VIRGINIA TECH

Northern Shenandoah Valley

2019 Annual Report

Virginia Cooperative Extension

Clarke County

Frederick County

Page County

Shenandoah County

Warren County

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Engaging with

CLARKE COUNTY

Virginia Cooperative Extension
Virginia Tech • Virginia State University

STORIES OF IMPACT

Clarke County youth learn food preservation techniques by canning preserves.

Clarke County 4-H includes in-school enrichment programs and summer workshop opportunities for youth not involved in traditional 4-H club programming. Read for Health – a healthy food choice program – was delivered to first graders; an electricity curriculum was administered to third graders; several youth financial literacy simulations were offered through Real Money, Real World for eighth grade students; and the Reality Store financial simulation was provided to high school juniors through a collaboration between 4-H Youth Development and Family and Consumer Sciences Extension agents.

Summer programming for the county included sewing and food preservation workshops in partnership with Clarke County Parks and Recreation.

Through these program delivery methods, Clarke County 4-H reached more than 500 county youth in addition to the 200 youth actively involved in Clarke 4-H clubs.

AN AGENT OF POSITIVE CHANGE

"As a 4-H Extension agent, I have the unique opportunity to provide hands-on life skills and leadership to youth in Clarke County."

Claudia Lefeve
Extension Agent
4-H Youth Development

COMMUNITY VOICES

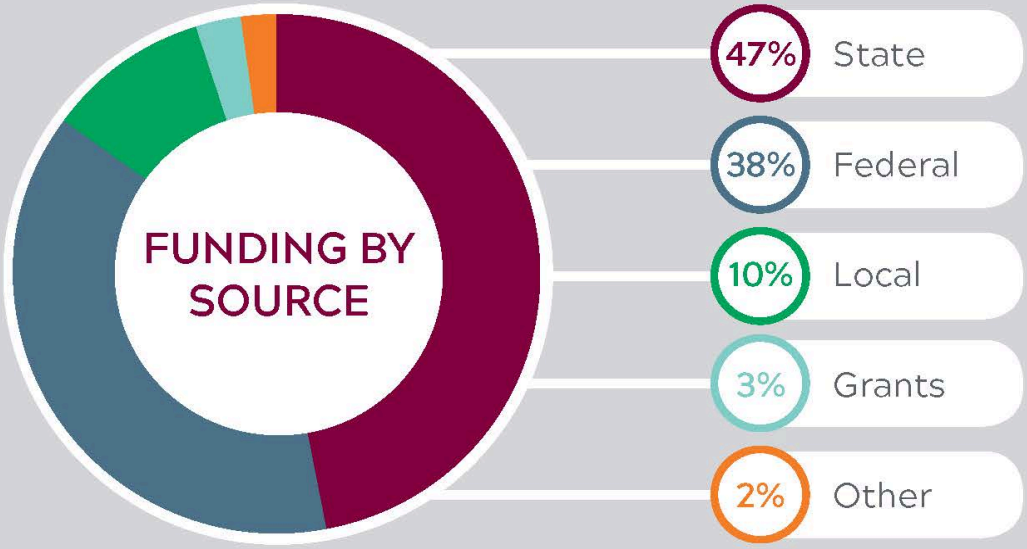
"4-H green runs through our veins. No other youth organization teaches dedication and perseverance, teamwork and accountability, leadership and citizenship, and sportsmanship and humility the way 4-H does. 4-H grows leaders who will undoubtedly make a difference, and we are blessed to be part of that here in Clarke County."

Jessica Vincent
4-H leader and Parent

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

CLARKE COUNTY
BY THE NUMBERS

TOTAL FUNDING: $541,863



OUTREACH BACKED BY RESEARCH

Virginia Agricultural Experiment Station researchers and specialists work in Blacksburg and at the state's 11 Agricultural Research and Extension Centers to create knowledge that benefits the commonwealth. They then share this knowledge with Virginia Cooperative Extension agents, who share this information with the citizens of Virginia to help individuals, businesses, and communities thrive.

$13.61

RETURN ON INVESTMENT FOR EVERY DOLLAR INVESTED BY THE COUNTY IN **CLARKE COUNTY**

$218,013

VALUE OF EXTENSION VOLUNTEER HOURS IN **CLARKE COUNTY**

Engaging with

FREDERICK COUNTY

Virginia Cooperative Extension
Virginia Tech • Virginia State University

STORIES OF IMPACT

An adult spotted lanternfly in Frederick County.

A new invasive insect, spotted lanternfly, was detected in Frederick County in January 2018. Native to Asia, the insect feeds on more than 70 plant species and is an agriculture pest, a forest pest, a nuisance in the home landscape, and a threat to commerce. In 2018, 50 local Master Gardeners were trained to identify the insect and 78 unique observations were made by eight detectors. While 10% were positive for spotted lanternfly, the remaining negative observations serve to delimit the infestation. The survey gives farmers an early warning system for the arrival of spotted lanternfly in their area and provides valuable information for farmers and businesses that ship in and out of Virginia. In 2019, the survey was replicated across Virginia by training 55 volunteers and agents through a train-the-trainer program. They have made more than 500 observations.

AN AGENT OF POSITIVE CHANGE

"This year we implemented the Read for Health nutrition and literacy program for first grade students in two of our local elementary schools. We have been successful in getting students to try foods they've never had before, and in a number of cases, changing how they perceive those foods."

Dyllan Chapins
Associate Extension Agent
4-H Youth Development

COMMUNITY VOICES

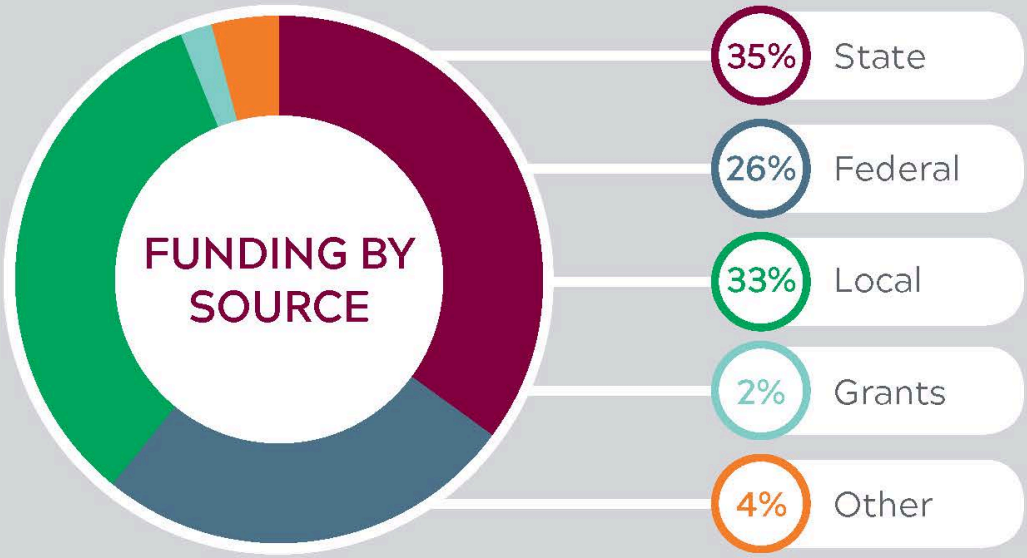
"I read labels, including the fine print. I eat more healthy foods. I am not drinking soda on a regular basis. I eat more whole grain products. I will be using MyPlate guidelines. I will check for trans fats."

Participant
Eat Smart, Move More

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

FREDERICK COUNTY
BY THE NUMBERS

TOTAL FUNDING: $785,615



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$3.96

RETURN ON INVESTMENT FOR EVERY DOLLAR INVESTED BY THE COUNTY IN **FREDERICK COUNTY**

$504,184

VALUE OF EXTENSION VOLUNTEER HOURS IN **FREDERICK COUNTY**

Engaging with

PAGE COUNTY

Virginia Cooperative Extension
Virginia Tech • Virginia State University

STORIES OF IMPACT

For generations, families have enrolled in 4-H and raised livestock as a way of life. Enrollment has continued to increase over the last several years, with 78 youth enrolling in 2019. Livestock projects are the vehicle Page County 4-H uses to teach youth life skills like perseverance, decision-making, and financial management.

Allison Jenkins' hard work and commitment paid off, and she won Goat Showmanship.

Senior 4-H'er Allison Jenkins wrote in her record book, "The 4-H program has had a major impact on my life throughout the past years. 4-H has helped me to be more responsible, helped me with time management, and allowed me to take on leadership roles through being a club officer. It has also given me the opportunity to help in my community and to make friends that I will keep for a lifetime."

AN AGENT OF POSITIVE CHANGE

"OrganWise Guys is a curriculum that uses puppets and stories to teach children how to keep their bodies healthy. Through partnerships with different Page County elementary schools, 228 pre-K through second graders have learned about the importance of eating fruits and vegetables, drinking water, and getting daily physical activity."

Molly Beardslee
Associate Extension Agent
Family and Consumer Sciences, SNAP-Ed

COMMUNITY VOICES

"I can already see that my fields are more lush and productive than they were prior to rotational grazing. I am becoming more knowledgeable about what types of grasses and weeds I have. I'm looking forward to continuing to rotate my herd and feed them more grass and less hay."

GRAZE 300
Virginia Cooperative Extension

Myranda Caudill
Page County farmer

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

PAGE COUNTY
BY THE NUMBERS

TOTAL FUNDING: $648,863

- 44% State
- 36% Federal
- 15% Local
- 2% Grants
- 2% Other

OUTREACH BACKED BY RESEARCH

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$7.62

RETURN ON INVESTMENT FOR EVERY DOLLAR INVESTED BY THE COUNTY IN **PAGE COUNTY**

$179,533

VALUE OF EXTENSION VOLUNTEER HOURS IN **PAGE COUNTY**

Engaging with

SHENANDOAH COUNTY

Virginia Cooperative Extension
Virginia Tech • Virginia State University

STORIES OF IMPACT

The Northern Valley has 150,000 acres of rented farmland. Most of this land is under short-term lease arrangements. Rented farms often become run-down because neither the farmer nor the landowner is willing to make investments to improve the land.

The Shenandoah County Sustainable Farm Demonstration sign.

The Shenandoah County Sustainable Farm Demonstration was initiated to show farmers and landowners how they can work together to revitalize a farm using practices that are environmentally sound and profitable for both farmer and landowner. Over the past eight years, this 151-acre farm demonstration site has been improved with new fences, barn repairs, grassed waterways, improved pastures, and more. Results have been shared with more than 1,000 landowners. Revised farm leases that stem from this program often include a multiyear lease with specific farm improvement goals, and they address landowner goals and enable farmers.

AN AGENT OF POSITIVE CHANGE

"Our Managing Your Money series addresses important financial skills, including understanding credit, establishing a spending and savings plan, banking, maintaining insurance, record-keeping, and getting out of debt. By teaching people to take control of their finances and live within their means, we are strengthening Shenandoah County families through financial education."

Karen Lynn Poff
Senior Extension Agent
Family and Consumer Sciences

COMMUNITY VOICES

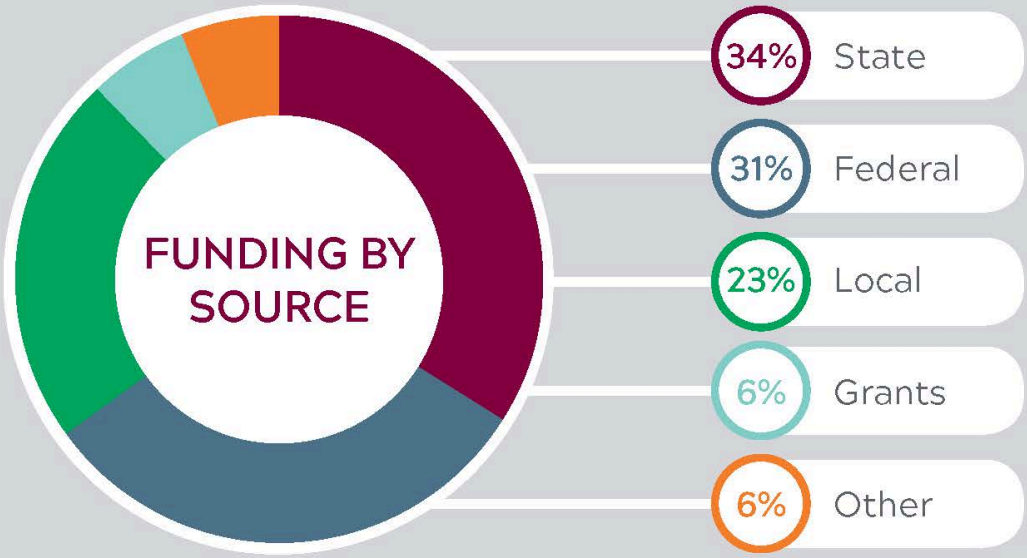
"My daughters have grown through 4-H. Officer roles taught them group meeting and leadership skills. Public speaking contests taught them to be composed in front of a group. Competing on judging teams taught them critical analysis skills, and camps afforded them opportunities to learn new skills and make new friends."

Barbara Derflinger
4-H All Star and volunteer

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

SHENANDOAH COUNTY
BY THE NUMBERS

TOTAL FUNDING: $678,165



OUTREACH BACKED BY RESEARCH

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$5.32

RETURN ON INVESTMENT FOR EVERY DOLLAR INVESTED BY THE COUNTY IN **SHENANDOAH COUNTY**

$318,887

VALUE OF EXTENSION VOLUNTEER HOURS IN **SHENANDOAH COUNTY**

Engaging with

WARREN COUNTY

Virginia Cooperative Extension
Virginia Tech • Virginia State University

STORIES OF IMPACT

Read for Health is a nutrition and literacy program conducted in partnership with school food services. In 2018, the Warren County Office offered the program at three elementary schools, reaching 379 students in preschool through second grade. Each month we read a nutrition-related book and provide students an opportunity to taste fresh fruits and vegetables, which reinforces important health messages.

Teachers have noticed that students are trying more fruits and vegetables during lunch. Other teachers have requested the program for their classes after hearing about its success. When we contacted the Child Nutrition Services coordinator about continuing the partnership, she said, "We would love to partner with you again and at all elementary schools! We, as well as the students and teachers, love this program."

Students eat a healthy snack.

AN AGENT OF POSITIVE CHANGE

"I worked with the Powers Family on farm-wide pasture management and how to create a site for an organic fruits and cut flower enterprise area."

Corey Childs
Extension Agent
Agriculture and
Natural Resources

COMMUNITY VOICES

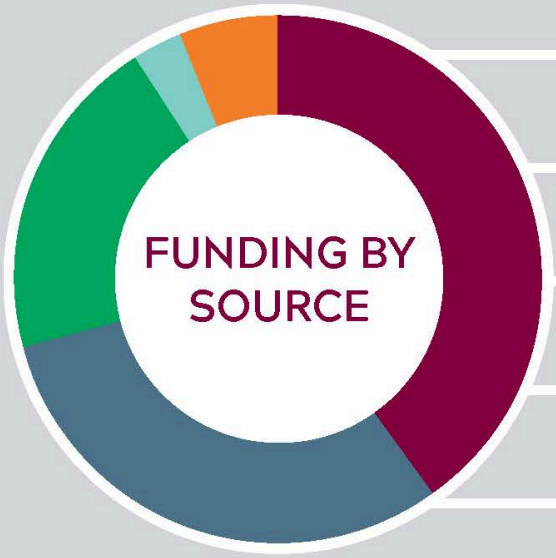
"I've taken the Managing Your Money course, and it's wonderfully informative. It helps you see it's not about how much income you have, but living within your means. After the classes are done, it's a very empowering feeling because you realize you can do this."

Debbie Young
Participant
Managing Your Money

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

WARREN COUNTY
BY THE NUMBERS

TOTAL FUNDING: $599,995



- 40% State
- 31% Federal
- 20% Local
- 3% Grants
- 6% Other

OUTREACH BACKED BY RESEARCH

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$5.12

RETURN ON INVESTMENT FOR EVERY DOLLAR INVESTED BY THE COUNTY IN **WARREN COUNTY**

$142,016

VALUE OF EXTENSION VOLUNTEER HOURS IN **WARREN COUNTY**

ALSON H. SMITH JR.
Agricultural Research and Extension Center

Sherif Sherif (center, in blue) at an in-orchard meeting in Washington, Virginia, showcases how the pollen tube-growth model can be used for crop load management under organic systems.

The AREC's grape pathology lab is developing a web-based decision support system for grape pest management called GrapeIPM.org. This mobile-ready system allows grape growers and other users to access this information from anywhere. A user can set up multiple vineyards and blocks to input site-specific information, including fungicide inventory, spray plan/records, disease observations, and more.

This system helps growers make decisions on their pesticide application by providing: guidance in pre-season fungicide application-planning based on the AREC's pesticide database; reminders of in-season actions; a personal fungicide inventory for planning; recordkeeping on fungicide application and other viticulture-related information; printouts for EPA reports and for Worker Protection Standard postings; and, daily weather and disease-risk information based on user input and nearby weather stations. In order to keep our objectives simple, we are currently focusing on disease management. Over the next several years, the system will be expanded to include other pesticide uses. The development of GrapeIPM.org has been supported by the Virginia Wine Board and the USDA NIFA Extension Implementation Program and was officially released to growers in 2018.

PARTNER WITH US

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

"We recently detected the samurai wasp in northern Virginia. The wasp is an effective biocontrol agent for the brown marmorated stink bug, an invasive agricultural pest. We hope to reduce stink bug populations by releasing samurai wasps widely in Virginia."

CHRIS BERGH
PROFESSOR OF ENTOMOLOGY

"Dr. Wolf and his team's technical contributions to the Virginia Vineyards Association meetings have been invaluable. The team also provided me with instructional materials to teach aspiring agricultural high-school students the basics of vineyard management. Some of those students are now working in local vineyards."

FRANCOISE SEILLIER-MOISEIWITSCH
PROPRIETOR
REVELATION VINEYARDS

ALSON H. SMITH JR. AREC AT A GLANCE

DISCIPLINES

- Entomology
- Pathology
- Pomology
- Viticulture

INNOVATIVE TECHNOLOGIES

- Membrane-based grapevine virus sampling kit
- Molecular tools to detect and identify major grape pathogens
- High Resolution Melting (HRM) analysis
- Marker Assisted Breeding (MAB) of apple
- CRISPR/Cas9-mediated gene editing of apple
- Weather-based prediction models for managing crop load in apple

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 serves Virginia's commercial fruit and value-added horticultural food crops industries through research, educational programs, development of sustainable production systems and technologies, and increased public knowledge of horticultural opportunities and benefits. Our central stakeholders are current and future fruit producers, allied agricultural industries, producer associations, students, and research and Extension colleagues.

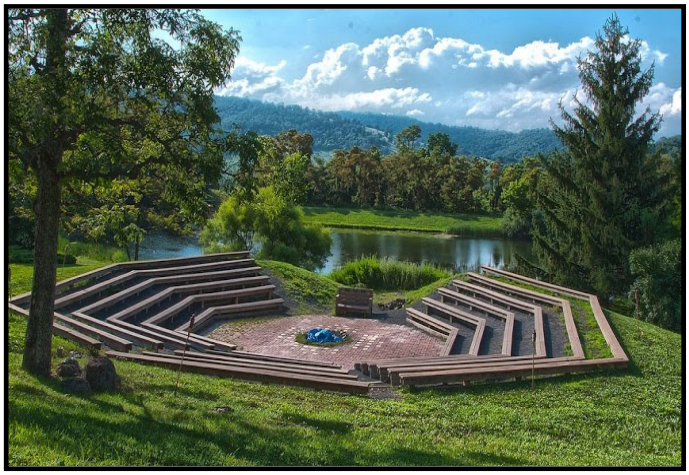
A COLLABORATIVE NETWORK

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
Virginia Tech • Virginia State University

VT/0419/AREC-263



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!

1. Mission
    1. 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 andconnect.
2. Vision
    1. 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.
3. Core Values
    1. Educate, Inspire, Connect

Program Impacts

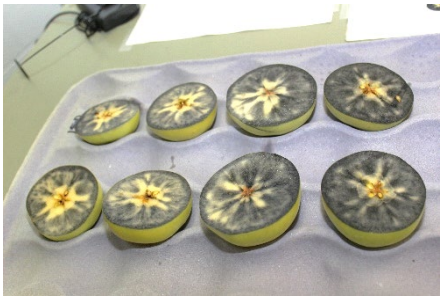
Title: 2019 Orchard Winter Fruit Schools

RELEVANCE: Fruit crops are a knowledge-intensive, high value set of crops. Virginia ranks 6th in the nation in apple production with a crop valued at over $68 million; and 20th in peach production (crop valued at $4.5 million). Cherries, pears, and plums are also produced in Virginia (2013 data). In the modern economic and extension climate, it is more difficult to visit individual farmers. The importance of a long-standing series of orchard fruit schools has therefore grown as a means of reaching most commercial tree fruit growers.

RESPONSE: Faculty involved in tree fruit industries in Blacksburg and the ARECs (Entomology, Plant Pathology, and Horticulture) participate in a week-long series of full day fruit schools in February. Technical issues are presented in a venue that encourages participation from fruit producers, both in the form of questions as well as contribution of ideas. VCE agents are central to the planning of these fruit schools, both in terms of logistics and organizing stakeholder input in program development.

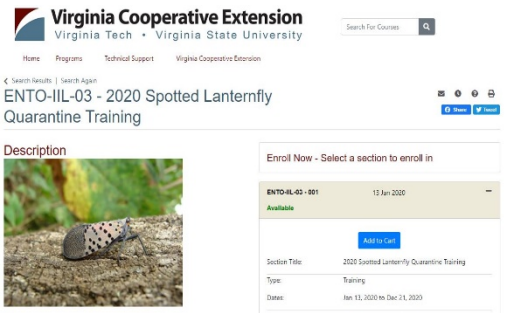
RESULTS: Growers that account for most of the tree fruit production acreage take part in these fruit schools. This venue is used to provide pesticide applicator recertification credits. With two-way information exchange, information to formulate future research and extension efforts is garnered by specialists. A recent survey (https://pubs.ext.vt.edu/AREC/AREC-135/AREC-135.html) of fruit producers and crop advisors indicated that:

* 95.1% of survey respondents have used information from fruit schools to help guide their application of pesticides.
* 98.0% of survey respondents reported that the fruit schools had been helpful or extremely helpful in improving their ability to manage pest problems. Several growers noted that they were now rotating insecticide classes to reduce resistance; or were using different pesticides, including mating disruption; or had lowered the rates used.
* Of the 74 participants who answered the question, "How has using the information from Fruit Schools affected the profitability of your operation (or the operations of the growers you consult with)?", 34 (45.9%) reported an increase, 39 (52.7%) reported no change, and only 1 (1.4%) reported a decrease in profitability. Thirteen growers estimated their yearly increase in profitability based on using the information from fruit schools. These estimates ranged from $300 to $200,000. The total of these 13 estimates was $600,600.

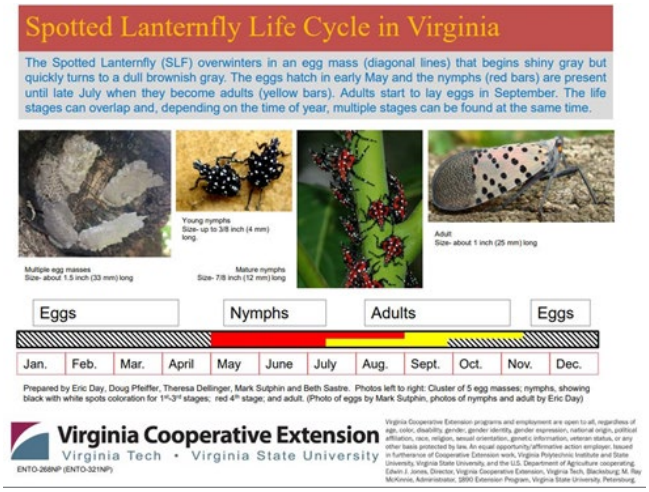


Title: 2019 On-line Training for Spotted Lanternfly Permit

RELEVANCE: A potentially very serious pest of grapes, peaches, hops, and a variety of other crops, the spotted lanternfly (SLF), Lycorma delicatula, was detected in Frederick County, Virginia, on January 10, 2018. By June of 2019, it had spread to 18 square miles, and the Virginia Department of Agriculture and Consumer Services (VDACS) issued a quarantine for infested counties. In order to streamline the process for farmers and shippers impacted by the quarantine, Virginia Cooperative Extension developed on-line training for individuals and companies to obtain "Training Credentials" that will allow them to apply for a permit from VDACS. This permit will allow them to do self-inspections of vehicles and cargo before it leaves the infested area and satisfies regulatory requirements for other states.



RESPONSE: The Spotted Lanternfly Training course is presented by Virginia Cooperative Extension and the Virginia Department of Agriculture and Consumer Services. After successfully completing the course, you can submit your training credential and a completed Spotted Lanternfly Permit Application to spottedlanternfly@vdacs.virginia.gov to receive your permit. The Virginia Department of Agriculture and Consumer Sciences (VDACS) has established a quarantine for Frederick County and the city of Winchester. A Spotted Lanternfly Permit, issued by VDACS, is now required to move regulated materials out of the quarantine area. Other states with quarantines for spotted lanternfly may also request this permit for materials and goods brought from the quarantine area in Virginia.



RESULTS: This course is provided in a series of four self-paced modules. Each module contains a video presentation and a required quiz at the end to test your knowledge of the presented material. A score of at least 80% (answer 4 out of 5 questions correct) is required to successfully complete a module. Module 1: Identifying the Spotted Lanternfly; Module 2: Recognizing Spotted Lanternfly Egg Masses; Module 3: Phenology and Host Range of Spotted Lanternfly in Virginia; Module 4: Regulatory Information Virginia Tech utilizes the Canvas learning management system for online courses.

Title: Building Capacity to Meet Virginia Produce Grower Needs for FSMA Water Testing Compliance

RELEVANCE: The Food and Drug Administration (FDA)'s Food Safety Modernization Act (FSMA) was signed into law on January 4, 2011, and consists of seven different rules. One of the rules, the Produce Safety Rule (PSR) was published in the United States Federal Register (citation 80 FR 74353) on November 27, 2015. The rule sets a series of science-based standards for the safe growing, harvesting, packing, and holding of produce grown for human consumption, and aims to be proactive rather than reactive by focusing on high-risk practices and identification of hazards within individual produce operations. There are six specific identified routes of potential microbial contamination, and subsequent minimum standards to minimize that potential contamination are detailed in the PSR. Those six areas in the PSR are agricultural water, biological soil amendments, sprouts, domesticated and wild animals, worker training and health and hygiene, and equipment, tools, and buildings. It is hypothesized that if a grower follows the PSR minimum farm-operation standards, they will significantly reduce the likelihood of a foodborne outbreak.

Under the PSR, agricultural production water is water used during covered activities, prior to harvest and post-harvest stages, that comes into direct contact with the harvestable portion of covered produce. The PSR standards for agricultural water are more stringent than current Good Agricultural Practices (GAP) audit requirements (e.g., USDA GHP/GAP, Harmonized GAP), and require growers to initially establish a Microbial Water Quality Profile (WQP) for each agricultural water source on-farm and conduct annual surveys for that water source in subsequent years. The WQP is based on the levels of generic *Escherichia coli* (*E. coli*) in water (high numbers may indicate high levels of contamination). Generic *E. coli* is often used as an indicator of fecal contamination. Testing frequencies for each water source are determined based on assumed contamination risk of the water source. For example, testing frequencies are higher for untreated surface water sources (assumed higher risk), than for untreated well water sources (assumed lower risk).

While FDA has extended compliance dates (2022 at earliest) for parts of the PSR dealing with agricultural water (except sprouts), the FDA is still recommending that growers start monitoring and testing agricultural production water sources, if not already doing so, and gain an understanding of the baseline water quality for their agricultural water sources. These water test results can be used to document water quality for GAP audits and/or future FSMA Produce Safety Rule inspections, and provide water quality trends for guiding management decisions.

To be poised for the compliance dates, a critical educational programming strategy should be in place in order to train trainers and growers in sampling procedures, sample handling requirements, and providing interpretive information about results, as well as building capacity with water testing laboratories to help them understand PSR agricultural water standards and acceptable analytical methods required.

RESPONSE: A strong team of Virginia Tech extension specialists secured USDA Specialty Crop Block Grant funding (2016-2019) to pilot a Virginia agricultural production water testing cost share program to build capacity within extension and to help participating Virginia produce growers to begin developing agricultural water profiles described by the Produce Safety Rule (PSR). Building on the success of the Virginia Household Water Quality Program, and food-safety education efforts in Virginia Cooperative Extension (VCE), 11 field extension agents, serving 19 counties spanning the four VCE districts, were recruited in early 2018. Water

sampling and handling guidelines and resources were developed to train the agents, who in turn recruited 47 growers and assisted them in the agricultural production water sampling process. Water sample collection occurred in 2018 and in 2019, over several time points (561 total samples collected), then all samples were analyzed in collaboration with four VDACS laboratories (Harrisonburg, Lynchburg, Warrenton, Wytheville).

For each grower, test results for each water source and time point were collated, tabulated, and developed into a unique individualized grower report (47 reports). These reports provided baseline water profiles and explanatory notes for understanding water quality in the context of current FSMA requirements. Additionally, all data were analyzed to provide a general idea of overall water quality for ground and surface waters in the northern, northwest, northeast central, southwest, and southeast regions of Virginia. The pilot program and knowledge gained by agents, growers, and laboratory staff were evaluated, using a combination of surveys and focus groups, to provide recommendations for future VCE PSR water quality compliance programming efforts.

RESULTS:

- All 11 VCE agent collaborators were certified trainers of the PSR and had some familiarity with agricultural production water standards and working in the area of food safety. Based on the surveys and focus groups, 100% of agent respondents increased their understanding that: water quality applied to crops is important; there are specific water testing requirements to comply with the PSR; and indicator organisms are used to indicate possible contamination in test water. Additionally, as a result of project involvement, all 11 agents felt more proficient to train and assist growers in: collecting a water sample from surface water and from ground water; awareness of laboratories where water can be tested in VA; and how to handle collected samples from collection to drop off. Agents offered invaluable practical feedback for our future work training agents, as well as ideas for streamlining collection sample kits and materials, handling issues encountered, and further resources that could be helpful.
- The 47 participant farms in the water testing pilot program saved a total of $5,610 in water testing costs as a result of cost share provided through the grant funds. In spite of time, scheduling conflicts, and sampling frequency being challenges, growers stated the greatest benefits to participating in the project were the cost share help, as well as the pre-packaged sample kits with instructions provided, agent coordination, and agents providing logistical help for getting samples to the laboratories (over $4,500 in grant support for agent travel and Fed-Ex-ing water samples). Agents stated their growers would likely not have tested their water if it wasn't for this program.
- All farms received a unique individualized grower report for the water sources sampled on their farm. Each report was uniquely tailored to crops being grown, how water was applied to crops, and included interpretation of the measured water values. For those growers having generic *E. coli* values above the PSR maximum level, the report discussed the importance of determining possible causes, taking corrective actions when warranted, re-testing, and continuing to monitor their water as per current FDA guidance. Growers indicated their participation in the pilot program increased their knowledge about the vital role agricultural water quality plays in on-farm food safety and the importance of regular testing to monitor water quality.
- The project team established a strong working relationship with the VDACS Office of Laboratory Services, which runs the four regional diagnostic facilities in the Commonwealth. As a direct result of this project, VDACS expanded its offering of a specific water analysis method accepted by the PSR at two additional laboratories (Warrenton and Wytheville). This development is critical since these two locations

represent areas where there are many produce growers who will be affected by the PSR water regulation. The program raised VDACS laboratory awareness of the impending PSR, and also helped to pinpoint areas where sampling, handling, and invoicing procedures can be improved, as well as materials that can further be developed to assist growers. This strengthened partnership is vital as we move forward and will provide input as we seek to partner with additional laboratories in the state.

- Resources developed for the project include: 1) "How to Sample Untreated Agricultural Production Water to Establish a Water Quality Profile" YouTube video, https://www.youtube.com/watch?v=Vvwj44MJyzc&t=1s; "Demystifying Agricultural Production Water Testing under the FSMA Produce Safety Rule" factsheet, https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/FST/fst-350/FST-350.pdf; 47 confidential reports were prepared for each participating farm and sampled water sources (A. Vallotton, Strawn, L. and Saunders, T. 2019); and "Virginia FSMA Produce Safety Rule Water Testing Pilot Program Summary" (L. Strawn, Vallotton, A., Saunders, T., and Boyer, R. in process).

Title: School Wellness Initiatives to Support Healthy Learners

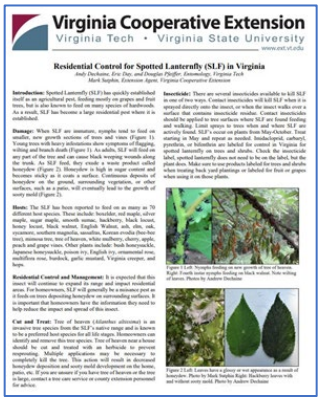
RELEVANCE: Through the Healthy Hunger-Free Kids Act of 2010, schools who participate in the USDA child nutrition program are required to expand their school wellness policies though nutrition education and physical activity goals, nutrition guidelines for foods consumed during the school day, ensure compliance with the United States Department of Agriculture National School Lunch Program guidelines, and establish implementation and evaluation for School Wellness Policies. Page County has a high rate of free and reduced-price meal eligibility at 55.7% district-wide higher than the state average of 41%, limited access to exercise opportunities at only 32% of residents having adequate access compared to the average for the state at 82%, and also a high rate of adult physical inactivity at 27% of adults over 20 not engaged in any physical activities above the 22% average for Virginia (County Health Rankings, 2019).

RESPONSE: I am a member of the Page County Wellness Committee which is the group that oversees and reviews the school health and safety policies and programs district-wide. The committee is made up of representatives from all schools, as well as parents, teachers, school nurses, administrators, and students.

RESULTS: Assisted the Wellness Committee with their triennial progress assessment and updating the district wellness policy. With the wellness committee, we are working on a professional development day for staff to learn how to integrate more physical activity into the school day even in subjects not related to health. This intervention has the potential to reach 4,103 Page County Public School students and their families.

TITLE: 2019 Citizen Science Detection of the Spotted Lanternfly

RELEVANCE: A potentially very serious pest of grapes, peaches, hops, and a variety of other crops, the spotted lanternfly (SLF), Lycorma delicatula, was detected in Frederick County, Virginia, on January 10, 2018. Initial infestation was determined to about 1 square mile. By late fall of 2018, it had spread to 18 square miles. Spotted lanternfly (SLF), Lycorma delicatula, is a fulgorid plant bug that has been expanding its range in Asia, and the Pennsylvania discovery was the first outside of that continent. SLF feeds on more than 70 host plant species. Vineyards, orchards, and the forest industry are at risk. Feeding damage on grape, apple, and peach occurs close to harvest and reduces yield and fruit quality. 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 citizen science detection. A successful program has been used for several years in Pennsylvania, site of the original North American infestation.


Virginia Cooperative Extension
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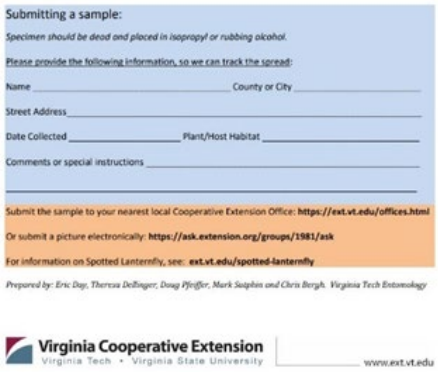
Residential Control for Spotted Lanternfly (SLF) in Virginia

RESPONSE: Master Gardeners, Master Naturists, park employees, and local and county government employees from throughout the state, but predominately in Northern Virginia, expressed interest in surveying for this new pest. Supplies were purchased for trapping SLF and an app was set for the volunteers to report both positive and negative findings. A meeting was held on March 22, 2019 for all volunteers.

2019 RESULTS: 632 unique observations were made by 41 detectors in 26 counties. Spotted lanternfly was only found in Frederick County and the City of Winchester. The remaining negative observations serve to delimit the Virginia infestation.

Spotted lanternfly is delimited to Frederick Co., City of Winchester and Clarke County. Trained individuals have searched for this invasive pest, using approved methods including banding and trapping. Counties where it was not been found by banding can be listed on USDA maps as apparently free of Spotted Lanternfly. More eyes looking for Spotted Lanternfly mean early detection in new locations. Spread is slowed by volunteer outreach about how this insect is moved about. 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.


Submitting a sample:

Specimen should be dead and placed in isopropyl or rubbing alcohol.

Please provide the following information, so we can track the spread:

Name _____ County or City _____

Street Address _____

Date Collected _____ Plant/Host Habitat _____

Comments or special instructions _____

Submit the sample to your nearest local Cooperative Extension Office: **https://ext.vt.edu/offices.html**

Or submit a picture electronically: **https://ask.extension.org/groups/1981/ask**

For information on Spotted Lanternfly, see: **ext.vt.edu/spotted-lanternfly**

Prepared by: Eric Day, Theresa DeBinger, Doug Pfeiffer, Mark Sutphin and Chris Bergh. Virginia Tech Entomology

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Title: 2019 Consumer Horticulture and Environmental Programming in the Northern Shenandoah Valley

RELEVANCE: For over 39 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.

RESPONSE: In 2019, 21 additional volunteers participated in the EMG training program in Winchester. Extension agents, specialists, and veteran EMGs all worked to provide quality training to this new cohort of volunteers. Following training EMGs began volunteering to employ their new training in educational projects across the area. With a 5-county area, we rotate training geographically each year to better accommodate all community members. To reach a diverse audience for the 2019 Front Royal training, we hand delivered fliers to minority faith-based organizations in addition to utilizing other traditional advertising methods.

In 2019, EMGs participated in four radio interviews and three interviews for newspaper articles. NSV EMGs conducted over 40 educational programs, projects, and events to extend best management practices and knowledge into the local communities.

EMGs partnered with the Lord Fairfax Soil and Water Conservation District (LFSWCD) to establish a new community Garden in Strasburg, VA. Along with some demonstration plots designed, installed, and maintained by EMGs, LFSWCD allotted $10,000 for VCE to offer urban agriculture educational programs. We advertised workshops and plots with fliers at low-income housing communities and at local businesses, through town mailings, via a Facebook page and with a garden newsletter.

RESULTS: 21 trainees participated in EMG trainings and joined forces with the 119 currently active EMGs, Emeritus, Interns, and Trainees in the NSV. In 2019, there were 140 volunteers working on behalf of VCE providing service and educational programming to 260,770 contacts. In the course of working with NSV citizens, EMGs reported 15,584 volunteer hours. The volunteer time equated to more than 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 $428,589 (based on an hourly rate for Virginia of $27.50 from the independent sector), a tremendous in-kind contribution and return on investment to the NSV.

TITLE: Virginia Family Nutrition Program Volunteer Training 2019

RELEVANCE: 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.

RESPONSE: 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 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 such as newsletters, recipes, and reinforcements like cookbooks.

RESULTS: In 2019, I have trained five volunteers in OrganWise Guys in Fauquier and Page County. I have trained 43 teachers in LEAP (Literacy, Eating, and Activity for Preschoolers) in Clarke, Fauquier, Frederick, Page, Rappahannock County, and Winchester City. I have trained two volunteers in Choose Health: Food, Fun, and Fitness in Fauquier County. Through the Teen Cuisine program at Page County Middle School in Spring 2019, the students in the Family Consumer Science class decreased their sugary beverage consumption by 23% and increased their physical activity by 11% to reach the recommended activity of 60 minutes per day.

TITLE: Shop Smart, Eat Smart 2019

RELEVANCE: In the Lord Fairfax Health District (which houses Page County), 73.37% of adults are overweight or obese and 36.2% are specifically categorized as obese (FeedVA, 2019). In Page, 11% of the total population of 23,731 (around 2,610 individuals and families) participates in SNAP (Supplemental Nutrition Assistance Program, formerly known as food stamps) (FeedVA, 2019). FNP has designed a 2-phase healthy food retail program called Shop Smart, Eat Smart (SSES) where SNAP-Ed Agents partner with food stores in low-income areas or stores with high SNAP redemption. Strategies I have implemented in Phase 1 include in-store marketing and consumer education and engagement. The goal of the program is to encourage purchases of healthy food among SNAP participants, thus increasing the demand for healthy foods. Opportunities in Phase 2 will support inventory changes that add healthy food options to SNAP-authorized retail stores. There are also plans for Phase 2 to include deepening the partnership to include other community partners as well.

RESPONSE: I have a standing Memorandum of Understanding with the Shoppers Value store in Luray to participate in SSES. The retailers have decided to implement in-store marketing including shelf labels with messages or nutrition information to highlight healthy foods and beverages, and direct education and customer engagement through food demonstrations with nutrition education and a youth scavenger hunt/grocery store tour.

RESULTS: I have conducted a monthly food demonstration at Shoppers Value during SNAP issuance (the 1st, 4th, and 7th day of the month) since February 2019. I average around 50 people per demonstration, and the program has the potential of reaching 11,562 people through the in-store marketing strategies of shelf talkers. In collaboration with Page County 4H, 10 4Hers participated in a grocery store tour/scavenger hunt as part of the Shop, Prep, Eat Day Camp. I plan to collaborate with the Adult Program Assistant serving Page to conduct an adult grocery store tour in 2020.

Title: Shenandoah County 4-H/FFA Livestock Ambassador Program

RELEVANCE: Shenandoah County is known throughout Virginia for having a strong 4-H/FFA Livestock Show and Sale Program, which is supported by the community. Approximately 130 exhibitors raise market and breeding beef, sheep, swine, and goats through this program, which culminates with the 4-H/FFA livestock shows and sale we run during the Shenandoah County Fair. Approximately 60 local volunteers provide leadership to this program, along with the 4-H Extension Agent and County FFA Advisors. As part of the 4-H/FFA Livestock program, we expect the youth exhibitors to help market their sale animals to local businesses and individuals. They are assigned potential buyers to visit. Over the past few years, we have had feedback from many buyers that they are either not being contacted by exhibitors, or the youth lack basic communication skills when they make contact. It is time for us to teach those basic communication skills to enable our youth to be successful now and to carry those skills into the future.

RESPONSE: A new program was developed this year – a county 4-H/FFA Livestock Ambassador Program. The program was optional and included both 4-H and FFA members. We received grants from the Shenandoah Community Foundation and the Virginia Association of Extension 4-H Agents which enabled us to offer nice incentives to entice the youth to participate. Participants received a pizza dinner, an embroidered golf shirt and a magnetic 4-H/FFA Livestock Ambassador nametag. Participants learned and practiced the following leadership and communication skills in the workshop: Shaking hands when appropriate and introducing themselves to someone they don't know, both in-person and over the phone, Making eye contact and showing interest while engaging in an appropriate conversation, Writing and being able to deliver an "elevator speech" promoting agriculture, and Writing a letter of invitation, a thank you letter and properly addressing an envelope.

RESULTS: Local business and education leaders volunteered to teach break-out sessions during this training. Twenty-three exhibitors attended and completed the 4-H/FFA Livestock Ambassador Program and received the incentive prizes. 100% of the evaluations said this program should be offered again next year. 73% thought the most important thing they learned was how to write and give an elevator speech. 58% of participants thought learning how to write introductory and thank you letters to buyers and sponsors was the most important thing they learned. A quarter of the participants mentioned the importance of making a good first impression, having a firm handshake, and making eye contact as being very important. Additional comments on the evaluations included, "The speakers were very nice" and "Thank you for the meeting!"

Title: Read for Health

RELEVANCE: The 2018 Frederick County Situation Analysis ranks the top ten issues affecting our community, with "Health Issues Related to Obesity, Chronic Disease, and Lack of Insurance" and "Availability of a Safe and Affordable Food Supply" ranking as third and tenth, respectively. The Read for Health program addresses both of these items through providing fresh fruits and vegetables to the students in the program free of charge. The cost of the foods is either covered by the 4-H Foundation Innovative Programming Award funds or through a partnership with the school working the cost into their budget for the year. The program uses language arts as a vehicle to teach nutrition and physical activity, and these health messages are reinforced through activities and fruit and vegetable tastings that are provided by your local school food services department. Students are asked to use positive or neutral adjectives to describe how they feel about texture, smell, and the shape of fruits and vegetables and are then encouraged to sample foods and describe the taste. Students are strongly encouraged to take at least one bite of the sample fruit or vegetable but can choose whether to eat it.

RESPONSE: I reached out to one school from the City of Winchester and one school from Frederick County to see if they were interested in bringing this program in to their classrooms. The response to the Read for Health program was overwhelmingly positive from the Principals, Cafeteria Managers, and Teachers. The target audience for the Read for Health program is first grade students. I met with my contacts at the schools to develop a monthly program date and time that would best fit with the busy school schedule as well as deciding who would purchase the fresh fruits and vegetables. The City of Winchester school was part of a grant to receive fresh fruits and vegetables every day for every grade level, so we decided to incorporate the provided snack with our program. The Frederick County school used our Innovative Programming Award money for the first program and decided to adjust their budget to accommodate the program each month. I spoke with the Food Service Coordinator for Winchester City Schools to determine the cost of the foods per child to serve as a point of reference when coordinating with other schools in the future. The cost of the program comes out to approximately one dollar per child for each monthly meeting which allows for a great deal of flexibility when considering costs.

RESULTS: The Read for Health program has had an increasingly positive impact on the first grade students in the schools with the program. Approximately half of the classrooms try a new food each time my 4-H Volunteer and I visit them. Each time we return, the students are excited to try the foods, and they remember the lessons about healthy foods and physical activity from our prior visit. Students stated that they helped their parents more at family dinners and tried new foods between our Read for Health visits.

During 2019, we had three schools participate in the Read for Health program:

- John Kerr Elementary School, 75 students
- Virginia Avenue Charlotte DeHart Elementary School, 82 students
- Redbud Run Elementary School, 109 students

Comments from Teachers:

- "A little boy had peeled and eaten a whole clementine during the program, and we were shocked! He doesn't try new foods at home or in the cafeteria, has the same exact lunch packed every day, and yet he tried a new fruit during the Read for Health program!"
- "Everyone was very pleased with the first program and looking forward to the next. Several teachers commented on how surprised they were with the numbers of students that had never tried the fruit before and surprised with how many were willing to try it and liked it."

Northern Shenandoah Valley Financial Education Program

2019 Annual Report

Virginia Cooperative Extension
Virginia Tech • Virginia State University

Highlights from 2019:

- *92% of Super Pantry graduates improved one or more financial behaviors*
- *2,085 youth learned how the choices they make now can affect their financial future.*
- *97% of 3rd graders learned to choose what they need with their money (rather than just what they want).*
- *99 adult financial management sessions reached 280 participants with education to improve their financial stability*

Inside this issue:

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Strengthening Personal Finances Through Education

Families who achieve financial stability are better able to meet their own housing, social welfare, and health care needs. They are also less likely to experience conflict over finances and thus better able to provide for their children's physical and emotional needs. Families who are able to make their payments on time, meet their tax obligations, and reduce their debt contribute to the overall well-being of the local economy. By strengthening personal finances through education, our programs support family self-sufficiency.

Super Pantry Lessons Strengthen Financial Skills

The Incentives Pictured Encourage Participants to Complete the Series

"Working on paying off debt a little at a time with a plan makes it possible!"

~Comment from a Super Pantry Participant

Between 2015 and 2019, more than 400 people learned about managing money through interactive lessons at our Super Pantry program.

On their follow-up surveys, participants said they had started doing things like writing financial goals, saving for emergencies, having a written spending and savings plan, opening a bank account, and paying bills on time.

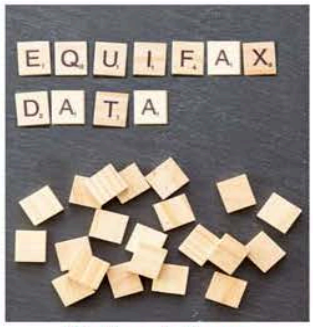
Overall, 92% of program graduates said they had changed or planned to change at least one financial behavior because of the program.

Perhaps even more important than the behavior change was the change in self-confidence. Participants felt better prepared to plan, set goals, save money and pay off debt. Some of the comments included:

- "[I learned] how to better plan for unexpected expenses, i.e. car repair or a heating bill surge;"
- "I learned the importance of planning and having goals;"
- "Have an emergency fund savings and it doesn't have to be high amounts;" and
- "I will watch my spending habits more closely and impulse buy as little as possible."

These responses show that those who graduate really feel empowered to improve their circumstances.

Equifax Breach Webinar Prompts Action



Webinar Informs Consumers

The Equifax data breach exposed all the components an identity thief needs to commit a variety of crimes against consumers. Through this webinar, 25 people explored a more comprehensive strategy to reduce the likelihood that they will be victims in the future.

After the program, the number of people who planned to take steps to protect themselves had increased:

- ***92%*** said they planned to investigate whether or not their e-mail address had been compromised in any breaches;
- ***88%*** had signed up or planned to sign up for either free or paid credit monitoring;
- ***72%*** had frozen or planned to freeze their credit.

One participant commented, "There are so many more ways for a breach to occur than I had realized!." When asked what they will do differently, one person wrote, "[I will] make a comprehensive financial security plan and implement it!"

Participants Recommend Managing Your Money Series

Participants not only benefit from our six-lesson Managing Your Money Series, they also highly recommend it to others:

"If you are questioning where is all my money going? Or where can I get more? This class is for you!!!"

"...after the classes are done, it's a very empowering feeling because you realize you can do this."

"Down to Earth straightforward presentations, allowing questions - no judgement."

"All is great - I bought a house and am still using what you taught me to this day!"

"I urge everyone to take this class. Think of it as an investment in your future."

Workplace Managing Your Money Series

3rd Graders Learn About Economics at Kids Marketplace

One-hundred thirty eight 3rd graders learned economic concepts through a hands-on Kids Marketplace activity.

Students discovered how to make good financial decisions, explored the difference between needs and wants, and considered the importance of math skills in everyday life.

The students received an occupation with their monthly salary. Then, they experienced the financial obligations that adults deal with every day, as they visited booths representing the categories in a typical family budget. After making choices on items such as housing, clothing, food, transportation, fun, and even pets, students had improved their understanding of important financial concepts.

- ***97%*** learned to choose what they need with their money (rather than just what they want).
- ***96%*** learned that life has surprises that can cost extra money;
- ***93%*** learned that jobs pay different amounts;
- ***87%*** learned how to give up one thing to choose another.

One student commented, "It was very fun and incredible." Another student stated, "I really had fun and you can learn at the same time."

Student Visits a Booth at Kids Marketplace

"I observed a lot of critical thinking which surprised me for 3rd graders."

~Comment from a Kids Marketplace Simulation Volunteer

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Frederick – (540) 665-5699
Page – (540) 778-5794
Shenandoah – (540) 459-6140,
Warren – (540) 635-4549.

E-mail List: tinyurl.com/nsvfepemails
facebook.com/nsvfinancialeducation
linkedin.com/in/karenlynnpoff
twitter.com/VCEKarenPoff
Website:
warren.ext.vt.edu/programs/nsvfep.html

We would like to thank the following sponsors who have each invested at least $650 each in support of our programs. Through their gifts we are able to help more local families achieve a brighter financial future:

Wells Fargo
Farmers & Merchants Bank
MidAtlantic Farm Credit
Raffa, P.C.
Shenandoah Community Foundation
First Bank

For more information about becoming a business sponsor, contact Karen Poff. If you personally share in our vision and would like to make a gift to ensure this work continues, use the "Give Now" link at our website or visit: https://tinyurl.com/givetonsvfinancialed. Gifts are made to our program through the Virginia Tech Foundation, Inc., a 501c3 organization. Every gift, big or small, has a lasting impact.

Thank You to Our Priceless Volunteers!

We could not accomplish this work without the enthusiasm and dedication of our volunteers. During 2019, 248 volunteers gave 2,294 hours of their time in support of our programs. Many of these volunteers assisted with our financial simulations, providing hands-on financial education to youth and adults or serving in support roles such as publicity and data entry.

"Volunteers are not paid -- not because they are worthless, but because they are priceless."

Others served in educational roles, teaching classes, working with small groups or individuals, and managing specific programs. These volunteers complete a 30-hour training program, as well as a thorough screening process. Those completing 50 hours of service receive the title of Master Financial Education Volunteer.

The following volunteers achieved ***Master Financial Education Volunteer*** status in 2019:

Kathy Chrisman
Tiffany Ford
Rebecca Myers
Cindi Sechler
Trish Snyder

Meet the Staff Serving the Northern Shenandoah Valley

Clarke County		**540/955-5164**
Claudia Lefeve	4-H Extension Agent; Unit Coordinator	clefeve@vt.edu
Lindsay Phillips	Support Staff	lphillips@vt.edu
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Warren County		**540/635-4549**
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Stacy Swain	4-H Educator	hstacy@vt.edu
Tammy Henry	Unit Administrative Assistant	tahenry@vt.edu

** 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:

Eric Bendfeldt	Housed in Northern District Office Extension Specialist, Farm-to-Table; Community Viability	540/432-6029 ebendfel@vt.edu
Adam Downing	Housed in Madison County Agriculture & Natural Resources Agent – Forestry	540/948-6881 adowning@vt.edu