
Sustainable Urban Agriculture Certification Program

Global food demands will double by 2050, leading to significant increase in food insecurity. In the Commonwealth of Virginia the rate of food insecurity exceeds 12%. Nearly 18% of Virginia is a food desert, or an area with limited access to fresh fruits and vegetables. Thankfully, urban agriculture can serve to fill the gap by increasing food production and access in these areas. Urban agriculture benefits the economy, environment, and well-being of the residents who also enjoy its produce. Urban agriculture also plays a key role in enhancing health and nutrition.

Program Length/Structure: The Sustainable Urban Agriculture Certificate Program consists of 14 Modules. Classes meet for 10 weeks on Saturday from 9:00 a.m.-3:00 p.m. beginning September 23 (Orientation) through December 9, 2017. Sessions are split between morning (9:00 a.m. to 12:00 p.m.) and afternoon (1:00 p.m.-3:00 p.m.) with a working lunch session in between. During the class instruction, participants have the opportunity to learn from Extension Specialists, Agriculture Agents as well as special guests. This is an intense program that requires class attendance and active participation. Those who fail to make satisfactory progress may be asked to leave the program, and in the event that happens, there will be no refund of the application fee.

Apprenticeship Program: Participants are required to participate in an 80 hour apprenticeship program designed to complement the course work by providing the practical application of course material. Participants may choose from various urban farms and gardens that meet their need and interest. A list of available sites will be provided during the course of the program. The apprenticeship program cannot begin until the completion of the eighth (8th) module on October 28, 2017, and must be completed by March 2, 2018. Instructors will be available to provide guidance during the apprenticeship.

Seminar Presentation and Award of the Certificate: Participants who have successfully completed the 10 weeks course and the 80 hours apprenticeship are required to give a 20-30 minutes seminar related to their apprenticeship experience. Thereafter, participants will be awarded a Sustainable Urban Agriculture Certificate by the College of Agriculture, Virginia State University.

Registration: The cost of participation is a one-time nonrefundable fee of \$190. The class size is limited to 25 and is on a first-come, first-served basis. A limited number of scholarships is available with application deadline of September 1, 2017. Scholarship applicants will be informed of the outcome by September 8, 2017. For non-scholarship (and partial scholarship) recipients, full payment must be received by September 15, 2017 to guarantee a place. Please make checks payable to Virginia State University and send to:

Ms. Mollie Klein
Cooperative Extension, College of Agriculture
Suite 203 Douglas Wilder L. Building
Virginia State University, P.O. Box 9081 Virginia 23806

Program Site: All classes are held at Virginia State University's Randolph Farm Pavilion, located at 4415 River Road, Petersburg, VA 23803. If there are any changes to the meeting place participants will be notified in a timely manner.

Module	Module Topic	Date	Instructors
0	Meeting of the fall 2017 participants with instructors	September 23	All the instructors
1	General Principles of Urban Agriculture	September 30	Dr. Leonard Githinji (lgithinji@vsu.edu)
2	Basic Botany, Physiology and Environmental Effects of Plant Growth	September 30	Dr. Leonard Githinji (lgithinji@vsu.edu)
3	Approaching Urban Agriculture with an Entrepreneurial Mindset	October 7	Dr. Larry Connatser (lconnatser@vsu.edu)
4	Business Principles for Urban Agriculture	October 7	Dr. Theresa Nartea (tnartea@vsu.edu)
5	Weed Management	October 14	Dr. Charlie Cahoon (cwcahoon@vt.edu)
6	Permaculture	October 14	Patrick Johnson (pbjohnson@vsu.edu)
7	Insect Pest Management	October 21	Dr. Doug Pfeiffer (dgpfeiff@vt.edu)
8	Sustainable Soil Management; Urban Soils and Brownfields	October 28	Dr. Leonard Githinji (lgithinji@vsu.edu)
9	Vegetable and Small Fruit Production	November 4	Dr. Reza Rafie (arafie@vsu.edu)
10	Greenhouse Production, Hydroponics & Aquaponics Systems	November 11	Mr. Chris Mullins (cmullins@vsu.edu)
11	Urban Aquaculture	November 11	Dr. Brian Nerrie (bnerrie@vsu.edu)
12	Plant Propagation and Nursery Management	November 18	Dr. Laban Rutto (lrutto@vsu.edu)
13	Backyard Chicken and Rabbits Rearing	December 2	Dr. Dahlia O'Brien (dobrien@vsu.edu)
14	Plant Disease Management	December 9	Dr. Steve Rideout (srideout@vt.edu)

Meeting times: Session 1: 9:00 A.M. - 12:00 P.M. Session 2: 1:00 P.M. - 3:00 P.M.

Module 1: General Principles of Urban Agriculture

(Dr. Leonard Githinji, Assistant Prof. and Extension Specialist, Sustainable and Urban Agriculture)

Participants will learn what urban agriculture is and why it is important. They will also explore some examples of urban agriculture operations including the Community Gardens, Small Urban Farms, Farmer's Markets, Home Vegetable Gardening, School Gardens, Roof Top Gardening, Community Supported Agriculture, and Farm to School. The concept of food desert, defined as geographic areas with limited access to affordable healthy food options will be discussed.

Module 2: Basic Botany, Physiology and Environmental Effects on Plant Growth

(Dr. Leonard Githinji, Assistant Prof. and Extension Specialist, Sustainable and Urban Agriculture)

Participants will learn the basic botany including the lifecycle of flowering plants, the anatomy of vascular plants and how to identify a diverse range of plants. They will also learn about the various plants physiological processes and how the environmental factors effect plant growth. The knowledge gained will help the participants on how to better select their garden plants and manage the growing environment for successful production and higher yields.

Module 3: Approaching Urban Agriculture with an Entrepreneurial Mindset

(Dr. Larry Connatser, Assistant Prof. Family Financial Management Specialist)

“Building a business is not rocket science; it’s about having a great idea and seeing it through with integrity.” Richard Branson.; “At 211 degrees, water is hot. At 212 degrees, it boils. And with boiling water, comes steam. And with steam, you can power a train.” S.L. Parker. This program will discuss what is the Entrepreneurial Mindset? Where do you get it? Can you develop it? Why is it important? Do you already have it? How do you know? Having an entrepreneurial mindset is critical to fulfilling one’s potential, and especially in being successful as an entrepreneur. No other attribute, personality, inherent entrepreneurial proclivities, training, or demographic profile is common to all successful entrepreneurs whether Warren Buffet, Steve Jobs, the neighborhood florist, grocer or urban farmer.

Module 4: Business Principles of Urban Agriculture

(Dr. Theresa Nartea, Assistant Prof. and Extension Specialist, Marketing & Agribusiness)

Prerequisite: Working knowledge of Microsoft Word and Microsoft Excel. Participants are requested to bring to class their personal laptop, with MS Word/MS Excel software installed. During this module, participants will learn the essential business and marketing information needed to develop their own customized urban farm business plan. Participants will gain knowledge on how to develop, prepare, and complete a customized an urban farm business plan using provided computer-based worksheet templates in MS Word and MS Excel.

Module 5: Weed Management

(Dr. Charles Cahoon, Assistant Prof., Weed Management)

Weeds are plants that are considered undesirable in a particular situation, or simply "plants in the wrong place". Economic losses due to weeds are encountered nearly everywhere weeds occur, especially for vegetables since only a few of them can compete with weeds. For this module participants will learn about the root cause of weeds; Weed seed banks and germination; Proactive weed management strategies; Reactive weed management; Weed-free by design; Weed control tools as well as integrated weed management.

Module 6: Permaculture

(Patrick Johnson, *Small Farm Outreach Program*)

Permaculture is a system of agricultural and social design principles centered on simulating or directly utilizing the patterns and features observed in natural ecosystems. For this module, participants will learn how to design agricultural ecosystems that have the diversity, stability, and resilience of natural ecosystems. The instructor will share his personal experience on establishing and managing a permaculture system.

Module 7: Integrated Insect Pest Management

(Dr. Doug Pfeiffer, *Prof., Entomologist*)

Integrated pest management (IPM), also known as integrated pest control (IPC) is a broad-based approach that integrates practices for economic control of pests. IPM aims to suppress pest populations below the economic injury level (EIL). For this module, participants will learn about the definition of an insect pest; Principles of Insect Pest Management including: Prevention; Pest Identification and Monitoring; Tolerance Levels and Economic Thresholds; and Pest Control Methods. Online resources for chemical and biological control information will be presented.

Module 8: Sustainable Soil Management; Urban Soils and Brownfields

(Dr. Leonard Githinji, *Assistant Prof. and Extension Specialist, Sustainable and Urban Agriculture*)

“Sustainable” is a word we see everywhere lately and whether the subject is energy, fishing or gardening, it generally means the ability to continue indefinitely without relying much on external inputs. The right thing to do these days in your yard and garden is to practice the art and science of reusing and recycling organic waste materials, saving water and conserving energy. For this module participants will learn about the physical, chemical and biological soil characteristics, soil fertility, productivity, and management including composting. The concept of “brownfields” and their dangers including debris, dilapidated buildings and toxic chemicals will be discussed as well as their clean up and potential redevelopment into urban gardens or farms.

Module 9: Vegetable and Small Fruit Production

(Dr. Reza Rafie, *Prof., and Extension Horticulture Specialist*)

For this module, participants will learn about the following: Classification systems and identification of the major vegetable crops and cultivars; Ecological regions for vegetables, and Environmental and cultural requirements; Cultivation and cropping Systems; Field establishment and cultural practices; Fruit tree growth, development & pruning; dormancy, chilling & rest breaking; Flowering, pollination & fruit set, fruit development & thinning; Tree water relations & irrigation, Plant nutrition & fertilization; Root growth & rootstocks; and Postharvest quality & technology.

Module 10: Greenhouse Production, Hydroponic & Aquaponics

(Chris Mullins, *Assistant Prof., and Extension Specialist, Greenhouse*)

For this module, participants will learn the basic principles of greenhouse operation and management including propagation, environmental control, irrigation, economically important crops, and pest control. They will also learn about the selection, construction, use and management of season extension technologies such as high tunnels, low tunnels and row covers. Alternative production systems i.e. hydroponics and aquaponics will be discussed. Emphasis in all subject areas will be placed on practical application of several management procedures; how to use logical and critical thinking to evaluate plant growth and development

as related to greenhouse and alternative production system conditions; and Systematic thinking process to identify problems in the greenhouse/high tunnel environment.

Module 11: Urban Aquaculture

(Dr. Brian Nerrie, Assistant Professor, Aquaculture Extension Specialist)

Aquaculture is the farming of aquatic organisms such as fish, crustaceans, mollusks and aquatic plants. For this module, best management practices for limited scale commercial or hobby scale aquaculture (water farming) of fish and shrimp will be discussed. Topics will include planning, facilities and equipment, safety, water quality and quantity, selection of crop, feeds and feeding, waste management, post-harvest handling and marketing. Solutions to seasonal production differences will be shown. Permits, if necessary, and possible regulations will also be discussed.

Module 12: Plant Propagation and Nursery Management

(Dr. Laban K. Rutto, Associate Prof., Alternative Crops)

Plant propagation is the process of creating new plants from a variety of sources: seeds, cuttings, bulbs and other plant parts. For this module we will cover the common plant propagation methods including starting plants from seed, and vegetative propagation methods including use of cuttings, slips, splits, and bulbs. Techniques including grafting, budding, layering, and tissue culture will also be discussed. The class will consist of classroom discussions coupled with demonstrations, and hands-on practice. While addressing plant propagation by seed, the instructor will provide in-depth coverage of seed treatment methods e.g. priming, coating, and pelleting, and as a bonus introduce the class to the recently acquired SATEC Concept 2000 seed coating and pelleting machine. Basic principles of media selection, climate control, and principles of nursery management will be covered while addressing the areas mentioned above.

Module 13: Backyard Chicken and Rabbits Rearing

(Dr. Dahlia O'Brien, Associate Prof., Small Ruminant Specialist)

For this module, participants will learn about the following topics in their relation to small ruminants, poultry and rabbits: **Zoning codes** – determining which animals are allowed and under what conditions; **Selection** – learn how to select healthy animals to make your animal production more successful; **Feeding** – learn about the nutritional requirements and what you'll have to provide to meet these needs; **Breeding and taking care of young stock** – learn about the reproductive cycle, when and how to breed, gestation length, preparing for birthing, and caring for young stock; **Health** – healthy animals are more productive, profitable and enjoyable to raise so you'll learn about prevention, diagnosis and treatment of common diseases; **Housing and equipment** – learn about shelter, supplies and/or equipment needed to handle and raise animals in your backyard; and **Marketing** – learn about how important it is to know who your customers are and how to explore local options to selling your products.

Module 14: Plant Disease Management

(Dr. Steve Rideout, Associate Prof., Vegetable Crop Diseases)

The goal of plant disease management is to reduce the economic and aesthetic damage caused by plant diseases. For this module participants will learn about the common diseases affecting vegetables and small fruits and plant disease management including: Prevention; Disease Identification and Monitoring; Tolerance Levels and Economic Thresholds; Control Methods and Principles of integrated disease management.