, you’ll need to dig footings deep into the ground to ensure that the fence will have long-term durability.

3. Border plants should be spread out to project anticipated maturation size.
Rainwater harvesting systems can be as simple as directing gutters to a lidded garbage can or as complex as building an underground cistern, replete with pumps, roof washing and a filtration system. Collecting and using rainwater has numerous benefits, ranging from improved water quality to reduced stress on underground aquifers.

Ready-made rain barrels, most commonly constructed from UV-protected plastic and fitted with lids and screens, are available in capacities ranging from 30 to 500 gallons. With a spigot and secure top and screen, wooden wine barrels and recycled food-grade plastic barrels also can be made into water catchment devices.

**INGREDIENTS**

- Barrels
- Spigot
- Mosquito screen
- Gutter downspout or piping

**INSTRUCTIONS**

1. Acquire a container for the rainwater. The best barrels are made out of an opaque material (metal, wood or colored plastic) to prevent light transmission and inhibit algae and bacterial growth.

2. To keep barrels from becoming mosquito breeding grounds, fasten a tight-fitting top to them, and screen the ends of downspouts leading into the barrels. Alternatively, you can place this screen under the rim of the barrel, rather than on the downspout itself. As an added measure of protection, add a tablespoon of vegetable oil to coat the water’s surface and kill larvae by depriving them of oxygen.

3. Attach a spigot to the bottom of the barrel, and connect a hose to it.

4. Size the cistern to provide enough water storage for reasonable dry periods. The most common rainwater catchment system is a roof. In cold climates, you can protect the cistern from freezing by burying it underground or incorporating it into a basement.
Circulation within your garden will facilitate access while at the same time giving the space a readable structure. If circulation is planned into the garden at the outset, it will help to dictate where raised beds, composting areas, livestock pens and water sources are located.

1. Decide where to place circulation. You may work with an existing network of paths or re-envision a landscape according to the experiential qualities of your garden. Considerations include access to associated buildings and the street, positive drainage, adequate width for wheelbarrows, machinery and wheelchairs, durability, and aesthetic quality.

2. Remove debris and weeds from the circulation path. Stake out the path using string if you intend to build exact dimensions or angles.

3. Lay down a weed barrier.

4. Determine what your edge condition will be. Gravel or other loose materials will need to be kept in place with some sort of vertical edging.

5. Place the path material on top of the barrier. If you’re laying bricks or pavers you’ll need an inch of sand underneath to support a level base.
Lighting in a garden can improve safety and security as well as create ambiance. Many over-the-counter outdoor lighting options are available, and can be added to nearly any garden once it is built.

It may be helpful to live with your garden for some time before installing lighting devices. This will give you enough time to get to know how you use your garden and what sorts of lighting needs you have.

**INGREDIENTS**

- Light fixtures: free-standing solar powered garden lights are widely available and generally fairly affordable. Wall-mounted motion sensor lights provide more light and better security.

**INSTRUCTIONS**

1. Consider your gardening needs and the areas where lighting could be incorporated. For instance, you may want small lights along a circulation path for safety, colorful string lights above an outdoor table, or a giant motion-sensored flood light attached to a building.

2. Run electricity to these areas, either with an outdoor-grade extension cord, or a hard-wired utility box. Solar-powered lighting solutions are particularly useful for areas without immediate power.

3. Set up lights and test them over several days to see how they work. You can always add or reduce fixtures or wattage to get the desired effects.
Composting is essential to successful organic gardening. Depending on your time and spatial resources, you may choose to make your own compost or to purchase it. If you have the space, an outdoor composting pile or bin is a no-hassle way to recycle food waste and create nutrient-rich fertilizer for your garden. It is estimated that around 12% of all home waste is from food, so composting can help keep biodegradable materials out of landfills. The key to successful composting is aeration: this oxygen speeds up the decomposition process and helps reduce odors. Anaerobic decomposition results in noxious smells from the chemical release of microorganisms breaking down organic matter without oxygen.

1. Construct a compost pile with a few pieces of wood, a found object, or a purchased compost bin. The bin should have contained sides and a top hatch for your waste. More elaborate bins can be turned easily to aerate the soil, and have a lower door for extracting finished compost. Using a black enclosure will cook the compost using solar gain.

2. Mix greens (nitrogen-rich leaves, kitchen scraps, garden weeds, coffee grinds, manure and lawn trimmings) and browns (carbonaceous material, like dried leaves, wood chips, sawdust and shredded newspaper) with a rough ratio of 1 to 1. If the compost begins to smell or attract maggots, just turn the pile and add more browns.

3. Aerate regularly. By turning over the pile frequently, and alternating food scraps with layers of dead leaves or grass clippings, you can eliminate any concerns you may have over bad smells and keep methane-contributing materials out of the landfill. Moreover, a turned compost pile will break down considerably more quickly than a lazy one.

**INGREDIENTS**

- Organic matter

- A compost area or container: off the shelf containers include trash cans with lids and holes punched in the sides, ready-made composting systems, or even used tires.
If you don’t have a place to store tools on site, you will need to acquire or construct a shed for this purpose. The real benefit of having tool storage in the garden is that tools will be available when you need them, which translates to better garden maintenance. Of course, not worrying about transporting dirty or heavy tools is also a major benefit of an on-site storage space.

**INGREDIENTS**

- Tools to build with: a saw, screwdriver and hammer, at minimum
- Materials
- Hardware such as screws, hinges and locks

**INSTRUCTIONS**

1. Determine your tool storage needs, specifically the size and shape of your combined tools. Think about how to best access these tools, such as mounting them to a wall for easy identification.

2. Look at your site to see where you will put the tool shed. Things to consider include visibility from the street, site drainage, access to and relationship with the garden, and building codes.

3. If you want to integrate a rainwater catchment system, you will need to design the roof pitch and size accordingly. Factor in the barrel itself, which should be placed adjacent to the structure, and connect this system to the garden areas.

4. Design the door and entry for ease of access and tool extraction.

5. If you need light inside the shed, you can either build in windows for daylighting or incorporate electric lighting.
PLANTING SEEDS

By starting with seeds, you’ll be able to ensure organic gardening from the outset, since many nurseries use man-made chemicals and other additives in their seedlings. Seeds also allow for a much more diverse selection of plants, by ordering through seed catalogues or the internet. While the rare, heirloom, and unique varieties have become increasingly available in mainstream markets, usually they are only in seed form.

Seeding will allow you to control your harvest to get a more productive and extended season, and seeds are considerably cheaper than starts. After your first round of seeding, you can reseed crops that you use often or in one harvest, such as root crops or leaf crops.

INGREDIENTS

• Soil
• Water
• Seeds
• Markers

INSTRUCTIONS

1. Prepare the soil by clearing weeds, testing and fortifying as needed.

2. Water the dirt thoroughly.

3. Make holes for the seeds, referencing seed literature as to plant spacing and number of seeds per placement.

4. Drop the seeds into the holes, and gently cover with the recommended soil layer.

5. Water frequently until the seeds are established.

6. Monitor the temperature to ensure that the seeds are warm enough to get started. You can place your seeds indoors, or even on a stove or DVD player to help to keep them warm during this phase.

7. Label all of these batches, and track them in a notebook for reference.
Chicken coops can be made out of salvaged building materials, or even salvaged buildings. They need to be secure, weather-resistant, cleanable and offer protection from the elements. A coop should be sized to the appropriate number of birds it houses, since hens tend to bully each other more frequently in crowded spaces.

Think about linking a coop to a run so that the chickens can peck at the dirt during the day, or consider making the coop a mobile chicken tractor to disperse their droppings throughout the site.

**INGREDIENTS**

- Building materials
- Tools to build with: a saw, screwdriver and hammer, at minimum
- Hardware such as screws, hinges and locks
- Metal cloth: not chicken wire, which is too flimsy to protect against predators

**INSTRUCTIONS**

1. Size the coop to accommodate the chickens you intend to support. You’ll need space for them to roost (up high) and an area for them to lay (they take turns using this space, so just one or two laying areas can support multiple chickens).

2. Design the access to the coop so that you can easily retrieve eggs and let the chickens in and out. These should be separate hatches, and both need to be secure and lockable.

3. Design the floor of the coop so that it has positive drainage, and all surfaces so they can be washed down.

4. Attach a roof that will shed water and protect the chickens against the elements. The walls or roof should allow for airflow.

5. If you design a run as well, this area should be connected to the coop and also feature secure edges.
**MAINTENANCE**

Maintenance is a critical component of gardening, although it can take many different forms. Hands-off gardeners have unruly patches that often feature such plant diversity that the produce thrives. More rigorous garden tending can create productive works of art. Either way, the garden should receive enough sun, soil nutrients and water to survive, and if this isn’t naturally occurring, your job will be to provide that support.

4.1

**INGREDIENTS**

- Soil
- Water
- Solar access

**INSTRUCTIONS**

1. Try different gardening techniques, from rigorous maintenance in some areas to a more relaxed response in others. Watch your garden to see what happens, and how much support it needs. By using your physical garden to establish a maintenance regimen, you’ll be able to gauge how you want to keep it up in the very real context of your specific site.

2. If you intend to be a hands-off gardener, invest in the infrastructure that will help you to achieve success. Automatic sprinkler systems on timers, for instance, obviates the need for daily watering chores.
Watering regularly helps to lay the foundation for healthy and growing plants. This effort is particularly important in the early stages of your garden, when young plants are just taking hold. Continued watering should reflect your climate, rainfall, season and the specific needs of the plants at any given time.

If you’re at all unsure about when and how to water, look to the soil for information. Dry soil generally needs to be watered, whereas damp soil is still retaining moisture. Soaker hoses or other slow-drip long-term watering solutions are particularly beneficial for plants, because they are slow enough to allow water to percolate down to the roots of the plants.

Low maintenance or automated watering systems help to ease the burden of regular watering responsibilities, and it makes sense to build these systems into your garden early on.

**INGREDIENTS**

- A watering system

**INSTRUCTIONS**

1. Water plants regularly, (either daily or weekly) and always water any plant that has just been planted.

2. When planting in dry ground or during hot months, pre-water the hole before you plant. If you saturate the area, allowing for the water to soak into the ground completely, the plant will experience less shock during the planting process.

3. Houseplants and container plants need to have positive drainage and since they dry out more easily, they need to be watered more frequently.

4. Standing water provides breeding areas for mosquitoes. Either dump out this excess water or remove ponding areas.

5. Consider moating the earth around each plant to help water remain near the plant.
WEEDING

Any plant out of place can be called a weed. Most common weeds are both tough and resilient, making weeding a challenging ongoing process. While many weeds can coexist with other garden plants quite well, they are also notorious for robbing those favorites of important soil nutrients, sunlight and water. Your own levels of control, comfort and energy will largely dictate your response to weeds.

INGREDIENTS

• Herbicides, such as RoundUp, kill all manner of plants and tend to take a considerable amount of time. This isn’t recommended for garden weeds, which will respond well to pulling by hand.

• Gloves (while they are not strictly necessary, do help to protect hands against prickly plants)

• A shovel (this is important if you will be digging to prepare the soil before planting your garden.)

INSTRUCTIONS

1. If you have time before your planting begins, try solarizing weedy soil with a layer of black plastic for several months. You can also quash weeds with a layer of cardboard and several inches of topsoil. This soil will rot the cardboard, but not before it kills weeds by blocking their access to the sun.

2. As your garden grows over time, you can improve the quality of the soil and resist weeds by consistently mulching. This additional layer of soil keeps weeds from reaching the sun.

3. Weed according to your own schedule, intentions and energy levels. Pull weeds firmly and slowly, removing the entire root from the ground.

5. Learn to recognize different types of weeds. Annuals, for instance, can be composted whole, whereas perennials need to be treated differently. If you can’t determine the difference, just compost the green part of the weed.
HARVESTING

If you can’t tell just by looking at the plant, you should be able to track when a crop will be ready to harvest based on the dates listed on the back of the seed package. Plants harvested before they are completely mature may be able to ripen off the vine (like tomatoes and peppers), whereas others, like root vegetables, will not. All told it will likely take a few months before you start to see your fresh produce.

INGREDIENTS

- Mature plants

INSTRUCTIONS

1. Most plants can be harvested simply by pulling the fruit or vegetable directly off with your hands. Be careful not to damage the plant, especially if it will continue to produce.

2. Some plants will only continue to produce if you pick from them---beans, for instance---and so you’ll need to keep up on your harvesting to ensure a long and fruitful crop.
START-UP COSTS

Gardens can be started without any money at all—imagine tossing potato ends in the compost pile and harvesting pounds of potatoes later in the year! However, gardens thrive with additional investment, from your time and energy to seeds, watering, and built infrastructure. Managing these start-up costs will help you to leverage your initial investment while also setting your garden up for success.

5.1

1. Consider phasing your garden to minimize your initial investment. You can start with several small containers, for instance, and gradually add growing space over time. This strategy also helps to build experience without costly mistakes.

2. Consider each garden cost as a separate item on a larger checklist, and then research free or cheap alternatives to those purchases. With a little extra effort, many of these costly items can be mitigated.

3. Plan ahead. Determine what plants you want to have in your garden, and how many of each. When you go to the garden supply store, you’ll be armed with a list that will help you keep costs in check.

INGREDIENTS

- Plant material
- Planting medium
- Site infrastructure
- Water infrastructure
- Built enclosures/containers

INSTRUCTIONS
Keeping up in the garden doesn’t need to be a costly or time intensive affair, but it should be consistent. Gardens are inherently vulnerable to the elements, pollutants and unwanted guests. Regardless of your weeding regimen, you will need to develop an ongoing plan for keeping the garden healthy and productive.

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**INGREDIENTS**

- A PH kit for soil testing
- A watering plan
- Tools and materials to keep up built components

**INSTRUCTIONS**

1. Soil health, watering, weeding and infrastructural maintenance will need support in your garden over time. Plan ahead for these needs, and phase them appropriately. For instance, a good time to address soil health issues is in the spring, before any new plants go in and when weeds are relatively well abated.

2. If you notice that a problem arises that will need maintenance, address it immediately to prevent further damage. Nuisances such as rats and moles tend to grow worse over time, and it pays to deal with these visitors early on.

3. Think about how materials will perform and weather before you introduce them into your garden. For instance, wood will rot over time; rot-resistant wood will last longer but still break down; chemically treated rot-resistant wood may leach harmful toxins into your soil; and plastics may never go away. Each of these materials has a different set of attributes which may or may not be valuable to your garden.
Sustainability is intrinsic to most urban farming endeavors, simply for cultivating productive greenspace in the urban realm. Gardens reduce stormwater runoff, provide habitat for urban wildlife, create food and thereby reduce petroleum-intensive food imports, and help to cleanse the air and water.

Sustainable gardens move beyond this inherent greenness by reducing consumption and supporting long-term stability. These gardens employ water harvesting and water collection strategies, little or no inputs in terms of tools and supports, introduce local and regional plants, participate in seed saving, and rotate crops to naturally heal the soil. The principles of permaculture help to illustrate this kind of sustainability, which prioritizes a holistic approach to gardening.

**INGREDIENTS**

- Rainwater catchment
- Seed saving and perennials
- Mulching, composting and crop rotation on-site to improve soil conditions
- Organic approaches to pests and weeds

**INSTRUCTIONS**

1. Approach your garden as a work in progress. Consider the different ways you could improve sustainability on your site, and begin by addressing the low-hanging fruit. You may find that a rainwater barrel is a fast and affordable way to obviate the need for municipal water, or that a front lawn can gradually be absorbed into your edible landscape. Each garden will have different opportunities, but all should support some degree of sustainability.
It is completely feasible to make money from an urban farm, and like any business endeavor, this type of garden will require a business plan and a thorough understanding of market forces to succeed. Many growers ease into a profit-turning garden business, starting off small and selling extra produce, for instance, and gearing up to fit a niche. This kind of development allows them to learn lessons from experience, while gradually adapting to the conditions they encounter.

It makes sense to identify a product type, as well as a buyer, and to think about costs in terms of labor and materials.

**INGREDIENTS**

- A space to garden
- Access to water and sun
- Labor
- A crop
- A means of selling the product

**INSTRUCTIONS**

1. Learn everything you possibly can about the type of product you’ll provide, as well as the market needs in your area. Resource the internet, books from the library, or talk to other similar growers in your region.

2. Create a business plan that outlines the anticipated labor needs, the initial investment to prepare the site and plant the crop, and the expected harvest. Remember to factor in ongoing maintenance costs, such as water, over the duration of the planting cycle.

3. Devise a plan for selling the product, whether that is at the farm itself, or at a stand in a market, or by using an existing network of friends and acquaintances.

4. Try your business plan, perhaps at a smaller scale for the first year, to see how it works. Keep notes and detailed accounts. Analyze that data to see if there are opportunities for savings and to see if you’re making a profit.
Gardens don’t need to be expensive projects, but with land acquisition and labor costs, they can become prohibitively expensive. Many not-for-profit entities rely heavily on gifts to support access to land, labor and materials. If your garden model incorporates some sort of benevolent partnership or social justice component, you may find that grants and donations can carry the garden in lean times.

INGREDIENTS

• Non-profit status
• Literature about the program
• A website
• Grant writers
• A convenient drop-off area for physical donations

INSTRUCTIONS

1. Determine what your value is to the community, and how to sell the garden you’ve developed. It could focus on the product, such as produce for needy individuals, or on the process, such as job training for at-risk youth.

2. Look for opportunities to engage the community in your work. This could be in the form of volunteers who contribute time at the site, or individuals who act as champions of this project in the greater community.

3. Create some form of written information about your work. This could be a website, a brochure, or posters. If you can generate a mailing list, it may also be useful to have an e-newsletter, or a list of addresses where you can send postcard notices and updates.

4. If you have material needs, identify them by listing specific items on your website or by creating a sign at your site. Make sure that donation delivery is secure and accessible.
Cities and regions have widely variable zoning, code and permit requirements for urban farms. While some places seem to lack any kind of restrictions, other areas are infamous for outlawing composting, or other completely natural processes. Whatever the requirements, it helps to be well versed in the expectations specific to your locale, especially as you begin to invest in various systems.

**INGREDIENTS**

- Zoning guide
- Local building codes

**INSTRUCTIONS**

1. Before you begin your garden, look at the code books and zoning guides that have been developed for your area. These are typically available online or at the public library, but can also be accessed at any city hall.

2. Look for some of the classic challenges to urban farming, such as bee and livestock restrictions, acceptable levels of noise and smell, compost legality, front, side and rear yard setbacks for built structures, the allowable footprint for free-standing buildings, and the permits required for selling produce.

3. If you need a permit--- either for a building or to sell your goods, you should go to city hall to file the requisite paperwork.
If you don’t own the land you will garden, you may want to get permission from the land owner before beginning your work. Some landlords will allow certain forms of gardening, but not others, and it is always a good idea to get this kind of information up front. Regardless, gardening on rented land is a tenuous endeavor, namely because investment tends to be site-specific and that kind of embodied energy can be very difficult to relocate.

1. Begin by researching the land that you expect to cultivate. If it is an abandoned lot and you can’t get in touch with the owner, you may find that it is worthwhile to start with a low-investment container garden. If you are in contact with the land owner, make sure you have his or her permission and that it is documented in some form of lease or letter of support. If you intend to invest energy in soil improvements and long-term crops, it may make sense to lock into a long-term lease.

2. If you know that your tenure at this site will be short-lived, but you still want to have a garden in the interim, consider planting container crops with fast maturation times. You can either invest in mobile containers that you will be able to take with you, or settle for cheap container gardens, such as burlap sack gardens that you can leave in place or easily disperse once you need to leave.

3. Resist planting permanent crops unless you can be reasonably assured that they will become permanent fixtures.

**INGREDIENTS**

- A lease
- A letter of support from the land owner
- A list of expectations and intentions for the garden

**INSTRUCTIONS**
Owning land for gardening is ideal, because it supports long-term investment in soil health, perennials, and infrastructure. You’ll need to consider your own long-term vision for the land, and any incremental building or adjustments you can foresee. Gardens are inherently flexible, and respond well to micro-adjustments over time.

**INGREDIENTS**

- Land: ideally this should be clarified in a legal document

**INSTRUCTIONS**

1. Think about your garden as a long-term investment that can be built up over time. Certain pieces of the infrastructure may be more cost effective to install initially, such as sprinkler systems that are interconnected and buried underground. Other systems could be phased in, such as the development of a tool shed or the creation of livestock pens.

2. As your garden evolves, think about ways to improve your efficiency and outcomes. Intelligent relationships may be fairly simple to implement, while vastly improving performance.
Guerrilla Gardening

In cities where many people lack their own space for gardening, and underused greenspace in the public realm is ubiquitous, pirating space for planting seems like a logical solution. Guerrilla gardening can be as casual as lobbing seed bombs into forgotten parking lots or as intentional as planting large trees in medians.

Because the practice is inherently outside of the accepted legal process, gardeners risk losing their time or produce to other factors, or getting reprimanded for seizing someone’s space.

Ingredients

- Seeds, starts, transplants, or seed bombs
- Space: this can be a median strip, a vacant city lot, or the forgotten areas around buildings
- A watering strategy

Instructions

1. Plant your guerrilla garden just as you would a normal garden, being mindful of environmental factors, the season, and your own needs.

2. Give careful consideration to maintenance. Will you be able to tend this garden in the future? How and when will you water and weed? It is possible to cast seeds out into the world without any follow-up, but if you intend to return on occasion, you’ll need to find an accessible space.
If you intend to garden for yourself on your own land, you probably won’t need to worry about liability. On the other hand, if you’re managing an urban farm with various participants and volunteers, large or dangerous equipment, or extensive investments, you may decide to purchase insurance.

**INSTRUCTIONS**

1. If you have any question about whether you need insurance or protection for your garden, you should consult a legal expert or an insurance advisor. These professionals will help you to determine what appropriate levels of risk are for you specifically, as well as the cost of these types of services.

2. If you decide to create a waiver or any other official paperwork for your garden, you will probably want to get legal assistance.

**INGREDIENTS**

- Insurance Agent
- Waivers
- Legal Counsel
PARTNERS

THE TULANE CITY CENTER

The Tulane City Center houses the Tulane School of Architecture’s applied urban research and outreach programs. Programs of the City Center vary over time, but share a focus on improving cities - particularly our home city of New Orleans - through fostering global urban research, the development of flexible and innovative urban strategies, and the provision of environmentally and culturally informed principles to guide the design and revitalization of the contemporary metropolis. An important aspect of the City Center’s work is to ensure that, where appropriate, our research is activated through design and construction and/or advocacy and education.

THE NEW ORLEANS FOOD AND FARM NETWORK

The New Orleans Food & Farm Network believes everyone should have access to fresh, healthy, and sustainably produced food for the long-term health of our environment, economy, and communities. NOFFN works with individuals, organizations, growers and communities to help make fresh, healthy food more accessible to everyone. As a grassroots organization, the New Orleans Food & Farm Network partners with neighborhood groups and community residents to identify their community’s food needs and design solutions that best meet those needs.

THE NATIONAL ENDOWMENT FOR THE ARTS

The National Endowment for the Arts is a public agency dedicated to supporting excellence in the arts, both new and established; bringing the arts to all Americans; and providing leadership in arts education. Established by Congress in 1965 as an independent agency of the federal government, the Endowment is the nation’s largest annual funder of the arts, bringing great art to all 50 states, including rural areas, inner cities, and military bases.
Reference maps of your region and your town to better understand climatic data, growing patterns, land use and local zoning regulations.

In addition to this hardiness zone map of the United States, other good resources related to zones can be found in the last chapter of Fritz Haeg’s book, Edible Estates: Attack on the Front Lawn. This resource has plant lists, calendars for planting by region, and useful maps.
RESOURCES

Chickens
Mad City Chickens: madcitychickens.com

General Gardening
American Community Gardening Association: communitygarden.org
Cornell Home Gardening: www.gardening.cornell.edu/homegardening
Garden Web: www.gardenweb.com
National Gardening Association: www.garden.org

Guerrilla Gardening
www.guerrillagardening.org

Homesteading
Instructibles: www.instructibles.com
Urban Homesteading: www.homegrownevolution.com

Heirloom Seeds and Seed Saving
Organic Seed Alliance: www.seedalliance.org
Saving Our Seed: www.savingourseed.org
The Seed Savers Exchange: www.seedsavers.org

Organic Gardening
www.organicgardening.com

Permaculture
The Permaculture Information Web: permaculture.info/index.php/Main_Page
Permaculture Institute: www.permaculture.org

Research
American Farmland trust: www.farmland.org
Bioneers: www.bioneers.org
Food Routes: www.foodroutes.org
The Land Institute: www.landinstitute.org

Soil Testing
Soil Foodweb, Inc.: www.soilfoodweb.com
REFERENCES

Bartholomew, Mel, Square Foot Gardening. On gardening in small spaces.


Goodchild, Claude and Alan Thompson, Keeping Poultry and Rabbits on Scraps. Penguin Books, 1941. A guide to extremely efficient microlivestock rearing, first published during World War II.


Nearing, Helen and Scott, Continuing the Good Life. Schocken, 1979. A second read on the homesteading lifestyle that this couple made popular in the 1970’s.

