VIRGINIA TECH

Northern Shenandoah Valley

2021 Annual Report

Virginia Cooperative Extension

Clarke County

Frederick County

Page County

Shenandoah County

Warren County

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Virginia Cooperative Extension
Virginia Tech • Virginia State University
www.ext.vt.edu

Noteworthy Metrics for 2021 Programming

920 youth and adults certified, recertified, or credentialed for workforce professional development and through workplace readiness programs*

$819,016 value of volunteer time contributed*

1,562,546 virtual educational contacts*

645 volunteers*

1,939 youth enrolled in 4-H*

3,776 face-to-face youth educational contacts*

22,433 of face-to-face adult educational contacts*

*compiles figures from all Northern Shenandoah Valley VCE staff (figures based on calendar year)

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At a Glance:

Several 2021 Program Impacts:

Improving wellbeing in
CLARKE COUNTY

COMMUNITY VOICES

"My internship at the Clarke Extension Office prepared me for my role as a 4-H agent through actively planning camps, programs, workshops, and networking. The Clarke Office provided an environment that fostered transparency, independent learning/program planning, and real-life scenarios that challenged me to develop professionally for my graduate and professional career."

Lacey Dysart
Extension Agent

PARTNERS FOR SOLUTIONS

"One truly doesn't appreciate the strength of a community until it comes together during a pandemic to support our youth. Our youth livestock program would not have enjoyed a successful year without the families, community stakeholders, local businesses, and the youth who pushed to succeed."

Claudia Lefeve
Extension Agent

SHARING KNOWLEDGE

In response to COVID-19, the Family and Consumer Sciences team developed the Buzz, Body & Bites newsletter for the actively aging population. This was an effort to create a sense of community during the pandemic when reports showed higher levels of anxiety, depression, and loneliness, as well as significantly reduced physical activity among older adults. The monthly newsletter provides readers with an article on a health topic of current interest, an exercise that can be easily done at home, a delicious healthy recipe, and a puzzle to stimulate the mind. The Clarke County Senior Center is a recipient of this newsletter and distributes it to seniors. We have received an outpouring of positive responses from readers who have benefitted from feeling connected during a time of isolation, are excited to try new recipes and exercises, and look forward to a new puzzle every month.

GET IN TOUCH
524 Westwood Road, Berryville, VA 22611
clarke.ext.vt.edu | 540-955-5164 |

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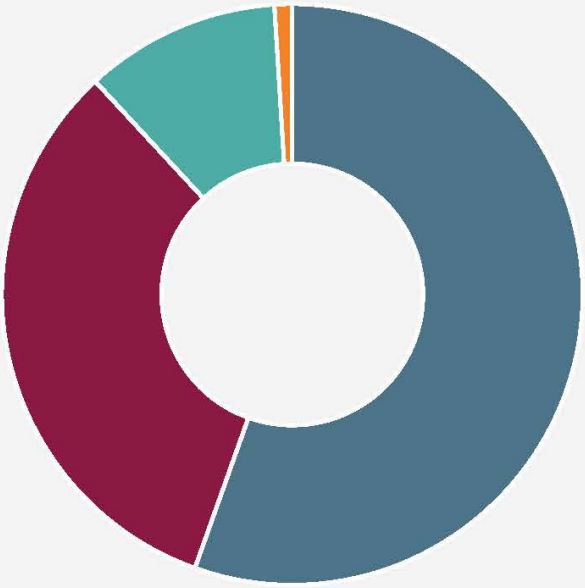
CLARKE COUNTY

FUNDING BY SOURCE



56% State

33% Local

11% Federal

0% Grants

1% Other

TOTAL FUNDING: $172,215

$2.02
return on investment for every dollar invested by the county in **Clarke County**

$134,627
Value of extension volunteer hours in **Clarke County**

To find out how you can support your local Extension office, **visit www.cals.vt.edu/make-a-gift.**

Improving wellbeing in
FREDERICK COUNTY

COMMUNITY **VOICES**

"My children came to the Junior Master Gardener program with an interest in gardening and a desire to be able to grow their own food. They finished the program with tools, encouragement, a sense of community, and ability to grow their home garden."

Elizabeth Wallace
Parent of 4-H Junior Master Gardener Participants

PARTNERS FOR **SOLUTIONS**

"I've had the great pleasure of working with many Shenandoah Valley produce growers and apple packing facilities collaboratively with area agents. Over the last year, we have learned that trainings around and adoption of the Food Safety Modernization Act and Good Agricultural Practices food safety production practices have prepared fresh fruit and vegetable growers to handle the best management practices and food safety concerns around COVID."

Laura Strawn
Extension Specialist

SHARING **KNOWLEDGE**

Diabetes Prevention Program participants walk together.

The 2020-21 virtual cohort of the Diabetes Prevention Program has improved the lives and well-being of participating Northern Shenandoah Valley residents. Diabetes and obesity are sweeping Virginia; 1 of 3 adults in Virginia – about 2.1 million adults have prediabetes, and 9 out of 10 people with prediabetes do not know they have it.

Twelve individuals came together dedicated to encourage one another and to live a healthier lifestyle in order to reduce their risk of developing Type 2 diabetes. This was accomplished by frequently receiving education in group meetings, having assigned support partners, and walking together. The group's average weight loss is currently 4%, and with one month left, we are hoping to reach our 5% goal. Together, the group has lost nearly 100 pounds! Significant life changes they've made include walking more, being more conscious when eating out, and eating more vegetables than they ever have.

GET IN TOUCH
107 N. Kent St., Winchester, VA 22601
frederick.ext.vt.edu | 540-665-5699 |

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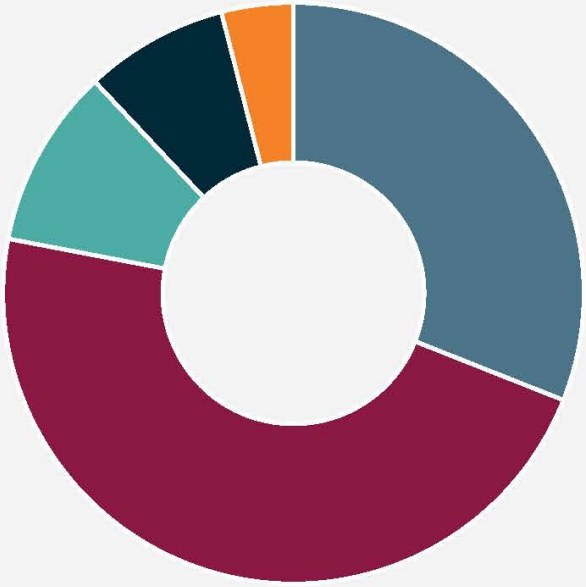
FREDERICK COUNTY

FUNDING BY SOURCE



31% State

47% Local

10% Federal

8% Grants

4% Other

TOTAL FUNDING: $593,652

$1.14
return on investment for every dollar invested by the county in **Frederick County**

$489,348
Value of extension volunteer hours in **Frederick County**

To find out how you can support your local Extension office,
visit www.cals.vt.edu/make-a-gift.

Improving wellbeing in
PAGE COUNTY

COMMUNITY **VOICES**

"Thank you for the cooking utensils. I plan on using them a lot this year. These cooking utensils will be a big part of my life, and I will use them a lot for my future cooking career. Thank you for providing me with one of the things I needed most."

August Beatty
Participant, Teen Cuisine Program
at Luray Middle School

PARTNERS FOR **SOLUTIONS**

"This school year I worked with our Extension agents Meagan Dyer and Molly Beardlee on after-school programming for Page Middle School. Lessons from the program focus on life skills, healthy living, agriculture, and environmental literacy. I am grateful to work in an office with such great interdisciplinary collaboration."

Elizabeth Mullins
Extension Agent

SHARING **KNOWLEDGE**

Page County 4-H exhibitors Lydia Parlett, Hailey Higgs, and Tanner Guzy show their market lambs at the 2021 Page Valley Fair.

Page County 4-H has had an amazing year with many 4-H members participating in various livestock shows. Our local 4-H and FFA Show and Sale at the Page Valley Agricultural and Industrial Fair was a great success.

The Page 4-H program has received tremendous support from community members, businesses, and volunteers to make the show and sale possible. 4-H members showed and sold a total of 27 single-market hogs, eight pen of two market hogs, 15 market goats, 25 market steers, and 29 market lambs. This year's sale grossed over $265,000, with 100% of sale proceeds going back to the 4-H'ers. Youth learn responsibility, sportsmanship, and proper animal care through their livestock projects. The livestock program and all of its exhibitors are grateful for the community's support.

GET IN TOUCH
215 W. Main St., Suite C, Stanley, VA 22851
page.ext.vt.edu | 540-778-5794 |

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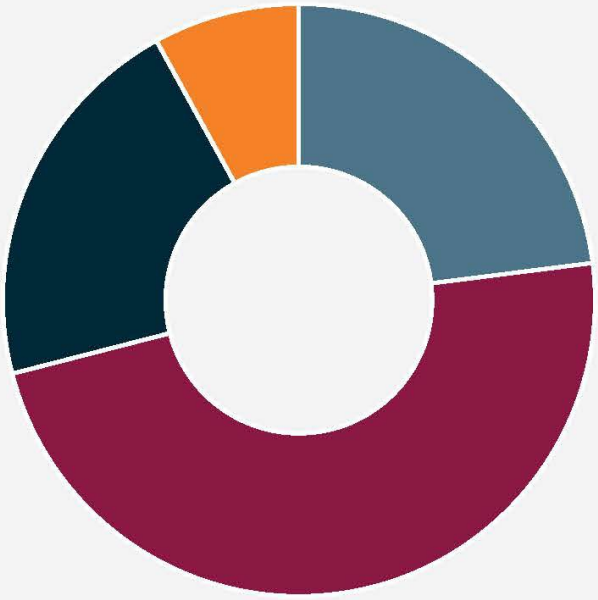
PAGE COUNTY

FUNDING BY SOURCE



23% State

48% Local

0% Federal

21% Grants

8% Other

TOTAL FUNDING: $264,676

$1.09
return on investment for every dollar invested by the county in **Page County**

$1,195
Value of extension volunteer hours in **Page County**

To find out how you can support your local Extension office,
visit www.cals.vt.edu/make-a-gift.

Improving wellbeing in
SHENANDOAH COUNTY

COMMUNITY VOICES

"Through the Extension internship program, I was able to grow in ways I had never imagined! Going into the summer with almost no knowledge of 4-H or Extension, I gained understanding in many diverse areas. Being an intern has completely altered the way I see my community, agriculture, and myself."

Jana Bowman
4-H Intern, Shenandoah County

PARTNERS FOR SOLUTIONS

"The Extension Master Gardeners help Northern Shenandoah Valley residents properly identify plants and pests in the home landscape and garden. With a goal of protecting water quality and the environment, they offer best management practices to reduce misuse and overuse of pesticides and fertilizers."

Mark Sutphin
Extension Agent

SHARING KNOWLEDGE

Wholesome Foods of Edinburg custom processes beef so farmers can directly market their products.

The Coronavirus pandemic caused major disruptions to the nation's food processing and distribution systems. This resulted in food shortages at grocery stores nationwide. Shenandoah County grocers were no exception. Ironically, Shenandoah County livestock farmers had plenty of animals ready for market, but local processing plants had waiting lists that were over a year long.

In response, Extension agent Bobby Clark worked with the Shenandoah County Economic Development Office to facilitate dialogue among farmers and local meat processors to better understand the situation. This group worked together to send letters to state and federal officials to explain the dilemma.

As a result of these efforts, the Virginia Department of Agriculture and Consumer Services increased inspection services so that one Shenandoah County food processor could operate one extra day per week. Another Shenandoah County food processor started custom processing locally grown livestock. These changes improved the availability of beef, pork, goat, and lamb to households throughout the region. They also created more income and employment for local processors and enhanced profitability for area livestock producers.

GET IN TOUCH
600 N. Main St., Suite 100, Woodstock, VA 22664
shenandoah.ext.vt.edu | 540-459-6140 |

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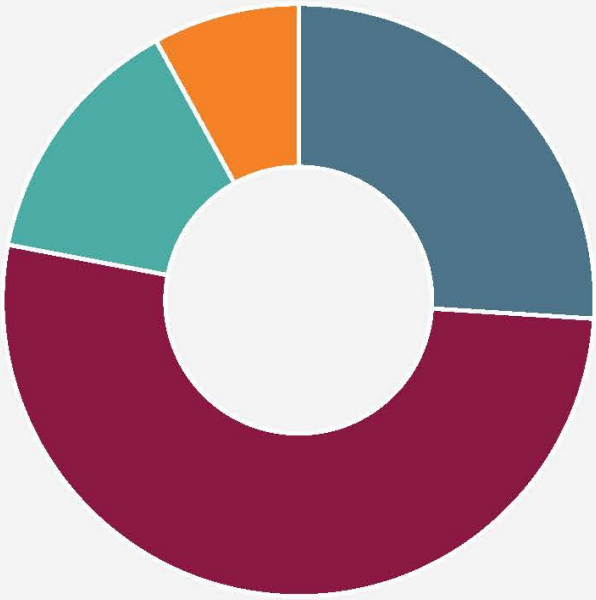
SHENANDOAH COUNTY

FUNDING BY SOURCE



26% State

52% Local

14% Federal

0% Grants

8% Other

TOTAL FUNDING: $383,768

$0.92
return on investment for every dollar invested by the county in **Shenandoah County**

$36,425
Value of extension volunteer hours in **Shenandoah County**

To find out how you can support your local Extension office,
visit www.cals.vt.edu/make-a-gift.

Improving wellbeing in
WARREN COUNTY

COMMUNITY VOICES

"Corey Childs was very helpful this spring with pasture improvement advice and again this fall with conversion of cropland to grassland."

Justin Mckay-Smith
Farm Owner

PARTNERS FOR SOLUTIONS

"Our Quick Money Chats, located at https://tinyurl.com/quickmoneychats, offer participants a convenient way to get their money management questions answered. We reach out virtually to answer questions, even if the chat is needed on an evening or weekend. Most people improve their financial knowledge and feel less stressed and more in control afterwards."

Karen Poff
Senior Extension Agent

SHARING KNOWLEDGE

Sign advises residents to kill spotted lanternflies and report any sightings.

The spotted lanternfly, which feeds on more than 100 host plant species, was detected in Frederick County, Va., on Jan. 10, 2018. Vineyards, orchards, and the forest industry are at risk. Since then, Warren County Extension staff have given 78 presentations about the invasive species to 2,756 individuals. More than 90% of participants said they will scout for and report any sightings of the lanternfly.

The office consistently posted social media updates on host species, locations found, and best management information. Facebook posts regarding spotted lanternfly have reached more than 500,000 individuals.

Specialists, agents, and volunteers made 1,356 unique observations of the lanternfly, which were first found in Warren and the surrounding area by the end of 2020. Over 98% of spotted lanternfly reports are correctly identified by the reporting individual.

GET IN TOUCH
220 N. Commerce Ave., Suite 500, Front Royal, VA 22630
warren.ext.vt.edu | 540-635-4549 |

Virginia Cooperative Extension
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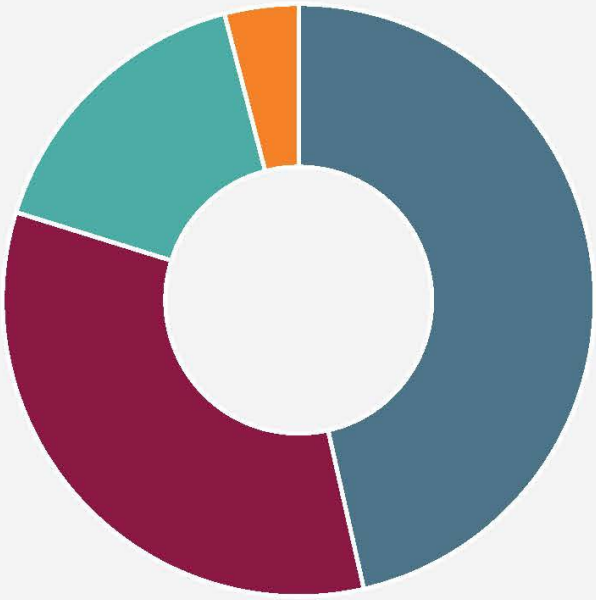
WARREN COUNTY

FUNDING BY SOURCE



46% State

33% Local

16% Federal

0% Grants

4% Other

TOTAL FUNDING: $361,550

$1.99
return on investment for every dollar invested by the county in **Warren County**

$54,084
Value of extension volunteer hours in **Warren County**

To find out how you can support your local Extension office,
visit www.cals.vt.edu/make-a-gift.

VIRGINIA COOPERATIVE EXTENSION

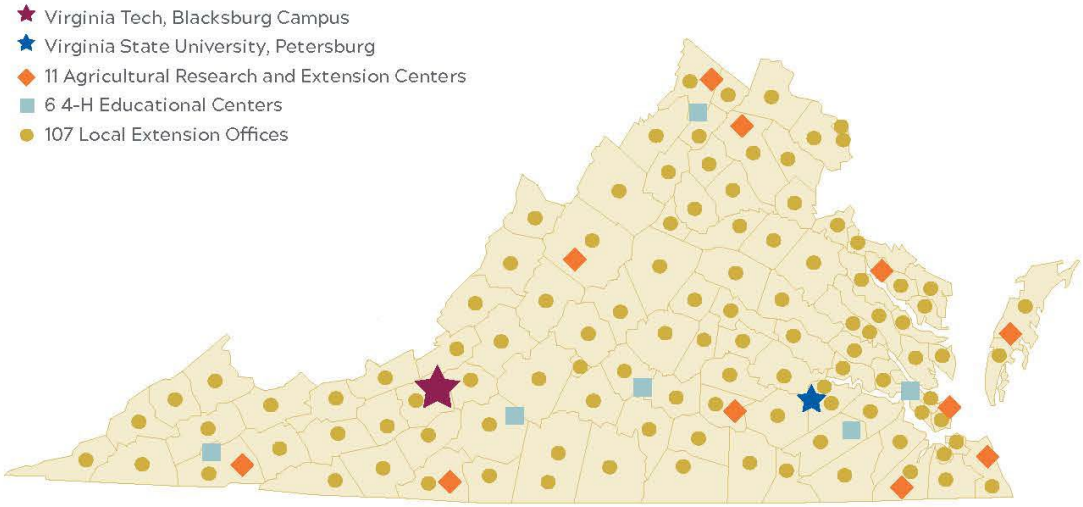
Advancing Wellbeing of All Virginians

At Virginia Cooperative Extension, we take concrete action that advances the wellbeing of all Virginians. Whether we're building a more resilient food system, supporting local economies, or mentoring youth, we help manage our natural resources, bridge access to knowledge, and shape a brighter future for our communities.

Extension faculty and staff come from a variety of backgrounds which helps us better understand the distinct needs of all Virginians. It is through this lens that we can accurately and effectively assess, prioritize, and respond to local and state needs.

Health and wellbeing
Children and youth
Safe and stable food supply
Strong families
Resilient communities
Environmental health

Virginia Cooperative Extension has an existing network of facilities (107 city and county unit offices, 11 Agricultural Research and Extension Centers, six 4-H centers and two university campuses and satellites), professional extension staff, and university specialists to deliver vital educational programs to the public. This network is enhanced by a connection to the resources of the land grant universities across the nation and is already located in every county and major city in the state.



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VIRGINIA COOPERATIVE EXTENSION

Addressing the needs that you care about in your community

STRENGTHENING FAMILIES

Extension offers local programs that ensure that families have the skills and opportunities they need to manage their money, and develop strong family relationships to ensure secure and healthy families.

- Financial literacy and financial education
- Human development programming
- Caregiving across the lifespan
- Mental Wellbeing

FOOD

Virginia Cooperative Extension programming results in safer food from farm to table, increased compliance with food regulations, and more markets available to producers.

- Community, local, and regional food systems
- Food safety, food preservation, and food-based businesses
- Master Food Volunteers

YOUTH

As the youth development arm of Virginia Cooperative Extension, Virginia 4-H works throughout the commonwealth to help all youth learn by doing to help them become the best versions of themselves. 4-H youth are empowered to be upstanding citizens who are actively engaged in their communities and around the world.

- Helps youth become leaders in their communities
- Helps youth make healthy decisions and lifestyle choices
- Agriculture programs equip youth to feed the future
- Emphasizes the importance of STEM through hands-on projects

ECONOMY

Virginia Cooperative Extension programming supports the sustainability and profitability of the Commonwealth's agriculture and forestry industries, Virginia's number one economic drivers that in turn support our communities and provide us with food.

- Agribusiness management and economics
- Agronomy and horticulture expertise
- Animal production and value-added marketing
- Emerging pests and pesticide management
- Natural resources management

COMMUNITY

Virginia Cooperative Extension works on the big issues, partnering with governments and organizations to solve systemic challenges in a way that benefits all Virginians. The commonwealth counts on us for their immediate land, health, and community needs to fix problems as they arise or seize opportunities.

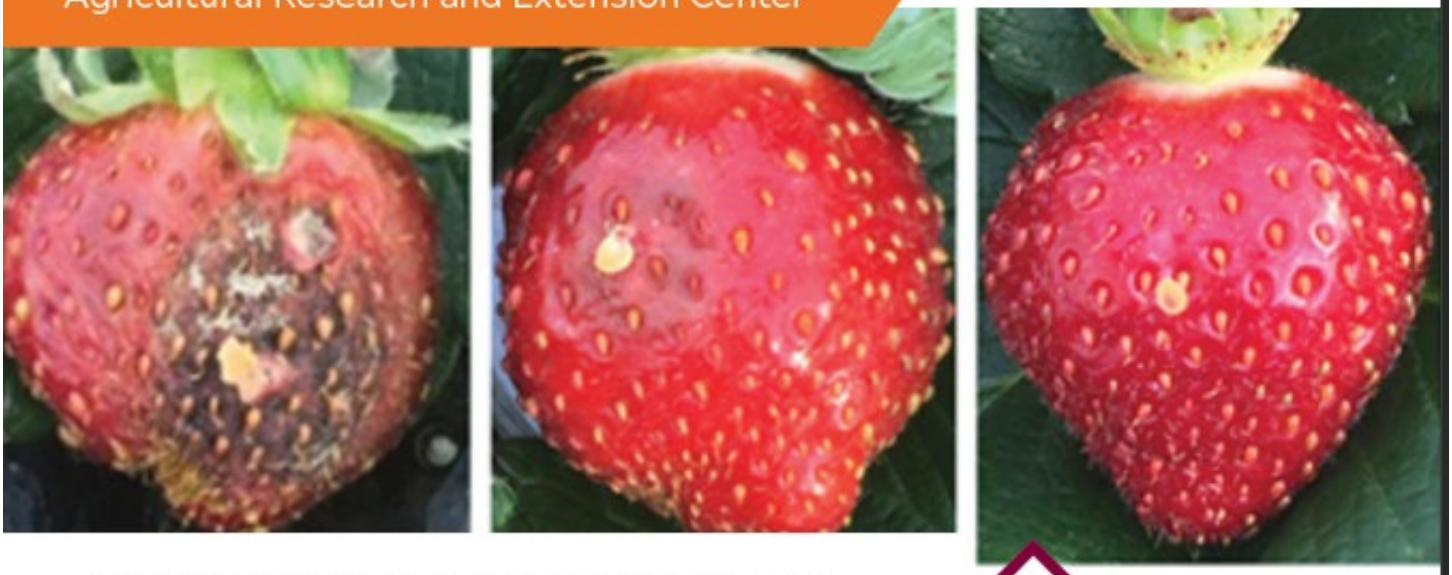
- Addresses critical local needs
- Promotes economic prosperity
- Fosters justice, equity, and respect for all

HEALTH

Extension is an integral part of helping Virginians follow a healthy lifestyle and learn how to prevent chronic diseases. Extension empowers people to make healthy choices so they can prevent, delay, and manage chronic diseases.

- Nutrition and Fitness
- Chronic disease prevention
- Substance misuse and abuse

ALSON H. SMITH JR.
Agricultural Research and Extension Center



Gray mold disease symptoms development on strawberry fruits sprayed with water, AgriCells (AGRNA1 & 2) targeting vital genes of Botrytis cinerea fungus after 5 days of inoculation with the fungus.

Sherif Sherif's lab, in collaboration with AgroSpheres, Inc. and the University of Virginia, has examined the efficacy of a novel class of bio-fungicides to manage grey mold disease in strawberry. Botrytis cinerea is the fungal pathogen that causes gray mold disease in more than 1,000 plant species, including many fruits and leafy vegetables, causing more than $10 billion of annual losses worldwide. This fungus is of increasing commercial interest due to its ability to mutate quickly and the overreliance on synthetic fungicides to manage it. AgroSpheres, Inc., a startup company based in Charlottesville, Virginia, has introduced novel biotechnology called AgriCells that can deliver RNA molecules to invading fungal pathogens.

Using laboratory and greenhouse facilities and equipment at the AREC, Sherif and his research team have demonstrated that AGRNAs can significantly reduce fungal growth and prevent grey mold disease progression in strawberries for at least 12 days after application. The collaborative teams also showed that AGRNAs have a high degree of species specificity and are resistant to degradation by RNases and amenable to large-scale production and open-field applications.

PARTNER WITH US

595 Laurel Grove Road
Winchester, Virginia
(540) 869-2560
https://www.arec.vaes.vt.edu/arec/alson-h-smith

"My lab explores novel and alternative means of improving tree fruit resiliency to both biotic and abiotic threats, including spring frost and diseases. The industry partnership with Agrospheres illustrates our commitment to finding fruit industry solutions that embrace the SmartFarm Innovation Initiative and support the needs of start-up, Virginia-based enterprises"

SHERIF SHERIF
ASSISTANT PROFESSOR, TREE FRUIT HORTICULTURE EXTENSION SPECIALIST

"Tony Wolf and other specialists at the AHS Jr. AREC organized and partnered with Virginia Vineyards Association leadership in 2020 to present a series of well-attended, virtual vineyard meetings, in which the impact of spring frosts and other seasonable vineyard topics were discussed. These educational meetings kept our membership up-to-date with the necessary information in an unusual growing season. The feedback from our membership has been extremely positive."

NATE WALSH
PRESIDENT, VIRGINIA VINEYARDS ASSOCIATION

ALSON H. SMITH JR. AREC AT A GLANCE

DISCIPLINES

- Tree fruit entomology
- Tree fruit and specialty crop horticulture
- Tree fruit and specialty crop pathology
- Grape pathology
- Viticulture

INNOVATIVE TECHNOLOGIES

- Membrane-based grapevine virus sampling kit
- Molecular tools to detect and identify major grape pathogens
- Marker-Assisted Breeding (MAB) of apple
- CRISPR/Cas9-mediated gene editing of apple
- Weather-based prediction models for managing crop load in apple
- Partial canopy rain shelters for grapevine
- Novel fungicide chemistry for grape disease management

FACILITIES

- 124 acres on the farm with over 40 field plots
- 6 modern labs
- 24,500 square foot complex
- 100 person auditorium

INDUSTRY PARTNERS

- Virginia Agribusiness Council
- Wine Industry
- Apple Industry
- Virginia Department of Agriculture and Consumer Services

ABOUT THE ALSON H. SMITH JR. AREC

The Alson H. Smith Jr. Agricultural Research and Extension Center serve Virginia's horticultural fruit industries through research, educational programs, student training, and the development of tools and technologies that increase sustainability and resiliency of commercial producers.

A COLLABORATIVE NETWORK

The ARECs are a network of 11 centers strategically located throughout the state that emphasize close working relationships between Virginia Agricultural Experiment Station, Virginia Cooperative Extension, and the industries the work with. The mission of the system is to engage in innovative, leading-edge research to discover new scientific knowledge and create and disseminate science-based applications that ensure the wise use of agricultural, natural, and community resources while enhancing quality of life.

VIRGINIA AGRICULTURAL EXPERIMENT STATION
VIRGINIA TECH.

Virginia Cooperative Extension
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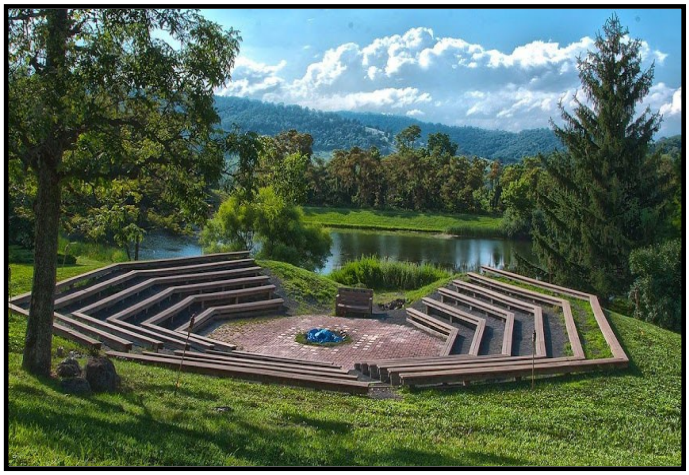
VT/0121/AREC-265



Northern Virginia 4-H Educational Center

600 4-H Center Drive
Front Royal, VA 22630
(540) 635-7171

Our Mission

Since 1981, the Northern Virginia 4-H Educational Center has offered year-round, research-based programming to the youth and families of Northern Virginia. In addition to its acclaimed camps, the Center hosts a variety of corporate retreats, festivals, team building programs, and outdoor recreation.

Our beautiful setting in Harmony Hollow, just outside Front Royal, Virginia will leave you invigorated and inspired.

Home to acclaimed year-round camps and educational programs, we provide facilities and services to groups seeking a relaxed, economical retreat experience. Located on 229 acres in the Blue Ridge Mountains, the Center was deeded to Virginia Tech in 1976 and is the site of the historic U.S. Cavalry Remount Center. We are just 1 hour from the suburbs of Northern Virginia and Dulles International Airport and 1.5 hours from Washington DC!

Mission

* The Northern Virginia 4-H Educational and Conference Center's mission is to facilitate proven experiential learning programs for youth, families, and adults that educate, inspire and connect.

Vision

* The Center's vision is to improve all aspects of the world in which we live, work and play through recreation, education, leadership, and life skill development. Our vision is put into action through the support of diverse communities, impactful stewardship and the creation of meaningful relationships with those around us, making the 4-H Center a truly sustainable organization.

Core Values

* Educate, Inspire, Connect

Program Impacts

Northern Shenandoah Valley Drinking Water Clinics

Nearly one quarter (21%) of Virginia's population (1.6 million people) rely on private water supply systems, such as wells, springs and cisterns, for their household water. In the US, municipal water supplies are regulated under the Safe Drinking Water Act by the Environmental Protection Agency, which mandates regular testing and water treatment. Homeowners who use private water supplies are completely responsible for routine testing, system maintenance and addressing any water quality problems, should they exist. Lack of knowledge about private water supply management and water quality issues may lead to system neglect and a lack of regular water testing, which can have serious implications for water quality, longevity of the water supply system, and, ultimately, the health and safety of the families who rely on these systems. (Derived from Erin Ling's 2021 statewide impact report.)

Extension Agents in the Northern Shenandoah Valley offices worked to provide affordable, accessible, and efficient water testing for the public. We served residents of Clarke, Frederick, Page, Shenandoah, and Warren County.

Agents advertised the event via newspaper, social media, and mass email messaging. For the first time, we provided kits at a discounted rate of $10 (regular kit is $60) to those who have an annual household income of $50,000 or less. This allowed us to reach an underserved audience, who may have otherwise not participated due to cost.

Agents held a kick-off meeting to provide education on home plumbing systems and how to properly collect their water sample. Ninety-six individuals participated. Clients picked up their water kit from their local Extension Agent and dropped off their water samples. Water test results were distributed by e-mail followed by the Results Meeting where agents presented information about trends in the counties, how to treat certain contaminants, and the importance of keeping water sources clean. Sixty-eight participants attend this meeting. After the Results Meeting, several participants reached out to agents with questions about their results, how to treat certain contaminants, and recommendations for water treatment companies.

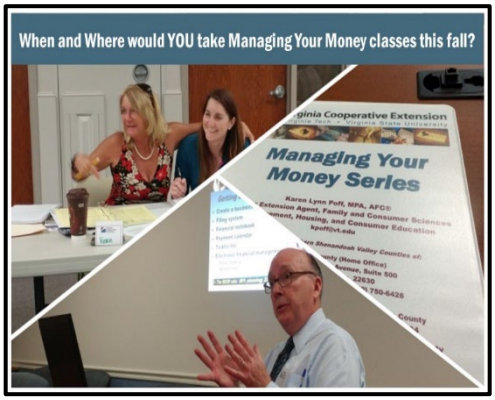
Agents are proud that even with the COVID-19 pandemic, they were still able to deliver this program while making adjustments to ensure its delivery was safe and accessible. Adjustments included delivering meetings virtually, providing office hours for participants to easily pick up and drop off their water kits and samples, and distributing water test results via email.

Across the five counties, we sold a total of 262 water kits and had 212 participants. Twenty-three of the kits were sold at the discounted rate at $10. In comparison to our water clinic in the previous year, we had a 20% increase in number of kits sold and 16% increase in the number of participants.

Individuals are now aware of the quality of their water and have the knowledge to take action in remediating their household water to improve their and their family's health. This program also provides visibility to Virginia Cooperative Extension and the variety of programs and services we provide to the community.

We received many compliments from participants who were extremely grateful that we provided this service. One commented that it was the most organized event they've ever participated in.

Participants Gain Financial Stability Through the "Managing Your Money" Series



Middle- and lower-income individuals and families experience financial distress because of inadequate savings, too much debt, and poor planning for major life events, as well as from events such as illness, layoffs, or divorce. Many individuals and families also rely on expensive and sometimes even predatory financial services, such as check-cashing services, payday loans, rent-to-own agreements, or pawn shops. Regardless of income, families across Virginia lack some of the most basic skills to promote financial stability. A 2018 Financial Capability study (the most recent available) by the FINRA Foundation, found that Virginians struggle with making ends meet, planning ahead, managing financial products, and financial knowledge and decision-making. The study found that 20% of those responding had spent more than their income over the previous year; 47% lacked a rainy-day (emergency) fund; 36% only paid the minimum on their credit cards during some months in the previous year; and only 31% could correctly answer four or five questions on a basic five-question financial literacy quiz.

The Managing Your Money series has been offered throughout the Northern Shenandoah Valley since 2011. A total of 529 people have participated since the program's inception. The six-lesson series shows participants how to take control of their finances, covering budgeting, credit, banking, insurance, record-keeping, and getting out of debt. Participants include not only those who may be struggling financially; but also, families who have financial goals such as owning a home, paying for their children's college education, or saving for retirement. Each session includes a list of "Action Steps" to help participants apply what they learn to their own situation.

A five-year summary of evaluations from 58 people who had completed the series showed positive results, with significant impacts that include the following:

- 91% (53) have a plan for paying down debt
- 83% (48) compare the cost of credit before getting a credit card or loan
- 81% (47) have funds in case of an emergency
- 79% (46) have a written spending plan and pay themselves first for savings.

At the time of the follow-up evaluation, these participants had put $68,645 into savings and paid off $43,130 of consumer debt, resulting in an average of $1,927 in savings or debt reduction per person. Participant comments included the following:

- *"I learned that I must not procrastinate when bills must be paid."*
- *"[The class] inspired us to start getting out of debt."*
- *"I feel as though I will be able to retire and be comfortable in my finances."*
- *"[The program] made me accountable for my actions, and I am much more conscious of the way I spend money!"*

Gardening for Community Health in Page County

There are 23,788 people in Page County with a poverty rate of 15.1% (DataUSA, 2019). Page County has a traditional agriculture background but 30% of its population are renters (7,136 people) (Eviction Lab, 2020). Renters may not have access to the space needed to garden to meet their household needs making the community gardens in Page County, currently located in Stanley and Luray with a location in Shenandoah coming this year, a great option to increase a household's food budget.

A community garden was started in Stanley at the Rural Health Clinic/Dialysis Center in 2020, and following the success of that garden a second was built at the Page Memorial Hospital in 2021. These gardens are cooperative style, where anyone can come harvest and work in the garden with no transaction or plot assignment necessary. During June through August, monthly Free Market Fridays were hosted at both the Stanley and Luray locations. This was an opportunity to distribute produce from the garden to community members, free meals to children 18 and under, and provide fun educational activities for all ages. At the Just Say Yes and Summer Food markets, Summer Moves curriculum was utilized to provide fun nutrition education for youth. Several days during the growing season, West Luray Rec Center came out and visited the garden where Growing Healthy Habits was used to teach youth about the importance of watering and managing weeds in the garden. We also had a visit from the Hawksbill Assisted Living Center where they did a garden scavenger hunt. These market days shared the garden location with many individuals and families who did not know where the gardens were before. My partners shared that these events increased visitors to the gardens during non-market times as well.

The Family Nutrition Program funded a Policy, System, Environment (PSE) mini-grant for both the Stanley and Luray garden for $1,800.43 which provided supplies needed for Free Market Fridays and other growing needs. In 2021, there was over 1,300 pounds of produce harvested from the gardens in September. This produce was distributed throughout the community from the senior center, food pantries, and schools. These gardens were so successful that we are implementing a Healthy Kids Bucks program at a hospital-sponsored farmers market next year. Patients at the dialysis clinic and the hospital will receive produce prescriptions (Produce RX) for garden produce and their health outcomes will be measured.

Shop Smart, Eat Smart – Increasing Healthy Affordable Food Access in Shenandoah County

According to Feed VA (2020), 8% of Shenandoah County's population, or 3,458 people, participates in SNAP, and 7% of residents are low income and have low access to a grocery store, 3,025 people. FNP's healthy food retail program known as Shop Smart, Eat Smart (SSES) is a partnership between SNAP-Ed Agents and food stores in low-income areas or stores with high SNAP redemption. I have been working with Jon Henry General Store in New Market for a year now and have reached the Community Champion Level upon implementation of strategies.

I onboarded Jon Henry General Store as an SSES partner in 2020 and soon after the owner decided to participate in Virginia Fresh Match to double SNAP dollars on fresh produce. In 2021, Jon was awarded a $25K Virginia Food Access Investment Fund, which I wrote a letter of support for, to offer frozen fruits and vegetables which will also be available for half price to SNAP customers through Virginia Fresh Match. In-store marketing, technical assistance, as well as direct education and customer engagement have occurred at the Jon Henry General Store in 2021 as part of the SSES program.

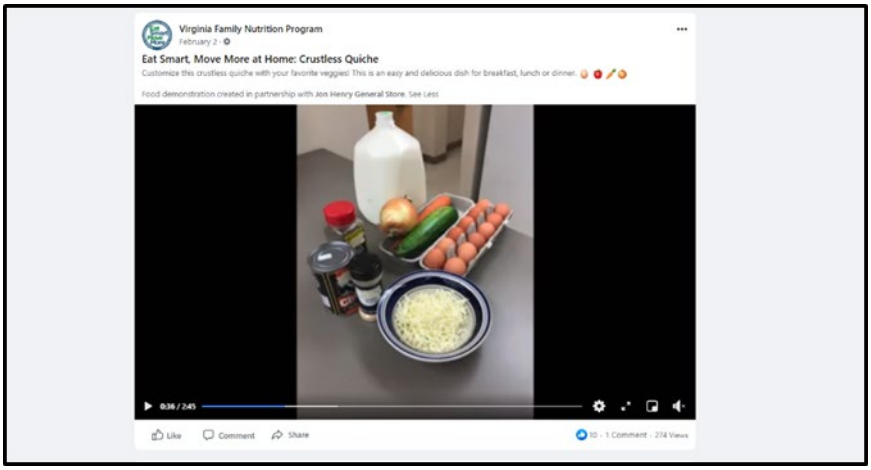
In-store marketing, in 2021, included posters and shelf-talkers with the potential to reach 4,913 people just in Shenandoah County. The store is at a great location off of I-81 on the way in to Page County, which makes up a lot of the SNAP customer base at Jon Henry General Store. A virtual "this or that" tour of the store highlighting healthy choices in the store was hosted on Facebook Live. During March Nutrition Month, water bottles were given away if a customer came in and said they had seen the "this or that" store tour. I partnered with the New Market Library volunteer Becky Kipps to read The Hungry Caterpillar and make a fruit kabob according to the LEAP lesson on Hungry Caterpillar for Eric Carle Day, author of The Hungry Caterpillar. A meal bundle recipe package was offered for chocolate chia pudding with a food demonstration offered in-person. Virtual food demonstrations were also offered for pumpkin soup and crustless quiche recipes. A social media salad competition occurred via Facebook utilizing the build your own salad recipe from FNP. Customers were incentivized to post their own salad for Eat Your Fruits and Veggies Day. Consumer requests are acknowledged through "Voice Your Choice", which is supported with SSES through the use of graphics put up by the store that if a customer does not see what they need to ask. Jon Henry has seen great SNAP sales and wishes to continue our partnership in 2022.

Virginia Family Nutrition Program Volunteer Training

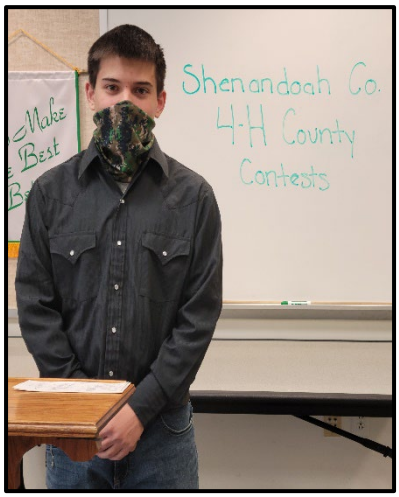
The Virginia Family Nutrition Program (FNP) mission is to teach limited-resource households how to make healthier food choices and become better managers of available food resources for optimal health and growth. Our programs focus on basic nutrition, physical activity, safe food handling, and thrifty food shopping.

In an effort to stem the rise in childhood overweight and obesity levels, FNP's volunteer-led initiative uses a train-the-trainer model to complement other programs and expand the reach of SNAP-Ed throughout the state. Volunteers are trained in the age-appropriate curriculum to deliver nutrition education in the classroom or community to maximize the impact on Virginia's youth. In addition to training volunteers, I also provide resources and technical assistance as needed.

During the 2021 programming year, I have trained 36 volunteers in various nutrition education curricula. These volunteers have taught a total of 27.5 hours of nutrition education to 576 youth for a valued time of $801.35. In the last year of OrganWise Guys, I have trained four teacher volunteers in Page County. In Elementary Schools, in Page during 2021, 324 kids were reached through the OrganWise Guys curriculum. I have trained 24 teachers in LEAP (Literacy, Eating, and Activity for Preschoolers) in Clarke, Fauquier, Frederick, and Page Counties, and the City of Winchester. In 2021, 122 Preschoolers were reached through the LEAP curriculum. I have trained two volunteers on Teen Cuisine in Page County and co-trained with Stacy Swain in Warren County. In 2021, 130 teens were reached in Middle Schools in Page County. The Teen Cuisine programs increased fruit and vegetable intake, water intake, and decreased soft drink consumption. Of the students at Page Middle, 100% agree they know how to safely use a knife due to Teen Cuisine (93% at Luray Middle); and 100% of students wash their hands more before they cook (95.2% at Luray Middle). In Culpeper County, six PE teachers have been trained on Pick A Better Snack in collaboration with Georgette Mosley, JoAnna Kilby, Clare Lillard, and Cristy Mosley. This is a new effort to reach a whole school division and is a whole Extension effort with great buy in from the local school office.



Presenting Your Best (4-H Presentations, Demonstrations, and Public Speaking)



Youth need to learn to organize thoughts and ideas and express them clearly and effectively when speaking and writing. Communication skills are critical to success in the workplace and are ranked first among a job candidate's "must have" skills and qualities, according to a 2010 survey by the National Association of Colleges and Employers. The Virginia Standards of Learning for Public School systems has included presentations, demonstrations, and public speaking as skills that students need to achieve.

Shenandoah County 4-H leaders and 4-H All Stars worked with their local 4-H'ers to learn about preparing and giving an oral presentation and/or speech. Youth prepared and gave their presentations/speeches first at the club level, and some progressed to the County, District, and State level of competition where they were judged and ribbons awarded.

Two 4-H'ers prepared and gave a presentation, five 4-H'ers prepared and gave a public speech, and three 4-H'ers gave a table setting presentation during the in-person County Contests. Three different clubs were represented. Eight 4-H All Stars assisted with, judged, and provided leadership for the County 4-H Contest Day. The Presentation Contest Evaluations indicated that 100% of 4-H'ers participating in the program improved organizational skills, self-confidence, and public speaking skills. The Public Speaking Contest Evaluations indicated that 80% of 4-H'ers can now communicate to the audience with confidence; 100% can organize, prepare, and deliver a speech; and 60% indicated that the Public Speaking program had helped them with school work. 80% of the 4-H'ers indicated that they are more confident as a result of this program.

Seven 4-H'ers advanced to the virtual District 4-H Contest Day, with three All Stars serving as judges. Three senior 4-H'ers competed in the virtual State 4-H Presentation Contests with one winning the State 4-H Table Setting Contest. Three All Stars served as state judges.

4-H Day Camp-in-a-Box Program

4-H is grounded in a deliberate, research-backed development and delivery model, which means at 4-H camp, kids learn critical life skills like resilience and independence. If we want our kids to be able to bounce back from adversity, stress, challenges and failures, teaching them resilience is key. Having experiences outside their comfort zones help young people become more resilient, more independent, and better able to plan and reach their long-term goals.

Due to the COVID-19 pandemic, overnight 4-H Camps had very stringent protocols involving staying in small cohorts throughout the camp. Holding 4-H Day Camps where children come and go to a common venue daily was not encouraged. We decided to continue successful 4-H Day Camp-in-a-Box program that we developed in 2020 in order for children to have some additional educational camp experiences at home.

Over the winter, I partnered with the Friends of the North Fork of the Shenandoah River to conduct a Kitchen Science/Environmental Science 4-H Day Camp-in-a-Box program for 12 participants. All materials were provided for the activities, and an optional field trip to the new Seven Bends State Park was encouraged for families.

During the summer, I worked with my 4-H program assistant and 4-H intern to plan and conduct two 4-H Day Camp-in-a-Box hands-on programs for a total of 20 children. There was an Aerospace themed box for ages 9-12 and a Marine Science Box for ages 5-8. Each camper received a box with lesson plans, all supplies needed, and a daily snack. Brief morning Zoom energizer meetings were held daily. “How-to” videos for all lessons were posted on Flipgrid, and campers were invited to post their own videos, which were shared in a final showcase Zoom meeting for all campers.

Parent responses to evaluations indicated that they were happy to have the materials and lesson plans provided for their children to continue learning over the summer. Overall evaluations were positive and indicated that most campers were new to 4-H and would like this program to continue after the pandemic. Participants were provided with information about joining a 4-H Club in the fall.

VCE Summer 4-H Internship Program

Virginia Cooperative Extension gives college students an opportunity to explore a career in Extension through the paid summer internship program. The program was designed for students who have:

- An interest in possibly pursuing an Extension Career
- A desire to serve others and a genuine interest in people
- The ability to lead, teach, motivate, and communicate effectively
- The motivation to continue learning and growing professionally
- The desire to work as part of a team

I applied for a 4-H Intern position through the state cost-share program and was granted one position. After interviewing several prospective interns, I chose a local girl who had no previous experience with either 4-H or Extension, but she had skills to complement the other members of our summer team. She also had a willingness to learn new things. She hit the ground running when she arrived because our first big event was overnight 4-H Camp. She had never been to an overnight camp before, but she grew and thrived at this one. We followed this camp up with having her plan and conduct two 4-H Day Camp-in-a-Box programs with our 4-H program assistant. We also worked in visits/shadowing with FCS and ANR Extension Agents in PD7, along with a day with our Community Viability District Specialist. She also visited several senior 4-H members to learn about their livestock projects, and she assisted with weighing and tagging sheep, swine, and goats for our County Fair.

Our intern learned so much about herself during the ten weeks she worked in our office. She had never been to an overnight camp before, and she absolutely loved it – even considered applying for a 4-H Summer Camp Staff position next summer. She had never worked with children before but found that she had a talent for and an interest in teaching children. She had never given a demonstration before, but successfully recorded all of the 4-H Day Camp-in-a-Box "how to" videos on Flipgrid for the campers. She had also never been around livestock before but became engaged in learning about the 4-H livestock program and learning what the 4-H members were accomplishing in their livestock raising projects. She was a delight to have in our office, on our team, and working with 4-H members.

During the fall semester at her college, she did some research on Extension careers in Virginia and other states for one of her class assignments. She told me she went from knowing nothing about Extension to being very interested in pursuing an Extension career and wanted to apply for either another VCE internship position in 2022 or apply for the 4-H Program Assistant in our office. She also came back and helped me with our Winter 4-H Day Camp Program, which was held in-person at our office in early January while she was home on break. She gave leadership, as a volunteer, to the 9-12-year-old 4-H Day Camp group and did a fabulous job.

A Personal Story: Our intern provided the "Community Voices" section quote for the Shenandoah County ROI publication.

> *"Through the VCE internship program, I was able to grow in ways I had never imagined! Going into the summer with almost no knowledge of 4-H or Extension, I gained understanding in many diverse areas. Being an intern has completely altered the way I see my community, agriculture, and myself."*

Jana Bowman, 2021 Shenandoah County 4-H Intern
https://sites.google.com/vt.edu/janabowman/home
(Jana's Blog from her Internship)

Improving Beef Cattle Profitability, Health, and Safety Through Addressing Current and Emerging Issues

The beef industry in Virginia is the 2nd largest agriculture enterprise with annual gross values exceeding 679 million dollars representing 17.2% of total farm sales. Furthermore, almost half of all farms in the state derived some income from cattle. In our local working area, beef cattle represent 11% of the state's total inventory and contributed over 34 million in farm sales. Endemic and emerging cattle diseases represent a direct economic loss to cattle producers. It is estimated that Pinkeye infection, through treatment cost, reduced production, and sale discounts cost the industry $150 million annually. Emerging infections such as Theileria, based on data from countries like Australia, could cost the industry tens of millions of loss income. Safe/low stress livestock handling is essential for profitable beef production, allowing for the opportunity to add value through applied health and management practices as well as reducing the probability of injury to livestock and handler. Parasite control, vaccination, and castration are proven management techniques to improve net income. Injuries such as carcass bruising result in $35 million-dollar loss to the industry.

Agents in the Northern Piedmont and Northern Shenandoah Valley collaborated and created the Beef 20/20 series to address ongoing and emerging issues related to beef production. Beef 20/20 is designed to help producers develop a clear vision around issues that may impact their business. The goal of this series is to utilize local and state subject matter specialist to identify current relevant issues and then present the most up to date, science-based information to producers. Delivery of this information includes group presentation (in-person and electronic), on-farm demonstrations, and group led discussions. Furthermore, partnership with local producer groups, Co-Ops, and veterinary practices has increased outreach opportunities and enabled the group to capture as many additional producers and potential producers.

The following virtual or in-person programs where offered for clientele.

- Introduction to Whole Farm Planning (virtual; 29 attendees)
- Plants Poisonous to Livestock. Speakers: Gabe Pent and Dr. Currin. (virtual; 23 Attendees)
- Tick-Borne Diseases in Beef Cattle: Anaplasmosis and Theileria. Speaker: Thomas B. Massie (virtual; 12 attendees)
- Livestock Transportation VDACS DMV Perspective and LE Perspective. Speakers: Daniel Hadacek and Andrew Smith (virtual; 34 attendees)
- Demystifying the CRISPR Revolution (BRCA). Speaker: Dr. Tim Durham
- Theileria and Long Horn Tick Program. Speaker: Dr. Kevin Lahmer. (virtual; 19 attendees)
- Low-Stress Stockmanship and Cattle Handling Systems. Speakers: Multiple. (in-person; 26 attendees)

Basic Evaluations were conducted at each virtual session.

"Tonight, I gained information, or learned a best management practice, that I will use for my farm operation."

a. Agree strongly
b. Agree
c. Question is not applicable to my farm operation
d. Disagree
e. Disagree strongly

99% of the participants responding answered with either A or B. One responded with C.

Improving Farm Profitability to Extending the Grazing Season in PD-7

Northern Shenandoah Valley (NSV) Cattle Producers are constantly looking for techniques to improve their bottom line. Recent survey data indicates that the majority (87%) of NSV Cow-Calf operations are grazing less than 245 days per year. Research conducted in Virginia shows that a 40-head cow/calf operation in the state can potentially save $166 per head per year in expenses if the farm shifts from grazing less than 245 days per year to practices that extend the grazing season by rotational grazing, stockpiling fescue, and purchasing hay. University of Kentucky research suggests that producers feeding hay at a purchase price of $80/ton will operate most profitably with grazing days of 280 to 320 days per year. The long-term profitability of cow/calf production throughout Virginia and the South will require many farmers to extend the number of days they graze their cattle.

I have been working, through the Graze 300 VA initiative, to provide producers greater knowledge of the management skills and infrastructure required to extend the grazing season. This has included coordinating field days, teaching livestock producers how to strip graze stockpiled grass, holding educational meetings, developing educational videos, developing grazing plans, and many more activities. As part of this process, Virginia Extension Agents completed economic analysis on ten different Virginia Cattle farms to evaluate benefit of extending the grazing season. Results show these livestock producers can save at least $1.20 per head per day for each day they are able to graze their livestock in the winter instead of feeding hay.

In year 2021, six Northern Shenandoah Valley livestock producers elected to try something new. They decided to not bale hay on fields in late September. Alternatively, these farmers grazed the fall growth on these fields. Collectively these six farmers grazed their livestock 8,030 days on this forage in lieu of baling the fields and subsequently feeding that baled hay to their livestock. Conservatively, these livestock producers are saving at least $1.20 per head per day by grazing these livestock for a total economic benefit of $9,636. Other Northern Shenandoah Valley livestock producers changed management to extend their grazing season in past years.

Expanding Fresh Market Vegetable Production in the Northern Shenandoah Valley to Enhance Farm Income and Improve the Availability of Fresh Produce in the Region

The VCE Shenandoah Unit was contacted by Rouge River Farms to inquire about potentially growing Sweet Corn and Green Beans in Shenandoah County. Meetings were held to better understand their needs. Rouge River Farms is a large vegetable producer that has been growing corn on the eastern seaboard of the United States to supply major retail stores with fresh sweet corn year-round. They wanted land that could be irrigated in the greater Mount Jackson and New Market Area. They were primarily interested in leasing land and possibly paying farmers or custom operators to produce the corn.

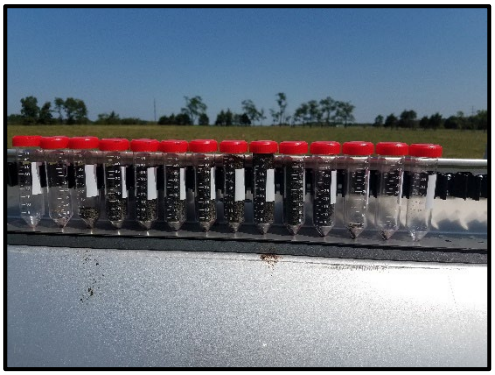
A tour was organized so that area farmers could see their processing facility and some of their sweet corn fields. The tour was attended by about ten area farmers. In year 2020, Rouge River Grew 350 acres of sweet corn on one farm near Mount Jackson plus 115 acres near Port Republic. In year 2021, Rouge River leased an additional 200 acres near Mount Jackson and 100 acres near New Market. In 2021, they also grew double crop green beans (two crops of green beans in one year) on 100 acres of that land, 100 acres of land following a wheat crop, 100 acres preceding a sweet corn crop, 300 acres single crop beans, for a total of 600 acres. This was a total harvest of 600 acres of green beans and 500 acres of sweet corn in year 2021. Extension Agents supported Rouge River field scouts with pest management decisions, crop management strategies, and other basic production information.

Growing Sweet Corn and Green Beans on 1,000 acres of crop land likely quadrupled the farm gate value of product generated on this land. Corn and soybean generally generate about $1,000 per acre worth of crops whereas these vegetables exceed $4,000 per acre. The entire farming community is benefitting from this expansion. Rouge River Farms pays respectable land rental fees and thus land owners benefit. The vegetable crops are planted and maintained by local custom operators. Rouge River markets their product through major retail stores whereas most local farmers market their vegetables through roadside stands or at local farmers markets. Thus, Rouge River is not competing with local farmers (i.e., there is not a commensurate reduction in the current production of local produce). The entire region benefits by having an abundance of fresh vegetables grown nearby.

Alternative Fertilizer for the Clarke/Frederick/Warren Area

In early 2019, the VCE Shenandoah Unit was approached by Synagro (a company that land applies a lot of biosolids in Virginia). They indicated that multiple municipalities in Washington, DC/ Baltimore/Southern PA region were generating more granulated biosolids in the late summer and early fall than they could move. This product is a Class A – *Exceptional Quality, EQ* biosolids that is a legal fertilizer. It can be sold/land applied *as long as it is registered as a fertilizer or soil amendment with appropriate state department of agriculture, with few restrictions*.

Meetings were held with Synagro to better understand the product. We determined the product would be a good fit to fertilize pastures or hay fields for fall grazing and/or fall hay production in the Clarke/Frederick/Warren area. The product has a high phosphorus content and, due to the abundance of chicken litter, most fields in Page and Shenandoah do not need phosphorus. I worked with Synagro and Clermont Farm to install a demonstration at Clermont Farm. We applied the biosolids to a fescue field to generate fall stockpile grass. We subsequently strip grazed the field with cattle and sheep. Data collected included the analysis of the biosolids, nutritional quality of the grass (both with and without granulated biosolids), the tonnage of the grass grown, and the number of days the fields were grazed. This demonstration was promoted through multiple Facebook posts and a handout was generated outlining the results. A twilight tour was held and the results were shared at multiple farm meetings over the next year. I also reached out to multiple custom fertilizer and litter applicators to find someone willing to apply this material on a routine basis.



As a result of this work, a young farmer from Frederick County became interested in custom applying this product. This person had recently purchased a Fertilizer/Lime spreader truck. I helped him calibrate the spreader truck for these granulated biosolids. Over 1,000 tons of this product was applied to farmland in Clarke and Frederick Counties.

There are multiple benefits to this effort. First the product is less expensive than commercial fertilizer. Thus, farmers are fertilizing their fields at lower cost. Also, it complements the Graze 300 VA initiative. Finally, these efforts expand the market for biosolids generated in the region.

Northern Shenandoah Valley Pesticide Safety Education Program

The federal and state pesticide laws require applicators to be certified to use restricted use pesticides. In addition, VA law requires all commercial applicators to be certified to use any pesticide and to renew their pesticide licenses through continuing education every two years. Without pesticide safety and IPM education to enable these individuals to do so, many would suffer economic hardships and violate the law. A lack of knowledge threatens human health and the environment. There are over 550 certified commercial applicators, registered technicians, and private applicators in the Northern Shenandoah Valley.

In January 2021, PD7 and PD6 ANR Agents transformed annual commercial pesticide recertification workshops into an online offering through Canvas. In fall 2021, PD7 agents conducted ten VDACS approved re-certification programs in pesticide safety and IPM in Winchester, Woodstock, and Stanley. To best accommodate private applicators in the midst of the coronavirus pandemic, the re-certification was also made available in-person, online, and via printed materials.

During 2021, 110 private pesticide applicators and 92 commercial pesticide applicators were trained for recertification in PD7. The five-year total pesticide recertifications for license holders offered through VCE NSV programs is 567 private applicators and 1,027 commercial applicators. This programming helps applicators ensure worker health, food safety, protection of water quality, and general environmental health by safe use of pesticides. It also builds the community labor force and improves workplace readiness through licensing and recertification.

Of the 181 attendees at the 2020 commercial workshop, 142 (78%) completed a written survey supplied at the end of the day following the course with the following results:

- 99% know what they need to do to comply with state and federal laws and regulations
- 92% learned more about proper use of applicator equipment
- 98% read pesticide labels and use required PPE
- 94% rated the program as good-excellent and provided comments such as: *"good overview of invasive species and common issues we face in the industry"; "this was a very well organized and educational recertification class"; "provided me knowledge I need to work safely"; "overall it was the best recertification class I have attended"*; critical comments to learn from came from 8% of comments and include: *"a little redundant"; "the bit about aquatic weed management didn't apply, should have been a breakout session"*

- 98% stated they are now able to identify spotted lanternfly and 94% will scout for and report SLF findings
- 95% acquired a better understanding of how water quality can impact spray applications
- 94% stated they learned about brown marmorated stink bug biological control agent, Samurai wasp

Additional comments about lessons learned and plan to implement are captured in these comments: *"change mowing height of turfgrass"; "wear proper PPE no matter what"; "will test pH and water quality".*

Spotted Lanternfly Outreach in Virginia

Specialists and Agents spoke throughout the state, regionally, and nationally about spotted lanternfly to raise the awareness and to slow the spread of this invasive insect. In 2021, 114 presentations were delivered by 21 Specialists, Agents, and staff to a total of 4,798 individuals. Audiences included researchers, Extension Agents in Virginia and North Carolina, grower groups, and farmers (including Oregon tree fruit growers), civic groups, state and local elected officials, volunteers, state and local government workers, pesticide applicators, businessmen/businesswomen and employees, non-profit organizations, and the general public. Social media was used regularly to post updates and seasonal information related to the phenology of the pest, host species, geographic locations found, and timely best management information. Additionally, eleven media interviews were conducted for radio, television, and newsprint.

Volunteer Monitoring: Due to COVID limitations, online training and five recorded modules were developed to ready willing volunteers for 2020 and modified in 2021, the fourth year of volunteer monitoring in Virginia (https://www.ento.vt.edu/idlab/SpottedLanternfly.html). Materials were distributed in person at an outside meeting that was held on April 9, 2021 for 25 lead volunteers. In 2021, 54 volunteers trapped 99 sites across 20 counties. Public reports also came from the public via social media, Qualtrics, email, phone, and in-person to the Insect ID Lab and through VCE offices. In addition to transportation intercepts, breeding spotted lanternfly infestations have been found in the counties of Albemarle, Augusta, Carroll, Clarke, Frederick, Page, Prince William, Rockbridge, Rockingham, Shenandoah, Warren, and Wythe, as well as the cities of Winchester and Lynchburg. The remaining negative observations help serve to delimit the Virginia infestation.

Community members are being reached and awareness is increasing regarding this invasive insect species. VCE Northern Shenandoah Valley Agriculture and Natural Resources Facebook posts (https://www.facebook.com/VCE-Northern-Shenandoah-Valley-Agriculture-and-Natural-Resources-183932085102951) and Northern Shenandoah Valley Master Gardener Association Facebook posts (https://m.facebook.com/NSVMGA) have reached more than 500,000 individuals regarding spotted lanternfly in 2021. Over 1,500 SLF reports with requests for best management practices have been made to the Virginia Tech Insect ID Lab and to Virginia Cooperative Extension unit offices. Residents reporting are often aware of the pest and over 97% of spotted lanternfly reports are correctly identified by the reporting individual. Volunteer monitoring reports along with public reports to the VCE-Frederick Unit and the Virginia Tech Insect ID Lab are entered into an Arch GIS Survey 123 Mapping Tool for VCE and VDACS observation. Since monitoring and reporting began in 2018, 4,349 entries have been made in this system. Reports and scouting led to several new county population discoveries in 2021 along with multiple transportation intercepts throughout the state.

Following a SLF presentation, 98% of the audience comprised of 181 pesticide applicators (142 completing a post-program evaluation), stated they are now able to identify spotted lanternfly and 94% will scout for and report SLF findings. The following comments were received from middle school youth following a presentation in Winchester: *"I learned that lanternflies are an invasive species and they die off in winter but lay their eggs before winter and then the babies hatch in the spring"; "I learned they don't bite, they are bad, they are colorful"; "I learned you should kill them and report them"; "I learned: 1. The types of trees lantern bugs don't go on, 2. Females bigger than males, 3. They are everywhere"; "I learned that their egg masses have 20-30 of those bugs. And that the male has a black thing on its bum and the female has a red thing on its bum. I also wanted to tell you that I have killed 30 bugs".*

Consumer Horticulture and Environmental Programming in the Northern Shenandoah Valley

For over 40 years, Extension Master Gardeners (EMGs) have assisted state and county faculty in providing current, relevant, research-based, and timely responses to Virginia's homeowners who need assistance with their home landscapes. As personnel resources diminish, we rely more heavily on our volunteers to help deliver quality programming and services to our constituents. The work of EMGs is important in multiplying the efforts of our paid faculty as they impart best practices to homeowners wishing to manage their landscapes in sustainable and environmentally friendly ways. In the Northern Shenandoah Valley (NSV), there is a population of over 229,000 individuals residing in the counties of Clarke, Frederick, Page, Shenandoah, Warren and the City of Winchester. There has been an active network of EMGs in the NSV since 1993.

In 2021, the typical annual EMG training in the NSV was paused. 25 applicants are ready to begin the hybrid class as trainees in 2022. The annual plant festival called GardenFest returned following a COVID cancelation in 2020. Record attendance for this 11th annual event with over 1,200 participants attending workshops, children's activities, educational booths, and plant sales. The NSV EMGs also kicked off a new annual event in 2021 with a one-day tour of five gardens. The inaugural one-day June 2021 event welcomed over 300 community members to five different gardens (EMG home gardens, education and demo gardens, as well as a private arboretum) in Shenandoah County, each staffed with EMG volunteers to teach and lead attendees through educational experiences with each garden and ecosystem. $3,000 proceeds from ticket sales were donated to the garden and shelter construction at the Corhaven Cemetery for enslaved persons.

In 2021, EMGs participated in four radio interviews and five interviews for newspaper articles and other printed publications. Despite the coronavirus pandemic, NSV EMGs altered and reworked to conduct 52 educational programs, projects, and events in-person and virtually with a goal of extending best management practices and knowledge into the local communities. Significant effort was made to educate via Facebook (https://www.facebook.com/NSVMGA), quarterly newsletter (http://nsvmga.org/newsletter/), and via the local association website (http://nsvmga.org/).

27 trainees participated in 2020 EMG trainings and joined forces with the 146 active EMGs, Emeritus, Interns, and Trainees in the NSV. By end of 2021, there were 170 volunteers working on behalf of VCE providing service and educational programming to 459,028 contacts. In the course of working with NSV citizens, EMGs reported 13,855 volunteer and continuing education hours. The volunteer time equated to nearly 7 full-time equivalents. This means that collectively, VCE had an additional 7 full-time, non-paid, staff disseminating best practices in the NSV. The economic value of the reported volunteer time is $403,734.70 (based on an hourly rate for Virginia of $29.14 from the independent sector), a tremendous in-kind contribution and return on investment to the NSV.

These numbers speak volumes, but it is really about the changed lives, improved environment, and healthy communities created by the efforts that these numbers represent. Extension volunteers help train and empower youth to grow their own fruits and vegetables, they provide community members with best management practices for residential horticulture activities, they offer appropriate pest identification to reduce misuse and overuse of pesticides and fertilizers, and so much more.

Virginia Cooperative Extension

Master Gardener Program

Northern Shenandoah Valley

WHAT IS THE EXTENSION MASTER GARDENER PROGRAM?

Mission: Sharing Knowledge and Empowering Communities

Extension Master Gardeners (EMG) are trained volunteer educators who work within their local communities to promote sound horticultural practices. The Extension Master Gardener program delivers the horticultural resources of Virginia's land-grant universities: Virginia Tech and Virginia State University.

Five Year Impact: 2017-2021
Northern Shenandoah Valley

136 Master Gardeners
25 Master Gardener Interns
9 Emeritus Master Gardeners

WHO DROVE
333,073 miles
AND MADE
1,086,999 educational contacts

CONTRIBUTING A TOTAL OF

74,076 volunteer and continuing education hours

VALUED AT

$2,053,902.60*

TO CLARKE, PAGE, FREDERICK, SHENANDOAH, AND WARREN COUNTIES

*Based on Independent Sector Value of Volunteer Hours by State by Year

Virginia Cooperative Extension
Virginia Tech • Virginia State University

Volunteer Monitoring of the Spotted Lanternfly in Virginia

A very serious pest of agricultural crops, forest products, home landscapes, and general business commerce, the spotted lanternfly (SLF), Lycorma delicatula, was detected in Frederick County, Virginia, on January 10, 2018. Initial infestation was determined to comprise about 1 square mile in Winchester City and Frederick County. At the end of 2021, the invasive insect species is now known to cover over 200 square miles across 12 counties and 2 cities. Spotted lanternfly is a fulgorid plant bug that has been expanding its range in Asia, and most recently North America. SLF feeds on more than 100 host plant species. Vineyards, orchards and the forest industry are at risk. Excessive feeding on the vascular system of grape vines, fruit trees, and hardwoods reduces yield, quality, and can ultimately lead to plant death. Spotted lanternfly can be detected by using traps on Tree of Heaven, Ailanthus altissima, and is easily identified, thus making it a good candidate for volunteer science detection. Modeled after the Pennsylvania efforts at the site of the original North American infestation, a successful monitoring program has been used in Virginia and led by the Virginia Tech Insect ID Lab along with Frederick County Agent Mark Sutphin for four years.

Extension Master Gardeners, Master Naturalists, Virginia Department of Forestry staff, park employees, and local and county government employees from throughout the state, but predominately in the northern regions of Virginia, expressed interest in surveying for this new pest. Over the past four years, trapping efforts have adjusted to minimize non-target bycatch and to protect rusty patched bumble bee, Bombus affinis, a protected species by EPA Endangered Species Act. Supplies were purchased for trapping SLF and an app was set for the volunteers to report both positive and negative findings. Due to COVID limitations in 2020 and 2021, online training and five recorded modules were developed and updated to ready willing volunteers (https://www.ento.vt.edu/idlab/SpottedLanternfly.html). Materials were distributed in-person at an outside meeting that was held on April 9, 2021 for 25 lead volunteers representing 19 various unit offices, EMG units, and Master Naturalist chapters.

First piloted by Northern Shenandoah Valley Extension Master Gardener volunteers, in 2021, 54 volunteers trapped 99 sites across 20 counties. 28 Master Naturalists from eight chapters reported 226 volunteer hours associated with this program. Public reports also came from the public via social media, Qualtrics, email, phone, and in-person to the Insect ID Lab and through VCE offices. In addition to transportation intercepts, breeding spotted lanternfly infestations have been found in the counties of Albemarle, Augusta, Carroll, Clarke, Frederick, Page, Prince William, Rockbridge, Rockingham, Shenandoah, Warren, and Wythe, as well as the cities of Winchester and Lynchburg. The remaining negative observations help serve to delimit the Virginia infestation.

Coordinating efforts with Virginia Department of Agriculture and Consumer Services Plant Industry Services, Spotted Lanternfly is delimited to the counties of Albemarle, Augusta, Carroll, Clarke, Frederick, Page, Prince William, Rockbridge, Rockingham, Shenandoah, Warren, and Wythe, as well as the cities of Winchester and Lynchburg. Volunteer monitoring reports along with public reports to the VCE-Frederick Unit and the Virginia Tech Insect ID Lab are entered into an Arch GIS Survey 123 Mapping Tool for VCE and VDACS observation. Since monitoring and reporting began in 2018, 4,349 entries have been made in this system. Trained individuals have searched for this invasive pest, using approved methods including banding and trapping. Counties where it has not been found by trapping can be listed on USDA maps as apparently free of Spotted Lanternfly. More eyes looking for Spotted Lanternfly mean early detection in new locations and spread is slowed by volunteer outreach informing the public about pathways of potential movement and human assisted spread. Eager and highly trained volunteers conducted surveys that provided valuable information for farmers and businesses that ship in and out of Virginia. The survey gives farmers an early warning system for the arrival of the spotted lanternfly in their area.

Meet the Staff Serving the Northern Shenandoah Valley

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** Serve the counties of Clarke, Frederick, Page, Shenandoah, and Warren*

***Serve the counties of Clarke, Culpeper, Fauquier, Frederick, Madison, Orange, Page, Rappahannock, Shenandoah, and Warren*

Others serving the Northern Shenandoah Valley but are housed in another district:

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