2020 Annual Report of Accomplishments and Results

U.S. Virgin Islands
University of the Virgin Islands
Agricultural Experiment Station and Cooperative Extension Service
[insert name of Institution reporting in this document]
[insert name of Institution reporting in this document]

I. Report Overview

The NIFA reviewer will refer to the executive summary submitted in your Plan of Work. Use this space to provide updates to your state or institutions as needed.

1. Executive Summary (Optional)

During the third year of recovery since two devastating category 5 hurricanes in September 2017, the Agricultural Experiment Station is awaiting FEMA funding to repair storage sheds, greenhouses, aquaculture and animal facilities. This has hampered research during the year, but progress was made as best as possible under these conditions.

On June 20, 2020, the University of the Virgin Islands Board of Trustees unanimously approved the creation of a School of Agriculture. The new school combined UVI's Agricultural Experiment Station and Cooperative Extension Service with a new academic teaching unit that is expected to further expand and strengthen the University's Land-Grant mission. The new School of Agriculture expects to conduct the planned programs for all of the critical issues.

II. Merit and Scientific Peer Review Processes

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Process	Updates
1. The Merit Review Process	
2. The Scientific Peer Review Process	

III. Stakeholder Input

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Stakeholder Input Aspects	Updates
1. Actions taken to seek stakeholder input that encouraged their participation with a brief explanation	
2. Methods to identify individuals and groups and brief explanation.	
3. Methods for collecting stakeholder input and brief explanation.	
4. A Statement of how the input will be considered and brief explanation of what you learned from your stakeholders.	

IV. Planned Program Table of Contents

V. Planned Program Activities and Accomplishments

Please provide information for activities that represent the best work of your institution(s). See Section V of the Guidance for information on what to include in the qualitative outcomes or impact statements. Add additional rows to convey additional accomplishments. You may expand each row as needed.

No.	Title or Activity Description	Outcome/Impact Statement	Planned Program Name/No.
1.	Small Livestock Production	The "Buy Local, Eat Fresh" program continued to promote the consumption of locally produced animal products. The external parasite monitoring program continued for livestock farms to document parasite populations as an aid in tick control programs. Monitoring of test sites for forage evaluation in pastures during recovery from the devastation caused by Hurricanes Irma and Maria was limited due to state and University COVID-19 pandemic protocols. The program continued, as circumstances allowed due to the restoration of livestock housing following the hurricanes, to demonstrate to producers the health and financial advantages of proper housing for livestock. Limited methods of nutrition evaluation were demonstrated to producers so that they could determine the effects of nutrition on reproduction and performance. Information exchange between established and developing farmers continued on a limited basis through farm visits to see what could be done to improve livestock management and production The issues facing livestock farmers include: promotion and demonstration of using drought-resistant forage species with high nutritional content for pastured livestock; decreasing animal losses due to parasites and poor nutrition; increasing the sales and consumption of locally produced livestock products (such as meat and eggs); increasing the number of livestock herds/flocks using complete identification and recordkeeping practices; and increasing the number of pig farmers who are raising their livestock in recommended facilities. Farmers want more improved pastures with forages that have a high nutritional value and are drought resistant. Agriculture professionals (including extension staff), farmers, consumers and the general public are interested in healthier animals being raised locally to increase the quality and value of livestock and livestock products. Youth are interested in learning about livestock and the	Small Livestock Production #1

		local livestock industry. Farmers and the public care about recordkeeping and the proper identification of farm animals. The target audience was comprised of livestock producers, extension staff and other agriculture professionals, consumers, youth and the public. Technical advice and demonstrations were conducted for sheep and goat farmers on the proper husbandry practices, pasture improvement and management, control of internal and external pests/parasites, housing, and protection from stray dogs. Pig farmers were provided with technical information on best management practices for rearing pigs. The topics included proper selection of breeding stock, sanitation, feeding and housing. Poultry production continued as a popular enterprise in the Virgin Islands. Poultry producers were assisted in the proper husbandry of rearing chickens through good housing, selection of breeds and type of chickens (broilers/layers), feeding, killing and plucking, and simple processing. All of these activities helped to increase the knowledge of livestock producers about the best management practices to improve local livestock production. On-farm demonstration sites were maintained and monitored to observe and display the performance of selected improved grass varieties under farmer-managed conditions for pastured livestock. Four farmers established a total of eight acres of improved grass species (*Panicum Maximum* cv Mombaza). Farmers observed and received information about the performance of drought-resistant forages with high nutritional value. The selected varieties are being promoted to other farmers. Maintenance of pastures, breed selection and de-worming of animals were utilized as practices to reduce losses due to parasites, resulting in increased livestock production and sales. Farms were visited for general assessment of, and guidance on, management techniques including parasite monitoring and assessment. During these visits to 21 farms, counseling and other technical advice were provided. Applicable COVID-19 Pandemic protocols were followed at all times. The implementation of a "Buy Local' campaign continued encouraging consumers to support local farmers and the local economy by buying locally produced meats and other livestock products.	

		As farmers continue the process of rebuilding and restoring their facilities, including perimeter fencing, they are provided with technical advice and other assistance from extension staff and other partnering agencies. Farmers are slowly recovering and working diligently to get their farms fully functional again following the ravages of the hurricanes. The recovery from two category 5 hurricanes, in 2017, is still ongoing and continued to affect the outcomes of the planned programs. This was exacerbated by the COVID-19 Pandemic and the protocols that have followed; including the closure of the Territory. The local economy and agriculture industry was again adversely affected.	
2.	Computer Training and Technology	There is a large adult population, in the Virgin Islands, that do not possess basic computer, MS Excel, and PowerPoint skills. Some of these individuals need to acquire these computer skills in order to get employment to increase their household income and take advantage of new technology. In this fast-moving technological world, these skills are needed so that persons do not get left behind. The target audience is low-income adults residing in the Virgin Islands, who do not have adequate basic computer, MS Excel, PowerPoint, Smart Phone & Tablet, and Zoom skills. Some need these skills to become more marketable when seeking employment or to advance in their jobs, which would ultimately improve their household income. There are other individuals who desire improving their technological skills to accomplish their day-to-day tasks more effectively. Two seven-week Basic Computer Training Courses were conducted. These classes taught how to use Microsoft Windows, Microsoft Word, E-mail, and the World Wide Web. Three six-day workshops were conducted that focused on increasing participants' knowledge and usage of MS Excel. Two four-day workshops were conducted that focused on increasing participants' knowledge and usage of MS PowerPoint. One two-day workshop was conducted that focused on increasing participants' knowledge and usage of smart phones & tablets.	Computer Training and Technology #2

		94% of the 23 participants indicated that they acquired/increased their knowledge and/or usage of Microsoft Windows. 92% of the 30 participants indicated that they acquired/increased their knowledge and/or usage of Microsoft Word. 95% of the 23 participants indicated that they acquired/increased their knowledge and/or usage of E-mail. 13 participants competed the UVICES MS Excel workshop. 10 participants competed the UVI-CES MS PowerPoint workshop. 20 participants competed the UVI-CES Smart Phone & Tablet workshop 16 participants competed the UVI-CES Zoom & Tablet workshop Due to COVID-19, all workshops and classes were conducted virtually and a Zoom workshop was developed, as participants were in great need of Zoom training.	
3.	Sustainable Agriculture	While many producers are familiar with the principles and practices of sustainable agriculture, there is still a need for increased education among our clientele. Even though a steadily growing number of producers are knowledgeable about the economic value and benefits of value-added agricultural practices. Farmers have a continued need for training regarding the business, farm financial planning, and recordkeeping aspects of farming along with the Food Safety Modernization Act and other related topics. The program's target audience consisted of crop and livestock producers, outreach professionals from governmental and academic institutions, students, and young adults who aspire to be farmers. The primary audience was farmers who are typically socially disadvantaged, limited resource individuals who lack the necessary technical training, technological tools, and infrastructure for optimum farm production. Numerous educational initiatives, mostly virtual, were conducted throughout the territory to increase awareness and knowledge regarding sustainable agricultural principles and practices. Training activities were conducted that focused on recordkeeping, tax filing, and the cooperative business model. In addition to discussions during on-farm visits and the cooperative business training, and a farmers and fishermen's business conference, this need was addressed through demonstrations and presentations conducted at fairs and exhibitions before the COVID-19 pandemic.	Sustainable Agriculture #3

		During the reporting period, a total of 1,100 producers (including repeat contacts) increased their knowledge of sustainable agricultural principles and practices as a result of the training activities. Through trainings and presentations, 300 producers (including repeat contacts) increased their knowledge regarding value-added agricultural practices and 400 producer trainees increased their knowledge of farming as a business.	
4.	**Tropical Horticulture**	A continuously increasing number of residents sought to increase their knowledge and awareness of the benefits of urban gardening, especially since the advent of the COVID-19 pandemic. Clients continued to express a need for increased knowledge and awareness regarding the most efficient and energy efficient practices in crop and urban gardening production. An increased number of residents also expressed an interest in establishing home gardens to enhance their health and well-being in addition to reducing their food costs. Many residents and homeowners expressed an interest in increasing their knowledge regarding the art, science, and benefits of composting, and also increasing their knowledge and awareness regarding micro-irrigation technology as a time and water saving measure. The target audience consisted of homeowners, horticultural organizations, public housing residents, schoolteachers, students, senior citizens, policymakers, gardening groups, youth groups and employees of public agencies. The CES staff conducted workshops, demonstrations, and site visits and guest presentations for students (at their schools), homeowners, public housing communities, private residences, and community groups. Much information was also shared via electronic and social media platforms. • 12 educational classes were conducted to disseminate information regarding the benefits and basic principles of gardening. • 13 workshops and demonstrations were conducted to disseminate information regarding the benefits and principles of urban gardening. • Educational displays were delivered during 2 exhibits and fairs that featured the principles of urban gardening and composting.	Tropical Horticulture #4

		• In order to promote the benefits of urban gardening, announcements were issued via print and electronic media. • In order to promote the benefits of urban gardening, 8 garden plots were established. As a result of the activities conducted over 1000 participants increased their knowledge about the benefits and principles of urban gardening; at least 500 clients reported establishing or expanding urban garden projects, resulting in domestic cost savings for their purchase of food. An estimated 550 clients reported increased knowledge and practice of composting an estimated 150 clients implemented some level of micro-irrigation usage as a part of their urban gardening efforts. During the reporting period the primary external factor which hampered program implementation was the COVID-19 Pandemic. This development negatively impacted our agency's financial resources and physical engagement with clients. Consequently, many of the outreach activities were delivered virtually and through the use of social media.	
5.	**Urban Forestry** McIntire Stennis: Establishing trees using active and passive irrigation on arid sites #VI-MS-1601	We have been operating under Covid-19 restrictions since March, yet still collected data monthly. Our original hypothesis was that the trees would all do better regardless of species in the active irrigation or deep pipe treatment, where they were being watered every 2 weeks with 3.8 liters (a gallon of water). Followed by the trees planted in the basin treatment, which would accumulate and store rainwater in their basins. Finally, the trees in the control treatment, that is to say in a conventional manner, would do the worst. That did not what has been observed. The Spanish Cedars. (*Cedrela odorata*) performed the best, in the basin treatment, the Gre-Gres (*Bucida buceras*) trees performed best in the control, and the Lignum vitaes performed best in with the deep pipes. However, there is a noticeable gradient in soil properties (either chemical or physical and/or both) from west to east and where the trees grew the best was in the eastern third of the field. The Spanish Cedars subjected to the basin treatment are growing in this third, as are the Gre-Gres in the control treatment and the Lignum vitae in the Deep Pipe irrigation treatment. It also must be mentioned that most of the Lignum vitae look sickly. They do not like this soil or planting site. Physical and/or chemical properties like compaction or high pH of the calcareous soil could be	Urban Forestry #5

		the reason. The row these trees are planted in is next to a busy road with several hundred years of existence. Perhaps there was building or stone wall on site that hasn't existed for a long time. While digging the planting holes for this site a big block of coral used for construction of colonial era buildings was found lying on the surface of the soil. With both Spanish Cedar and Gre-Gre/Black Olive, I would have expected that to be the same case with Lignum vitae. But this species has not done well at all. Most of the 27 Lignum vitae are dead or dying. It does not like the calcareous soil at all, whether due to chemical, physical properties or both. A UVI student assisted the researcher with watering regimes and collecting monthly data. This student was able to attend the Southern Association of Agricultural Scientists in late January, 2020 and present a poster on research results.	
	Urban Forestry	Partnerships were strengthened and continued with public/private agencies, community leaders and groups to provide education, information, and technical advice to the general population. Our educational programs continued to focus on recovery from the destruction caused by the two 2017 Category 5 hurricanes. The primary focus was the revitalization and resurgence of the urban forests. Emphasis was placed on resilience in anticipation of future climate change events including tropical storms. The community is continually made more acutely aware of the value of trees/forests and what they provide to the local economy. As the surviving trees recover, the valuable contributions they make to the quality of life of residents continues to be evident. Recovery efforts are ongoing but the economic downturn has been exacerbated by the COVID-19 pandemic. Educating residents, with an emphasis on our young people, is strategic to ensuring that the next generation can be involved in the management of trees in urban and other forest communities. Artisans, homeowners, landowners, persons interested in earning additional income, policymakers, youth, educators, persons concerned about the environment and the general public should all care about the contributions made by urban and suburban forests. The target audience reached by the project consisted of landowners, natural resource professionals, extension professionals, urban foresters, forestry/arboriculture professionals, policymakers, utility employees/linemen, public works officials, other governmental agency personnel, other UVI personnel, NGO's, youth groups, forestry council members, agriculture advisory groups, landscapers, homeowners and residents.	Urban Forestry #5

		The COVID-19 pandemic negatively impacted the delivery of our planned programs. The shutdown of the U.S. Virgin Islands, including the University, followed by strict protocols affected our interactions with clients and other stakeholders. In collaboration with the St. George Village Botanical Garden, we continued the 'Trees for St. Croix Project' to educate the public on the importance of having trees in both the home and urban landscape. The project grew and distributed over 6,000 trees to interested persons upon request. Distribution of the trees began at the annual Agriculture and Food Fair of the U.S. Virgin Islands in February 2020. COVID-19 pandemic restrictions later affected the distribution but it continued by appointment only, through the end of the program on September 1, 2020. The sorting and chipping of hurricane debris generated by the storms, from fallen trees, continued. The wood waste was double-chipped and made available to be collected by the public for use as mulch and for composting. The territorial long-term recovery efforts are ongoing including the recovery of the urban forest. As this happens the valuable contributions that trees make to the tourism industry and the quality of life of residents continues to be evident. The community is constantly being made aware of the value of trees/forests and what they provide to the local economy. Woodworkers' Expos were held in both St. Thomas and St. John, during December 2019. These events had not been held for a few years and their return was welcomed. In addition to the woodworkers displaying and selling their items to attendees, the event included woodturning demonstrations and featured tours for schoolchildren. These Expos provided opportunities for the woodworkers to increase their income while exposing the community to products that can be made from trees and parts of trees that would have been normally discarded. The art of woodworking was introduced to young people making them more aware of the economic potential of recycling forest products. Educational activities were conducted which exposed the community to the utilization of products that are made from green waste, trees, and parts of trees generated from the ravages of the hurricanes. Other educational efforts focusing on schoolchildren were limited when the pandemic caused the closure of all public schools and the switch to remote/online learning. Fortunately, the Virgin Islands Agriculture and Food Fair occurred just before the COVID-19 pandemic so we were able to use the event, which thousands attended, to share information and increase the knowledge and awareness of our target audience.	

		All of our educational events, which were already scheduled from April to August 2020, had to be canceled due to the pandemic and the restrictions that followed. We were no longer able to have direct communications for our planned in-person programs, so we joined with some of our collaborating agencies to participate in their online programs. As a result, we were able to direct our target audience to be involved in a number of webinars. The main series covering a range of topics was 'Native Plant Production in Puerto Rico and the U.S. Virgin Islands' - weekly webinars during the months of August and September. Even though the pandemic severely limited in-person interactions with our target audience, we were able to, while following COVID-19 protocols, continue some of our projects related to tree planting. As a result, we were involved in at least six projects distributed across St. Croix, St. Thomas and St. John. Over 3,000 trees were planted. A Tree Care and Maintenance Workshop was held at the request of the We Grow Food, Inc. organization. CES staff delivered a very interactive two-hour workshop at the Estate Bordeaux Farmers' Market for their membership and interested members of the general community. As a result of the training event, 29 farmers and homeowners increased their knowledge and awareness of urban forestry. Some of the topics of presentation were proper tree selection, site selection and preparation, proper spacing, transplanting techniques, pest monitoring and control, and drip irrigation technology. At the conclusion of the workshop, the participants expressed their interest in continued training activities regarding tree care and maintenance. In partnership with local governmental agencies, we helped develop post-hurricane plans for restoring/replacing damaged/destroyed vegetation in VI coastal recreational areas. We responded to requests from clients such as landscapers, property owners, developers, architects, local and federal government agencies, and others in the community for technical information on native plants or plants in general for habitat protection and restorations, and to enhance the landscape. CES Staff provided technical assistance to territorial park managers and the UVI Master of Marine and Environmental Science Program (MMES) students and faculty about evaluating, restoring, and developing plans for, urban forest areas damaged by hurricanes in 2017 in the Magens Bay Territorial Park. Our staff worked with clients to inventory damaged plant communities and develop various restoration strategies. In similar efforts, CES staff provided technical assistance to the UVI Physical Plant personnel about trees on the St. Thomas campus.	

		Hundreds of private landowners and homeowners increased their knowledge about a variety of tree-related issues through technical assistance and advice during socially distanced onsite visits and other communications. Staff served as members of the Virgin Islands Urban and Community Forestry Council and the Virgin Islands Forest Stewardship Council. Assistance and technical advice were provided to Urban and Community Forestry projects. The COVID-19 pandemic caused the cancelation of all in-person programming scheduled after March 2020. For periods of time, the U.S. Virgin Islands including the University was shut down. Fortunately, we were able to collaborate with other agencies to participate in their online programs. When both the university and all public schools in the territory reopened, the format for instruction was remote/online only for the rest of the year. We will have to modify our outreach events to include more webinars and other similar formats if COVID-19 protocols remain in place during the next year.	
6.	Marketable Skills for Limited Resource Families, Youth and Communities	Over 30% of families in the territory reside at or below the poverty line. Cultivating interests, building skills and creating entrepreneurial opportunities for limited resource families, youth and communities can serve to improve family well-being in the challenging socioeconomic environment embracing the territory. Teaching basic sewing and clothing construction, and batik skills provides opportunities for creativity, skill development, creating a personal garment, and ultimately using newly developed skills to earn additional income and explore entrepreneurship. The target audience comprised of low-income, at-risk, underserved youth and adults interested in clothing construction and batiking. **Nothing to report** External Factors Key staff positions to support Marketable Skills programs are in the process of being filled.	Marketable Skills for Limited Resource Families, Youth and Communities #6
7.	Food Safety Education	The impact of foodborne diseases on health in the U.S. Virgin Islands is significant. The V.I. Department of Health estimates that each year roughly 1 in 10 Virgin Islands residents experience a foodborne illness. Likely, this number is much higher, however, many residents inaccurately self-diagnose symptoms and thus do not report these incidences. In addition, food is a primary form of cultural expression in the territory. Road-side food stands and food booths at major public events	Food Safety Education #7

		such as the annual carnivals and festivals, agriculture fairs and other holiday observances are potential vectors for foodborne illnesses. Providing food safety education to minimize the risk of foodborne illnesses and provide a safer food supply is paramount. In partnership with the V.I. Department of Health Division of Environmental Health, the UVI-CES 4-H/Family & Consumer Sciences Program provides food safety workshops, and requires all vendors to hold a valid Food Handler's Card and a Health Permit signifying compliance with local food safety rules and regulations. Food safety is also an integral component of the Expanded Food and Nutrition Education Program (EFNEP) targeting low-come, at-risk youth and adults. The target audience was comprised of low-income, at-risk, underserved youth and adults residing in public housing communities, or attending public schools, food vendors that take part in events sponsored by the Cooperative Extension Service, and the general public. What has been done? • "Eating Smart, Being Active," 14 adult EFNEP clients developed a food behavior checklist to follow when preparing food at home • "Show Me Nutrition," 211 youth EFNEP demonstrated and used proper hand washing techniques before each lesson. • Developed educational displays and handouts focused on food safety best practices at CES events and programs, 4-H activities, local fairs Result • 14 adults completed "Eating Smart, Being Active" • Partnered with WIC (Women, Infants and Children) Supplemental Nutrition Program, Frederiksted Health Center and 1 public housing community • 14 adults (100%) attended Closing Program and received Certificates of Completion • 100% indicated that put meat and dairy foods away within two hours • 11 of 14 responded that they thawed foods in the refrigerator • All clients shared that they wash their hands before preparing food • 65% (9) reported using a meat thermometer to measure doneness of meat. • 211 youth completed a six-week series of EFNEP lessons using "Show Me Nutrition" for their respective grade levels	

		• 100% demonstrated proper hand washing skills • Created and presented educational/promotional nutrition and food safety displays at four (4) CES sponsored events External Factors • The Covid-19 pandemic curtailed our ability to fully achieve program goals and objectives. In March, 2020, UVI began working from home and schools adjourned and eventually began learning from home. NARRATIVE SUMMARY A total of 225 low-income, at-risk, underserved youth and adults completed EFNEP programming either via an 8-week series of lessons using "Eating Smart, Being Active", or a 6-week, in-school program using "Show Me Nutrition." All (100%) learned about good nutrition, a healthy diet, the health benefits of increased physical activity, and food safety best practices; 100% reported adopting at least one of the practices learned. In addition to direct nutrition and food safety education taught as part of EFNEP, educational displays and demonstrations promoting nutrition and food safety best practices were presented at fairs, events and other venues.	
8.	A Healthy, Well-Nourished Population	• A healthy, well-nourished population positively impacts the quality of life, life expectancy, health care, economy, and environment of the territory. Awareness of and access to fresh, nutritious, locally grown produce contributes to a well-nourished population. The UVI Cooperative Extension Service, in partnership with local departments of Agriculture, Education, Health, Human Services, Housing Authority and other public and private agencies and programs, works to provide, relevant, research-based nutrition workshops, short courses and programs that help the public achieve a healthy lifestyle. The target audience was comprised of all Virgin Islands children, youth and families with special attention given to high-risk groups at-risk for diabetes, hypercholesterolemia, hypertension, and obesity. What has been done? • "Eating Smart, Being Active," engaged 14 adult EFNEP clientele in exploring nutrition, diet and health, while promoting increased physical activity	A Healthy, Well-Nourished Population #8

		• "Show Me Nutrition," led 211 youth EFNEP participants through six (6) nutrition lessons, including a hands on healthy snack demonstration, and physical activity • Promote healthy lifestyles at CES events and programs, 4-H activities, local fairs Result • 211 youth learned about basic nutrition and physical fitness • 100% adopted at least one healthy habit • 167 (80%) youth reported increasing their daily physical activity by 20 minutes each day • 14 adults successfully completed "Eating Smart, Being Active" and were awarded "Certificates of Completion" • 100% reported adopting three or more skills learned • Over 500 individuals received nutrition education materials • 300 individuals reported increased awareness of the relationship between food intake, physical activity, stress management and disease prevention. External Factors • The Covid-19 pandemic curtailed our ability to fully achieve program goals and objectives. In March, 2020, UVI began working from home and schools adjourned and eventually began learning from home. NARRATIVE SUMMARY With the goal of achieving a healthy, well-nourished Virgin Islands, the UVI Cooperative Extension Service partnered with a wide array public, private and parochial programs and agencies to share relevant, research-based information and best practices with the territory's children, youth and families. This collaborative approach resulted in over 1,000 children and adults learning more about how to lead a healthy lifestyle; 211 school-aged youth participated in the Expanded Food and Nutrition Education Program (EFNEP) with all youth adopting at least one healthy practice. Over 800 individuals received information and applied their knowledge to improve their own nutrition, diet and health.	

9.	4-H - Youth and Volunteer Development	• Providing exceptional, positive youth development programs, events and activities is contingent upon a highly trained team of staff, and youth and adult volunteers. Empowering volunteers through mentoring, training to lead vibrant 4-H clubs, after- and in-school 4-H programs, and special interest clubs is key to our success and the ability to engage Virgin Islands youth in meaningful, interest-motivated programs. The target audience was school-aged children and youth in the Virgin Islands; some programs specifically focus resources on low-income, at-risk, underserved youth. What has been done? • Secured external funding in the amount of $17,500 to support 4-H Healthy Habits programming • Supported five (5) 4-H clubs and special interest groups in communities, schools and after-school programs • Organized and implemented exceptional, positive youth development programs, events and activities • Fostered partnerships with government agencies, educational programs and non-profit organizations to bring additional resources, volunteers and training to enhance 4-H initiatives Results • Recruited 21 teen 4-H Health Ambassadors, far exceeding our target of 5; 3 staff • A total of 704 (108% of target) received at least 6 hours of direct healthy habits programming to include 3 key partners: • Partnered with key community groups and government agencies: • Caribbean Center for Boys & Girls – 5 teens, 82 youth, 8 staff • V.I. National Guard Child & Youth Programs – 5 teens, 43 youth, 1 staff, 4 volunteers • V.I. Department of Education - 5 teens, 196 4th graders, 9 teachers • Collaborated with two internal partners: • Expanded Food and Nutrition Education Program (EFNEP) – 2 teens, 211 students, 9 teachers • 4-H – 4 4-H Clubs, 69 youth and 7 adult volunteer leaders • 3 clubs adopted 4th H for Health Guidelines for their club	4-H - Youth and Volunteer Development #9

		• All 4-H clubs elect a Health Officer • CYFAR - $150,000 supported 28 at-risk youth were enrolled in the Children, Youth and Families at Risk (CYFAR) Program explored nutrition, gardening, and physical activity while receiving homework assistance in a safe, nurturing, afterschool program at Croixville Apartments. External Factors • The Covid-19 pandemic curtailed our ability to fully achieve program goals and objectives. In March, 2020, UVI began working from home and schools adjourned and eventually began learning from home. NARRATIVE SUMMARY A total of 45 adult and teen leaders engaged 801 youth enrolled in 5 4-H units and special interest programs. In addition, 28 at-risk youth were supported via the CYFAR program. Youth enrolled in 4-H clubs explored 4-H project work in small livestock, arts and crafts, culinary arts, environmental science, entrepreneurship, leadership, and citizenship and community service. Over 700 youth engaged in the 4-H Healthy Habits program received at least 6 hours of healthy living programming provided by 48 teens as teachers and health ambassadors. Teens, using their leadership skills, planned and implemented a Hunger Banquet leading 88 youth and their teachers through an experiential learning opportunity to explore hunger, poverty, and food access, equity and security.	
10.	Protecting the VI Natural Resources and Environment	Few places in the world show the vital connections between land and sea resources as clearly as within tropical island ecosystems, including the US Virgin Islands (VI). The VI economy depends on a strong tourism market supported by a healthy natural environment and scenic beauty. However, rapid development can fragment and threaten natural terrestrial resources, and the VI mountainous topographies increase the potential for storm water and septic runoff causing non-point source pollution that threatens coastal waters. VI residents, especially VI youth, need exposure to science-based environmental education and guidance in career development that incorporates environmental management and protection. Territorial Park managers, farmers, VI Dept. of Agriculture (DOA), local and federal government personnel, educators and students, environmental consultants, environmental NGOs, hotel managers, developers and private landowners with natural conservation areas, VI arborists, post-hurricane recovery/resiliency teams, architects, engineers, tourism-related businesses, custodial professionals and the general public need CES technical assistance related to native plants and environmental management practices to	Protecting the VI Natural Resources and Environment #10

		protect their properties and critical habitats. They also want recommendations to restore hurricane-damaged natural landscapes/ecosystems, develop resilience planning, prevent NPS pollution from defective septic systems or sediment-laden runoff that impacts human health and marine resources, negative effects caused by exposure to toxic household products, and/or create a culture of preparedness related to food security through sustainable agriculture and urban gardening landscape planning. Many seek research-based information to be able to make the best decisions regarding watershed protection. CES has established long-lasting, key relationships with Virgin Islands Territorial Park managers, the VI Dept. of Agriculture and farmers, local and federal government personnel, educators and students, environmental consultants, conservation NGOs, and partnering academic institutions. These partnerships remained active in FY 2020 through the post-hurricane recovery and COVID 19 phases when CES staff regularly responded to requests for technical assistance, especially related to recovery and resiliency planning efforts. During the "safer at home" time, many CES clients in chat groups ("Gardening on the Rock", etc.) who were interested in growing food at home, also sought information about native plants in their home landscapes. To a lesser degree than usual during this challenging period, tourism-based businesses, watershed residents, developers or private landowners with natural conservation areas, USVI arborists, architects, engineers, architects, pesticide application professionals and trainees, custodial workers, and the general public also were part of the target audience. CES continued to produce and/or update publications to help people better understand how to protect the home, septic and natural environments through the use of safer household products, as well as, more about native/traditional medicinal plants and their uses. CES worked with 20 National Healthy Home and local partners to produce HUD-funded publications: Safe and Heathy Recovery and Rebuilding: A Guide for Homes in the Territory of the U.S. Virgin Islands and Your Safe and Healthy Home for families in the U.S. Virgin Islands Home (see links in Other Information). Presentations about traditional medicinal plants/native plants were made to participants (15) in a "Garden to Table" training program at the CES Demo Garden on St. Thomas sponsored by the VI Government Retirement System (GERS) and to senior citizen volunteers (25) in the VI Foster Grandparent Program who assist teachers with special needs children in various child care agencies, institutions and schools.	

		A display was featured at the 33rd Annual STT-STJ Agriculture Fair (11/19) entitled "Creative Growing in the USVI" showing terracing and container gardening using recycled materials focusing on methods to help protect against soil erosion and help filter stormwater runoff. CES also partnered with the St. Thomas VI Dept. of Agriculture to produce graphic advertisements for the Agriculture Fair. CES helped host a Farmers and Fishers Business Conference with the VI Economic Development Agency and VI Department of Agriculture and the development of the conference booklet. On St. Thomas, staff continued to monitor the effectiveness of the use of hurricane wood waste debris from 2017 hurricanes Irma and Maria recycled into compost in municipal composting programs on St. Thomas and St. Croix with assistance from FEMA and the Army Corps of Engineers. CES staff responded to an estimated 400 requests for plant identifications and other information from the general public, farmers and UVI or VI governmental partners. These requests for plant identifications and related information increased during the pandemic when many VI residents were spending more time at home when. CES met the increasing demand to provide technical assistance related to native plant identification, erosion control, and other general issues related to the natural environment around the home during 17 site visits (23 participants). As part of this effort, CES contributed to start-up plans for environmentally sustainable community food garden landscapes and worked with the CES Demonstration Garden Manager to collect and cultivate VI traditional medicinal plants to display in the garden. Staff also continued to provide technical assistance to resource managers and educators through site visits and office/phone/email consultations and meetings. CES shared technical information with UVI Master of Marine and Environmental Science Program students/faculty (5) and Territorial Park managers in coastal areas (15) about: post-hurricane restoration of VI landscapes including: how to restore a storm-damaged forested park area for recreational and educational outreach efforts; trail placement; and identifications of native, invasive and rare plant species. At the public beach maintained by UVI near the St. Thomas campus, frequent direct and indirect contacts (estimated at more than 300) were made with stakeholders (volunteers, tourism businesses, vendors, boat operators, UVI maintenance crew, the general public, the VI Dept. of Planning and Natural Resources – Division of Environmental Protection) about coastal plants, landscape maintenance, watershed protection, monitoring of boaters in nearshore areas. Free processed hurricane wood waste debris mulch/compost continued to be used successfully for experiments in the CES Demo Gardens, home gardens and on farms by those who could pick up the	

		mulch at the main processing location. A lack of funding prevented the execution of a plan made by CES, federal and local partners to deliver mulch to 12 island-wide distribution sites for easier pick-up, and much of the mulch was utilized at island landfill locations. The pandemic caused CES and partners (VI Territorial Park managers and students and faculty in the UVI Master of Environmental Science Management Program) to postpone post-hurricane recovery plans made earlier in FY 2020 to restore and develop Territorial Park forested areas as educational attractions. However, after the start of the pandemic Magens Bay Territorial Park management continued to request CES technical assistance related to other park environmental issues and resiliency planning. Although the COVID 19 pandemic limited some of CES's typical outreach efforts, requests from farmers and other clients for plant identifications and technical recommendations were constant during the lock-down and stay-at-home periods. Many clients (an estimated 400) repeatedly made direct and indirect requests for information. Clients' questions were focused on their home natural environments and sustainable food production, farm environments, or church and school studies. Staff finished updating a 1997 CES publication about a selection of VI native/traditional medicinal plants, but the pandemic has slowed efforts to finalize the publication. However, in an effort to provide clients with more recent science-based information about commonly used and marketed traditional medicinal plants, print-outs of the updated information were shared with (8) farmers and educators who requested it. VI Government Retirement System "Garden to Table" program attendees who participated in a two-day CES training program requested future additional training sessions including information about native/traditional medicinal plants and their uses. The COVID 19 pandemic significantly affected program activity. Some program staff members were involved with efforts to establish the new UVI School of Agriculture. CES Publications: Safe and Healthy Recovery and Rebuilding: A Guide for Homes in the Territory of the U.S. Virgin Islands (USVI Disaster Recovery) https://missouri.app.box.com/s/tde8ow03r45g4n5hpes6m80ixny8sw40/file/775003842383 Your Safe and Healthy Home for Families in the U.S. Virgin Islands https://www.hud.gov/sites/dfiles/HH/documents/Safe_Healthy_Carribean_Home-USVI020221.pdf Traditional Medicinal Plants of St. Croix, St. Thomas and St. John http://brahmsonline.kew.org/Content/Projects/crlp/Resources/Botanical%20Resources.pdf https://www.stjohntradewinds.com/preserving-cultural-heritage-st-johns-plants/	

		http://www.daramonifah.com/2015/09/21/local-naturopath-and-researcher-dig-deeper-into-the-vi-chlorophyll-conversation/ Island Peak to Coral Reef https://www.librarything.com/work/2592878 Help Yourself to a Healthy Home Caribbean Style https://ssl.acesag.auburn.edu/pubs/docs/H/HE-0936/HE-0936-archive.pdf Gardening on the Rock https://stthomassource.com/content/2020/07/26/facebook-gardening-group-growing-strong-during-pandemic/ USVI Hazard Mitigation and Resilience Plan https://cgtc-usvi.com/hazard-mitigation-resilience-plan	
11.	Animal Science – Small Ruminants Hatch # VI-17-0001 and VI-Hatch-AnSci-2019	Nothing to report	
12.	Beef Cattle Production Hatch multistate # VI-MS1602 & VI-S1086-2019	Data was collected on hoof and udder scores of heifers as yearlings. Overall herd management was conducted but no data collection due to COVID restrictions.	
13.	Hatch: Evaluation of Integrated Tropical Cover Crop Systems # 01152019	Much of the reporting period was covered by the COVID-19 pandemic and little external field work, where such pastures are located, was possible during that time. However, four "cool season" tropical cover crops (berseem clover, kale, forage brassica, and sunn hemp) were evaluated on the basis of biomass production and weed development within mature stands. These cover crops were broadcast-sown into roto-tilled soil, alongside a parallel study of direct seeding these four crops into mowed, zero-till soil. Evaluations continued on the use of *Callisia repens*, a ground cover plant native to St. Croix, U.S. Virgin Islands, for potential as a ground cover crop in perennial carbohydrate production systems (*Musa* spp. and *Artocarpus altilis*), to be followed up with water- and nutrient-cycling studies in these production systems to estimate the effect of such ground cover on these agroecoligical processes. Callisia was evaluated on the basis of establishment under variable shade canopies and with differing moisture regimes, and by response to granular fertilizer applications. These initial evaluations indicate that this ground cover can be investigated in larger studies in plantain production later in this project.	Agronomy - Cover Crops #13

14.	Hatch: Use of the UVI Commercial Aquaponics System to improve food security in the USVI #VI-201012	Nothing to report	Aquaculture #14
15.	Hatch: Vegetable performance trials in the USVI #VI-201015 Multistate Hatch: Scaling microirrigation technologies to address the global water challenge #W3128 Hatch: Evaluation of Native *Hylocereus* sp and Pitaya Varieties #VI-201019	The covid-19 pandemic limited production and data were obtained during this year. A replicated variety trial was conducted on 15 varieties of Kale to determine the best varieties for production in the Virgin Islands. The 15 varieties included multiple leaf types, green curly, red curly and dinosaur. The kale was grown during late spring and summer. One variety, 'Red Russian' was highly prone and attractive to insects and had the worst production. Two of the green curly leaf type experienced chlorosis in the high pH calcareous soil. The dinosaur leaf types had the greatest and consistent production. A UVI student assisted with data collection on leaf growth. A summer student symposium was held virtually during which results on Kale leaf development were presented. Future plans to conduct a variety trial on 16 varieties of bell pepper that change from green to red and 14 varieties of Radish. Due to hurricane Maria in September 2017, the collection of native Pitaya was severely damaged. Recovery has been slow. During 2020, the Pitaya had grown back and developed flowers and fruit. Many young fruit aborted due to lack of crosspollination on these self-incompatible plants, even though planted in a plot with other Pitaya varieties. Lack of compatible pollination may have been due to synchronous flowering with other lines and cultivars. Excessive rains during August through September also influenced late production of this night blooming climbing cactus plant. Local farmers and backyard gardeners have stopped by to investigate the multiple trellis types being used to assist them to determine which model is most applicable to their situation.	Horticulture #15
16.	Multistate Hatch: Plant Genetic Resources Conservation and Utilization #S009AES	Sweetpotato research focused on spacing trials. Single row at either 8" or 12" and staggered double row at 12". The most efficient production per plant and 100' row was the single row 8" spacing. The 12" double row had the smaller, unmarketable tuberous roots. This may be due to the competition for water from the drip irrigation. Sorrel, *Hibiscus sabdariffa*, was grown as a spring crop to select for day neutral lines. Two f15 lines are ready for release as new varieties.	Biotechnology - Plant Breeding #16

		Six varieties of Jicama were grown in a replicated trial. Floral buds were removed on 2/3 of the trellised plants to evaluated the influence on tuberous root development. Harvest at 90 days, indicated marketable root while flowering plants took 180 days to obtain marketable tuberous roots. Future trials will investigate harvest at 60 days to determine when bulking of the tuberous roots is initiated from the floral disbudding treatment. Limited training opportunities due to covid-19. However, two UVI students conducted research on the production of sweetpotato with different spacing, and Jicama growth and influence of deflowering on tuberous root development. Poster presentations at the Southern Association of Agriculture Science conference in Louisville, KY in late January.2020. Posters focused on spacing/sweetpotato planting density and production and the influence of deflowering on Jicama tuberous root development.	