

Grow More Vegetables Citywide

Bronx Green-Up's *Grow More Vegetables Certificate Series* is a free edible gardening course designed to teach the best organic techniques for growing vegetables safely and effectively, particularly in urban settings. This development of this online course material (outlines 1-5 and course handouts available online at http://www.nybg.org/green_up/tips.php) was made possible by The New York Community Trust.

Grow More Vegetables Certificate Series	1: Why Grow Food?
Total time:	2 hours <i>Show: To this class, bring photos/powerpoint of past classes and field activities in order for students to become comfortable with the style and (sometimes outdoor) setting of the course.</i>
Learning Objective	In this class, students will... • Learn a short history of urban agriculture • Define the principles of organic farming/gardening • Raise issues that relate to our food system and our community's health
Materials	Past student final project visuals (like photos, project plans, timelines, video or photos) Video clip (Healing Gardens of New York or other relevant video) Sprouting materials: untreated seeds, cheese cloth, containers, rubber bands, sample sprouts Blank paper and markers Handouts: <i>Why Grow Food?</i>; <i>What is Organic?</i>; <i>How to Grow Your Own Sprouts</i>; <i>Final Project Overview</i>
10 minutes	Introductions – name, garden/organization
5 minutes	What we will cover in this course as a whole: This course is designed to increase your knowledge and skills around growing food in your community garden, school garden or urban farm. The topics of the classes are as follows: • Why Grow Food?/Community Health

Bronx Green-Up, the community gardening outreach program of The New York Botanical Garden, provides horticultural advice, technical assistance, and training to local gardeners, urban farmers, school groups, and other organizations interested in improving neighborhoods through greening projects. At the heart of Bronx Green-Up are the community gardens, school gardens, and urban farms of the Bronx. For additional information, contact Bronx Green-Up at 718.817.8026 or bronxgreenup@nybg.org, or visit www.nybg.org/green_up

Activity 5 minutes each, then share with neighbor Lecture 5 minutes	• Seed-starting • Soils & Compost • Organic Growing Techniques I • Organic Growing Techniques II: Natural Insect Control; beneficial plants and insects • Project Design Presentations Any Questions? Opening Activity: share a short story or draw a picture that relates to your experience of growing food. This can be a story about your community garden, your background, if you grew up on a farm, a particular success/failure in growing a certain vegetable, an experience with children, or other. History of Urban Agriculture • Urban gardening became popular as part of the Victory Garden movement during World War II. • Victory Gardens were home and community vegetable gardens encouraged by government and civilian groups as a way for those at home to support the war effort. Home-grown vegetables helped to stretch household budgets and reduce the use of resources that could otherwise be used for the military. • Some people sold produce and donated the proceeds for war relief. • “Victory Gardens were more than a symbolic gesture toward domestic food security. In 1944, 20 million gardeners grew 40% of the nation's fresh vegetables.”¹ • Role of immigration in introducing home gardens and bringing new types and varieties of vegetables. • We can define urban agriculture as <i>growing, processing, and distributing food and other products through intensive planting and animal husbandry in and around cities.</i> • A United Nations report on urban agriculture stated that 25% of urban households in the United States are involved in gardening, including food gardens and landscaping.² • Urban agriculture in the United States produces an estimated \$38 million worth of food annually¹ NYC
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Lecture
10-15
minutes

- New York City in the early '70s, during the city's financial crisis, residents began cultivating derelict lots
- In 1973 Liz Christy, a Lower East Side artist, gathered her friends and neighbors together to clean out a vacant lot on the corner of Bowery and Houston Streets. Calling themselves the Green Guerillas, these visionaries created a vibrant community garden and sparked the modern community gardening movement in New York City.
- In the Bronx, River Garden was founded in 1976; Tremont Community Garden was founded in 1981
- Today over 700 community gardens in NYC; beekeeping and chicken-keeping is legal

What is organic?

- This course will focus on growing vegetables **organically**. **What does this mean? Can anyone define the term "organic"?**
- Organic and conventional methods refer to how food is produced. Organic methods exclude or strictly limit the use of chemical pesticides, herbicides and fungicides (as well as plant growth regulators like hormones, livestock antibiotics and food additives). Also, only conventional methods use genetic engineering. We will talk about what organic methods use shortly.
- **Genetic engineering** (also known as bioengineering): a modern technique of biotechnology where DNA from different plant or animal species can be combined to create entirely new organisms, called **genetically modified organisms(GMOs)**. The goal is to create a more desirable plant or food product.

Principles of organic farming/gardening:

- **Soil health** is at the heart of organic gardening. The focus is to build the soil and maintain or increase its nutrient content. This is done by adding organic matter and organic fertilizers, and through methods like crop rotation and planting cover crops to increase soil fertility.

High-quality soil has:

- Good structure that resists erosion, absorbs water quickly, and has a high water-holding capacity.
- An abundance of living microbes and organisms that contribute to good soil structure and release, transform, and transfer nutrients.

	• Natural Plant Nutrition is the proper care and nourishment of soil organisms responsible for the breakdown of organic matter. In other words, organic gardening techniques embrace the importance of feeding soil organisms. - Toxic chemicals and practices like excessive tillage (ploughing or turning the soil) are harmful to soil organisms. We can care for these organisms by adding organic matter and soil amendments, like rock powders, to our soil. In contrast, conventional farming provides the needed minerals to the plant directly, ignoring the importance of soil organisms. - Choose plants that naturally thrive in their environment and also varieties that have adapted and grow well in our local conditions • Natural Pest Management: Organic growers use a wide range of practices, mostly intended to <i>prevent</i> pests and diseases. Some examples include providing habitat for beneficial organisms, keeping the garden clean to remove habitat for pests, and crop rotation/diversity. • Other methods of pest control include the use of insect predators, mating disruption, traps and barriers (row cover) to control pests, and the use of naturally occurring pesticides like pyrethrum (though there is controversy about some of these pesticides, as they may not be safer or more environmentally friendly than synthetic pesticides). • Weed management is focused on suppression rather than elimination. Strategies to manage weeds in the organic garden include: - Tillage (turn the soil to incorporate crop residues, including existing weeds) - Cultivation (pre-germination of weeds after seeding) - Mowing and cutting (prevent weed seed development) - Mulching (block light needed for germination) • Biodiversity: In nature, diverse ecosystems are more stable than those with only a few species. The same is true for farming/gardening. - Gardens with a mix of crops have a greater chance of supporting beneficial organisms—like pollinators—and deterring pests. - For an example of pest control, we can look at parasitic wasps. These insects kill other insect pests, like caterpillars. (When the saliva of the caterpillar and the juices of the plant mix, a fragrance is emitted that certain parasitoid wasps are very attracted to. The parasitoid wasps then kill the caterpillars and often use the carcasses to lay eggs within.)
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5 minute break	- Diversity of soil organisms is also important for better nutrient cycling, disease suppression, nitrogen fixation, and overall soil health - Practices like intercropping, companion planting, establishing beneficial habitats and crop rotation all help to increase biodiversity - Organic farms have been shown to nurture a wide variety of species of birds, native plants, invertebrates(some serve as bird food), non-pest butterflies and spiders • Environmental Sustainability: organic farms and urban gardens are closer to reaching the ideal of sustainability than conventional farms. - living in a way that there are enough resources to live well in an alive, diverse, thriving environment—indefinitely. Or, “living within the Earth's budget" - No pesticide or fertilizer run-off that leaches into groundwater, rivers and oceans - Improvement of the soil rather than degradation - Recycling of resources (organic matter, closed-loop systems) • Food Justice - a principle of urban agriculture <u>and</u> organic farming Embodying the social, historical, environmental and community health aspects of our food system is the term food justice. Some themes relating to food justice are: - Historical Trauma - Local Foods, Community Development and Public Investment - Food Sovereignty - Hunger Relief, Health Disparities and the Industrial Food System - Land - Labor and Immigration A working definition of food justice is the right of communities everywhere to produce, process, distribute, access and eat good food regardless of race, class, gender, ethnicity, citizenship, ability, religion, or community.³
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Video clip 14 min	Watch a portion of <u>Healing Gardens of New York*</u> or video clip of your choice relating to the topics of the class *Distributed by The Cinema Guild (www.cinemaguild.com)
Activity 30 minutes (10 in groups; 20 for each group to share)	Why Grow Your Own Food? Activity: In small groups of 3 or 4, create a list of reasons for growing your own food. These can be personal reasons as well as benefits to your community or the city as a whole. In about 10 minutes, we will share these ideas as a group. As a class, discuss their reasons and include relevant data, slides or anything they might have missed. See Instructor's outline for themes/data, on page 7. Record results on board for all to see
3 minutes	<i>Show: Instructor will do a quick demonstration on indoor sprouting to prepare students for the homework assignment.</i>
Homework	Make Your Own Sprouts: students will learn how to grow edible sprouts indoors in about 5 days, and may take home the materials to do so. Handout: <i>How to Grow Your Own Sprouts</i>

Instructor's Outline for Activity: "Why grow your own food?"

The following are some themes and associated facts that address our brainstorm question, "Why grow your own food?" Students may have many different answers to this question. To reinforce the themes of the class, organic gardening and community health, the instructor may choose to include some of the following data, or simply use the outline as a prompt to surface ideas. Remember, the most important part of this activity is to share ideas among the students.

- **Concerns of the quality of our food**

Nutrient levels. USDA figures indicate a declining supply of nutrients in the American diet.

- A study⁴ compared 1950 to 1999 figures for 43 common fruits and vegetables, finding a declining level of nutrients in 6 out of 13 nutrients sampled
- also importance of nutrients in the same vegetable from different sources

One report⁵ summarizes findings over the last few decades, in which US and UK government data shows a drop in essential nutrients found in common foods, with double-digit percent declines in iron, zinc, calcium, selenium.

- In corn, soybean and wheat, data show the higher the yield, the lower the protein and oil content.
- Studies of wheat, corn and broccoli found that higher-yielding varieties generally had lower concentrations of nutrients than older, lower-yield varieties
- Higher the tomato yield, the lower the concentration of vitamin C, lycopene and beta-carotene
- High production dairy cows produce milk with lower fat and protein concentration; and are more susceptible to a range of metabolic diseases.
- Methods to increase yields, like tight spacing and widespread use of chemical fertilizers, irrigation and pesticides, create big plants that grow fast. Yet the plants are not able to absorb a comparable quantity of soil nutrients.

Transport/Storage losses. A 5-10 day need for transportation and storage, before your food reaches the supermarket shelf, leads to losses of 30-50% in some nutrient levels of fruits and vegetables⁶

Processed foods have replaced traditional foods which contained more nutritious ingredients.

Options for buying healthy food are limited in some communities.

Labeling. FDA is not required to put GMOs and hormones such as rBGH, given to cattle, on food labels.

- **Concerns of food safety**

According to the Centers for Disease Control and Prevention (CDC), an estimated 48 million cases of food-borne illness occur each year in the United States, including 3,000 associated deaths. That means that roughly 1 in 6 Americans are affected by food-borne illness each year. (<http://www.cdc.gov/Features/dsFoodborneEstimates/>)

- **Concerns about the environment**

- The true cost of food: Americans spend a smaller % of income on food than any other nation, but the cost of food leaves out the pollution of groundwater by feedlots, soil-depleting nitrogen fertilizers⁷
- We are losing topsoil 10 times faster than it is being replenished⁶.

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- Industrialized agriculture is a big user of water and a big emitter of CO₂
- Growing your own food reduces your carbon footprint. Products do not have to travel across the country or world to reach your plate.
- **Access to fresh fruits and vegetables**
 - **“Food Desert.”** Some neighborhoods lack access to grocery stores and supermarkets selling fresh produce. This is particularly prevalent in low-income areas
 - A study of Flint, MI neighborhoods conducted in 2000 showed that access to fresh and nonfresh fruits and vegetables in Flint is extremely limited; although there is a popular farmer’s market open year-round 3 days a week, the majority of stores selling grocery products within the Flint city limits (population: 119,716) were minimarts that sell primarily liquor, chips, and soda pop⁸
 - In the South Bronx supermarkets are uncommon. Community district 1 in the South Bronx has virtually no large food retailers¹ and the Hunt’s Point Area has only 1 supermarket for 11,354 residents.²
 - According to the NYC Coalition Against Hunger’s *Food Access in Low-Income New York* 2006 study, nutritious foods are more difficult to access than fattening junk foods and restaurant foods in low-income neighborhoods like the South Bronx.
 - **Emergency food providers**, like food pantries, usually have greater access to breads, cereals and canned goods, suffering a shortage of fresh produce. Garden donation programs can grow a little bit extra or donate unwanted vegetables from community gardens.⁷ This also contributes to community health
- **Save Money**
 - A 1996 study reported that every \$1 invested in a community garden plot yields about \$6 worth of vegetables⁶
 - One researcher calculated that under average growing conditions in a 30-day growing season, a 10 by 10 meter plot can provide a household's yearly vegetable needs, including much of the household's nutritional requirements for vitamins A, C, and B complex and iron. Although typically smaller, household gardens in urban settings in the United States can measurably supplement dietary intake and reduce overall household expenditures on food¹
 - Gardeners state that sharing the food they grow with people in need in their communities is an important reason for growing vegetables
 - **Make money!** One of the most financially successful of youth training programs in horticulture and marketing is the "Food from the Hood" project in Los Angeles. There, high school students have raised over a hundred thousand dollars for college scholarships through the sale of their salad dressing¹. **The City Farms markets** (Just Food) are a similar initiative here in NYC

- **Fresh and Local and More Variety**

Many consumers shop at farmers’ markets and gardeners grow their own food because both want the freshest vegetables possible. Many will attest to the improved taste and nutritional value of fresh and locally grown foods.

Other reasons are:

- Their local grocery store may not carry a fresh selection of produce

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- The food they grow and wish to eat has an ethnic character not available in local stores. Examples: papalo and pepiche, Mexican herbs; Chinese squash, gourds and fresh beans of Bangladesh
- **Food Miles.** Food travels an average of 1300 miles from the field it was grown to our plate. We can reduce our reliance on oil and lower pollution levels by growing our own food⁶
- Small family farms are disappearing in this country and farms located near the city are threatened with development. Farms near the city often supply leafy greens, yellow vegetables and berries, in part because they are products that can't be stored for long periods. It should be a concern that these products might become less available.

Community Health

Growing food in urban areas benefits individuals and whole communities, contributing to overall community health. Gardening can be a key element to health intervention programs because it addresses a wide range of health aspects—physical, mental, social and spiritual.

- **A satisfying form of exercise**
 - Gardening has been connected with reducing the risks of obesity and coronary heart disease, and helps control blood sugar and diabetes for various research subjects⁶
 - Eight in 10 adolescents and more than 9 in 10 adults in the South Bronx say they eat fewer than 5 servings of fruits and vegetables per day, according to a 2007 study by the Bronx District Public Health Office
 - The same study showed that obesity rates for both children and adults were higher in the South Bronx than NYC overall. Poor diet and lack of exercise are part of the problem.
 - By growing your own food and making your gardens accessible to residents, you are providing part of the solution to the obesity/diabetes epidemic in the Bronx
 - Exercise in gardening can take many forms. Even moderate gardening activities have been shown to increase muscle strength and endurance in people who must reduce activity levels including pregnant women, cancer survivors and those more generally sedentary.
 - Gardening and nature-adventure programs were seen to increase energy expenditure in 12 year-olds by 60 percent⁶
- **Increased fruit and vegetable consumption**
 - Research on urban gardeners in Flint, Michigan demonstrated that community gardens may improve dietary intake among urban residents. Household participation in a community garden was associated with increased fruit and vegetable consumption⁸.
 - On average, respondents with a household member who participated in a community garden consumed fruits and vegetables 4.4 times per day, as compared to 3.3 times for respondents without a gardening household member. Of respondents from gardening households, 32.4% consumed fruits and vegetables on average at least 5 times daily, as compared to 17.8% for those with non-gardening household members⁸.
 - Gardening is a hands-on opportunity for nutrition education. Seniors have changed their diets through gardening programs. Children may try fruits and vegetables that they grew themselves or learned how to prepare in fun ways. The experience of growing can boost young people's dietary habits⁶.
 - Diet-related illness is a common affliction in our communities; there is evidence that gardeners improve their diets and knowledge about healthy eating when they grow their own food⁶.

- **Physical therapy and mental health**
 - gardening has therapeutic effects and is used as a healing activity for patients who suffer physical and mental ailments
 - Kingsboro Psychiatric Center's horticultural therapy program is a fine example of a program in NYC
 - Horticultural therapy uses plant-human relationships to induce relaxation, reduce stress, fear and anger, blood pressure and muscle tension
 - Health professionals use plants to help patients with mental illness improve social skills, self-esteem and use of leisure time⁶
 - Prison garden programs aim to improve personal health and mental outlook through pride in nurturing the life in a garden; also lowers recidivism rates
- **Community building**
 - Community gardens bring a diverse group of people together for common goals. Gardens link different groups – youth and elders, people of different races, ethnic groups
 - Neighborhoods are improved with green spaces in them. Property values may increase; there may be reduced crime or littering in the vicinity of the garden; the garden offers a meeting place for residents
 - Participation in beautifying a neighborhood or space builds relationships constructively and allows for cultural expression
 - Many immigrant communities have people with extensive experience and knowledge in farming.
- **Greening the City**
 - Urban gardens improve air quality. Plant leaves absorb carbon dioxide and lower local temperatures.
 - Urban gardens increase biodiversity, attracting beneficial soil organisms, insects, birds, reptiles and animals. Gardens play a role in the conservation of various species of birds and butterflies. As they migrate, the gardens provide food, resting spaces and protection.
 - Food production, if done sustainably, reduces soil erosion. Urban soils, if cared for, can absorb and use rainfall.
 - Urban compost systems can reduce significant amounts of waste for beneficial use in growing food and caring for our gardens.
 - We are part of a worldwide effort. We can look to other countries, like Cuba, where urban agriculture is an important contributor to food production.

References

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- ⁸ Alaimo, K. et al. (2008). Fruit and Vegetable Intake among Urban Community Gardeners. *Journal of Nutrition Education and Behavior*. 40: 2, 94-101.