

# VSU College of Agriculture

VIRGINIA STATE UNIVERSITY

## 2019 Impact Statements

### VIRGINIA COOPERATIVE EXTENSION



**Virginia Cooperative Extension**

Virginia Tech • Virginia State University

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## Introducing a new 4-H STEM curriculum: Grass, Goats, and...Uninvited Guests! (GGUG)

### Who cares and why?

The gap between unfilled jobs and skilled talent to fill jobs is widening in the United States. Between 2018 and 2028, an estimated 2.4 million STEM jobs will be unfilled resulting in the loss of an estimated \$2.5 trillion (Deloitte, 2018). Unfortunately, one-third of U.S. adults believe teachers do not have the resources needed to provide STEM education to their students (Emerson, 2018). Nearly half of U.S. parents assert their daughters are not being encouraged to pursue a STEM career path. Racial diversity is low in STEM fields (Pew Research Center, 2018). According to Margot and Ketler (2019), educators (K-12) may feel uncomfortable teaching STEM subjects and need additional support in the form of guidance and integrated curriculum. To address this educational need, the VCE 4-H STEM program at VSU developed and introduced a new interdisciplinary STEM curriculum “Grass, Goats, and...Uninvited Guests! (GGUG)” in 2019.



### What has project done so far?

Throughout 2019, 11 training sessions were conducted resulting in 42 VCE agents, 324 adults and 545 youth being trained in Grass, Goats, and...Uninvited Guests! This integrated STEM curriculum, includes agriculture (A) by focusing on small ruminant internal parasites, diagnostics and treatment. This innovative, hands-on program uses goat or sheep stuffed animal models, group learning and edible treats to teach complex scientific ideas in an easy to understand manner. The curriculum



Right: Dr. Chantel Wilson conducts GGUG. Above. She is all smiles.

covers the FAMACHA© system and hematocrit determination to diagnose anemia, dag scoring, body condition scoring, fecal worm egg counts and treatment for worms. The use of live farm animals is not required to conduct a program nor is it costly to perform, making it ideal for teachers serving students in urban, low income and underserved areas. Especially exciting is the addition of an optional research project component allowing youth to conduct research and create models to teach others about a disease or parasite occurring in their favorite animal or pet. The program was piloted successfully in several Virginia communities and is available as a peer-reviewed 4-H curriculum.

### Impacts

In 2019, the innovative STEM curriculum: GGUG was enthusiastically taught and received across Virginia reaching 42 VCE agents, 324 adults and 545 youth in urban, rural and underserved communities. After receiving training in GGUG, 92% of participants agreed they felt more comfortable teaching STEM topics as a result of the workshop. Most importantly, more than 80% of participating youth said the workshop increased their interest in pursuing a STEM career path!

### VCE Planned Program Area

4-H STEM

### Project support

1890 Extension Funding

### USDA Primary (P) and Secondary (S) focus area

P-Youth, Family, & Communities; S-Agricultural Systems

### Want to know more?

Dr. Chantel Wilson, cwilson@vsu.edu

## Sweet gardens of hope: Fresh fruit for inner-city food desert communities

### Who cares and why?



Above: Gilpin Court

Gilpin Court is the largest public housing community in Richmond, Virginia. Eight hundred families, mostly single mothers raising children with an average annual income of \$8,786, live within the impervious concrete walls of 77-year-old structures overlooking a tree barren landscape. Gilpin Court is geographically isolated despite being “in the heart” of culturally vibrant Richmond city. Bordered on the south by a highway and on the north by a ravine, low income residents of Gilpin Court have restricted access to healthy foods, such as fruits and vegetables. With a lack of easily accessible grocery stores, underserved residents rely heavily on prepared, highly processed convenience store foods for daily meal consumption. Without inclusion of often expensive fruits and vegetables into a daily diet, Gilpin Court residents are at a high risk for obesity.



Above: Gilpin Court fruit tree garden

### What has project done so far?

In 2019, Urban Forestry Extension Specialist Joel Koci of the VCE at VSU worked with Lewis Ginter Community Garden and City of Richmond Parks and Recreation Department to install fruit tree gardens within select inner-city locations. Koci trained community volunteers on 1) How to select fruit trees appropriate for the specific site conditions; 2) How to properly install fruit trees and 3) How to maintain planted fruit trees using sustainable growing methods (low or no pesticides). Inner-city fruit orchard gardens were established in four low income areas in Richmond: Gilpin Court Public Housing complex, Lumpkin's Slave Jail site, Fulton Bottom and Forest Hill.

### Impacts

In 2019, 80 community volunteers (which included 10 youth and 40 senior citizens) planted 90 donated fruit trees (purchased by the Lewis Ginter Community Garden program). At each of the four sites, nine apple trees and four pear trees were planted with a conservative yield estimate of 125 apples per tree per year and 100 pears per tree per year, under low maintenance, sustainable growing practices. In 2021, each site will result in a conservative, minimal yield estimate of 1,125 local and sustainably grown apples and 400 local and sustainably grown pears valued at \$2.75 per pound at local Richmond Farmers' Markets. There are two apples in one pound or two pears in one pound. Estimated annual food bill savings for residents at Gilpin Court in fresh fruit expenditures total \$2,098 ((563 pounds of apples + 200 pounds of pears) x \$2.75). The typical life span of an apple or pear tree in the wild is 50 years. Therefore, over the span of 48 years, the Gilpin Court residents will enjoy more than \$100,716 worth of free, fresh fruit (763 pounds of fruit per year x \$2.75 per pound x 48 years). Additionally, all four areas over the next 48 years will provide underserved, inner-city residents with a minimum total of \$402,864 worth of free, fresh fruit.

### VCE Planned Program Area

Food, Nutrition and Health

### Project support

1890 Extension Funding

### USDA Primary (P) and Secondary (S) priority area

P-Local Foods, S-Youth, Family, & Communities

### Want to know more?

Joel Koci, [jkoci@vsu.edu](mailto:jkoci@vsu.edu)

## Low income, minority families saved more than \$54,000 in annual food bills through VSU Expanded Food and Nutrition Education Program (EFNEP) Trainings

### Who cares and why?

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The monthly cost of food for a family of four is not cheap. The range in food costs for a family of four spans from \$654 (thrifty) to \$1,300 (liberal spending) per month. According to USDA (2020), families of four bringing home up to \$2,655 per month, only receive \$640 in food stamps, which is \$14 short of the “thrifty” food budget. Many families, especially ones that struggle financially may benefit from learning how to stretch their tight food budget. Stretching a limited food budget includes learning how to use low cost foods in balanced healthy meals for the entire family.

Nationally, more than 80% of families enrolled in Expanded Food and Nutrition Education Program (EFNEP) classes survive at or below the 100% poverty level, with the majority (70%) of participants being minorities. Research studies demonstrate that poor health and chronic diseases, such as diabetes, disproportionately plague low income and minority populations and incorporating a healthy diet reduces chronic disease outcomes. Covering the food costs involved in making healthy meals is a recurring challenge for low income families. Additional education is needed to assist low income families to successfully navigate healthy balanced eating within their limited budget constraints.



Above: Grocery food receipt

### What has project done so far?

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In 2019, the VSU Expanded Food and Nutrition Education Program taught and graduated 66 low income and minority participants. Each individual was required to attend eight different class events. The participants learned how to improve their diet with nutrition knowledge and skills. Participants learned the following skills: 1) How to spend less on food bills and 2) How to increase their physical activity levels by moving more each day and incorporating simple exercise routines in daily activities.

### Impacts

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As a result of graduating from the 2019 VSU Expanded Food and Nutrition Education Program, participants saved an average of \$68.64 on their monthly food bills totaling \$823.68 annual savings. Combined annual food savings for all participants was \$54,362.88. Sixty graduates stated that their diet quality improved after participation. Additionally, 51 participants increased their exercise activity from 0 minutes per day to 30 minutes or more per day improving their positive health outcomes, such as reduced risk of chronic disease development over their lifetime.

### VCE Planned Program Area

Food, Nutrition and Health

### USDA Primary priority area

P-Nutrition & Health S-Youth, Family & Communities

### Project support

1890 Extension Funding

### Want to know more?

Debbie S. Jones, dsjones@vsu.edu

## Training Virginia small, limited–resource and socially disadvantaged producers

### *Who cares and why?*

Small farmers in Virginia face several barriers that limit their ability to successfully operate a profitable farm business. Such barriers are, but not limited to: 1) lack of knowledge of USDA programs and services, 2) limited access to credit and capital, 3) lack of skills in farm business and financial planning, 4) lack of knowledge of improved production practices and 5) limited access to existing and viable markets.



*Right: Teaching farm equipment repair workshop*

### *What is the background of this project?*

Through federal and state funding, the Virginia State University – Small Farm Outreach Program (VSU-SFOP) conducts primary outreach efforts to ably equip small farmers with the tools and skills needed for them to make informed decisions in operating successful profitable farm businesses through outreach, training and technical assistance, in a holistic manner, thereby enhancing their economic opportunities and quality of life.

### *What has project done so far?*

During 2019, VSU-SFOP agents and staff conducted the following educational activities:

- Educational outreach to 3,000 socially disadvantaged veterans, farmers and ranchers
- 239 - Educational workshops on the following subjects: USDA programs and services; farm business planning and financial management; improved production systems for high value and profitable crops and livestock; hands-on demonstrations with appropriate small farm tools and equipment and marketing strategies to enhance their farm profits
- 574 - Technical service field visits
- 704 - Indirect technical service contacts (Email and Phone)
- Eight farm tours conducted

### *Impacts*

As a result of 2019 evaluation of VSU-SFOP educational and technical service outreach, 384 underserved and/or socially disadvantaged, limited-resource, beginning, veteran, small farmers and ranchers indicated an increase in their knowledge in USDA programs. Due to an increased confidence and knowledge of USDA programs, 38 VSU-SFOP clients successfully applied for and benefited from USDA programs and services. In 2019, 145 VSU-SFOP clients gained practical knowledge and skills on how to transition their land to future generations or to retain their land when faced with foreclosure actions. As a result, 33 VSU-SFOP clients decided to take proactive actions to avoid foreclosures on their farmland. In 2019, 132 VSU-SFOP clients learned skills in farm financial planning and record keeping, as well as the importance of developing a business plan. As a result, 12 VSU-SFOP clients developed and wrote business plans for their beginning farm businesses.

### *VCE Planned Program Area*

Agriculture Profitability and Sustainability

### *Project support*

1890 Extension Funding; USDA-NIFA grants

### *USDA Primary (P) and Secondary (S) focus area*

P-Agricultural Systems; S-Alternative Agriculture

### *Want to know more?*

Mr. William Crutchfield,  
wcrutchfield@vsu.edu

## Ensuring top dollar for African-American landowners through Forest Management Education

### Who cares and why?

According to [Schelhas et al.](#) (2018) African-American landowners have endured a history of discrimination and distrust of the forestry profession and have fallen prey to timber harvesting predatory schemes due to a lack of knowledge, skills and abilities to understand the economic value of their forestland.

Many of African-American and other underserved landowners are selling their precious timber resources without the assistance of a consulting forester. Without the proper knowledge to inform their timber cutting decision, many underserved landowners receive only a fraction of their timber's true value. For this reason, it is vital to seek out and provide trusted counsel from 1890 institutional forest management professionals who have their best interests at heart.



Right: African-American forest landowner

### What has project done so far?

In collaboration with the VSU Small Farm Outreach Program, the VCE Forestry Management Program at VSU conducted four workshops to train participating landowners how to select a consulting forester and how to sell their timber for maximum value.



Right: Harvested timber

### Impacts

As a result of conducting four workshops, 69 landowners were trained on how to select a consulting forester and how to sell their timber for maximum value. Of those trained, 24 were African-American landowners. Fifty-nine participants completed the evaluation and 100% of participating landowners reported that they would use the information learned to market their timber. Seventy-six percent of the landowners responded that their understanding of marketing their timber was good to excellent after attending the training. After the success of these four workshops, additional workshops are planned for 2020, which will include timber contract development and negotiation skill building, as well as introducing the online tool: My Land Plan (<https://mylandplan.org>) from the American Forest Foundation.

### VCE Planned Program Area

Sustaining Virginia's Natural Resources and the Environment

### Project support

1890 Extension Funding, McEntire-Stennis funds

### USDA Primary (P) and Secondary (S) priority areas

P-Forest Resource Management; S-Natural Resources

### Want to know more?

Dr. Jerry Bettis, [jbettis@vsu.edu](mailto:jbettis@vsu.edu)

## VSU Blueberry U-Pick offers nature-based intervention for reducing workplace stress and improving employee perception of well-being

### Who cares and why?



More than 55% of Americans feel stressed most of the day (Gallup, 2019). Feeling stressed negatively influences an individual's sense of well-being. Within the workplace, employee stress reduction may lead to improved organizational performance through improved employee performance, perception of well-being, organizational civility, reduced sick leave and absenteeism. Medical researchers have determined exposure to nature and outdoor activities may improve mental health and assist in chronic pain management. Due to the high cost of health care interventions, there is a need for identifying and applying innovative workplace strategies to address employee well-being through stress reduction. Nature-based interventions may be a low cost, easy to implement employee stress reduction solution for organizations to implement.

### What has project done so far?

From June to August 2019, the VSU Small Fruits and Vegetable Program organized and implemented Blueberry U-Pick events for VSU employees as a nature-based intervention to improve employee well-being, 10 U-pick blueberry events were conducted.

### Impacts



In 2019, 120 VSU employees participated in the Blueberry U-Pick events picking 380 pints of fruit. Harvested fruit saved participants a total of \$1,140 (\$3 per pint local pricing). A survey was conducted, and 24 participants responded. Participants used fresh or frozen berries in recipes and shared with friends and family. Sixty-two percent of participants believed participating in this activity increased their personal well-being from 51% to 100%. Ninety-five percent of participants felt better about their health because of spending time outdoors, meeting other VSU employees and exercising. Additionally, 100% of participants stated that they and their family have benefited from eating the fresh berries they picked. One interesting finding was that 79% of participants felt that their appreciation for working at VSU increased from 51% to 100% after attending the Blueberry U-Pick events.

Above: Participants at a U-Pick Event. Left: Dr. Nartea picking blueberries

### VCE Planned Program Area

Agriculture Profitability and Sustainability

### Project support

1890 Extension Funding

### USDA Primary (P) and Secondary (S) focus area

P- Agricultural Systems; S-Local Foods

### Want to know more?

Dr. Reza Rafie, arafie@vsu.edu

## VSU trains aquaculture farmers to successfully stock juvenile shrimp for higher profitability

### Who cares and why?

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Virginia consumers are paying top dollar for locally grown freshwater prawns (shrimp) raised without the use of hormones or antibiotics in a chemical-free environment. Small, limited-resource aquaculture farmers are cashing in by selling their shrimp harvests from \$10 to \$12 per pound at local farmers markets and online. Over the last five years, Southside Virginia tobacco farmers have been “fishing” to find profitable enterprises to diversify their operations. One of the most promising enterprise for interested tobacco farmers has been growing tropical freshwater shrimp in a temperate climate to meet consumer demand for local shrimp.

A well-stocked one-acre pond typically yields 1,000 pounds/acre or 10,000 whole shrimp annually. Healthy juvenile stocking methods ensure a harvest of 10 large whole shrimp per pound yielding an estimated sales potential of \$10,000 to \$12,000 per year.



Above: Evaluating juvenile shrimp for stocking

In order to produce a high-quality shrimp yield, farmers must pay close attention to the critical input of stocking juvenile shrimp into production ponds. Ponds must be stocked with healthy, unstressed juvenile shrimp. Unfortunately, the transfer from indoor cultivation to a natural pond environment is quite stressful to juvenile shrimp and leads to increased mortality rates. Juvenile stress from improper stocking methods leads to increased mortality throughout the entire production cycle resulting in reduced profits for shrimp farmers. Education is vital for success.

### What has project done so far?

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Farmers are provided with overall freshwater shrimp management skills by the aquaculture extension office. Educational sessions are established with VSU’s aquaculture specialist, preferably at the pond site, to evaluate pond accessibility, water quality, transportation needs and best management stocking procedures. However, communication is essential to good stocking. Farmers with ponds to be stocked with shrimp need to confirm with the nursery operator the means of payment, the size of the pond, number of shrimp to stock and when the shrimp will be transported. VSU aquaculture specialist is present at the nursery on the day of the juvenile harvest for distribution to educate farmers. Handling techniques are observed and recommendations for timely stocking suggested. Tank specific dissolved oxygen and water temperature management are provided to the farmer.

### Impacts

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As a result of VSU’s educational efforts, 20 small, limited-resource aquaculture farmers in Virginia acquired the knowledge, ability and skills to successfully transport and stock juvenile shrimp. The reduction in mortality rates and the increase in healthy mature shrimp harvest rates have made an economic contribution of an estimated \$100,000 per year (20 farmers x \$5,000 sales/per year).

### VCE Planned Program Area

Agriculture Profitability and Sustainability

### Project support

1890 Extension Funding

### USDA Primary (P) and Secondary (S) priority area

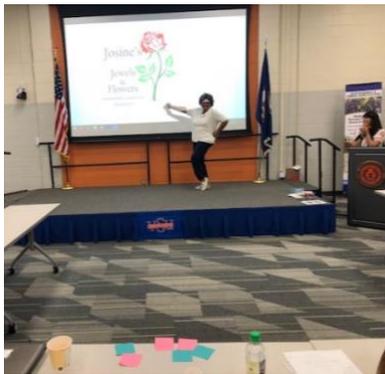
P-Agricultural Systems: S- Alternative Agriculture

### Want to know more?

Dr. Brian Nerrie, bnerrie@vsu.edu

# Show me the money! Managing market risk through beginning farmer brand development technical assistance and training

## Who cares and why?



In order to become an established farm operation, beginning farmers must stay in business for 10 years. According to the U.S. Small Business Administration (2018), only one in three start-up businesses actually make it to their 10<sup>th</sup> anniversary. With odds like this, beginning a small farm enterprise is a “risky” business.

One important way to manage risk in a competitive marketplace is for new businesses to create a memorable brand that customers find value in economically supporting. In order to reduce marketing risk, small, beginning farm businesses may benefit from educational training on how to develop their farm brand.

Left: Participant proudly displaying her new logo made in class

## What has project done so far?

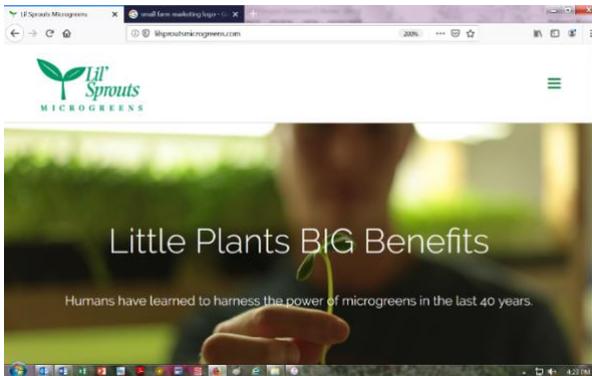
In order to address the identified need for additional educational training on how to develop their farm brand, the VSU Marketing and Agribusiness in conjunction with VSU Small Farm Outreach Program agents, Vernon Heath, Derrick Cladd and Tracy Porter, as well as the Virginia Farmers Market Association, conducted direct technical assistance and training in logo design, web design and/or product display techniques.



Right: Participants displaying market set-up confidence

## Impacts

In 2019, as a result of conducting direct technical assistance and training, 71 beginning small farmers learned how to develop their brand by creating a business logo, a webpage or product display. Of the 71 participants, 87% stated the skills learned in the risk management marketing classes would increase their income a minimum of \$100 to a maximum of \$5,000 as a result of implementing branding practices amounting to a total additional gross on-farm income range of \$6,100 (\$100 X 61 participants) to \$305,000 (\$5,000 X 61 participants). A tangible result of implementing the marketing techniques learned in training and direct technical assistance, nine farmers created their farm logo, 12 participants created a farm webpage and fifty participants learned how to create a product display.



Above: Participant created webpage example

## VCE Planned Program Areas

Agriculture Profitability and Sustainability

## Project support

1890 Extension Funding

## USDA Primary (P) and Secondary (S) priority area

P- Agricultural Systems; S-Local Foods

## Want to know more?

Dr. Theresa Nartea, [tnartea@vsu.edu](mailto:tnartea@vsu.edu)

## Food insecure Carroll County elementary school children learn to grow food indoors

### Who cares and why?

In the United States, more than 800 million people live each day uncertain where their next meal will come from. In Virginia, more than 893,000 people do not have reliable access to affordable and nutritious food in sufficient quantity for healthy mind and body system development and maintenance. This condition of uncertainty in food accessibility is termed as “food insecurity” and is related to income and geographic location. In the rural mountain area of Carroll County, Virginia, nearly 60% of the total student population of Carroll County schools is eligible for free and reduced lunch demonstrating a potential need for educational opportunities to train youth how to grow their own food, so that they can help improve their family’s access to fresh, affordable foods.



Above: Teaching indoor growing lesson

### What has project done so far?

Carroll County has seven elementary schools. Four of the elementary schools have an outdoor school garden. The three remaining elementary schools do not have a dedicated outdoor space or volunteers to manage an outdoor garden. These three schools that do not have an existing outdoor garden expressed interest in exploring growing indoors using hydroponic methods in their classroom. In 2019, the VCE Greenhouse Program at VSU, utilizing a \$500 Ag in the Classroom grant award, was able to establish three elementary school programs to teach students and teachers how to grow indoors using hydroponics, aquaponics and aeroponics methods. Student activity books were provided that included a weekly plant growth journal for students to use to track their plant’s growth. In addition to the classroom hydroponics setup, teachers were also provided with seeds and starter trays to get their plants germinating. Students maintained the fertilizer concentration in the grow tank and monitored the pH level of the water to maximize the health of the plants. Students also created a trellis structure in the classroom to support the vines on their bean plants.



Above: Indoor growing experiments

### Impacts

As a result of this educational outreach effort in Carroll County, 90 elementary students acquired the knowledge, skills and abilities to grow produce indoors. During the 2019 school year, participating students grew the following vegetables indoors: radishes, basil, thyme, sugar snap peas and kohlrabi greens. Prior to this project, 95% of students did not know plants could be grown without soil, and 100% of students did not know that hydroponics was a process utilized by ancient civilizations all over the world. When asked if they found hydroponics and aquaponics more attractive than traditional farming methods, 90% of students replied yes. When asked if aquaculture was a viable way to address food insecurity and help resolve food desert areas, 100% of students replied yes. Two of the three schools have decided to continue doing Classroom Hydroponics during the 2020 school year. Seven teachers who led the classroom experiments noted the attentiveness of students while making weekly observations regarding plant growth. Additionally, students transferred knowledge to classroom visitors by explaining how their indoor hydroponic system worked and how it was a potential solution for food insecurity in locations with extremely cold climates during the majority of the year.

### VCE Planned Program Area

Agriculture Profitability and Sustainability

### Project support

1890 Extension Funding

### USDA Primary (P) and Secondary (S) focus area

P-Food Security; S-Youth, Family, & Communities

### Want to know more?

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## Mobile processing unit opens lucrative market access for goat and sheep producers

### Who cares and why?

Goat meat is the world's most popular meat choice with more than 63% of the world's population enamored with goat. However, due to the popularity of ethnic cuisine, mainstream consumer demand for locally raised, sustainably grown, pastured goat and lamb meats are reaching all-time highs. Lucrative sales opportunities for small sheep and goat producers abound with prices ranging from \$7 to \$18 per pound for both lamb and goat meat cuts. One of the most limiting issues for goat and sheep producers is the lack of access to a convenient and affordable animal slaughtering, meat packing and retail distribution system. Due to this, excessive time and mileage burden is carried by limited-resource farmers in Virginia to slaughter animals at available slaughter facilities. Even if producers can make the trip to these facilities, they are often faced with the possibility of last-minute cancellations to facilitate the slaughter of other species, especially cattle. As a result, producers are frequently unable to take advantage of market demand for locally produced meat products to mainstream buyers (retail grocers, restaurants and institutions) or direct sale, local food system channels. Without addressing the critical issues of lack of accessible, affordable slaughter facilities, and inability to meet market demand for locally produced value-added meat products, the Virginia small ruminant industry will remain incapable of taking full advantage of producer profitability in the growing local food system marketplace.



Above: MSPU butchering

### What has project done so far?

Successful funding by the USDA allowed specialists to design and build a mobile slaughter processing unit (MSPU) at Virginia State University (VSU) to educate and enhance profitability of Virginia's small ruminant industry. The following project tasks were accomplished thus far:

1. The unit was built and delivered to VSU
2. Delivered unit was equipped with slaughtering equipment
3. Creation of detailed operational manual incorporating Hazard Analysis and Critical Control Point (HACCP), Good Management Practices (GMPs) and Sanitation Standard Operating Procedure (SSOPs)
4. Virginia Department of Agriculture and Consumer Services approved application for red meat permit of exemption (custom slaughter) and establishment hours of operation
5. Virginia Department of Environmental Quality approved letter for wastewater land application
6. Received a USDA Reserve Number to procure necessary markings, labeling materials and other regulatory requirements for federal inspection

### Impacts

Typically, individual small ruminant producers spend approximately \$240 in fuel costs (\$2.30 per gallon of fuel x 4.28 gallons of fuel used (90 miles/14 mpg) x 2 trips x 2-way x 4 slaughter/processing/year) per year. In addition, lamb and goat USDA processing fees can range from \$90 to \$125, regardless of size, per carcass and with approximately 6 processed per event for 4 events per year, processing fees can range from \$2,160 to \$3,000/producer/year. As a result of access to the MSPU in Central Virginia, a minimum of 50 small ruminant producers would save a combined \$4,000 to \$10,500 in fuel costs (\$2.30 per gallon of fuel x 4.28 gallons of fuel used (10-60 miles/14 mpg) x 2 trips x 2-way x 4 slaughter/processing/year x 50 producers) due to shorter travel distances ranging from 10 – 60 miles instead of 90 miles. Utilizing the MSPU could also save a small ruminant producer \$360 to 1,200 per year in slaughter fees (\$75 versus \$90/\$125). Overall total savings to a minimum of 25 goat and 25 sheep producers is \$4,000 to \$10,500 (fuel) + \$18,000 to \$60,000 (processing) ranging from \$22,000 to \$70,500 per year. Individual producers may save \$440 to \$1,410 per year.

### VCE Planned Program Area

Agriculture Profitability and Sustainability

### Project support

1890 Extension Funding; USDA-NIFA grant funds

### USDA Primary (P) and Secondary (S) priority area

P-Agricultural Systems, S-Livestock Management

### Want to know more?

Dr. Dahlia O'Brien, [dobrien@vsu.edu](mailto:dobrien@vsu.edu)

## VSU Sustainable Urban Agriculture Certification Program trains urban gardeners

### Who cares and why?

Nearly 75% of the U.S. population resides within 200 miles of a city representing potential customers for produce and livestock products grown on urban farms. A USDA survey of 315 U.S. urban farm producers cited their greatest training need was achieving and maintaining business profitability. The survey determined there was a lack of available educational training to assist urban farm producers in being profitable. Virginia Cooperative Extension educators and Master Gardener program volunteers may be inadequately prepared to confidently teach growing urban farm audiences how to start and manage a successful urban farm business.



Above: VSU urban community garden participants

### What has project done so far?

The VSU Sustainable and Urban Agriculture Certificate Program (SUACP) conducted three 12-week programs to 84 individuals who expressed interest in learning how to start or manage an urban farm. Industry and Cooperative Extension educators developed an urban agriculture curriculum rich in



experiential learning to train participants in the following subjects: sustainable soil management, plant propagation, nursery management, permaculture, plant disease, pest management, greenhouse production, animal husbandry (chickens and rabbits), urban farming business planning and management.

Left: Class cohort eager to start an urban farm

### Impacts

In 2019, VSU SUACP participants which included urban farmers, gardeners, extension educators, school teachers and other community members were surveyed with the following results: six out of 10 participants believed the 12-week educational program fulfilled their expectations. Sixty-three percent of participants benefitted from hands-on learning experiences during the 12-week course. As a result of the success of the face-to-face program, an online module was introduced for distance learners.

Right: Dr. Githinji in front of the VSU urban farm classroom



### VCE Planned Program Area

Agriculture Profitability and Sustainability

### Project support

1890 Extension Funding; USDA-NIFA grant funds

### USDA Primary (P) and Secondary (S) priority area

P-Agricultural Systems, S-Livestock Management

### Want to know more?

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## Making bank with value added farm products! Limited-resource, socially disadvantaged farmers and food artisans learn to transform raw produce into high dollar food products for consumer direct markets

### Who cares and why?

In Virginia, 10,862 Virginia farmers earned less than \$1,000 from their farm operation (USDA, 2017). Conversely, USDA (2018) reported that Virginia producers sold nearly \$1.3 million in value added products, which were sold directly to customers through farm stands, farmers markets, Community Supported Agriculture and online sales.

With market demand skyrocketing for ready to eat specialty food products, educational outreach on cost effective methods of producing and marketing value added farm products to Virginia small and minority farmers may provide significant economic benefits. Additional education and technical assistance are needed to assist small, minority, limited-resource farmers to adopt value added production and marketing practices.

Right: Browntown Farms value-added jam packaging



### What has project done so far?

From 2010 to 2019, in collaboration with the Virginia Food Works (VFW) Processing Facility (Prince Edward, VA), the Southern Virginia Food Hub (South Hill, VA) and the VSU Small Farm Outreach Program (SFOP) more than 15 educational, hands-on workshops and processing facility tours have been conducted with more than 500 limited-resource, socially disadvantaged farmers and food artisans throughout Virginia. Additionally, direct technical service from the VCE Marketing and Agribusiness program at VSU and cooperating VCE Extension specialists and VSU SFOP agents is provided to participants needing additional assistance in understanding regulations, label creation, consumer promotional materials and cost-effective packaging options. In 2019, the Marketing and Agribusiness program created an outreach brochure for VFW to distribute to potential clientele to explain the value-added opportunities available from VFW.

### Impacts

As a result of collaborative value added farm tours, workshops and the VFW brochure, educational outreach efforts on behalf of the Virginia Food Works Processing Facility (Prince Edward, VA) and Southern Virginia Food Hub (South Hill, VA), 100 unique value added farm products from strawberry jam to spicy tomato salsa have been created with Virginia grown farm products and are being sold directly to the public through farm stands, farmers markets, Community Supported Agriculture, food hubs and online sales with an estimated retail value range of \$5 to \$15 per specialty product netting 100 limited-resource, socially disadvantaged farmers and food artisans a minimum annual gross income range of \$125,000 (\$5 each x 250 production volume per process event X 100 producers) to \$375,000 (\$15 each x 250 production volume per process event X 100 producers).

### VCE Planned Program Areas

Agriculture Profitability and Sustainability

### Project support

1890 Extension Funding

### USDA Primary (P) and Secondary (S) priority area

P- Agricultural Systems; S-Local Foods

### Want to know more?

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## Training sheep farmers to lower lamb loss and reduce costs with lambing techniques

### Who cares and why?

Hair sheep are a growing segment of the U.S. small ruminant industry. They are well suited for sustainable, pasture-based production and are a good fit for novice producers. One of the most stressful times for a shepherd is lambing. Many producers do not realize that pasture lambing is an option, especially when necessary to take a lamb and force it onto a foster mother (mothering up). The difficulty with this process is convincing the foster mother to accept the lamb, and then allowing her to feed the foster lamb. In order to reduce lamb losses and cut down on labor and feed demands associated with indoor lambing systems, spring lambing on pasture may be a viable solution. It has been estimated that \$25 per ewe is needed to manage a lambing ewe in a barn to pay for feed, bedding, labor and other expenses. Additionally, research showed that barn or shed lambing results in higher lamb loss (15%) compared to lambing on pasture (8%). To address this issue and potential solution, the VSU Small Ruminant Program conducted research and outreach to limited-resource, small-scale and socially disadvantaged lamb producers on the benefits and techniques of spring lambing on pasture.



Above: Pasture lambing techniques

### What has project done so far?

Two workshops were developed and implemented to explore pasture lambing as an option for Virginia hair sheep producers. In these workshops, the biology of gestation and parturition, preparation for lambing, supplies needed, demonstration of lambing positions, dealing with complications and the unexpected and the processing of newborn lambs were taught and demonstrated (hands-on experience). Workshops were kept to a small number to provide direct interactions and experiential learning with participants.

### Impacts

As a result of attending workshops, 24 small-scale sheep producers increased their knowledge of low-input pasture lambing by nearly 60%. Economic savings were thus realized by participating sheep producers. Seventeen participants (averaging 20 breeding ewes per farm) prior to training would have spent an additional \$500 (\$25/ewe X 20 ewes) if they were to conduct lambing indoors as opposed to lambing on pasture. With an average lamb crop of 180% (36 lambs/farm each lambing), it is estimated that lamb loss would be approximately 2.9 lambs each pasture lambing compared to 5.4 in barn lambing. This potentially results in 42.5 live lambs ((2.5 x additional locally produced pasture-raised lambs available to market in Virginia (5.4-2.9 = 2.5 X 17 producers)) that can be sold in local food channel systems (direct to consumers) for premium prices (\$7 to \$18 per pound). If just half of existing hair sheep producers adopted pasture lambing and direct marketing to consumers in Virginia, a reduced lamb loss could result in profits of approximately \$320/lamb. Therefore, with 70% of participants adopting pasture lambing practices, the total potential savings as a result of trainings for Virginia sheep farmers is estimated to be \$8,500 (\$500 x 17 farmers), as well as potential profits of \$6,400 (\$320/lamb X 2.5 lambs X 8 farms).

### VCE Planned Program Area

Agriculture Profitability and Sustainability

### Project support

1890 Extension Funding; USDA-NIFA grant funds

### USDA Primary (P) and Secondary (S) focus area

P-Agricultural Systems, S-Livestock Management

### Want to know more?

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