

VIRGINIA COOPERATIVE EXTENSION
SUSTAINABLE VEGETABLE GARDENING
PROGRAM CURRICULUM
Final Program Project Report

By

Katy Overby

November 12, 2015

Committee:

Dr. Holly Scoggins, Advisor

Dr. Joyce Latimer

Mr. Dave Close

Online Master of Agriculture and Life Sciences: Plant Science and Pest Management

Virginia Polytechnic Institute and State University

Abstract

The purpose of this project is to create a sustainable vegetable gardening curriculum in order for extension agents in Virginia Cooperative Extension to be able to access the information and implement the program in their own counties according to the needs of the communities. On a smaller scale, actually implementing the curriculum as a program in Prince Edward County and evaluating the gardening habits of the participants before, during and after the series is always important. This project will further assist extension agents in the future that have a need for this curriculum in their community to be able to quickly and easily apply this program. A collection of research based information regarding specifically sustainable vegetable gardening practices will be all in one place available for access. The conceptual framework of the project will be based on the Kolb's experiential learning model which is a learning-by-doing model approach. The results of the project include a detailed learning site for extension agents to have access to that entails a month-by-month curriculum for sustainable vegetable gardening in the Learning Management System of Scholar that is used by extension agents in Virginia. Recommendations for the future of this project include but are not limited to: changing the Scholar site to the new Canvas site that will be available to agents in the future and evaluating the agents as they use the curriculum in their programing and essentially recording the impact the project has made to Virginia Cooperative Extension as a whole.

Table of Contents

Introduction	4
<i>Background and Setting</i>	4
<i>Statement of the Problem</i>	5
<i>Purpose of the Project</i>	6
<i>Project Objectives</i>	6
<i>Definition of Terms</i>	7
<i>Review of Literature and Conceptual Framework</i>	8
<i>Summary and Significance of the Problem</i>	10
Project Overview	11
<i>Targeted Population and Participating Audience</i>	11
<i>Methodology</i>	11
Summary of Outcomes, Discussion, and Recommendations	13
<i>Program Outcomes</i>	13
<i>Program Impact Analysis</i>	14
<i>Implications</i>	15
<i>Recommendations</i>	16
Literature Cited	17
Additional Resources	18
Appendices	20

Introduction

Background and Setting

Agriculture and Natural Resources (ANR) Extension Agents in Prince Edward County, Virginia for the most part, had an educational background in conventional agriculture. These agents were specialists in livestock, crops, soils, and environmental sciences. Though these areas are still truly significant in Prince Edward County, in recent years there has been another important aspect of agriculture developing in this area. Knowledge in horticulture has become almost imperative due to the increased interest in home and public gardening, sustainable landscaping, and most importantly, home vegetable gardening. The interest in the local foods movement has dramatically increased due to uncertainty of where food is coming from and which unknown products food from box stores have been introduced to in their life cycle from seed to the table.

Knowing that there is a need in the community for more information in home vegetable gardening, a demonstration garden has been established in the last two years as a means to address some questions and issues on this subject. How to go about putting together a program to address these questions and issues has been a task for the Horticulture ANR Extension Agent along with the Local Foods Family and Consumer Sciences (FCS) Agent in Prince Edward County. The programs that need to transpire should involve lectures of the basic information and practices that the community needs to successfully establish vegetable gardens. More importantly these practices need to be demonstrated to help participants get a hands-on example and idea of labor involved in the gardening process. “The reasons to incorporate gardens into Extension programming are compelling. As an educational setting, gardens make possible the

type of sensory, exploratory experiences recommended for Extension's educational delivery systems” (Richardson, 1994).

Previous research proves that demonstrations are essential in Extension programming. According to a study done by North Carolina Extension Specialist in Educational Programs, John Richardson, “To determine the single most preferred way of learning by targeted clientele, they were given the choices of hearing, seeing, touching/feeling, doing, tasting, smelling, and discussing. Among these options, they indicated an overwhelming preference for ‘doing’...” (Richardson, 1994). “Additionally, the development of gardens has been suggested as a catalyst for initiating lasting, mutually beneficial community collaborations and partnerships” (Renquist, 2005). After realizing this need, the ANR Agent along with the FCS Agent decided to establish a sustainable vegetable gardening program in Prince Edward County that includes monthly lectures on sustainable gardening practices along with hands-on demonstration opportunities involving implementation of these practices into the garden.

Statement of the Problem

Gardening programs are limited here in Prince Edward County, along with the rest of Southside Virginia. The issue being addressed is the need for garden programming including but not limited to use of a demonstration garden as a teaching tool along with lecture implementation. “...Extension educational programs should include foremost, experiential or ‘doing’ opportunities. The learning process is further enhanced by providing opportunities for the learners to also see and discuss the information” (Richardson, 1994). Therefore, after using the demonstration garden as a tool for educational classes, the Prince Edward Horticulture Program will be enhanced.

Purpose of the Project

The purpose of this project is twofold. The main purpose is to establish a curriculum of a sustainable vegetable garden series for extension agents to be able to implement in Prince Edward as well as other counties throughout the state. Much information is available through extension publications on conventional practices in the vegetable garden. However, sustainable practices and organic methods are not as readily available. The additional purpose is to evaluate pre-program gardening habits of participants who mainly had conventional classroom teaching methods (i.e. PowerPoint, lecture, handouts, etc.) and compare them to post-program gardening habits after using the demonstration garden as a teaching tool. For all intents and purposes, garden programs in Prince Edward County will increase and there will be an established vegetable garden series that covers all seasons.

Project Objectives

1. Introduce a curriculum to other extension agents throughout the state on sustainable vegetable gardening.
2. Make more research based information available to extension agents on sustainable and organic practices for the home vegetable garden in Virginia.
3. Improve gardening program attendees' knowledge on all aspects of sustainable vegetable gardening.
4. Improve gardening program attendees' interest in physical interaction in their home gardens by implementing a variety of teaching tools including hands-on activities in the demonstration garden and discussion/question-answer sessions between attendees and instructors.

Definition of Terms

- *Local food movement*- a movement which aims to connect food producers and food consumers in the same geographic region; in order to develop more self-reliant and resilient food networks, improve local economies, or for health, environmental, community, or social impact in a particular place
- *Virginia Cooperative Extension (VCE) agent*- (person that) must determine program needs by monitoring trends and issues, involving Extension leadership councils and other leadership committees; design programs to meet needs of target audiences, specify program goals and objectives, and identify resources; inform clientele of program activities; use appropriate technologies to plan and deliver programs through workshops, seminars, conferences, one-on-one visits, on-farm demonstrations, field trips and tours; maintain knowledge of current research information; develop computer applications; develop and implement evaluation plans; recruit and utilize volunteers; and report results to clientele, public and administration. Extension agents recognize the importance of diversity and inclusion in the development and delivery of Extension programs, actively work to diversify program participation and are responsible for VCE's civil rights policies and compliance with affirmative action.
- *Agriculture and Natural Resources (ANR) agent*- an educator, an information provider, a needs assessor, a problem solving resource for clientele, and networks with the agricultural industry, specialists, Extension agents and agency representatives
- *Family and Consumer Sciences (FCS) agent*- (person who) takes a holistic approach to the development of programming that is designed to improve the well-being of

Virginia residents. Programming is tied to community needs and directed toward families and individuals.

- *eFARS (Electronic Faculty Annual Reporting System)*- report is an account of an individual's annual contribution to addressing the mission for which the agency is funded to achieve
- *Scholar*- the Learning Management System that is currently used at Virginia Tech
- *Canvas*- the Learning Management System that Virginia Tech is converting to
- *Learning Management System (LMS)*- a software application for the administration, documentation, tracking, reporting and delivery of electronic educational technology (also called e-learning) courses or training program

Review of Literature and Conceptual Framework

With increased awareness of growing and shipping practices of commercial vegetable gardening throughout the United States and the world, the consumer is turning to their own backyard as a produce department. That being said, there is a necessity for informative classes, workshops, and programs offered to the communities that will help these consumers grow their own fruits and vegetables correctly, safely, and sustainably. In Prince Edward County, there is increased interest in gardening, but there seems to be something missing, or a disconnect, of some sort, from teaching to learning to applying. Therefore, it is necessary that the demonstration garden be used as a tool to improve the gardening practices of the participants of this program.

The Kolb's experiential learning model is used for the framework of the project of evaluating horticulture programming after using demonstration gardening as a tool in the

monthly vegetable gardening workshops. The experiential learning theory is defined as "...the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience." (Kolb 1984, p. 41)

In Kolb's experiential learning model there are four distinct learning processes: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Concrete experience is basically a feeling or learning from specific experiences and relating them to people. Reflective observation is watching or observing before making a judgment by viewing the environment from different perspectives. This means looking for the meaning of things. The third aspect of the learning processes is abstract conceptualization which is the thinking part of the process. This is where you logically analyze ideas and act on intellectual understanding of a situation. Lastly, the process of active experimentation is actually doing or the ability to get things done by influencing people and events through action. This is a risk-taking process because you are actually testing by doing. You could fail or succeed. Below is a model demonstrating the cycle of these processes.

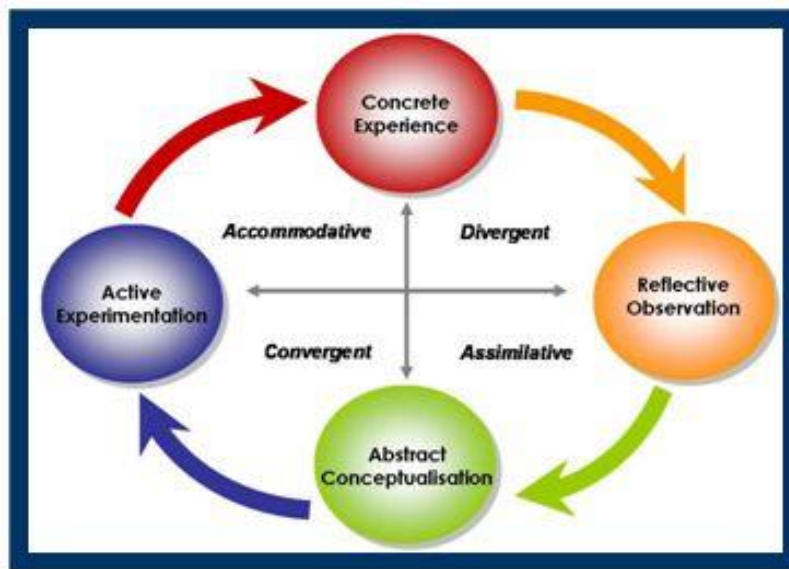


Figure 1. The Kolb's experiential learning model. ("Anderson Secondary School," 2014)

In “Learning Best through Experience”, a study done by North Cooperative Carolina Extension agents, this model was used to determine the preferred learning methods of their programming clientele (Richardson, 1994). They found that to determine the single most preferred way of learning by targeted clientele, they were given the choices of hearing, seeing, touching/feeling, doing, tasting, smelling, and discussing. Among these options, they indicated an overwhelming preference for "doing". Therefore, they had to experience feeling, thinking, watching and doing.

After reviewing many demonstration garden programs throughout the United States, most of the programming uses an experiential learning model as their framework for their workshops and programming. Most of their mission statements and objectives take people through the process that the Kolb’s experiential learning model follows. In extension, a learning-by-doing approach is imperative. “Demonstration gardens were more likely to be part of Extension programs in counties with populations over 100,000, though programs in counties of all population ranges had developed gardens.” (Glen, Moore, Jayaratne, and Bradley, 2013). This article shows that research has been done, demonstration gardens exist, programming is ongoing and learning is a success throughout Extension. Using this same approach in Prince Edward County would improve horticulture programming altogether.

Summary and Significance of the Problem

While preparing for the monthly workshops, the main problem that arose was preparing and organizing material for each program and trying to refer back to the previous year and what was taught during each particular month. Also, with garden demonstrations being outside, weather played a factor up to the last second on some occasions. With extension programming,

cancellations and postponements are sometime not an option. Trying to find a way to organize the material and have a backup plan in case of bad weather became imperative and the main task of the project.

Project Overview

Targeted Population and Participating Audience

To acquire participants, flyers will be sent to local businesses, advertised in the newspaper, and sent to many of the local and surrounding counties' Extension list-servs. Social media is also an effective way to advertise. Flyers will be posted on the agents' personal Facebook pages as well as the county extension Facebook page. The other agents in surrounding counties will also post the flyer to their local Facebook pages as well. The flyer will also be posted on the Extension Website for Prince Edward County. Due to the variety of ways that the flyers will get to the community, there should be a well-rounded turn-out at the workshops. The targeted audience will be those people that have an interested in home vegetable garden by using sustainable and/or organic methods and people that need to learn how to grow their own food for reasons such as lack of income, health issues, dietary restrictions, and knowledge. This quote goes for teaching one to garden as well: "Give a man a fish, and you feed him for a day. Teach a man to fish, and you feed him for a lifetime." (Keyes, 2015)

Methodology

The Sustainable Vegetable Garden Program will take place for two hours, from 5:30 pm to 7:30 pm every third Monday from March to November. During these workshops there will be a lecture on what practices need to take place in the garden in the upcoming month. Then

participants will have the opportunity to go to the garden to observe or do demonstrations that pertain to the lecture for that day. Participants can pre-register prior to the first class with a set fee of \$40 for the 9 months or they can pick and choose which classes they want to attend and there will be a per class fee of \$5. These fees will cover materials needed for demonstrations. Approximately 10 to 15 participants would be expected per class.

Pre-Workshop Evaluation will be given to the participants at the beginning of class on the first day of class. If new participants come on board throughout the nine months, they will also be allowed to fill out the Pre-Workshop Evaluation, so that there will be Pre-Workshop Evaluation data from all participants throughout the nine months.

Next, it is necessary to present the participants with a general evaluation at the end of each workshop with a few questions pertaining to that particular session. The main reason for this is, at the end of the workshops there may not be the same people as there were at the beginning, therefore, thoughts on the whole program from all of the participants may never be received. These evaluations will be considered the Post-Workshop Evaluation.

Finally, a Long-term Evaluation will be sent out to all of the participants 6 months later to see if they are taking into consideration what they learned about the class. It is necessary for the instructors to know if the participants are putting the information that they learned to use and if they have implemented their learnings in their own gardens since the vegetable garden series.

Once these evaluations have been distributed to all participants before, throughout, and following the program, the agent will collect all of the evaluations and review the answers to understand the thoughts of the participants. The instructor will take the information and use it as guidance for the next series of workshops that will be offered in the following year. This way, each year the program will improve from the year to year.

In order to understand the thoughts of all workshop participants, the data will need to be analyzed. First, the individual evaluations will be reviewed and studied. Next, the answers to each evaluation will be examined and consolidated. After review and understanding the evaluations as a whole, changes and improvements will be made for the following year's program.

Summary of Outcomes, Discussion, and Recommendations

Program Outcomes

The Sustainable Vegetable Gardening Program was offered for two years, from May to November of 2014, and then from March to November of 2015. The dates were originally scheduled for the first or second Monday of each month from 5:30 pm to 7:30 pm depending on when the conference room was available in 2015. After the dates were set, as the program went on, there were some occasions where the program had to be rescheduled, Hurricane Joaquin being a very specific example. Otherwise, the dates were kept and videos or indoor demonstrations were implemented in cases of bad weather in lieu of outdoor demonstrations.

The 2014 program included three participants that were very consistent in their attendance- one white male, one white female, one black female and occasionally her husband, a black male. The 2015 program consistently included seven participants, three of which made up the 2014 class. These participants enjoyed the 2014 class to the point where they came back for a second year of sustainable vegetable gardening lessons. These numbers may not seem like much, but in rural Prince Edward County, depending on the program, attracting ten participants to an ongoing program and holding them for the entire series is a great accomplishment. There were avid vegetable gardeners as participants as well as gardeners with little to no experience.

Not only did the participants learn from the material presented, but they learned from one another.

The evaluations were a very helpful tool for the program. The pre-program evaluations allowed the extension agents to understand the audience to which they were presenting and their strengths, weaknesses, and interests. The post-workshop evaluations helped the agents understand on a month to month basis what kept the participants attention and how they understood the specific topics. The long-term post-program evaluation told the agents whether or not applications from the programs were implemented into the participants' gardens. The long-term post-program outcomes were obvious after the 2014 class, due to the fact that the three participants for this class were also loyal participants for the 2015 class.

Program Impact Analysis

During the 2015 series, much more organization and material preparation took place. During this year, material was gathered and placed into a Scholar Site and organized in a way that would be beneficial for not just the Prince Edward extension agents for years to come, but also for agents in surrounding counties and all over Virginia. Sustainable and organic vegetable gardening practices are hard to come by in Virginia Cooperative Extension publications. A lot of the information is there in various publications, however, picking and choosing information from the publications that are applicable to sustainable and organic practices alone is a large task in and of itself. The main purpose of this project was to create a one-stop-shop for extension agents to be able to implement a sustainable vegetable gardening program. After reviewing the Scholar Site, one will understand the impact this will have on extension agents in the future throughout Virginia.

The impact of the vegetable gardening series in Prince Edward has been great. The space where the demonstration garden thrives, that was previously a void, is now a beneficially productive space for the extension agent's and the public's use. The garden, as long as it is maintained, can be a teaching tool for extension for years to come. Not only can classes be taught from it, but the fruit of the labor can be used throughout the community. There are endless opportunities in the horticulture and local foods sectors of Prince Edward extension programming.

An even greater impact that could resonate not only in Prince Edward and the surrounding counties, but throughout the state, is the idea of having a canned curriculum for sustainable/organic gardening practices. With access to the Scholar Site, extension agents can teach a monthly program, individual programs depending on their needs in their county, or one to two day conferences covering the same material that Prince Edward covered on a month to month basis. The information is there, applying it is in the hands of the extension agent.

Implications

These first two years of this program is only the beginning for Prince Edward County. With the tool of the Scholar Site, marketing and advertisement for the program can be just a click of a button away. The focus of preparing material for the actual program will be lessened to focus of advertising for the program, which will essentially increase attendance overall. Underserved audiences in the community can be specifically targeted and the information can be used to teach an audience of children as well. With the local foods movement becoming more and more significant, programs on vegetable garden practices, especially sustainable methods, are extremely necessary in most places throughout Virginia and beyond.

In conclusion, the establishment of a demonstration garden, the application of information on sustainable gardening practices, and availability of sustainable gardening curriculum to extension agents, can further help other extension agents inform the public of practices to support the local foods movement as well as the science behind these practices.

Recommendations

In the future, it is recommended that there be an ongoing forum on the Scholar Site, for agents to post their thoughts and considerations for this program. The beauty of the Scholar Site is that it can forever be changed, edited, and improved. Every agent that uses any part of this curriculum should be required to fill out a pre- and post- use evaluation. Not only will this keep the organizer of the site informed on interests of the agents, but it will also create a great impact statement for the organizer to present in the year-end report (eFARS) that is required of all extension agents in Virginia. One last recommendation would be to keep the site up-to-date. In the very near future, Virginia Tech will be changing its Learning Management System for Scholar to Canvas. In order for this vegetable gardening curriculum to prosper, the information will have to migrate from Scholar to Canvas.

For many reasons that have already been mentioned, this project has the ability to reach out and touch many parts of the communities that extension works for throughout the state. It is the extension agent's responsibility to implement this project in his own community if there is a need. This quote is twofold for this program in the sense of giving the agent the material that can be taught for a long time; then the agent can teach the community how to garden and the community can provide food for a lifetime. "Give a man a fish, and you feed him for a day. Teach a man to fish, and you feed him for a lifetime." (Keyes, 2015)

Literature Cited

Anderson Secondary School with Constancy and Purpose. (2014). Retrieved February 28, 2014,

<http://www.andersonsec.moe.edu.sg/web1/Generic.asp?id=4&subid=12>

Glen, C. D., Moore, G. E., Jayaratne, K. S. U., Bradley, L. K. (2013). Characteristics of extension demonstration gardens. *Journal of Extension*, 51(2) Article 2RIB8.

<http://www.joe.org/joe/2013april/rb8.php>

Keyes, R. (2015). Quote Investigator: Exploring the origins of quotations. Retrieved November

11, 2015, <http://quoteinvestigator.com/2015/08/28/fish/>

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. New Jersey: Prentice-Hall.

Renquist, S. B. (2005). Finding hidden partnerships to create a teaching garden. *Journal of*

Extension, 43(5) Article 5IAW4. <http://www.joe.org/joe/2005october/iw4.php>

Richardson, J. (1994). Learning best through experience. *Journal of Extension*, 32(2) Article

2FEA6. <http://www.joe.org/joe/1994august/a6.php>

Additional Resources

Brookfield, S. D. (1986). *Understanding and facilitating adult learning: A comprehensive analysis of principles and effective practices*. California: Jossey-Bass, Inc.

College of Agriculture and Life Sciences, (2015). eFARS, electronic Faculty Annual Reporting System Help Desk. Retrieved on November 12, 2015, <http://www.efars.cals.vt.edu/>

Franz, N. (2007). Adult education theories: Informing Cooperative Extension's transformation. *Journal of Extension*, 45(1) Article 1FEA1.
<http://www.joe.org/joe/2007February/a1.shtml>

Harmon, A. H., Jones, S. B. (1997). Forestry demonstration: What good is a walk in the woods? *Journal of Extension*, 35(1) Article 1RIB3. <http://www.joe.org/joe/1997february/rb3.php>

Johnson, S. B., Carter, H. S., Kaufman, E. K. (2008). Learning styles of farmers and others involved with the Maine potato industry. *Journal of Extension*, 46 (4) Article 4RIB7.
<http://www.joe.org/joe/2008august/rb7p.shtml>

Meunier, R. A., Talbert, B. A., Latour, M. A. (2000). Creating agriculture awareness through an interactive learning experience: Incubators in the classroom. *Journal of Extension*, 38(1) Article 1IAW1. <http://www.joe.org/joe/2000february/iw1.php>

Obropta, C. C., DiNardo, M. F., Rusciano, G. M. (2008). The demonstration rain garden. *Journal of Extension*, 46(2) Article 2TOT3. <http://www.joe.org/joe/2008april/tt3.php>

Ota, C., DiCarlo, C. F., Burts, D. C., Laird, R., Gioe, C. (2006). Training and the needs of adult learners. *Journal of Extension*, 44(6) Article 6TOT5.

<http://www.joe.org/joe/2006december/tt5.php>

Seevers, B., Graham, D., & Conklin, N. (2007). *Education through Cooperative Extension* (2nd ed.). Albany, NY: Delmar Publishers.

Strong, R., Harder, A., Carter, H. (2010). Agricultural extension agents' perceptions of effective teaching strategies for adult learners in the Master Beef Producer Program. *Journal of Extension*, 48(3) Article 3RIB2.

<http://www.joe.org/joe/2010june/rb2.php>

Virginia Cooperative Extension, (2015). Extension agent job description. Retrieved on

November 12, 2015, <http://www.ext.vt.edu/employment/agentjobdescriptions.html>


Wikipedia, (2015). Definition of local food movement and Learning Management System.

Retrieved on November 12, 2015, https://en.wikipedia.org/wiki/Local_food,

https://en.wikipedia.org/wiki/Learning_management_system


Appendices

Evaluations



Virginia Cooperative Extension

Virginia Tech • Virginia State University



Vegetable Gardening Pre-Program Evaluation

Please answer the following questions thoroughly and with much thought.


1. For how many years have you been gardening?
2. On a scale of 1 to 5, 5 being the highest, what do you believe is your gardening knowledge level?
3. What type of gardening have you done in the past?
4. Are you planning to implement practices you learn in this class in your own garden?
5. What do you expect to learn about in this program?

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> </table>											<ul style="list-style-type: none"> Soil Health (nutrient supply) Seed Starting Plants/Crops Water Pests (weeds, insects, diseases, animals) Harvest Cooking, Preserving, and Storage Other (please explain)

6. What are some specific topics and questions regarding vegetable gardening have you had in the past that you would definitely feel the need for us to cover during these workshops?
7. What is your expectation of percentage of time spent on lecture versus demonstration for these workshops with the total equaling 100%? (Example: 40% Lecture, 60% Demonstration)
8. In which areas do you need the most instruction and resources (Please rate from 1 to 7, 1 being the most important topic and 7 being the least important topic):


<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> </table>											<ul style="list-style-type: none"> Soil Health (nutrient supply) Seed Starting Plants/Crops Water Pests (weeds, insects, diseases, animals) Harvest Cooking, Preserving, and Storage

Virginia Cooperative Extension programs and employment are open to all, regardless of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, genetic information, marital, family, or veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; Jewel E. Harston, Administrator, 1890 Extension Program, Virginia State, Petersburg.



Virginia Cooperative Extension

Virginia Tech • Virginia State University



Vegetable Gardening Post-Workshop Evaluation

Please answer the following questions thoroughly and with much thought.

1. What did you enjoy most about this workshop today? Please be specific.
2. Did the demonstration make you want to go in your own garden and apply what you learned?
3. Is there anything that you wished we had talked about pertaining to this month that we did not cover?
4. Is there anything that you disliked about the workshop today or that you wished we would have done differently?
5. Do you plan on attending the workshop next month specifically and do you plan on attending in the months to come?
6. What is your expectation of topics that will be covered in the next class?

Virginia Cooperative Extension programs and employment are open to all, regardless of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, genetic information, marital, family, or veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; Jewel E. Harston, Administrator, 1890 Extension Program, Virginia State, Petersburg.



Virginia Cooperative Extension

Virginia Tech • Virginia State University



Vegetable Gardening Long-Term Evaluation

Please answer the following questions thoroughly and with much thought.

1. Since the Vegetable Garden Workshops last year, have you changed anything about what you do as far as garden preparation, garden planting, and garden maintenance? If so, please share with me those changes?

2. I have _____ changes in my gardening practices since the Vegetable Gardening Workshops last year.
 - a. made significant
 - b. made slight
 - c. not made any

3. Have you shared what you learned in the workshops with your neighbors, friends, family or coworkers in hopes that they may practice some of the techniques that we discussed and demonstrated?

4. If you answered yes to the question above, do you think any of those people have changed any of their gardening techniques because of what you shared about what you learned in the workshops?

5. Are there any programs, garden related or not, that you would like to see Extension offer to the public in the future? If so, what are your suggestions?

Virginia Cooperative Extension programs and employment are open to all, regardless of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, genetic information, marital, family, or veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; Jewel E. Hairston, Administrator, 1890 Extension Program, Virginia State, Petersburg.

Example Curriculum and Support Materials for the Month of March Scholar Site March Page

Unpublished Site
(Publish Now)

Curriculum by Month > March - Principles of Organic Gardening

March - Principles of Organic Gardening Back

Reorder Add Text Add Multimedia Add Resource Add Subpage Add Assignment Add Quiz Help More Tools Copyright Info

Welcome to the March curriculum that entails the Principles of Organic Gardening. Specifically, this module will cover these objectives:

- Definition of organic gardening
- Explanation of site analysis and building soil health for a garden
- Discussion of physical and cultural techniques for a garden
- Introduction of vegetables: Onions, Asparagus, Peas
- Demonstration of seed starting

Marketing and Evaluation
This section contains the material you will need to advertise, promote, record, and evaluate your program for the first month.

Presentation
This section contains a PDF version of your presentation as well as an editable version of the PowerPoint presentation for the first month.

Demonstration
This section contains a description and/or videos of the demonstrations for the certain month.

Resources
This section contains the extension and other publications that were used for the presentation and can be handouts for the participants of the program.

Technology-enhanced Learning and Online Strategies | Using this site means that you accept its terms | For assistance, contact 4-Help
Acceptable Use of Scholar is governed by Virginia Tech's [Policy 2009: Acceptable Use and Administration of Computer and Communication Systems](#).
All Scholar logins, transactions and IP addresses are routinely logged for security, authentication and Honor System purposes. Your work is confidential, private and logged.
Your IP address for this Scholar session: 198.82.38.115
Copyright 2015 Virginia Polytechnic Institute and State University
Scholar - 20151009 - Sakai 2.9.0 (Kernel 1.3.0) - Server tamale

Schedule

GROW YOUR OWN VEGETABLE GARDEN SERIES SCHEDULE

March

Presentation Topic: "Principles of Organic Gardening"

Vegetables: Peas, Beans, Asparagus, Onions

Demo: Seed Starting

April

Presentation Topic: "IPM, Attracting Beneficials, Scouting"

Vegetables: Lettuce, Spinach, Carrots, Beets, Potatoes

Demo: Direct Seeding/Planting

May

Presentation Topic: "Weed Control, Companion Planting, Square Foot Gardening, Succession Planting"

Vegetables: Tomatoes, Peppers, Eggplant, Cucumbers

Demo: Weed Control, Mulching, Square Foot Gardening

June

Presentation Topic: "Trellising/Staking and Moisture Management"

Vegetables: Squash, Melons, Okra

Demo: Trellising/Staking Vines and Tomatoes

July

Presentation Topic: "Harvesting and Home Food Preservation"

Vegetables: Brussel Sprouts, Sweet Potatoes

Demo: Canning

August

Presentation Topic: "Transitioning Your Garden"

Vegetables: Greens, Chard

Demo: Making Fresh Recipes

September

Presentation Topic: "Overwintering, Cover Crops, Storage"

Vegetables: Broccoli, Cauliflower, Cabbage

Demo: Seed Saving

October

Presentation Topic: "Putting your Garden to Bed"

Vegetables: Kale, Asparagus, Garlic, Shallots

Demo: Planting and Care of Perennials

November

Reflection and Celebration

Flyer for March

GROW YOUR OWN



**Are you interested in growing your own vegetables?
Join us each month in the Prince Edward
Demonstration Garden to learn step-by-step.**

Topics will include:

- Principles of Organic Gardening
- Building Soil Health
- Seed Starting & Seedling Care
- Attracting Bees, Butterflies, & other Beneficial Insects
- Weed Control, Trellising, & Water Management
- Companion Planting & Square Foot Gardening

This series also includes cooking & food preservation demos!



WHEN? 5:30-7:30pm

March 2 August 10
April 13 September 7
May 4 October 5
June 8 November 16
July 6

WHERE?

**Virginia Cooperative
Extension
Prince Edward
100 Dominion Drive
Farmville, VA 23901**

CONTACT

**PRINCE
EDWARD
EXTENSION**

434-392-4246

CGRACEM@VT.EDU

TO REGISTER

COST

\$5 PER CLASS

OR

**\$30 FOR ENTIRE
SERIES**



**Virginia
Cooperative
Extension**

Virginia Tech
Virginia State University
www.ext.vt.edu

Virginia Cooperative Extension programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; Jewel E. Ha Irston, Administrator, 1890 Extension Program, Virginia State, Petersburg.

Press Release

Virginia Cooperative Extension will be hosting a "Grow Your Own" vegetable gardening series on March ____, April ____, May ____, June ____, July ____, August ____, September ____, October ____, and November ____ of 20__ at the ____ (Location) ____, ____ (Address) _____. Topics covered in this series include principles of organic gardening, building soil health, seed starting and seedling care, attracting bees, butterflies and other beneficial insects, weed control, trellising, water management, companion planting, square foot gardening and cooking and food preservation. The cost will be \$5 per class or \$30 for the entire series. For more information and to pre-register by February ____, contact the __ (County) __ Extension Office at __ (Phone) __ or __ (E-mail) ____.



Virginia Cooperative Extension

Virginia Tech • Virginia State University

Virginia Cooperative Extension programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer.

11/19/2015

Virginia Cooperative Extension
Virginia Tech • Virginia State University


PRINCIPLES TO ORGANIC GARDENING

Vegetables:
Onions, Spring Asparagus, and Peas

Given by
Caitlin Miller
Local Foods
ECS

Katy Overby
Horticulture
AMR

GROW YOUR OWN!



- Monthly workshops
- Two-hour sessions
- Part-lecture/Part-demonstration
- March through November

“How on earth do I grow an organic garden?”

11/19/2015

WHAT IS ORGANIC GARDENING

·Production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity, and cycles adapted to local conditions, rather than the use of inputs with adverse effects. **Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved...**"

- International Federation of Organic Agriculture Movements

HEALTHY GARDEN SITE

- Sun exposure
- Air circulation
- Proximity to both beneficial and harmful wildlife
- Soil type and water sources



The Demonstration Garden at Virginia Cooperative Extension Office in Prince Edward

11/19/2015

USE HEALTHY PLANTS, SEEDS AND INPUTS

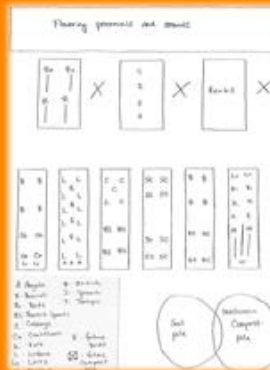
- Disease-free, Insect-free stock
- OMRI approved pesticides and amendments

<http://www.omri.org/omri-lists>



KEEP RECORDS AND MAKE MULTI-SEASON GARDEN PLANS

- Regular scouting for insect and disease pests
- Important for crop rotation



11/19/2015

BUILD SOIL HEALTH NATURALLY

- The goal is biologically active soil
- Regular soil tests (pay attention to pH & OM)
- Incorporate compost and mulch
- Cover crops (to build organic matter and provide nutrients while limiting synthetic fertilizer inputs)

**PHYSICAL/ CULTURAL
TECHNIQUES**


11/19/2015

PHYSICAL/CULTURAL TECHNIQUES

- Preventative
 - Mulching
 - Appropriate tillage
 - Trellising
- Irrigation
 - Row-covers
 - Culling
 - Hand-picking
 - Fencing & Traps

WEED MANAGEMENT

- Through the use of mulches-organic (leaves, straw, wood chips), newspaper, and cardboard
- The use of mulches combined with strip tillage to deal with pathway weeds is extremely effective in weed suppression and moisture retention



11/19/2015

TILLAGE

- Heavy tillage disrupts microorganisms and compacts soils overtime
- Lightly till soils to start, then add organic matter
- Never till wet soils



TRELLISING

- For improved air circulation and to keep plants off the ground (moisture, pests)
 - Tomatoes
 - Cucumbers
 - Beans



11/19/2015

DRIP IRRIGATION AND/OR MORNING WATERING

- Avoid wet foliage for prolonged period
- Added benefit of water conservation



ROW COVER (RE-MAY, AGRIBON)

- Essential to get transplants off to a strong start and in some cases must remain on-watch temperature



11/19/2015

ROW COVERS CONTINUED

- Comes in different weights & sizes
- Hoops (galvanized wire, PVC pipe)
- Can end up excluding pollinators so may need to remove at bloom set
- Best way to prevent vine-borer on squash
- Check to make sure pests are not building up within
- Added benefit of frost protection

CULLING

- Know when to give up on a crop
 - Take care to dispose of infected plants, pest population appropriately
 - Can be unintentional trap crop



Late blight on tomato

11/19/2015

HANDPICKING

- At the appropriate life stage can be effective
- Works best in the morning when insects are not as active
- Know what you're removing



FENCING, LIVE TRAPS, SCARE TAPE

- For mammals and birds



11/19/2015



11/19/2015

BIOLOGICAL PEST CONTROL

- Crop rotation
- Encourage beneficial insects through habitat creation (farmscaping) and safe practices
- Targeted biological and/or non-systemic sprays

CROP ROTATION

- Important for building (and using) proper nutrients in soil as well as for pest control
- Disrupt pest and disease cycles by keeping distance in time and space between plants in the same family

Sunflower family	lettuces, sunflowers
Goosefoot family	beets, spinach, chard, quinoa
Mustard family	mustard greens, rutabaga, kale, broccoli, cabbage
Onion family	cauliflower, turnip, radish, watercress
Gourd family	garlic, shallots, leeks, onions, chives
Pea family	melons, squashes, gourds
Nightshade family	peas, beans, icama, peanuts
Carrot family	peppers, tomatoes, eggplant, potato
Grass family	celery, dill, chervil, fennel, carrot, parsnip, parsley
Grass family	corn

- Lots of models from simple to complex

First Year	Second Year	Third Year
A B C	C A B	B C A
→		

11/19/2015

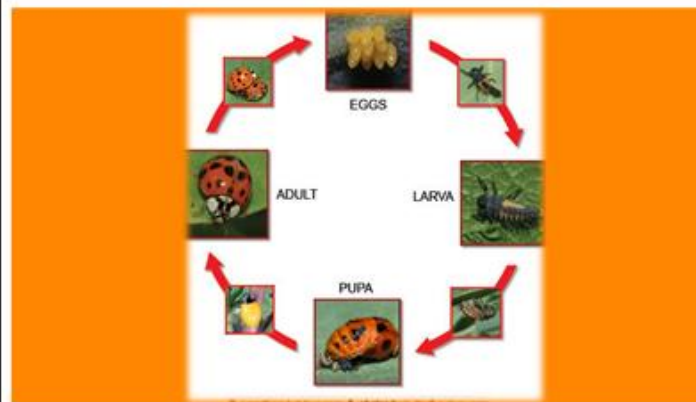
UNDERSTAND INSECT LIFECYCLES

- Learn to recognize different stages of pests and beneficial insects
- Lots of beneficial insects look "bad or dangerous"- that is a good thing for us
- Timing of treatment is often crucial to overall control

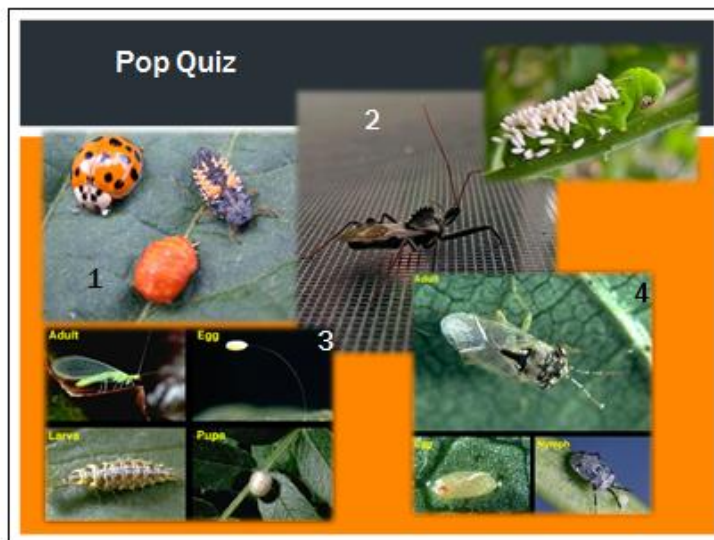
- If you can knock down the larval stage of first generation potato beetle, you may eliminate further infestations



LADYBUG LIFECYCLE



11/19/2015



ENCOURAGE BENEFICIAL INSECTS (FARMSCAPING)

- Biodiversity is key- flowering plants in and around your vegetables attract beneficial insects (pollen and nectar are alternative food sources) and provide habitat cover for overwintering
- Shallow nectary plants are best for syrphid flies and parasitoid wasps
- Many cover crops in bloom attract beneficial insects



11/19/2015

FARMSCAPING

Table 1. Some flowering plants known to attract arthropod natural enemies.

Carrot Family (Apiaceae)		Legumes (Fabaceae)	
Anise	<i>Pimpinella anisum</i>	Alfalfa	<i>Medicago sativa</i>
Blue Lace	<i>Trachymene caerulea</i>	Big flower vetch	<i>Vicia grandiflora</i>
Caraway	<i>Carum caryi</i>	Fava bean	<i>Vicia faba</i>
Chervil	<i>Anthriscus cersifolium</i>	Hairy vetch	<i>Vicia villosa</i>
Corander/Giantro	<i>Coriandrum sativum</i>	Sweet clover	<i>Melilotus officinalis</i>
Oil	<i>Anethum graveolens</i>	Red clover	<i>Trifolium pratense</i>
Fennel	<i>Foeniculum vulgare</i>	White clover	<i>Trifolium repens</i>
Lovage	<i>Lovisticum officinale</i>	Cabbage Family (Brassicaceae)	
Bishops Lace	<i>Ammi majus</i>	Yellow rocket	<i>Barbarea vulgaris</i>
Wild Carrot	<i>Daucus carota</i>	Sweet Alyssum	<i>Lobularia maritime</i>
Aster Family (Asteraceae)		Candytuft	<i>Iberis umbellata</i>
Blazing Star	<i>Liatris pycnostachya</i>	Mustards	<i>Brassica spp.</i>
Chamomile	<i>Anthemis nobilis</i>	Teasel Family (Dipsacaceae)	
Cosmos	<i>Cosmos bipinnatus</i>	Cephalaria	<i>Cephalaria gigantea</i>
Coneflower	<i>Echinacea spp.</i>	Dipsacus	<i>Dipsacus spp.</i>
oreopsis	<i>Coreopsis spp.</i>	Pin cushion Flower	<i>Scabiosa caucasica</i>
Golden Marguerite	<i>Anthemis tinctoria</i>	Scabiosa	<i>Scabiosa atropurpurea</i>
Goldenrod	<i>Solidago altissima</i>	Mint Family (Lamiaceae)	
Marigold, Signet	<i>Tagetes tenuifolia</i>	Peppermint	<i>Mentha piperata</i>
Mexican Sunflower	<i>Tithonia tagetifolia</i>	Spearmint	<i>Mentha spicata</i>
Sunflower	<i>Helianthus spp.</i>	Thyme	<i>Thymus spp.</i>
Tansy	<i>Tanacetum vulgare</i>	Other Species	
Yarrow, milfol	<i>Achillea millefolium</i>	Buckwheat	<i>Fagopyrum esculentum</i>
Yarrows	<i>Macrophyla tetragyna</i>	Cinquefoil	<i>Potentilla spp.</i>

TARGETED BIOLOGICAL AND NON-SYSTEMIC SPRAYS

- Regular scouting is important to be able to determine when you need to intervene
- Timing of treatment is important
 - To avoid harming pollinators (bees) and harming plant tissues (phytotoxicity)
- Wait and see approach
 - keep in mind that some insects carry bacterial diseases that can be more damaging than the insect feeding

11/19/2015

ORGANIC SPRAY TOOLKIT (ORGANIC SPRAYS ARE STILL TOXIC)

- *Surround (kaolin clay)*- deters feeding by beetles, prevents sunscald
- *Dipel (Bacillus thuringiensis)*- Larval form of cabbage looper another caterpillars- acts through ingestion
- *Monterey Garden Insect Spray (Spinosad)*- Colorado Potato Beetle larvae, thrips- acts through ingestion and on contact, toxic to honeybees
- *Safer soap/Sucrashield* - contact insecticide/ miticide for hard shelled insects
- *Serenade ASO (Bacillus subtilis)*- fungal and bacterial diseases (early and late blight, powdery mildew)
- *Pygantic (pyrethrin)*- rapid knockdown of hard shelled pests broad spectrum, toxic to honeybees, may cause phytotoxicity

VEGETABLES OF THE MONTH

Onions
Asparagus
Peas

11/19/2015

ONIONS

- Onion varieties
 - "Long day" -sets bulbs when it receives 15 to 16 hours of daylight and is used to produce onions in Northern summers
 - Seedlings or sets of long day varieties set out in April will produce a harvest in August
 - "Short day" -sets bulbs with about 12 hours of daylight and are used in the deep South for winter production
 - Seed of short day varieties started indoors in January should produce a harvest in June

ONIONS CONTINUED

- Use sets, seeds, or transplants in spring for bulbs and for green or bunching onions.
- Seeds may be started indoors eight weeks before setting out.
- Use sets in the fall for perennial or multiplier types of onions.
- Harvest green onions when tops are 6 inches tall; bulbs after 2/3 or more of the tops have fallen over. Do not wait more than one to two weeks after this occurs. Allow for thorough drying before storage.

11/19/2015

ASPARAGUS-PERENNIAL VEGETABLE

- Plant 1 year crowns in early spring
- Full Sun, good drainage, and away from any plants that do not like shade; bed of their own is best
- 12-18 inch trenches dug that are ~4 feet apart
- Remove top layer of soil and then dig another 10 to 12 inches into the dirt to break up soil
- Mix topsoil and compost and build a 2 inch deep mound in bottom of trench
- Set plants 15-18 inches apart making sure that crown is higher than roots
- Cover the crown with 2-3 inches of soil
- Continue to cover as crown grows

ASPARAGUS

- Deeper planting- larger, later, fewer spears
- Shallow planting- thinner, earlier, more spears
- Do not harvest 1 year after planting crowns; harvest lightly for 3-4 weeks the second year
- Extending harvest
 - Planting crowns at different depths
 - Harvesting half of crop in spring to summer while letting other go to fern and then in July cutting back the ones that you let go to fern so that they will send up new shoots for the fall

11/19/2015



11/19/2015

PEAS

- Sow in late winter, early spring
- Open sunny site
- Harvest in early summer
- Sow 2 inches apart and 2 inches deep with 2-3 feet between rows
- Depending on the variety, time of harvest varies
 - Pick pods when the peas have swollen to large enough to eat
 - Some varieties- snow peas- should be picked before the pods get tough

MARCH

Getting Started

- Make a plan
- Soil test
- Garden bed prep
 - till and weed
 - amend soil
- Cover beds with mulch
 - Transplant beds only

Planting

- Seeds to start: Spinach, celery, beans, kohlrabi, herbs, some farmscaping varieties
- Direct sow: peas, carrots, potatoes, leeks, onion seedlings
- Start lettuce every two weeks

11/19/2015

HOMEWORK

- Make a simple garden plan
- What do you want to grow in each season?
- Think about questions you've had in the past
- Prep your garden

The diagram is titled "Thinking forward and backward". It shows a sequence of boxes connected by arrows, representing a process flow. The boxes contain letters and numbers, such as "A", "B", "C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R", "S", "T", "U", "V", "W", "X", "Y", "Z", "1", "2", "3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21", "22", "23", "24", "25", "26", "27", "28", "29", "30", "31", "32", "33", "34", "35", "36", "37", "38", "39", "40", "41", "42", "43", "44", "45", "46", "47", "48", "49", "50". Below the diagram is a legend for the letters: A: Apple, B: Banana, C: Carrot, D: Date, E: Eggplant, F: Fig, G: Grape, H: Honeydew, I: Iceberg, J: Jalapeno, K: Kiwi, L: Lemon, M: Mango, N: Nectarine, O: Orange, P: Peach, Q: Quince, R: Raspberry, S: Strawberry, T: Tomato, U: Ugli fruit, V: Vanilla, W: Watermelon, X: Xanthoxanthin, Y: Yucca, Z: Zucchini, 1: Avocado, 2: Blackberry, 3: Blueberry, 4: Broccoli, 5: Brussels sprouts, 6: Cabbage, 7: Cauliflower, 8: Cauliflower, 9: Cauliflower, 10: Cauliflower, 11: Cauliflower, 12: Cauliflower, 13: Cauliflower, 14: Cauliflower, 15: Cauliflower, 16: Cauliflower, 17: Cauliflower, 18: Cauliflower, 19: Cauliflower, 20: Cauliflower, 21: Cauliflower, 22: Cauliflower, 23: Cauliflower, 24: Cauliflower, 25: Cauliflower, 26: Cauliflower, 27: Cauliflower, 28: Cauliflower, 29: Cauliflower, 30: Cauliflower, 31: Cauliflower, 32: Cauliflower, 33: Cauliflower, 34: Cauliflower, 35: Cauliflower, 36: Cauliflower, 37: Cauliflower, 38: Cauliflower, 39: Cauliflower, 40: Cauliflower, 41: Cauliflower, 42: Cauliflower, 43: Cauliflower, 44: Cauliflower, 45: Cauliflower, 46: Cauliflower, 47: Cauliflower, 48: Cauliflower, 49: Cauliflower, 50: Cauliflower. To the right of the legend are two overlapping circles labeled "Soil pile" and "Compost pile".

QUESTIONS?

Virginia Cooperative Extension
Virginia Tech • Virginia State University

11/19/2015

RESOURCES

- Relf, Diane. "Minimum-Chemical Gardening." Virginia Cooperative Extension. http://pubs.ext.vt.edu/426/426-366/426-366_pdf.pdf
- Relf, Diane and Alan McDaniel. "Asparagus." Virginia Cooperative Extension. http://pubs.ext.vt.edu/426/426-401/426-401_pdf.pdf
- Relf, Diane and Alan McDaniel. "Beans." Virginia Cooperative Extension. http://pubs.ext.vt.edu/426/426-402/426-402_pdf.pdf
- Relf, Diane and Alan McDaniel. "Onions, Garlic, and Shallots." Virginia Cooperative Extension. http://pubs.ext.vt.edu/426/426-411/426-411_pdf.pdf
- Wallace, Ira. *Vegetable Gardening in the Southeast*. Portland, Oregon: Timber Press, 2013.