Mid-Atlantic Urban Agriculture Conference 2021

Book of Abstracts

Virginia State University

Compiled by

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Evaluating the performance of the minute pirate bug *Orius insidiosus* as a predator of thrips in greenhouse-grown geraniums

*Christopher M, Epes**

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Abstract:

Thrips are among the most common and economically damaging greenhouse pests in the world. Due to the demanding nature of chemical control programs in greenhouses for thrips, biocontrol strategies are growing in popularity in greenhouse pest control programs. Geraniums are common in spring annual greenhouse production programs, and like many other crops demand thrips management strategies. This project lays the groundwork for exploring the performance of minute pirate bug, *Orius insidiosus*, to reduce thrips densities in greenhouse geraniums. In a laboratory, *Orius* and thrips were released into controlled, no-choice predation arenas using both geranium leaves and flowers, and thrips mortality was assessed. *Orius* and thrips were then released onto finished potted geranium plants under no-choice conditions in an insect proof cage under greenhouse conditions, after which thrips mortality was assessed. The cumulative results show that *Orius* prey upon thrips on geranium leaves and florets and could be used as a tool to help reduce thrips populations in greenhouse-grown geraniums.

Prevalence and Antimicrobial Resistance of Foodborne Pathogens in Value-added Commodities Procured from Farmers' Markets in Central Virginia

Chyer Kim, Ramesh Dhakal, Eunice Ndegwa, Theresa Nartea*

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Abstract:

Food safety concerns associated with products purchased at farmers' markets have been rising, highlighting the growing need for consumers and producers awareness of potential public health issues. The focus of this quantitative research study was to assess the prevalence and antimicrobial resistance (AMR) of foodborne pathogens in select value-added commodities (i.e., animal treats, soil amendments, herbs, honey, dressings, exotic foods, etc.) randomly procured from farmers' markets in Central Virginia. Between March and November 2017, a collection of 194 samples originating from 40 individual farmers' market vendors selling at 11 different farmers' markets transpired. Detection of potentially harmful bacterial species within collected samples was as follows: 0.5% Campylobacter, 24.5% E. coli, 16.7% Listeria, and 1.0% Salmonella. Bacterial isolates (n=155) of Campylobacter, E. coli, Listeria, and Salmonella were tested for their susceptibility to 12 antimicrobials. Tetracycline and ampicillin resistance showed the highest frequency among E. coli (approximately 30%) isolates. Nalidixic acid resistance was the highest in Listeria isolates (79.4%). Approximately 17% of E. coli isolates and more than 50% of each Campylobacter, Listeria, and Salmonella isolates exhibited multidrug resistance (MDR). No E. coli isolates had matching pulsed-field gel electrophoresis (PFGE) profiles demonstrating that the isolates had a high degree of genomic diversity and farm specificity. This study demonstrated an emerging public health threat of the presence of MDR arising from farmers' market-acquired value-added commodities. The importance of this research study highlights the value of implementing good agricultural and handling practices from farm (producer vendors) to table (consumers) to avert potential foodborne illness occurrence. Future research to determine potential reasons and supply chain interventions for the observed prevalence of MDR bacterial isolates from farmers' market value-added products is paramount.

Water quality and fish health issues in small-scale aquaponics and recirculating aquaculture systems in Virginia

David Crosby, Chyer Kim, Chris Mullins*

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Abstract:

Small-scale aquaponics and recirculating aquaculture systems (RAS) are increasing and expanding in Virginia, resulting in numerous aquaponics units in urban and rural areas. Food Safety Modernization Act (FSMA) has raised questions about food safety and fish health (zoonotic diseases) concerns in these small-scale aquaponics units. Many of these systems are now located in urban food deserts. The study goal is to collect data on fish health and water quality from these producers around the state. The Virginia State University Aquaponics Demonstration Unit was monitored for water quality and fish health issues as part of this study. The water quality of the units having tilapia, bluegills, and hybrid bluegills was tested twice a week for pH, alkalinity, hardness, total ammonia nitrogen (TAN), and nitrites. The TAN levels increased to 21 ppm over three weeks of testing in units having tilapia. High levels of nitrites were also noted. High levels of TAN are a serious water quality issue causing stress for fish. The un-ionized portion of TAN (NH3) causes gill damage. It is highly toxic to fish, creating a poor aquatic environment resulting in an epizootic outbreak such as Streptococcus, which can be a zoonotic issue. One of the problems found with the small-scale units in Virginia was that the water quality was not being monitored and adjusted to the required levels for aquaponics systems. Levels of alkalinity and hardness were far below recommended levels. To increase productivity, small-scale producers need to improve on testing and maintaining water quality for their systems.

A box or two with medicine

*Henriette den Ouden**

University of Maryland Eastern Shore, 10789 Stewart Neck Rd, Princess Anne, MD 21853

Abstract:

Build your community while sipping on a herbal tea grown and harvested by the community! This presentation will offer ideas and guidelines to create and use a yearlong supply of safe herbal teas and herbal medicine. Participants will get insights in the requirements for a herb garden or herb boxes with regards to soil, sun, water and maintenance. Next will be the choice of herbs focusing on herbs safe for all, fun for kids, and easy to use. Ideas for two boxes with a succession of herbs throughout the year will be shared, paying attention to plants growing well together and to minimal maintenance. We will close with examples of preparations such as dried herbs, teas and creams. Participants will gain useful insights and practical ideas to complete a community garden with an exciting edible, aromatic and healthy choice. The presenter has 15 years' experience in growing medicinal herbs and currently manages the herb garden at the University of Maryland Eastern Shore (UMES) Demonstration Farm.

It's ALL about the soil: Tips and tricks for urban soil improvement

*Kirsten Conrad**

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Abstract:

Urban small-scale food production has to deal with challenges of soil compaction, contamination, and small space growing. Giving urban residents an understanding of how soil characteristics and quality affect our ability to support local ecosystems, may lead to positive community benefits. Soil improvement is essential to supporting native plants, vegetable crops, trees and the insects, birds and wildlife that they support. Cultivating healthy soil can be part of the answer to dealing with storm-water runoff, reducing the urban heat island and contributes directly and indirectly to making our communities more livable. This program will present low-tech, simplified ways that soil testing can be done with experienced and novice gardeners alike and present a case study on improving soil using arborist wood chips to build volume, improve drainage, and put carbon back into the work of building living soil.

Research opportunities in Urban Agriculture

*Laban K. Rutto**

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Abstract:

The principles and practice of outdoor urban farming borrow heavily from conventional agriculture. However, there are critical differences between urban and conventional agriculture both in terms of intent, and the environmental conditions to which plants and animals are exposed. Urban environments are characterized by higher levels of noise, light, atmospheric pollution, and population pressure that may preclude certain cultural practices common to conventional agriculture. Furthermore, urban farming has a recreational component that is not common to the commercial or subsistence objectives of conventional agriculture. These observations point to an opportunity for physical and social science research tailored for discovery of new knowledge and innovations for urban agriculture. This presentation will discuss the current state of urban agriculture research and identify areas through which the land grant mission can contribute to the growth of urban and controlled environment agriculture as a new division within the agricultural sciences.

Assessing the benefits of organic mulch application at an urban farm in Richmond, Virginia

*Leonard Githinji**, Patrick Johnson

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Abstract:

Organic mulches are very popular for weed control in sustainable agricultural systems. A study was conducted on an urban farm located in Richmond, Virginia, to assess the benefits of an organic mulch to control weeds, enhance soil water potential, regulate soil temperature, and improve crop yield. Blended hardwood mulch was applied on the soil surface at a uniform thickness of 10 cm between May and June. The experimental design was laid as a completely randomized design with mulch treatments versus control, replicated 5 times on 1.2 m by 15.2 m test plots. Data was collected during the growing period for the weed biomass, soil matric head, soil temperature and yield for selected crops. Results of a two-way ANOVA revealed that the mulch treatments significantly ($p \leq 0.50$) reduced the weed biomass, and soil temperature, while increasing the soil matric potential and yields of okra, tomatoes, squash and basil. Thus, the use of organic mulch was beneficial for weed management, water conservation and increasing crop yield.

Urban agriculture & food security: Indoor hydroponic berry production, with and without pollination

*Lisa Horth**

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Abstract:

Urban agriculture currently revolves largely around a few major production regimes: small outdoor gardens created in regions densely inhabited by humans, roof-top gardens typically found in urban settings, and hydroponic systems often established in reclaimed warehouses that are located within short driving distances from large cities. Nearly a billion dollars in venture capital and other investments have been made recently in hydroponic food production start-up companies. Indoor food generation has been heralded as a solution to many current conventional agricultural problems. These include high water usage on farms and excess nutrient run-off into waterways, global food insecurity and decreasing crop yields per acre, exacerbated crises due to the impacts of climate change impacts and more. Indoor hydroponic food production is currently focused largely on a suite of greens, which are fairly straightforward to produce, and which grow rapidly in a basic indoor set-up. These greens are advantageous too, because they do not require pollination. Fruits generally require pollination, a substantive hurdle for many indoor growers. Automated pollinators are generally poor, while manual pollination is time-consuming. In the study presented here, indoor hydroponic strawberry production is compared with and without the use of native bees for pollination. Berry traits are reported and discussed.

The effects of potassium ferrate (VI) on the quality of chicken thigh meat

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Abstract:

Potassium Ferrate (VI) (CAS#: 13718-66-6) is a potent oxidizing agent used primarily on water and wastewater treatment because of its antimicrobial and coagulating properties. The use of ferrate (VI) for disinfecting poultry carcasses and wastewater during processing is being explored. However, there is concern that potassium ferrate (VI) may impact chicken meat quality, and studies on the effect of potassium ferrate (VI) on chicken meat quality are limited. The objective of this study was to determine the impact of different concentrations of potassium ferrate (VI) on the physicochemical quality of chicken thigh meat. Deionized water (positive control) and varying concentrations of potassium ferrate (VI) were sprayed onto approximately 100 g of boneless, skinless chicken thigh meat (N=3 per treatment), with unsprayed chicken thighs representing the negative control. A mixture of potassium ferrate (VI) and peracetic acid (PAA) was also tested (0.075% and 0.15%, respectively). The quality parameters assessed on the chicken thigh meat were color, pH, cooking loss, water-holding capacity (WHC), and lipid oxidation. Data were analyzed using the generalized linear model (GLM) procedure of SAS, and the treatment means and LS means were compared using Tukey's multiple comparisons test or 2-way anova with PDIFF option respectively ($P<0.05$). Ferrate had no significant effect on color and WHC. The pH of the ferrate treatments was not significantly different; however, the 0.15% ferrate treatment had a significantly lower pH than the negative control group. The mixture of potassium ferrate (VI) and PAA significantly lowered cooking loss compared to the positive control group. In all, lipid oxidation was higher in cooked meat than raw meat, with the ferrate and PAA mixture treatment showing more lipid oxidation than other treatment groups. In conclusion, ferrate (VI) appears not to affect color and WHC but might impact pH, cooking loss, and the oxidative stability of chicken thigh meat. Further studies will be conducted to determine the effect of potassium ferrate (VI) dip on meat quality and pathogen reduction in chicken breast meat.

Potentials, pitfalls and prospects of biologically-based approaches to combat plant diseases in gardens

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Abstract:

Foliar and soilborne diseases inflict a serious damage on specialty crops grown in gardens. In Virginia and the mid-Atlantic regions where there is enough warmth, wet summers and consistently humid environment, the loss of specialty crops by harmful pathogens is higher than regions with less humid and temperature climates. Soilborne diseases (SBDs) are particularly of a great concern to many gardeners since the same piece of land is used year after year leading to pathogen inoculum buildup, which remains viable in the soil for years posing a sustained threat. Furthermore, SBDs are generally difficult to predict, detect and diagnose thus ignored until severe damage results in pockets of reduced stand count in a way the invisible foes deceiving gardeners to take any immediate action. With many concerns related to chemical options (health, environmental and affordability), biologically-based and ecofriendly products and practices are essential for sustainable management of SBDs in urban gardens. Whereas the merits of these products are largely known, many research investigations highlighted unsatisfactory efficacy of biocontrol products. In this presentation, examples of frequently used biocontrol products, integrated preventative approaches (variety choice, sanitation, soil drainage, cover crops) as well as soil-disinfestation practices will be discussed. Best practices that help nurturing beneficial microbes to thrive in urban gardens and hints for an increased efficacy of biological products will also be covered in this presentation.

The effect of different light treatments on the growth of vegetable amaranth and Egyptian spinach microgreens

Peter A. Y. Ampim, Eric Obeng, Ernesto Olvera Gonzalez, Aruna Weerasooriya*

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Abstract:

The growing demand for fresh functional food has resulted in grower interest for vegetables that support healthy life and longevity. Vegetable amaranth (*Amaranthus spp.*) and Egyptian Spinach (*Corchorus olitorius* L.) are nutrient rich leafy vegetables that can improve the health of consumers. This study was conducted to determine the effect of different light treatments on the growth of vegetable amaranth and Egyptian spinach microgreens. The leafy vegetables were planted in Promix contained in 4 × 4 inch trays and grown in a grow tent. The study was set up in a complete randomized design with three replications. Treatments were 6 light regimes including red, yellow, green, blue, white, and natural light. Each tray was watered with 40 ml of water at 48-hour intervals. Plant growth factors such as CO_2, temperature, and relative humidity were adjusted to simulate greenhouse conditions. Data was collected for plant height, Soil Plant Analysis Development (SPAD) reading, and biomass yield, and was analyzed using JMP software at $P < 0.05$. Plant height was affected by light treatment for both Egyptian spinach and vegetable amaranth. Light treatment affected the SPAD reading of Egyptian spinach microgreens but did not affect vegetable amaranth. Microgreens yield ranged from 1447 to 9474 g/m^2 for Egyptian spinach and was not significantly different among the light treatments. Yield of vegetable amaranth microgreens on the other hand ranged from 7442 to 9457 g/m^2, and was similar for natural, green, yellow, red and blue mix, white and red lights. However, the yield for natural and green light treatments were greater than blue light.

Emergence and yield of container grown Egyptian spinach (*Corchorus olitorius* L.) in response to fabric covering

Eric Obeng, Peter A.Y. Ampim, Aruna Weerasooriya*

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Abstract:

Egyptian spinach (*Corchorus olitorius* L.) is a nutritious leafy vegetable with a niche market in the United States. Seed dormancy has been identified as a common problem associated with the germination of Egyptian spinach seeds. This study was conducted to investigate the effect of fabric covering on the germination and yield of Egyptian spinach. The study was arranged in a completely randomized design. The treatments comprised of pots covered with Dewitt ultra-web 3000 landscape fabric and pots without covering. Each treatment was replicated four times with twenty Egyptian spinach seeds planted in each pot containing Promix BX® growing medium. Each pot was watered with 500 ml of water every other day, from planting to harvesting. The covering was removed 10 days after planting. Data collected include stand count, Soil Plant Analysis Development (SPAD) reading, total number of leaves per pot, number of leaves per plant, leaf fresh weight per pot, total harvest weight per pot, and harvest weight per plant. The rate of emergence for both treatments was about 83%. However, there was a significant increase in total number of leaves per pot and number of leaves per plant for the covered Egyptian spinach compared to the uncovered ($P<0.1$). Though insignificant, harvest weight was greater for the uncovered treatment compared to the covered. The findings suggest that fabric covering can promote leaf production in Egyptian spinach.

The $100 salad

*Tyler Baras**

Area 2 Farms, 5712 MacArthur BLVD NW, Washington DC 20016

Abstract:

Home gardens are popular for a variety of reasons but how much impact can they truly have on food security? NASA research has shown a minimum garden size of 40 square meters (430 square feet) is required to meet the nutrient requirements of one person. It is unlikely a home gardener will grow all of their own food but it is not impossible! In urban areas, most gardeners are limited on space leading many to start indoor gardens. Growing plants indoors can come with many additional expenses compared to a traditional outdoor garden. The first major expense is the garden itself with small growing systems starting around $50 and larger designs easily costing several thousand. Then the gardener needs to pay for electricity, fertilizer, substrate, seeds and any other inputs required to maintain a healthy crop. With all of these expenses, does it make sense to grow food indoors at home? Many gardeners are familiar with the book “The $64 Tomato” in which author William Alexander adds up all of the expenses involved in building his outdoor garden then calculates the cost per tomato yielded. Are indoor gardens growing $100 salads? The decisions made by an indoor gardener can unfortunately sometimes result in a $100 salad but with proper garden design and crop selection, as will be shown in this presentation, it is possible to grow a crop indoors that beats the grocery store on both price and quality!

Building partnerships for gardens in public spaces

Robin Broder, David Sachs*

Arlington Friends of Urban Agriculture, 614A N. Tazewell Street Arlington, VA 22203

Abstract:

Arlington Friends of Urban Agriculture (FOUA) is a young nonprofit organization dedicated to building a resilient, community-driven urban agriculture sector that provides a fair, healthy, sustainable food system for all Arlingtonians. Run by a volunteer board of directors, we have had to build creative partnerships to support and develop vegetable gardens to meet community needs. Arlington County is a small, urban county lacking in large or vacant tracks of land that can be developed into urban farms or gardens. FOUA looked to public spaces to locate gardens and built partnerships with residents, civic associations, schools, and the county's parks department and libraries. This session will highlight the strategies and challenges of building sustainable gardens in public spaces. The session will cover the creation of a community garden in a public park (Project HUG), a demonstration garden at a public library, and a network of school garden coordinators to work on a long-term vision of a sustainable and equitable school garden program within the Arlington Public School system. FOUA believes that public gardens not only provide fresh vegetables to the local community, but also build community. https://arlingtonurbanag.org/.

Cultivating wellness, safety, and accessibility in urban agriculture: Innovations in assistive technologies for farmers and gardeners

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Abstract:

AgrAbility Virginia promotes safety, wellness, and accessibility on the farm through education, rehabilitative services, and assistive technology. Assistive technologies are used to improve accessibility and enhance independence. Recommending assistive technology is one way that AgrAbility Virginia supports farmers. Our recommendations can include a lift for a tractor or an added handrail or step for safer use, or a modification to an existing tool such as adding a horizontal handle to a shovel for better grip strength. In this fifteen-minute presentation, we will introduce the AgrAbility Virginia program and describe what we offer to farmers and farm workers across the Commonwealth, including a recorded interview with a farmer who has made use of this program, introduce our newest publication, Assistive Technologies to Improve Safety & Accessibility on Small Scale Diversified Vegetable Farms & Home Gardens and showcase some of the innovations and technologies listed there. This presentation will also highlight other publications and resources that urban farmers throughout the Mid-Atlantic will find useful to make their environment safe and accessible.

Lambsquarters and Malabar spinach, two underutilized crops that can help mitigate the effects of climate change while creating new income streams for farmers and foodies

Shanna White, Mamatha Hanumappa*

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Abstract:

Lambsquarters and Malabar spinach are two climate-resilient, underutilized, nutrient-dense crops. This project investigates the cultural techniques that are best suited for production in a changing climate and in an urban setting. The crops were introduced to farmers and the general public through outreach in 2021 and we will continue outreach in 2022. Growing such crops will add new and resilient biodiversity to DC while supporting production in limited urban farm space. Increased weather vagaries are projected to increase such as low and erratic rainfall, increased storms and floods, and extreme temperatures. Higher temperatures will affect yield in addition to increasing demand on water. One way to counteract is to grow climate resilient? species. Additionally, identifying species suitable for urban agriculture is important. Nevertheless, consumer acceptance and market potential play a major role in whether or not these crops are adopted for production by farmers. Therefore, it is important to standardize the production techniques before introducing them to the local population and markets through community outreach and extension activities.

Just sustainability or green gentrification: How policy can support equitable urban agriculture during and beyond the COVID-19 pandemic

*Caroline Boules**

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Yuki Kato

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Abstract:

Urban agriculture's potential to enhance ecological sustainability and address food security was tested during the 2020 pandemic; the demand increased yet the growers had to adapt to the economic and social disruptions. Based on 78 interviews with the managers of community gardens, school gardens, and urban farms across Washington, DC, Arlington County, and Prince George's County, this study examines variable capacities to adapt to the COVID-19 disruption across three types of urban agriculture, across three jurisdictions, and across diverse grower demographics. We find that community gardens experienced little disruptions and adapted quickly, while school gardens and urban farms faced multitudes of hurdles, and the growers' capacity to pivot during the pandemic depended on the level of autonomy in decision making, access to information and resources, and pre-disaster conditions of racial and class disparity. By focusing on the equity implications of the findings, we propose two specific realms of recommendations for urban agriculture policies: the importance of considering the heterogeneity across "urban agricultural practices," and the urgency to address significance of the structural injustices along racial and class lines. We caution that urban agricultural policies that merely promote installation of more gardens and farms in the city would not only fail to address food insecurity and just sustainability but would risk contributing and accelerating the displacement of marginalized communities. Thus, we contend that equitable urban agricultural policies must consider how to create opportunities for historically marginalized communities and growers to use the spaces for economic and social empowerment.

Planting the seeds of revolution

Oren Falkowitz, Tyler Baras*

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Abstract:

Farming remains the engine room of our society. From Little House on the Prairie to modern farmers' markets, farms are the core of most Americans' vision of what our society is supposed to look like. The value of the small farm economy has expanded in our imagination but is challenged. Part of the challenge is confusion, what is labeled "locally grown" can be from 400 miles away and arrive dead, and the growing demand to support local isn't meeting the needs of communities or benefiting the pockets of farmers. Modern business is consumed with a generation of people who lead companies that can only imagine being Amazon. They think they are playing the quantification game and that they are going to win on price. They will lose, and in the process, they will lower themselves. This presentation discussed innovations in urban agriculture business, technologies, and public policy that seek to enable a small farm future. Creating healthy communities through urban agriculture that nourish the mind, body, and spirits of our neighbors but also the economic viability of farmers. A small farm future requires must consider pressing crises in front of us and redefine a certain go-to-market approach, coupled with public policy partnerships where the novelty of the science of agribusiness doesn't dictate the market value of what needs to be fresh. It is as political an act today as it was at the time of the Revolution and one that requires a pick-yourself-up-by-your-bootstraps individualism that we celebrate.

Genetic variation of leafy vegetables on lead and chromium accumulation in their edible parts

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Leonard Githinji

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Abstract:

Urban agriculture has become popular in the United States due to the increasing demands for local foods. However, many urban lands are potentially contaminated by various heavy metals, such as lead and chromium, due to human activities and historic use of the lands. These potential contaminations brought up major safety concerns on consumption of the urban produce. Identifying new species or varieties within the species that tolerate heavy metals and accumulate less in their edible part is the key to urban agriculture. Most literatures only identified and provided information on what vegetable species are relatively safe to grow on certain heavy metal contaminated soils for the purpose of human consumption. However, based on our studies conducted on purslane, genetic variation on heavy metal accumulation among varieties within species are dramatically different. It is more important to identify specific varieties within the species on their abilities to accumulate heavy metals on edible parts. We therefore conducted a greenhouse study to screen two leafy vegetables, kale and lettuce, for their ability to grow on potentially heavy metal contaminated soils. For each species, four varieties were included and all were treated with 3 times of 200ppm either chromium VI (Cr-VI) or lead (Pb2+) during their growing season. In general, kale accumulated significantly more Cr in edible part than lettuce did. All 4 kale varieties accumulated more than 100mg/kg of Cr in their leaves. However, among 4 lettuce varieties, only Ruby accumulated over 100mg/kg of Cr, all other three varieties accumulated significantly less Cr, with variety Butter-crunch accumulated only about 5mg/kg, and Salad Bowl and Prize-head accumulated 30 to 50 mg/kg. When examining Pb accumulation, all 4 kale varieties accumulated very little (less than 3 mg/kg) Pb, which is in a safe zone for human consumption. However, lettuce showed a significant variation for Pb accumulation with Prize-head accumulated less than 2mg/kg, Butter-crunch 27mg/kg, Salad Bowl 40mg/kg, and Ruby over 180mg/kg. These results clearly demonstrated that heavy metal accumulation in the edible part is dramatically varied, not only between species, but also among varieties within the same species. Such information is essential to guide urban farmers on what they can grow and harvest marketable produce on potential heavy metal contaminated urban soils.

Virginia State University College of Agriculture Sustainable Urban Agriculture Certification Program

*S. Aisha Steplight Johnson**

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Abstract:

During the COVID-19 pandemic which hit the US in March 2020, the country pivoted to virtual instruction including the Virginia State University (VSU) College of Agriculture (COA) Sustainable Urban Agriculture Certification Program (SUACP). Despite the pandemic, the VSU College of Ag continued to meet the need of community members to learn about urban agriculture. The VSU COA SUACP combined virtual format and hands-on internship experiences in the field empowered participants to learn how to design, set up and sustain an urban farm. The in-depth coverage of topics and real-world experiences enabled participants to narrow down their interests and goals in urban agriculture. My focus has been narrowed to establishing a forest, pollinator garden, and self-guided teaching garden for families.

Controlled Environmental Agriculture in Urban Areas: Panel Discussion

Michael Schwarz[1], Jonathan van Senten[1], Bob Lane[1], David Crosby[2], Reza Ovissi[1], Mike Evans[1], Scott Lowman[3], Chris Mullins[2]

[1]Virginia Tech, Blacksburg, VA; [2]Virginia State University, Petersburg, VA; [3]The Institute for Advanced Learning and Research, Danville, VA.

Controlled Environmental Agriculture (CEA) is a technology-based approach to food production. CEA utilizes production systems such as hydroponics, aquaponics and aquaculture. Production takes place in a greenhouse or building with the goal to provide optimum conditions for crop growth. During this 1-hour panel session, participants will learn about systems utilized in CEA with an emphasis on urban/suburban settings. Information will be for those interested in non-profit operations, hobbyist and business enterprises and will include open discussion with the panelists.

The session will include presentations/discussion on the following topics:

- General discussion on indoor ag systems
- Examples of CEA systems suited to urban environments
- Energy considerations with CEA
- Water quality in CEA systems
- Economic and marketing considerations for CEA
- How to maintain safe crops after harvest

Blocks of Benefits for Urban Plots: Panel Discussion (USDA)

Edwin Martinez Martinez[1], Monta Worley[2], Julianna Arnett[3], Herman Ellison[4], Laurette Tucker[5], Kara Motosicky[6]

[1]Natural Resources Conservation Service, [2]Farm Service Agency, [3]Agricultural Marketing Service, [4]National Agricultural Statistics Service, [5]Rural Development, [6]Food and Nutrition Service

Urban agriculture is a fast-growing phenomenon with the potential to nourish communities and create economic opportunities for growers and neighborhoods. Ranging from small community gardens to larger farms spanning several city blocks, these operations also come with a unique set of challenges. Join representatives from several USDA agencies for a panel discussion on resources available to address those challenges and assist the growth of agriculture in cities. Topics covered will include:

Land Access and Soil Quality: The **Farm Service Agency (FSA)** offers farm loan programs that may assist you in purchasing suitable land. Once you have control of the property, it's critical to test the quality and toxicity of the soil. The **Natural Resources Conservation Service (NRCS)** provides expert technical assistance as well as a Web Soil Survey with soil data and specific interpretations for urban soils.

Water Access/Use: This resource may be limited in urban settings and efficient use can keep operating costs down. NRCS can help there too with financial and technical assistance to implement conservation practices that will promote more efficient water use.

Capital and Financing: Urban agriculture projects can have significant start-up costs that require access to loans, grants and investments. Local FSA offices can offer credit to farmers for working capital or infrastructure development.

I**nfrastructure:** On-farm infrastructure like high tunnels, cold storage and solar energy can be key to a successful operation. NRCS offers financial assistance high tunnels and efficient irrigation. FSA can support cold storage through its Farm Storage Facility Loan program and **Rural Development's (RD's)** Rural Energy for America Program (REAP) offers funds to support on-farm sustainable energy projects.

Market Development: It's not enough to grow your crop. You also have to let consumers in your area know you are selling it. The **Agricultural Marketing Service (AMS)** helps farms connect with consumers through its Farmers Market and Local Food Promotion Program and Specialty Crop Block Grant Program. The **National Agricultural Statistics Service (NASS)** offers accurate, unbiased and reliable data to help you make informed business decisions and be more competitive, locally and on a global stage.

RD's Value-Added Producer Grants are also available for marketing research and development and the **Food and Nutrition Service (FNS)** offers the Supplemental Nutrition Assistance Program (SNAP), which assists farmers' markets and producers with authorizations to accept SNAP EBT benefits.