

U.S. Virgin Islands (University of the Virgin Islands) Annual Report - FY2021

Report Status: Approved as of 07/08/2022

Contributing Organizations

University of the Virgin Islands

Executive Summary

Overview

Critical Issue: 4-H - Positive Youth Development and Volunteerism

4-H Healthy Habits Program

The 4-H program supported 41 teen Health Ambassadors using a ‘teens as teachers’ model to engage 2,039 school-aged in learning how to lead a healthier lifestyle through the 4-H Healthy Habits Grant funded by the Walmart Foundation and offered through the National 4-H Council.

Key preliminary findings and data trends gleaned from 1,168 (94% return rate) 4-H Healthy Habits surveys completed indicate the following:

- 94% planned to eat more fresh fruits and vegetables
- 87.5% indicated they would drink fewer sugar-added drinks
- 89% reported they would drink more water
- 91% noted they would focus on being more physically active

A coordinator, two (2) instructors and three (3) UVI mentors supported this effort.

The V.I. Good Food Coalition, a community-based non-profit, provided 20 hours of training focused on food systems, food security and food sovereignty.

4-H Cultivating the Next Generation

Dialogue continues with the UVI SOA administration and teaching faculty to explore the role 4-H can and should play in developing a recruitment pipeline for students into the new certificates, associates, and bachelor degree programs for future career pathways and workforce development for agriculture industry in the territory.

The V.I. Department of Education remains a key partner in this effort to build capacity to include agriculture education curricula in the public schools.

Volunteer Leader Recruitment, Training, Development & Retention

Efforts continue in networking with over five (5) land grant institutions to obtain, review, revise and adapt 4-H volunteer recruitment, training and development material that the Virgin Islands can use to create the first V.I. 4-H Volunteer Leader guide.

Critical Issue: A Healthy, Well-Nourished Population

A total of 319 youth and 43 adults completed basic nutrition education through EFNEP training territory wide. This effort was facilitated through partnership with four public schools, two government agencies and seven summer camp programs.

One (1) administrator and two (2) paraprofessional staff attended a virtual National EFNEP Coordinators Conference to attain professional development in program delivery, improving nutrition IQ and identifying new partners and opportunities for new target audiences to include college students.

Three (3) 4-H clubs enrolling 51 youth, include nutrition education as part of their cooking and culinary arts project work.

The economic challenges of the U.S. Virgin Islands continued and were exacerbated by the COVID-19 pandemic but disaster assistance from FEMA and COVID-19 pandemic federal assistance helped to bolster the economy. Residents continued to be desirous of developing new marketable skills, enhancing their current skill levels and reducing their food bills by growing some of the food they consume. Food security continued to be a priority for most residents. We provided short courses, workshops, seminars, and demonstrations so that residents acquired new skills and improved their abilities for future employment, including self-employment. The programs planned and executed were designed to transform the lives of the Virgin Islanders by addressing workforce development, the unemployment rate and the rising cost of living. We co-sponsored major outreach and educational events including the VI Agriculture and Food Fair, Mango Melee and Tropical Fruit Festival and World Food Day observance. All of these events were held virtually or hybrid. The staff continued to make local media appearances on radio and television.

We achieved most of our projected goals and objectives by conducting experiential learning workshops, demonstrations, exhibits, short courses, lectures, and other outreach activities. Due to the pandemic, online program delivery was used frequently. Responses from our clientele indicated that the training activities positively impacted their lives and that of their families. Through these educational activities, our staff engaged a large percentage of Virgin Islanders.

Our programs promoted the revival of agriculture production and recommended strategies for improvements in the capacity to address food security issues by endeavoring to meet the growing demand for food grown locally. A significant development during FY 2021 was that Act 8404 was passed by the 33rd Legislature of the Virgin Islands and signed into law on December 11, 2020, by the Governor of the Virgin Islands. The Act mandated that the Commissioner of the Virgin Islands Department of Agriculture, and the President of the University of the Virgin Islands, work to develop a comprehensive Agricultural Plan for the Territory. Our staff contributed to the development of the Agricultural Plan by serving as members of committees and subcommittees along with being resource persons to the Agricultural Plan Taskforce. The Agricultural Plan was officially unveiled to the public on May 9, 2022.

The small livestock program educated farmers to develop their pastures and manage their flocks. Animal identification training continued for farmers to assist them in better management practices. Improved pasture sites were monitored and used as demonstrations for increasing animal productivity and the incomes of the livestock enterprises.

The Sustainable Agriculture Program focused on sustainable agricultural practices including composting, micro-irrigation, and soil conservation. These programs assisted producers to plan for and make decisions to adapt to changing environments and sustain economic vitality. The Urban Gardening Program informed the public about how to create gardens, proper garden management, and low-cost efficient technology practices and principles in gardening. The demonstration garden on St. Thomas continued to be an attraction for farmers, visitors, and students to be informed about good agricultural practices and to learn about local tropical fruits, culinary and medicinal herbs, and sustainable gardening practices. Some residents regularly informed us of the savings in their monthly household grocery bill as a result of producing vegetables in their home gardens. The Urban Forestry Program assisted local residents in the proper restoration and maintenance of trees on private property and in public places.

The Natural Resource and Environmental Management Program facilitated community groups and leaders to address resource conservation and management issues, pollution prevention and the establishment of an eco-tourism industry that incorporates the Virgin Islands' natural and cultural history. Training on healthy homes and the use of non-toxic household products were given to schools, corporate groups, government agencies and the general public. We continued to promote the implementation of best management practices to protect water quality at coastal public parks, hotels, and large sub-divisions with intensive coastal and offshore resources.

Programs continued to provide guidance on childhood obesity so that individuals and families can make informed, science-based decisions about their health and well-being. The programs promoted nutritious foods that are affordable and easily available. The nutrition program developed culturally-sensitive nutrition and health-related products and resources that were made available to professionals, students, and the general public. There have been positive indicators relative to improvement related to children and their families' awareness of the importance of healthy lifestyles in the prevention of childhood obesity. There were positive responses and involvement from children who acquired knowledge about healthy living and healthy lifestyles. Children gained knowledge on healthy eating and the importance of physical activity.

The Food Safety programs were intended to reduce the incidence of food-borne illnesses and provide a safer food supply by educating consumers and food safety professionals on developing food-processing techniques to improve safety. The food safety program focused its attention on the importance of safe handling practices in the preparation by food vendors as well as educating low-income families about basic nutrition and behavior change practices. The food safety program continued to evaluate the results of its activities, which

showed that the children who received information continued to improve on their knowledge gained.

The 4-H Youth and Volunteer Development program continued to recruit and develop volunteers to lead and establish 4-H clubs in the community. There are two community-based clubs and three school-based clubs established.

The Computer Training and Technology program continued to positively impact the Virgin Islands community. Class participants utilized the knowledge and skills gained from the computer literacy classes to help them acquire new skills for job placement and to advance in their present careers and assist in future employment and personal development.

During the third year of recovery since two devastating category 5 hurricanes in September 2017, the Agricultural Experiment Station (AES) 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.

The AES was able to fill two research faculty positions. These two positions were Program Leaders in Horticulture and Aquaculture and Agronomy. However, a new vacancy occurred with the retirement of the Animal Science Program Leader. Also, the university mandated COVID-19 vaccination policy resulted in the loss of five field staff as well as 30% decline in the student enrollment of the university. Research continued at a reduced rate due to staffing and plant and animal research can't be conducted remotely as a physical presence is required. Hatch projects were completed for vegetable variety trials, aquaponics and dragon fruit studies. Multistate heat stress in sheep. Three active Specialty Crops Block Grant projects involved Jicama, Winged bean and Wild Cinnamon research.

Critical Issue: Beef Cattle Production

The Senepol semen collection was not conducted because of issues with maintaining viability between the time samples were collected at the off-campus Beef Cattle Research Facility and transported to the lab on campus for evaluation and processing. It was hoped that the results on procedures from a complementary project evaluating sheep semen would lead to progress on the procedures for this project, but that did not turn out to be the case.

Data was collected on 23 spring calving Senepol cows at weaning in December 2020 and 40 d later in January 2021. A set of pregnant, primiparous heifers (n=9) were also evaluated at the same times. Udder and teat conformation was done using the Beef Improvement Federation udder scoring guidelines (BIF, 2016). Hoof scores were collected on 24 calves as yearlings in spring 2020 using the American Angus Association Foot Score Guidelines for claw set and hoof angle. The model evaluated Udder scores using GLM procedures with time (weaning and post-weaning). Hoof scores of calves were analyzed using GLM with sex and sire as in the model. Udder and teat scores did not change from weaning to 40 days post-weaning in Senepol cows indicating that udder and teat size did not change in this brief period after weaning. In pregnant heifers evaluated at the same times as the cows udder and teat scores did not change either. Cows had lower udder and teat scores than heifers. Hoof scores (claw set and foot angle) were not different between yearling bulls and heifers.

Critical Issue: Computer Training and Technology

The Computer and Technology Training Program (CTTP) conducted six Zoom/MS Teams workshops. As a result of the COVID-19 pandemic, videoconferencing software like Zoom and MS Teams became the standard for connecting with others and conducting online learning. The workshops taught fifty-four (54) participants how to effectively use Zoom and MS Teams so that they could participate in virtual trainings and meetings and not miss important information. CTTP also conducted two Beginning/Intermediate MS PowerPoint workshops, where ten (10) participants learned how to create effective presentations. Two (2) Beginning/Intermediate MS Excel workshops were conducted, and thirteen (13) participants learned how to create spreadsheets and utilize various Excel functions. Due to the COVID-19 pandemic, all CTTP workshops were conducted virtually. We had to quickly move from in-person to online.

Critical Issue: Food Safety Education

Recognizing the importance of foodways and cultural connections, a key community partner, Sejah Farm, provided ServSafe Food Handler training for seven (7) teen 4-H Health Ambassadors competing in their annual "Bush Cook, Chef Cook" culinary competition.

Critical Issue: Marketable Skills for Limited Resource Residents

Basic Sewing and Clothing Construction

In preparation for reinstating the popular Basic Sewing and Clothing Construction classes, twelve (12) sewing machines and three (3) sergers were serviced and repaired and are now ready to use.

The 4-H Sewing Curriculum, *Under Construction*, was utilized by at least one (1) summer program partner and has been identified as the foundation for future youth sewing initiatives.

Personal Finance and Money Management

In preparation for offering youth personal finance and money management, and entrepreneurship courses, at least two (2) curricula have been identified:

My Financial Future

ESI: Discovery the E-Scen

Critical Issue: Protecting the VI Natural Resources and Environment

The plant identification “Knowing What’s Growing” program activities continued during the pandemic. The popular service had a wide range of clients including farmers, federal and local governmental personnel, educators, students, businesses, and the public. Clients brought in plant specimens or sent images that were shared through emails, texts and chat groups. Contacts and identifications were also made during site visits. Plant identifications often fostered a better understanding of VI terrestrial resources and biodiversity issues. This was mostly a client-driven program activity. Clients typically responded very favorably to services provided and often returned for additional plant identifications.

Technical assistance about native and non-native plant identification and ecosystem conservation was provided to the VI Department of Agriculture (VIDA) Forest Stewardship Program (FSP) and Forest Legacy Program (FLP), and various NGOs. CES supported the VIDA’s efforts to conserve forested land for the VI Territorial Park system through the FLP and supplied information about plant identification and the composition of plant communities. CES assisted with VI hurricane recovery/preparedness and hazard mitigation planning efforts in cooperation with local and federal governmental partners. CES helped new owners of a St. Croix property identify plants in forested areas and develop an FSP Management Plan, also to receive benefits from the FSP that allowed them to showcase portions of their (8 acres +) property as an ecotourism destination featuring undisturbed native forests adjacent to a major watercourse.

CES staff joined a new VI Department of Planning and Natural Resources Division of Fish and Wildlife (FWS) Plant Restoration Working Group to assist FWS with developing botanical literature on habitat restoration, community planting initiatives, private landowner outreach, and research priorities for territorial and federal programs. The group reviewed existing FWS plant databases and produced various VI plant sub-lists focusing on conservation, heritage concerns, medicinal uses, and landscaping.

The VI Department of Public Works and VI Waste Management Agency requested and received a list of “VI Special Trees” with commercially valuable or useful wood to be included in the VI Green Debris Management Plan for Mitigating Disaster Recovery. This plan is required by FEMA to maintain eligibility for additional funding not related to disasters.

CES worked with the VI Department of Planning and Natural Resources (DPNR) contractors to provide information for a DPNR hazard mitigation plan and website related to the management of VI terrestrial plant communities in watersheds including targeted ecosystem protection for eight VI watersheds and helped introduce management and hazard mitigation plans for four watershed protection projects on St. Croix. These hazard mitigation efforts help to secure FEMA funding not related to disasters.

CES furthered its goals to promote an individual and/or community ethic that supports cultural/natural resources protection, the employment of best management practices in watersheds, and the restoration and educational showcasing of historic sites rich in cultural and natural resources. CES also made progress in its program objectives to help people increase their awareness, understanding, and appreciation of the islands’ unique natural/cultural resources and history, the human activities that impact critical resources (soil, water, native plant communities), and recommended management planning strategies to mitigate these impacts.

The challenges posed by the COVID-19 pandemic often caused a shift in outreach activities to more indirect outreach methods, presentations and/or consultation services through Zoom, MS Teams, social media outlets, phone and email interactions. CES program activities continued to provide technical assistance, guidance and/or information to those who are managing, regulating, conserving and/or maintaining areas with critically important natural/cultural resources. CES focused on maintaining long-standing or forming new associations with partners and others in the target audience to effectively inform decision-making and management planning when possible.

CES staff continued to conduct educational environmental tours focusing on VI natural & cultural history and terrestrial resources. Tour attendees indicated that they gained a better understanding of the island’s natural & cultural resources and the importance of managing them for future generations.

VIDA, educators, students and the public benefited from a Zoom presentation about Virgin Islands' topographies. UVI's Center for Excellence in Leadership and Learning and The St. Croix Taxi Association benefited from a training program and tour certification focused on VI history, natural resources, culture, points of interest and geography. The Nature Conservancy and VI DPNR benefited from CES's collaboration in town hall meetings about historical, cultural, and natural signage projects. The VI Trail Alliance and the National Park Service benefited from a joint project to establish nature, historic, & bike trails in various locations.

The public benefited from access to unique archival and ethnobotanical reference materials and collections available to the public in the CES office libraries and herbarium collections. CES staff assisted clients with their searches at the UVI Environmental Information Repository and the UVI Virgin Islands Caribbean Cultural Center.

CES continued to participate with VI DNPR, federal agencies, and NGOs about strategies supporting the adoption of a VI Comprehensive Land and Water use Plan. Meanwhile, land with forests, cultural resources, and coastal areas are being acquired through the VIDA Forest Stewardship, and Forest Legacy programs, the St. Croix Trust for Public Land, and the St. John Land Conservancy. These land acquisitions rich in natural and cultural resources will become part of the VI Comprehensive Land and Water Plan when it is enacted into law.

The pandemic limited VI Home*A*Syst in-person events but some outreach activities continued online. Home*A*Syst information was disseminated through publication distribution, media outreach, personal contact, telephone and by email. The program gained broader public participation through Zoom and Facebook presentations. These presentations allowed CES to make progress with achieving the main program objectives: i) to motivate persons to read labels more critically; ii) to use more environmentally friendly products; and iii) to modify practices that have been culturally accepted as the norm.

The program promoted practices and information from the National USDA Home*A*Syst Program, tailored to provide information that relates specifically to the Caribbean people and environment. Outreach activities were presented from a local perspective, providing all segments of the public with updated information. Due to their local relatability and authenticity, the activities attracted and benefited the target audience including custodial workers, students, VI government workers, church congregations, and the public; especially about the safety of products used to sanitize homes and public areas. The audience also benefited from the availability of locally produced extension publications, such as 'Help Yourself to a Healthy Caribbean Home' and the 'Recipes for a Non-Toxic Household' featuring examples of alternative products and photographs/illustrations of practices showing VI people, landmarks, and cultural practices. New Caribbean versions of online publications by the National Healthy Homes Program were edited to make the information relevant to the Virgin Islands.

Critical Issue: Sustainable Agriculture

Farming Using the Integrated Pest Management Approach

The Integrated Pest Management (IPM) approach was used to improve crop profitability, stabilize crop yields, decrease the severity of pest infestations, reduce pest resistance from overuse of pesticides, and increase consumer confidence in the production, safety and quality of food and value-added products.

The Farming using the IPM Approach Program includes accurate problem identification, plant health, prevention measures, and best management practices (cultural, physical, mechanical, biological, and reduced-risk chemicals), all with a focus on environmental health and practical, economical solutions to pest management. Vegetable and herb crops, ornamental shrubs, fruit, and urban trees represent the major agriculture commodities in the USVI. We trained farmers on all causes of poor plant health including plant diseases, insects, mites, weeds, deer, iguanas, and abiotic factors, etc. The program assisted with outreach education, IPM guideline development, and increasing the knowledge and skills of the farmers.

Through knowledge gained by the UVI CES – Plant Diagnostic Center, farmers were taught to produce safe, good quality produce and reduce unnecessary pesticide applications, thereby reducing human health risks, decreasing environmental risks, and striving to help farmers produce safe and good quality produce.

The greatest number of IPM-related concerns were homopteran pests (aphids, scales, mealybugs, whiteflies), thrips, mites, leaf miners, lepidopteran leaf-feeders (webworms, leaf-folders, leaf-tiers, armyworms), etc.; along with root-knot nematodes, stink bugs and diseases (root rots, bacterial spot, blossom end rot, soil-borne diseases). Training, presentations, and farm visits were conducted, emphasizing preventative measures and safe pesticide materials. The importance of predators and parasite recognition and monitoring, appropriate choice and application practices were some of the main ingredients of the discussions.

We targeted growers of two families of specialty crops vegetables on the islands: 1. Cucurbitaceae (cucumber, squash, watermelon, pumpkin, zucchini); and 2. Solanaceae (emphasizing tomato, pepper, and eggplant). Key pests included whiteflies, aphids, thrips, armyworms, leaf folders, mites, leaf miners, and fungal and bacterial diseases. We photographed pests and beneficial organisms, and designed an IPM door hanger, soft-bodied pest bulletin and 4"x 5" pocket guide for each of the selected vegetable families. The guide includes pictures, identification, life cycle, monitoring, and management of these pests, and recognizing beneficial organisms.

To measure program impact and adoption of the VI IPM approach (prevention measures, conserve the land and resources, and adoption of BMPs) which highlights Pollinator Health, Specialty Crops, Farmers, Backyard Garden and Community Gardens, a unique evaluation plan has been designed and baseline data is being recorded for each client.

The iPM Score Card (*innovative Pest Management*) for the *Stairway to Sustainability and Land Stewardship* was created and a pre-assessment tool will be implemented in July 2022. The iPM Score Card will help measure a user's baseline level of current IPM practices used, introduce them to other practices, and will ultimately rate adopted practices and tools to increase production, minimize pests, reduce pesticides, honor the environment, and protect resources.

The IPM program objectives were to:

- Educate IPM users about practical, available, economical, and *innovative* management practices for the region to help fight pests, withstand adverse environmental conditions, and strengthen plant health
- Introduce support references for each IPM tactic to build user confidence
- Familiarize users about the significance of seasonal IPM elements in advancing a user forward with IPM thinking
- Identify research, extension and other needs and priorities by comprehensively assessing IPM practices.
- Compare current IPM practices and measure change in adoption over time, along with the reduction in pesticide use to gain a means to quantify program impacts.

Sustainable Agriculture: During the reporting period producers and other interested persons increased their knowledge and awareness of the theory, principles and practices of sustainable agriculture. Regarding environmental stewardship, CES clients developed an appreciation for the principles and practices of organic farming and the related ecological benefits to the Virgin Islands. Based on the responses received from the trainees, there was increased adoption of sustainable agricultural practices that conserve natural resources. In addition, the CES clientele benefitted from an overview of the Certified Naturally Grown (CNG) Program, including its principles, practices, and application procedure. The CNG Program was introduced as a less costly alternative to the Certified Organic Program for our limited resource producers.

Another training event that was well received by producers focused on the local sourcing, proper management, and usage of materials of biological origin. All the training participants were committed to applying the principles and practices shared during the presentation.

The target audience increased their awareness of the cooperative business model. Specifically, clients developed an appreciation for the history, principles, values, structure, and application of the business model as a tool for sustainable agricultural development in the Virgin Islands. Producers and other interested clients were also taught the steps involved in the development of a cooperative business through which they also gained insight into group dynamics, conflict resolution, and organizational development.

One of the critical aspects of the cooperative business training was the inclusion of problem-solving group activities which were integral parts of each teaching module. Consequently, the trainees were able to develop problem-solving skills by applying the theoretical information that was disseminated.

During the reporting period, clients also learned about recordkeeping practices to improve their business operations, apply for pertinent assistance programs, and prepare tax filing documents.

The success of CES's educational programs and activities was evidenced by the increased demand for training activities and educational materials by our clientele. Another tangible measure of this progress and success was the formation of a core group of trainees that are actively working toward the development of a cooperative business enterprise.

Cover crop as an integral component of crop/livestock production has immediate economic value to the farmer that come from incorporating ruminant livestock into the crop production system. In addition, the integration of improved leguminous crops and forage systems with beef cattle or sheep and goat can reduce fertilizer needs and minimizes cost by contributing N to cash crops.

Pressure compensating drip lines were compared with conventional drip irrigation lines. Water pressure varies and we hoped to see if pressure compensating drip lines provided a more uniform distribution of irrigation water and fertigation in bell pepper production. Both systems provided ideal growing conditions in the field with 4.5 months of harvests. The location was an open wind-swept field. We found no significant difference in total pepper production between the two drip irrigation systems.

Critical Issue: Tropical Horticulture

Garden Smart in Urban Areas using the Integrated Pest Management (IPM) Approach

The goal of the urban IPM gardening program is to address the threats to food security, health issues, and well-being faced by adults and children in the community. Objectives included: i) to advice and support to gardeners in planning and developing small-scale gardens across varying seasonal tropical conditions; ii) to implement IPM urban education about safe & innovative gardening practices including pollinator health; and ways to minimize risks and hazards; iii) to increase self-esteem and confidence as well as encourage youth to become involved; iv) to reduce the impact of food 'deserts' in areas on the island, and allow residents greater access to nutritious food by growing their own produce, a necessity to live a healthier life; and v) to establish a baseline of current IPM practices and those tools that can be adopted over time.

We participated in a Backyard Gardening Initiative, in collaboration with the VI Department of Agriculture. We identified (and continue to identify) common, seasonal flowering plants (non-competitive weeds, trees, vines, ornamentals, and annual/biennial/perennial flowers) found at local community and backyard gardens, small nursery production, and on farms that support pollinator health. A template was developed to photograph, and collect information on best production practices, and local issues that affect plant health (soil, fertilizer, water, space and light needs, and other factors). We are creating land designs for incorporating flowering plants into cropping systems on farms, community gardens, and on a farm's adjacent boundaries and the wildland; and focusing on other resources that support pollinators throughout the year; along with garden design ideas to assist users. A series of **four pollinator posters** and **flowering plant booklets** is underway. A draft of a new **Extension Bulletin** on pollinator plants has been started and will complement the posters primarily for backyard gardeners (and farmers).

To measure program impact and adoption of the VI IPM approach (prevention measures, conserve the land and resources, and adoption of BMPs) highlighting Pollinator Health, Backyard Garden and Community Gardens, a unique evaluation plan has been designed and baseline data will be recorded on each client.

The same IPM principles used for farmers can be applied at a smaller scale to island gardeners. Smart gardening uses eco-friendly IPM principles and helps minimize pests, strives to keep plants healthier, and offers a mix of prevention measures and pest tools that lead to increased food production and less frustration from pest problems. Evaluation of a gardener's use of pest management tools and pesticide use at the onset of the program and with time the adoption of new tools is a great way to measure the impact of the program, hence favoring pollinators and natural enemies of pests and producing quality food. Gardening the IPM way highlights nutrition, health, and safety to the environment. Outcomes help improve opportunities for children to gain interest, better their attitude toward eating more fruits and vegetables, increase nutrition, and enhance the quality and meaningfulness of learning from growing your own vegetables and fruits in a safe manner. In addition, a UVI Master Gardener program has been drafted and is being reviewed for implementation in the near future.

Urban Gardening: During the reporting period, the target audience throughout the territory increased its knowledge, appreciation, and application of skills regarding urban gardening. In addition to the long-standing interest of residents regarding urban gardening, the reality of the COVID-19 Pandemic resulted in a noticeable increase in the demand for information and educational programs from homeowners regarding food production for the household.

Consequently, residents enthusiastically embraced the outreach training opportunities offered by the Cooperative Extension Service (CES). The training formats included interactive presentations, demonstrations, exhibits, and virtual engagements which provided theoretical information and practical application. The participants increased their level of knowledge about crop and variety selection, site selection and preparation, pest management, as well as container and box gardening practices. In addition, the trainees acquired useful knowledge and skills concerning the general maintenance and management of urban gardens. During our outreach efforts, the trainees were also provided with an introductory presentation about value-added processing strategies that can benefit homeowners.

Following a successful training with a group of active and retired employees of the local government, the staff of the Cooperative Extension Service developed a support mechanism for the trainees through a social media platform. Subsequent to the initial training, the experienced CES professionals have continued to respond to inquiries and provide technical advice to the group via WhatsApp. As a result of this ongoing engagement, the CES team is able to monitor the obvious increase in urban gardening activities and the progress of the participants. In addition to the increase in gardening efforts, the online group activity provides insight into the cost-saving benefits experienced by homeowners as well as the value-added uses of their garden produce.

As a result of CES's training activities, progress was realized among the target audience as indicated by their increased knowledge regarding various aspects of urban gardening, the establishment of new gardens as well as the enhancement of previously existing sites. The success of CES's efforts is also validated by the ongoing, active engagements among the trainees as well as between the trainees and the CES staff through social media. These interactions have resulted in a genuine Train-the-Trainer initiative. This positive result is indeed one of the desired outcomes of the Cooperative Extension Service.

Two new varieties of Sorrel, *Hibiscus sabdariffa*, were released in April. They were named 'Midnite' and 'Festival'. Seeds of these new Sorrel varieties were distributed throughout the USVI. These varieties incorporated traits from African lines obtained from the USDA Germplasm repository in Griffin GA with Caribbean varieties. The new varieties have very dark calyxes and day-neutral flowering characteristics to expand the normal growing and production cycle.

Vegetable variety trials were completed for Bell Pepper, Radish and Kohlrabi. The red globe radishes were productive through May without bolting. Radish harvest was possible from 21-30 days making it a fast crop for farmers to adapt. It also is versatile as the greens can be cooked as well as the global root eaten fresh. Adequate water is required to reduce spiciness.

Critical Issue: Small Livestock Production

Multiparous St. Croix White (STX; n = 7) and Dorper x STX (DRPX; n = 7) ewes lambing in October and raising single lambs weaned at 120 d were used. Synchronized breeding began at 96 d postpartum. Vaginal temperature (VT) was measured at 10-min intervals for 96 h at 38 and 66 d post-partum (PP1, PP2) and at 2 days after mating (PM) using data loggers. Daily minimum, maximum and range of VT were determined for ewes within PP1, PP2 and PB. Data were analyzed using GLM procedures of SAS with breed, day and time (PP1, PP2, PM) in the model. There was no difference in maximum VT between breed or time ($P > 0.10$). There was no breed difference ($P > 0.10$) in range of VT, but the range of VT was lower ($P < 0.0001$) at PM compared to PP1 and PP2 (1.22 ± 0.04 vs 1.77 ± 0.04 vs 1.63 ± 0.04 °C, respectively).

The sheep semen collection method was changed from using intravaginal collection devices to using artificial vaginas (AV). The rams were trained to service the AV and semen samples were collected. Limited analysis was done on the semen samples because the survival rate from the time of collection at the field site and transport to the lab for analysis was very poor. Several pieces of equipment were purchased to try and maintain the temperature of the semen samples immediately post-collection with no success.

Technical advice were provided 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. Monitoring of established pastured grasses also continued by observing the condition of the forage grasses in pastures that were under severe overgrazing and overstocking. Pig farmers were provided with technical information on best management practices for rearing pigs. The topics included the 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 types of chickens (broilers/layers), feeding, slaughtering and plucking, and simple processing. Three new poultry farmers were trained in poultry husbandry, two are doing layer production and the other doing broilers. They all have started their enterprises with fifty birds.

Our staff assisted the Veterinary Unit of the VI Department of Agriculture in the monitoring of six livestock farms, that are in the designated or quarantined area for the presence of the Tropical Bont Tick (*Amblyomma variegatum*), which was previously thought to be eradicated. The Tropical Bont Tick has a huge effect on the livestock industry through the transmission of heartwater disease and its association with dermatophilosis.

Critical Issue: Urban Forestry

In FY 2021, the CES Urban Forestry Education (UFE) program made progress in providing technical assistance that supported the management decisions of policymakers, VI and federal government agency personnel, natural resource managers, educators, farmers, property owners and residents. Urban forestry issues often are centered on competing demands for the rapidly changing and limited terrestrial land spaces of the U.S. Virgin Islands (VI) that can make management decisions, concerning urban trees/forests difficult. Urban forestry management issues have been further complicated by destructive hurricanes, the senescence of many urban trees, and a general limited technical knowledge about trees. The UFE target audience often faced challenging situations related to the management of trees/forest resources that required CES technical advice and assistance.

UFE program activities focused on addressing requests from the community for technical information about urban forestry trees situated in public and private landscapes. This information exchange often implicitly furthered the program goal to make the community aware of the value of trees/forests, what they provide to the local economy and the valuable contributions they make to the quality of life of residents. Major activities also supported the program objectives: i) to educate public and private agencies, policymakers, community organizations, and individuals about the preservation and conservation of urban/street trees, ii) to increase the knowledge of the target audiences about the management of urban/suburban tree populations in our communities, and iii) to increase the awareness of our young people to be involved in the management of trees in urban and other forest communities.

VI government personnel benefited from UFE activities through technical assistance related to the protection and/or restoration of urban forest landscapes. Staff responded to requests from the VI Waste Management Agency (WMA), Department of Public Works (DPW) and the Department of Planning and Natural Resources Division of Fish & Wildlife Service (DPNR-FWS) for ongoing technical assistance and information about VI urban trees in public areas. CES staff members attended monthly meetings (started 4/2021) hosted by DPNR-FWS. The working group included five local plant experts (two from CES) representing St. Croix, St. Thomas and St. John who were recruited to help DPNR-FWS update and develop plant lists that will be compiled and merged into a "VI Plant Restoration Master List". Additional sub-lists include plants suitable for landscaping and protection in VI urban forests. When completed, this information will be available online for VI governmental personnel, those applying for building permits and the public. In another project, DPW and WMA requested that CES provide a list of "VI Special Trees" with commercially valuable or useful wood to be included in the departments' combined VI Debris Management Plan developed to mitigate disaster recovery. FEMA requires this plan to maintain eligibility to receive ongoing FEMA funding not related to disasters. As requested, CES created a list of VI Special VI Trees with photos to assist in identification. CES also attended periodic WMA-DPW phone or MS Teams staff meetings to discuss urban tree issues including the management of trees on VI government land under the stewardship of the VI Department of Agriculture (VIDA).

CES also benefited other targeted audiences by participating in planning meetings focusing on urban forestry issues with VI NGOs, VIDA's Forest Stewardship Program and Forest Legacy Program advisory groups, and UVI personnel (UVI partner departments). In FY 2021, the COVID 19 pandemic reduced but did not eliminate, UFE in-person direct contact outreach activities. CES was able to help clients by sharing information about native, commercially valuable and heritage trees during tours/site visits with youth groups, property owners, and farmers. At the same time, CES was able to draw attention to the importance of maintaining well-managed and biologically diverse urban forest landscapes through proper pruning and integrated pest management techniques.

UFE activities strengthened partnerships that benefited public/private agencies, community leaders and the broader public. CES provided education, information about urban trees/forests, and technical advice to various agencies that will benefit the broader public through the creation of VI hazard mitigation plans including management strategies for urban forests with an emphasis on resilience, in anticipation of future climate change events. Contacts and continued partnerships with NGO's and VI government agencies will lead to future opportunities for training. For the next reporting period, plans already are being developed by the DPNR-FWS "Plant Restoration Working Group" to encourage the propagation and sales of locally sourced native trees by nurseries and/or farmers. This group is concerned that local native plants can and are being threatened genetically by the importation of natives from Florida and elsewhere. Pests coming into the Territory with imported plants have already damaged local native species. For example, the important native sea grape tree (*Coccoloba uvifera*) has been severely impacted by this problem on St. John. CES also has been contacted by educators at VI schools and NGOs who want to plant trees at VI schools and elsewhere based on various initiatives such as the Earth Change (<https://earthchange.org/>) and Tiny Forest Academy (<https://www.tinyforestacademy.ca/>). The project anticipates that educators and NGOs will require technical assistance from CES and its partners with how to select and propagate locally sourced native trees and/or how to safely import native plants that will not threaten local native plants.

Merit and Scientific Peer Review Processes

Updates

No change to the merit and peer review process.

Stakeholder Input

Actions to seek stakeholder input that encouraged their participation with a brief explanation

No change. Spring semester meeting of the School of Agriculture Advisory Board Members provides input to the academic, research, and extension programs.

Methods to identify individuals and groups and brief explanation

No changes to identifying individuals and groups.

Methods for collecting stakeholder input and brief explanation

No change in collecting stakeholder input.

A statement of how the input will be considered and brief explanation of what you learned from your stakeholders

Brief Explanation

AES uses stakeholder input to assist in designing research projects that benefit the farmers and local agricultural community. This input may result in on-farm trials to assist in resolving the local issue. Stakeholders' input was considered in the budget allocation of programs. Stakeholders' involvement helped CES in setting its priorities and addressing emerging issues in the community. During the year, CES continued its collaboration with the Virgin Islands Departments of Agriculture, Health, Labor, Education, Human Services, the Virgin Islands Housing Authority, and the Office of the Governor in addressing at-risk youth issues in the community. Stakeholders' input was also used in redirecting extension programs.

Brief Explanation

CES stakeholders assisted the Extension Service in focusing on the needs of the community and also helped in focusing CES' educational programs and activities on emerging issues. They enhanced CES programs and increased the number of participation in CES programs.

AES scientists have been very responsive to our stakeholders needs and they have expressed how much they value the information we produce that they are able to incorporate into their agricultural agenda and operations.

Highlighted Results by Project or Program

Critical Issue

4-H - Positive Youth Development and Volunteerism

4-H – Cultivating the Next Generation

Project Director

SARAH DAHL-SMITH

Organization

University of the Virgin Islands

Accession Number

7000445



4-H - Cultivating the Next Generation

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

- The UVI School of Agriculture academic teaching program was recently developed, has seated faculty and is recruiting students interested in studying agriculture as a major.
- 4-H is a proven model to engage youth and spark continued interest in agriculture serving as pathway to cultivate the next generation of agricultural scientists and leaders
- In-school, garden-based learning provides the platform for youth, teachers, adult volunteers, kitchen staff, and the larger school community to explore agriculture across curricula and in the larger community context
- Agriculture in the Classroom is legislated to be taught in all V.I. public schools

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In February 2021, the University of the Virgin Islands was one of four land grant institutions invited to participate in the 4-H Pathways Institute. UVI was represented by the Dean and Director of the School of Agriculture, the Associate Director - Cooperative Extension Service and the Assistant Director - 4-H/Family & Consumer Science Program. 4-H Pathways is a core component of 4-H's goal to reach 10 million youth by 2025 by ensuring that the program reflects the diversity of the nation and embraces the kind of organizational change and innovation that will be required to succeed.

An overarching theme and outcome of this was the need to retool and redesign 4-H to become the pipeline for developing young agriculture enthusiasts, leaders and learners interested in pursuing an agriculture career pathways through the UVI School of Agriculture. Although not solely focused specifically on agriculture, in-school agriculture clubs would also provide 4-H Project work with that reflect the national 4-H mission mandates: Healthy Living, STEAM (Science, Technology, Engineering, AGRICULTURE and Math), and Civic Engagement.

Briefly describe how your target audience benefited from your project's activities.

No activities to report at this time.

Briefly describe how the broader public benefited from your project's activities.

No activities to report at this time.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

- Continue to dialogue with the V.I. Department of Education to determine pathways forward to introduce and support 4-H Ag in the Classroom as mandated by V.I. law
- Partner with Career and Technical Education Board and FFA to strengthen school-based vocational agriculture and student engagement
- Identify and pursue funding opportunities to support teacher/volunteer training, site readiness and cross-curricula implementation
- Explore Food Corps, AmeriCorp, VISTA and Master Gardener programs as potential garden leaders and facilitators

- Select curricula that can be used as a base on which to build Ag in the Classroom
- Develop a pilot program to be launched on each island targeting one specific grade level

4-H Healthy Habits Program

Project Director

SARAH DAHL-SMITH

Organization

University of the Virgin Islands

Accession Number

7000443



4-H Healthy Habits Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

- Obesity, and its resultant health challenges - heart disease, diabetes and high blood pressure, continues to be the leading cause of death in the U.S. Virgin Islands
- The territory's population is 88% black with a growing number (17%) of Hispanics; both groups are more likely to be adversely impacted by obesity than their white counterparts.
- Over 30% of the population live at or below the poverty line; as a result they may be considered food insecure and struggle with how to balance a limited food budget with healthy eating

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

- Awarded a 4-H Healthy Habits grant in the amount of \$44,000 to provide nutrition education to youth at-risk on St. Croix
- Targeted 32; recruited 41 teens as teachers
- Targeted 2,000; engaged 1,942 school-aged youth
- Hired one coordinator, three UVI mentors and 2 instructors
- Delivered over 15,500 direct contact hours featuring 6 hours of nutrition education + 2 hours of mental well-being
- Lessons were delivered predominantly in-person, but also hybrid and via live sessions via Zoom.
- Partnered with 1 faith-based organization; 6 public schools, 4 private and parochial schools, 4 youth serving agencies and 2 community partners

Briefly describe how your target audience benefited from your project's activities.

With a survey response rate, youth involved in the program reported the following knowledge, skills and improved behaviors:

- *94% planned to eat more fresh fruits and vegetables*
- *87.5% indicated they would drink fewer sugar-added drinks*
- *89% reported they would drink more water*
- *91% noted they would focus on being more physically active*
- *78% shared that they ate meals more frequently with their family at the dinner table*
- *12 teens expressed interest in becoming a 4-H Health Ambassador*

Briefly describe how the broader public benefited from your project's activities.

Over 2,200 parents, sibling and relatives of program participants were vicarious consumers and participants of the 4-H Healthy Habits Program. In addition, 162 youth attending at least two FACE (family and community engagement) events, featuring partner agencies, healthy living demonstrations, and interactive learning stations featuring a key nutrition or healthy habits message.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Informed by enthusiastic interest from parents and families, a new pilot initiative targets teens, grades 6-9 and their families will be rolled out.

Lessons will be enhanced through cultural connections, and linkages between where and who produces our food locally and local chefs to help participants explore how local, culturally relevant dishes can be elevated and prepared in a healthier manner. Giving back to the community will be an integral component of this effort to help young people understand their roles and responsibilities in a community context.

As we move through the global pandemic, and locally our continued efforts to recover from hurricanes Irma and Maria, mental health and well-being with a particular emphasis on mindful eating will also be included.

Volunteer Leader Recruitment, Training, Development & Retention

Project Director

SARAH DAHL-SMITH

Organization

University of the Virgin Islands

Accession Number

7000444



Volunteer Leader Recruitment, Training, Development and Retention

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

- 4-H is a volunteer led, positive youth development program
- A challenging socioeconomic climate in the territory provides challenges and opportunities for developing a robust volunteer program
- 4-H member and club enrollment in the territory continues to dwindle
- Staffing constraints prevent further development of this initiative

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Since the advent of the pandemic in Spring 2020, only two well-organized 4-H clubs on St. Croix, led by three adult volunteers, remain in operation. Twelve (12) teen leaders provide a wide range of support of 4-H programming initiatives to include World Food Day, Hunger Banquet, 4-H Race for CANs, and other UVI School Agriculture, CES and community-based service learning opportunities.

Briefly describe how your target audience benefited from your project's activities.

All volunteers have been recognized and two have been hired to provide critical organizational and content leadership especially with the 4-H Healthy Habits program.

Seven (7) teens earned a total of 1,264 community service hours (equivalent to \$15,168 dollars; 1,264 hours x \$12/hour) applied to high school graduation requirements and included in their high school transcripts.

Briefly describe how the broader public benefited from your project's activities.

Three adult volunteers lead two 4-H clubs enrolling 26 teens. Teens interact with their peers, families and school campuses and neighborhoods to share what they are doing and learning in 4-H.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

- A Volunteer Development Specialist is needed to ensure that a full and robust volunteer initiative can be planned, implemented and sustained
- Training in Volunteerism will be provided for program staff
- Volunteer and club system development plans include targeting recruitment efforts to special interests through Special Interest (SPIN) Clubs
- Partnering with the V.I. Housing Authority, with possible funding through the V.I. Department of Labor's Workforce Investment Opportunity Act (WIOA), to identify two adults in selected housing communities. Adults will receive workforce readiness skill training built around soft skills followed by 4-H 101 training. Soft skills training will be used as they work through the process of developing and leading a 4-H club. Additional training will be provided in partnership with the UVI Early Childhood Program.

- Episodic and event volunteerism will also be encouraged as a proven strategy to support continued volunteer service with 4-H clubs and special interest groups.

Critical Issue

Computer Training and Technology

Computer and Technology Training Program

Project Director

Marthious Clavier

Organization

University of the Virgin Islands

Accession Number

7000453



Computer and Technology Training

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Being technologically competent is very important in today's world, yet many adults lack the relevant skills. These individuals are digitally disadvantaged and acquiring technological skills can safeguard them from being marginalized and/or disadvantaged. Many of these individuals are farmers and others who participate in the EFNEP and SNAP program.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The program included computer/technology-based workshops that allowed individuals to learn a variety of relevant technological skills. Individuals were able to enroll in any of the above workshops to acquire and/or increase their technological skills.

Briefly describe how your target audience benefited from your project's activities.

Farmers:

Having a variety of technological skills put the farmers at an advantage when running their business. Being able to use digital devices such as computers, smartphones, and tablets, allowed farmers to access trainings and information online, in real-time. Being technologically competent allowed them to accomplish their day-to-day tasks more effectively, such as banking and recordkeeping. This saved them time and money.

Individuals enrolled in EFNEP, and SNAP beneficiaries:

Individuals who can effectively use MS Word, MS PowerPoint, MS Excel and Zoom are at an advantage when seeking employment. With these skills they are able to assist their children with virtual education. Being technologically competent allowed them to also accomplish their day-to-day tasks more effectively, such as banking, communicating and shopping. This saved them time and money.

Briefly describe how the broader public benefited from your project's activities.

When there are more technologically skilled individuals in a community, the broader public benefits. Not only can these individuals seek employment or promotions at work, but they can also teach others what they learned. In addition, these individuals are able to do some of their tasks more effectively at home and at work. This in turn improve transactions within the general community. For example, it can help to reduce lines at banks if more individuals are able to do online banking. Also, after giving first preference to the target audience, if there are any more spaces available, we allowed individuals in the broader public to participate.

Critical Issue

Documenting Native Plants and Traditional Plant Use in the USVI (“Passing It On”)

Project Director

Dale Ertwyn Morton

Organization

University of the Virgin Islands

Accession Number

7000455



Documenting Native Plants and Traditional Plant Use in the USVI (“Passing It On”)

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Many Virgin Islands’ (VI) residents and visitors are interested in obtaining information about VI plants, especially local native and VI traditional medicinal plants. People want to become more knowledgeable about the plants that they encounter and want to learn about the uses of plants for food or medicine. This interest seemed to increase after extreme weather events (2017 hurricanes) and during the pandemic. In addition, many native Virgin Islanders are interested learning more about their personal heritage, the islands’ cultural/natural history, and the relevance of local indigenous knowledge related to VI natural resources.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Through its direct and indirect contacts with clients, CES made progress in promoting its “Passing It On” project goals and objectives to increase understanding of the human reliance on plant resources in the USVI and respect for the relevance of local indigenous knowledge related to the islands’ natural resources. CES’s major project activities provided clients with research-based ethnobotanical information (documented local oral histories, CES publications, CES Diagnostic Herbarium plant collections, etc.). CES also made progress on another important project objective by investigating the interests and safety concerns of clients who were collecting, marketing and/or using local plants to prevent or treat COVID-19.

Briefly describe how your target audience benefited from your project's activities.

This project topic is very popular, and the target audience includes most of the public who has interest in learning more about native plants, traditional plant use and related indigenous knowledge. The project’s target audience benefited from the project’s activities including CES’s responses to many client requests for information. Using direct and indirect contacts, CES provided farmers, students/educators, tour directors, nurseries/garden businesses, VI and federal government personnel, health-care professionals, disabled individuals, interested VI residents and visitors with science-based information about VI traditional medicinal and native plant use and related indigenous knowledge. Recipients informally indicated satisfaction with CES’s efforts, and clients often contacted CES with requests for additional related information.

CES staff also benefited clients who, upon request, were provided with information about locally collected plants that they were using to prevent or treat COVID-19. During direct contacts, information was shared through conversations and the dissemination of CES “infosheets” created to address questions from more than (> 15) clients (including farmers) on St. Thomas who were collecting or selling these plants. On St. Croix, CES made Zoom presentations entitled “Food and Medicinal Plants to Boost Your Immune System” to students, professors, teachers, and the public attending a UVI Student Affairs Department Health Fair and to church audiences.

Several individuals, including visitors and locals, obtained the CES book Traditional Medicinal Plants of St. Croix, St. Thomas and St. John (ISBN 0-9628909-6-0) during CES Demonstration Garden tours. Some were provided with additional information about plants featured in the publication. The owner of E’s Teas, a St. Thomas tea house featuring locally grown teas and a VI meeting place, utilized information from this CES book in a promotional booklet that she created for her business entitled, “Bush Therapy, Enjoy a Cup of Wellness”. CES staff also conducted in-person tours for five UVI student government members volunteering to work in the St. Thomas CES Demonstration Garden who wanted to learn about traditional medicinal and useful native plants in the garden. CES staff assisted UVICELL (UVI Center for Leadership and Learning) by training 15 St. Croix Taxi Association members about VI natural and cultural history related to VI natural resources that led to tour certification for

the drivers through UVICELL. Staff provided technical assistance to farmers on St. Croix and St. Thomas who received USDA SARE grant funding to develop value-added products from traditional medicinal plants. Staff also served as a consultant to the UVI School of Agriculture (UVI-SOA) Dean and faculty members developing a syllabus for a medicinal plant course featuring VI/Caribbean indigenous knowledge. Staff also made a Zoom presentation entitled “Medicinal Plants of the Virgin Islands” to 20 virtual campers attending the UVI AgDiscovery (USDA-APHIS) summer camp. Additional similar presentations were made to the 25 members of the Friends of Round Bay (East End, St. John watershed association) and the Los Angeles Audubon Society visiting St. George Botanical Garden on St. Croix.

Briefly describe how the broader public benefited from your project's activities.

CES staff reached the broader public (local, national, and international) by providing information about VI natural and cultural history to interviewers on radio broadcasts including the Disability Rights Center of the Virgin Islands radio program and the WTJX VI Broadcasting System Channel 12. CES staff also were interviewed by the Washington Post newspaper about historical impacts to VI natural resources by the oil refinery and aluminum company. In addition, the broader public benefited from its access to unique archival and ethnobotanical reference materials and collections available to the public in the St. Thomas and St. Croix CES office libraries and herbarium collections, the UVI Environmental Information Repository, and the UVI Virgin Islands Caribbean Cultural Center.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

In FY 2021, the COVID-19 pandemic reduced, but did not eliminate, in-person direct contact outreach activities. The reduction of CES communication/information technology staff because of the University’s COVID 19 mandates also probably somewhat delayed progress with the production of publications related to this topic. Contacts with VI Taxi Association drivers and UVI student volunteers in the CES Demonstration Garden potentially will lead to future opportunities for training. Project results have been disseminated communities of interest in forms of printed Information and media broadcasts. This is primarily a client-driven project, and it is anticipated that during the next reporting period there will be more client requests for information related to VI plant use and more efforts to establish areas (trails, park locations, etc.) where people can observe and learn about plant usefulness.

[Knowing what’s Growing - CES Plant Identification Service](#)

Project Director

Dale Ertwyn Morton

Organization

University of the Virgin Islands

Accession Number

7000454



Knowing what’s Growing - CES Plant Identification Service

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Many Virgin Islands (VI) residents, resource managers and governmental personnel either want or are required to be more knowledgeable about the plants and terrestrial ecosystems that they observe and/or manage. They request information from CES to learn the identities of plants for various reasons including to increase personal awareness, complete an educational assignment or satisfy a work-related question and/or manage natural resources.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Major activities supported the project goal to promote increased awareness of native plants, their ecosystems, and the importance of conserving plant biodiversity, as well as the objective to provide accurate plant identifications to the clients who request information.

CES's "knowing what's growing" plant identification project continued, and perhaps increased, without disruption during the pandemic in FY 2021. Clients brought plant specimens for identification to the UVI-CES offices or plant images were shared through emails, texts and chat group communications. Contacts and identifications also were made during farm and home site-visits. CES provided technical assistance to the VI Department of Agriculture (VIDA) Forest Stewardship and Forest Legacy programs related to VI native plant identification and ecosystem conservation. CES supported the VIDA's efforts to conserve forested land for the VI Territorial Park system through the Forest Legacy Program by supplying VIDA contractors with information about the identities and community compositions of plants on a 330+ acre section of forested property on an undeveloped St. Thomas offshore island (Inner Brass Island) that VIDA wants to acquire. In addition, CES helped new St. Croix property owners contact the VIDA Forest Stewardship Program. This connection enabled the owners to apply for program benefits that will allow them to showcase portions of their (8 acres +) property as an ecotourism destination featuring undisturbed native forests adjacent to a major watercourse. CES also provided Non-Governmental Organizations (i.e., The Nature Conservancy, VI Conservation Service, etc.) with information related to both native and non-native plant identification. By sharing information related to VI plant identification and terrestrial ecosystems, CES staff continued to assist with VI hurricane recovery/preparedness and hazard mitigation planning efforts in cooperation with local and federal governmental partners.

Briefly describe how your target audience benefited from your project's activities.

CES's plant identification services are well-known, easily accessible, and popular with a wide range of clients in the project's target audience including farmers, federal and local VI governmental personnel, educators, students, businesses, and the public. The VIDA Forest Legacy Program Coordinator benefited by utilizing CES technical assistance and plant data bases supplied by CES to complete an environmental management plan required in a Forestry Legacy Program application to obtain funds to purchase conservation land on St. Thomas (Inner Brass Island) for the VI Territorial Park system. The final approval for both this acquisition and another Forestry Stewardship Management Plan submitted by St. Croix property owners developed with technical assistance from CES is pending at the federal level through the Institute of Tropical Forestry in Puerto Rico.

VI and federal government agencies benefited from receiving CES technical assistance related to VI plant identification and terrestrial ecosystem management. The agencies that requested and received information and technical assistance from CES that helped them complete required Hazard Mitigation planning required by FEMA and their own agency mandates included: the Division of Fish & Wildlife – VI Department of Planning and Natural Resources (FWS-DPNR), the VI Department of Public Works (DPW) and Waste Management Agency (WMA), VI Department of Planning and Natural Resources (DPNR), and UVI Established Program to Stimulate Competitive Research program (UVI EPSCoR).

At the invitation of VI FWS-DPNR, CES staff joined the division's Plant Restoration List and Database Working Group that is developing: botanical literature for the public that informs: habitat restoration, community planting initiatives, private landowner outreach, and research priorities for territorial and federal programs. VI DPNR and their contractors (VI Conservation Society & Watershed Consulting, Inc.) were provided with technical assistance related to the management of terrestrial resources in VI watersheds (targeting eight VI watersheds). Outreach efforts included the development of educational videos that also will be used in VI schools to introduce watershed best management practices promoted by the local and federal government mandates. Videos also will be available on television and social media. CES also promoted these practices at a Zoom community town hall on St. Croix described hazard mitigation planning projects for four watersheds on St. Croix. At the request of VI DPW-WMA, CES created a list of "Special VI Trees with Commercial Value" that the agencies could include in their VI Green Debris Management Plan for Mitigating Disaster Recovery.

Briefly describe how the broader public benefited from your project's activities.

Clients from the broader public seeking plant identifications were able to learn more about plants. CES plant identifications often led to discussions that fostered a better understanding of VI terrestrial resources and biodiversity issues. Technical assistance provided to the VIDA may help enable the awarding of U.S. Forest Service Forest Legacy Program funds to the Territory for purchasing conservation property on St. Thomas that will potentially benefit the broader public and visitors who will likely be able to gain access to a publicly owned property in the VI Territorial Park System.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to

communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

In FY 2021, the COVID 19 pandemic reduced, but did not eliminate, in-person direct contact outreach activities. The pandemic also caused the postponement of a project to identify and label trees in coastal St. Thomas VI Territorial Park damaged by Hurricanes Irma and Maria. Contacts with UVI student volunteers in the CES Demonstration Garden potentially will lead to future opportunities for training. Project results have been disseminated communities of interest in the form of printed Information. CES also helped disseminate information from VI DPNR's VI watershed study project and related hazard mitigation plan at a Zoom town hall meeting for the St. Croix community. For the next reporting period, it is anticipated that partner agency and client requests for plant identifications will increase.

Natural and Cultural Resources, and Environmental Management

Project Director

kenneth Davis

Organization

University of the Virgin Islands

Accession Number

7000457



Natural & Cultural Resources & Environmental Management

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The Virgin Islands (VI) economy depends on maintaining a strong tourism industry attracted by the islands' natural environments and scenic coastal resources. Protecting the integrity of these natural and cultural resources is a priority. Although the original proposed VI Comprehensive Land and Water Use Plan was developed decades ago, it and later versions have yet to be adopted and enacted into Virgin Islands law by the VI Legislature. However, it is mandated that the Virgin Islands must have such a plan enacted to be eligible for certain federal funding; some of these federal funds could potentially support management needs in VI Territorial Parks and other critical natural areas.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Major program activities supported CES's goal to provide technical assistance, guidance and/or information to those who are managing, regulating, conserving and/or maintaining areas with critically important natural and cultural resources to stimulate/grow a vital tourism/ecotourism industry and protect public recreational areas. Despite the constraints caused by COVID-19 pandemic in FY 2021, CES met its objectives to be easily accessible to its clients. CES focused on maintaining or forming associations that effectively inform clients' decision making and management planning when possible. However, some major activities that were planned before the pandemic in VI Territorial Parks and other critical areas were postponed or cancelled by some of our clients. On the other hand, CES major activities achieved progress by helping: St. Croix landowners develop a management plan to establish a conservation area and tourism destination through the VI Department of Agriculture (VIDA) Forest Stewardship Program; the VI Conservation Society (NGO) and the VI Department of Planning and Natural Resources with management and hazard mitigation plans for four watershed protection projects on St. Croix during Zoom town hall meetings. Through implementation of CES program activities progress was made with assisting CES recommendations being adopted when appropriate, and strive to have management recommendations be compatible with the latest version being developed by the VI Department of Planning and Natural Resources.

Briefly describe how your target audience benefited from your project's activities.

Typically, the target audience includes VI Territorial Park managers, environmental/conservation NGOs and businesses, educators/students engaged in environmental management projects in critical areas, VI governmental divisions that regulate natural resources, and the general public. Again, the pandemic in FY 2021 limited some contacts and activities with the target audience. CES activities benefitted: St. Croix landowners who completed a conservation management plan that is likely to be funded VIDA Forest Stewardship Program. The VI Conservation Society and VI DPNR benefitted from CES's assistance with developing a watershed protection video for St. Croix and supporting educational outreach activities in a Zoom community town hall meeting. The UVI Established Program to Stimulate Competitive Research (EPSCoR) and EPSCoR hazard mitigation Zoom conference .

Upon request, CES staff conducted educational, cultural, natural & environmental tours to private & public schools, businesses, local & federal government agencies, & non-profit organizations. Different trail sites were visited and discussed plants and usage of medicinal plants, native and non-native trees, cultural, natural resources and a range of other topics relative to environmental education. Attendees' knowledge increased of the natural and cultural resources of the Virgin Islands. They came away with a better understanding of the importance of managing the resources for future generations.

CES provided technical assistance for a student at Penn State University in collecting medicinal plants from St. Croix for dissertation research. CES provided technical assistance to personnel at Lund University in Sweden for a thesis project on hazard mitigation of wetlands in the Virgin Islands. Upon request, CES provided technical assistance to St. Croix Botanical Garden in helping creating a "provision ground" display for the community at large.

Upon request, CES staff assisted roughly 20 clientele locally, nationally & international on gathering information from the repository on variety topics of interest.

VI Trail Alliance, National Park Service, and CES have a joint project at Estate Morningstar, Windsor Forest & Concordia establishing a nature, historic, & bike trail. The first phase of the project where a trail was established is completed. This project was done in partnership with the AARP of the Virgin Islands, and the National Park Trust. The Orchid Society, Dept of Education, VI Caribbean Cultural Center and CES have a joint project known as the 1,000 orchids at the St. George Village Botanical Garden. The first phase of the project was completed where orchids are being (planted) established at the old sugar factory ruins at the garden. This project in partnership with the National Park Trust. The Nature Conservancy, DPNR (St. Croix East End Marine Park), and CES have a joint East End signage project. The first phase of the project was completed by a zoom town hall meeting, and two radio talk shows describing the project at the East End of St. Croix to the Virgin Islands community. Through social media such as Facebook, zoom, etc. the audiences met. This project was conducted in partnership with the Nature Conservancy, DPNR and the community.

Briefly describe how the broader public benefited from your project's activities.

Most of the CES Zoom presentations were open to and beneficial to the broader public. CES staff also reached the broader public (local, national, and international) by providing information about VI natural and cultural history to interviewers on radio broadcasts including the Disability Rights Center of the Virgin Islands radio program and the WTJX VI Broadcasting System Channel 12. CES staff also were interviewed by the Washington Post newspaper about historical impacts to VI natural resources, by the oil refinery and aluminum company. In addition, the broader public benefited from its access to unique archival and ethnobotanical reference materials and collections available to the public in the St. Thomas and St. Croix CES office libraries and herbarium collections. CES staff assisted both local and international clients (>20) with their searches at the UVI Environmental Information Repository, and the UVI Virgin Islands Caribbean Cultural Center. Additional articles published in FY 2021 that potentially benefitted the broader public included: Preserving the Wild Experience of St. Croix's East End; St. Croix Source online paper (July 25, 2021); Let's Preserve Point Udall's Natural Beauty for Generations to Come; Virgin Islands Daily News Paper (2/17/2021); Hiking Mount Eagle on Earth Day & The Lessons it brings: Virgin Islands Daily Newspaper (4/22/2021); Island Hopping: Birding the U.S. Virgin Islands Part 1: St. Croix-A birding Sweet Spot, by Robbie Lisa Freedom published by Los Angeles Audubon Society.

For decades these entities have been requesting technical assistance and incorporating CES information and recommendations into management strategies and restoration projects. Some of CES's common activities are: conducting site visits in critical natural areas and making management recommendations; assessing storm-damaged areas and making inventories of damaged vegetation; providing plant identifications to managers, staff or volunteers; contributing to vegetation management and restoration plans; developing ways to increase the educational potential of critical natural areas and working towards being compatible with the VI Comprehensive Land and Water Use Plan.

Virgin Islands Home*A*Syst

Project Director

Dale Ertwyn Morton

Organization

University of the Virgin Islands

Accession Number

7000456



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

In the Virgin Islands (VI), toxic and improperly used household products (cleaners, pesticides, herbicides, etc.), septic system effluent, and mismanaged cistern catchments can impact human and environmental health. The threat of these potential problems is increased by the islands' steep terrains. Impacts related to nonpoint source pollution can threaten both drinking and coastal water quality.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Despite the constraints caused by the COVID-19 pandemic in FY 2021, program activities furthered the goal to prevent residential pollution and health problems by providing technical assistance and research-based information to promote informed decision-making. Program activities (two Zoom presentations, publication distribution, site visits, responses to individual client requests) continued to be primarily client-driven. Through direct and indirect contacts, CES made progress with achieving the main program objectives to i) motivate persons to read labels more critically; ii) use more environmentally friendly products; iii) modify practices that have been culturally accepted as the norm. The Zoom presentations allowed CES to reach a larger audience because invitations to view could be extended to people who do not live in the VI. These presentations were also streamed live on Facebook.

Briefly describe how your target audience benefited from your project's activities.

Although the program content represented practices and information recommended by the parent USDA Home*A*Syst initiative, UVI CES developed its Home*A*Syst Water Quality Program to provide information that relates specifically to the Caribbean people/environment and existing local problems. The VI program's outreach activities popularized it as a service presented with a local perspective that reliably provided all segments of the public with updated information. Because of its local relatability and authenticity, the program activities have attracted and benefited the target audience including custodial workers, students, VI government workers, church congregations, and the public. The target audience also benefited from the availability of locally produced extension publications, such as 'Help Yourself to a Healthy Caribbean Home' and the 'Recipes for a Non-Toxic Household' where local examples of alternative products and photographs or illustrations of suggested practices feature recognizably VI people, landmarks, and cultural practices. During the COVID-19 pandemic, the target audience also benefited from the availability of Home*A*Syst information about the safety of products used to sanitize homes and public areas.

Briefly describe how the broader public benefited from your project's activities.

Although the COVID-19 pandemic reduced direct in-person Home*A*Syst contacts in live workshops and presentations, the program gained participation from the broader public through its Home*A*Syst Zoom and Facebook presentations. The VI Home*A*Syst publications also were shared electronically along with the new Caribbean versions of online publications by the National Healthy Program that the VI Home*A*Syst staff edited so that the information would be more relevant to the VI audience.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

In FY 2021, the COVID 19 pandemic eliminated the typical VI Home*A*Syst in-person events, workshops, and presentations at various venues (churches, Rotary Club meetings, fairs, schools, etc.). However, some similar program outreach activities continued online and during home visits. Home*A*Syst information was disseminated through publication distribution, media outreach and email. For the next reporting period, it is anticipated that partner agency and client requests for Home*A*Syst presentations will continue to grow because some of the COVID-19 restrictions are being relaxed.

Critical Issue

Small Livestock Production



Sustainable Small Livestock Production in the Virgin Islands

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The issues addressed by the program include: overgrazing of pastures due primarily to overstocking of animals which results in a lack of forages for the livestock, especially during the drier months of February to June; the continual breeding of livestock, in situations where the male animals are allowed to continually be with the female animals; and the lack of proper husbandry practices, including housing for small livestock (sheep, goats, pigs and poultry).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Technical advice was provided to stakeholders through site visits, telephone calls and office visits. 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 the proper selection of breeding stock, sanitation, feeding and housing. Poultry production continued to be a popular enterprise in the Virgin Islands. Poultry producers were trained in the proper husbandry of rearing chickens through good housing, selection of breeds and types of chickens (broilers/layers), feeding, killing and plucking, and simple processing.

We are working with producers to work cooperatively in groups for specific livestock, i.e., poultry group, sheep and goat group, and pig group.

These activities helped increase the knowledge of livestock producers about the best management practices to improve local livestock production. Farmers are interested in establishing pastures with improved grass species, especially *Panicum Maximum* cv Mombasa but we experienced difficulties in finding reliable sources of good quality seeds. Farmers received information about the performance of drought-resistant forages with high nutritional value.

Major outreach events were curtailed and in-person exchanges were sometimes limited.

Briefly describe how your target audience benefited from your project's activities.

The targeted audience benefited from project activities by visiting more progressive farms or starting small livestock farms, workshops, farm visits and demonstrations. These activities increased the knowledge of livestock producers about the best management practices to improve local livestock production, increase their profits and make the farm enterprises more sustainable.

Educational activities were conducted for the target audience through workshops, seminars and farm visits to observe and better understand the establishment of forages.

Some of the program plans for the next reporting period to accomplish the goals are to establish demonstration plots in different areas using different varieties of pasture grasses to observe their carrying capacity.

Briefly describe how the broader public benefited from your project's activities.

The broader public benefited from the program activities by having more animals, meats and meat products available to the public from local farmers at all times of the year and not only during the festive or holiday seasons.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

The major changes or problems encountered were that the farmers are more focused on the number of animals that they have without the necessary concerns about the carrying capacity of the farm acreage. This results in many instances where the land area cannot support the number of heads of animals on the farm.

The COVID-19 pandemic limited the number of in-person contacts and activities with the target audience.

The opportunities for training and professional development are in the areas of proper housing for livestock and the establishment and maintenance of proper pastures with improved and forage grasses and other species.

Critical Issue

Sustainable Agriculture

Farming using the Integrated Pest Management Approach

Project Director

Amy Dreves

Organization

University of the Virgin Islands

Accession Number

7001074



Farming using the Integrated Pest Management Approach

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Locally produced food makes up a tiny fraction of the total food consumed in the USVI. Greater local production would improve island self-sufficiency, particularly during pandemics and natural disasters, and fresh local food would have better nutritional value than imported food. Pest problems are a major hindrance to increased production of local food, and an Integrated Pest Management (IPM) strategy is a big part of the solution to pest problems. We are committed to the IPM approach to improve crop profitability, stabilize crop yields, decrease severity of pest infestations, reduce pest resistance from overuse of pesticides, and increase consumer confidence in production, safety and quality of food and value-added products.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The overall goal is to empower, educate, and encourage farmers to manage diseases, insects, weeds and other factors (drought, excessive rain, wind) that affect crop production, safety & yields. The main objectives of our activities are to: i) increase farmers' knowledge and skills by introducing an assortment of sustainable best management practices, emphasizing the growth of strong and healthy crops and soil; ii) promote practical, cost-effective, environmentally-sound and socially-acceptable ways for protecting crops with least possible disruption and minimum risks to human health, the environment and natural resources (water, air, soil, non-target organisms); iii) reduce dependence on pesticide use and endorse safety and proper use of less-risk products; and iv) evaluate and measure farmer implementation & effectiveness of chosen & combined practices.

Briefly describe how your target audience benefited from your project's activities.

The target audience includes new and seasoned farmers, agricultural and natural resource professionals and consultants, Extension & research specialists, and government officials. This audience will benefit in learning the importance of local, safe, secure, and available year-round food sources. IPM education will provide multiple benefits for long-term agriculture production including: prevention measures such as growing crops with optimal conditions from the start, the necessity of early and regular scouting for pests, record-keeping, accurate identification of pests and beneficial organisms, strategic planting time and rotation of crops, water management, preserving and protecting natural habitats, timing and reduction of damaging pests, the safety and timing of products, and the need of making good use of local resources and knowing the latest research and experience.

Briefly describe how the broader public benefited from your project's activities.

The target audience includes new and seasoned farmers, agricultural and natural resource professionals and consultants, Extension & research specialists, and government officials. This audience will benefit in learning the importance of local, safe, secure, and available year-round food sources. IPM education will provide multiple benefits for long-term agriculture production including: prevention measures such as growing crops with optimal conditions from the start, the necessity of early and regular scouting for pests, record-keeping, accurate identification of pests and beneficial organisms, strategic planting time and rotation of crops, water management, preserving and protecting natural habitats, timing and reduction of damaging pests, the safety and timing of products, and the need of making good use of local resources and knowing the latest research and experience.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Local events such as Agri-Fest, World Food Day, IPM concept trainings and workshops were cancelled due to UVI policy, had greatly reduced attendance, or got low attention. Morale was low due to the Covid pandemic. A foundation of education is being laid, but adoption of an integrated tool set is low.

There have been plenty of opportunities to attend virtual trainings are offered in the IPM and Pesticide Safety field. Slowly conferences and meetings are opening to in-person events such as the 10th International Integrated Pest Management conference in Denver, CO and the 2022 Joint Southeastern Branch and American Phytopathological Society – Caribbean Division Meeting in Puerto Rico.

Education, training, and hands-on demonstrations will increase trusting partnerships and grower awareness, knowledge and confidence for implementing new practices on a seasonal and long-term basis. Ultimately, farmers will understand the thoughtful consideration of pest management practices; and adopt practices they view as practical, economical, and valuable to their farming activities and clients' interests. Understanding farmers' perceptions of pest problems, their current practices, and economic status will lead to flexible assistance in choosing a combination of different IPM tactics. We will encourage personal selection of the right tools and products that fit into their farming system. By determining the baseline of what each grower is currently doing, we can report adoption of best practices and reduction of pesticide use, both of which lead to the growth and expansion of food production.

A unique evaluation plan is being designed to measure program impact and adoption of the IPM approach including prevention measures, conserving land and resources, and adopting BMP's for IPM in Pollinator Health, Nursery and Greenhouse, Backyard Gardeners, Specialty Crops, and Animal Production. An iPM Score Card (an acronym standing for innovative Pest Management) for the Stairway to Sustainability and Land Stewardship is being fine-tuned and will be implemented in 2022 for program participants including farmers, gardeners, plant nurseries and animal producers. Baseline data will be collected on current practices used, an array of practices to familiarize farmers will be introduced with references, and a training to assist individuals in selecting new tools will be implemented. In addition, we intend to use a new platform called VeVox to increase active learning.

Sustainable Agriculture Production in the Virgin Islands

Project Director

Louis Petersen

Organization

University of the Virgin Islands

Accession Number

7001068



USVI Sustainable Agriculture Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Farmers in the Virgin Islands are characterized as limited resource, small scale producers who strive to meet the local market demand by using environmentally friendly production practices. For producers to achieve this goal, on-going educational programs are needed to increase farmers' knowledge and awareness regarding sustainable agricultural practices that make efficient use of natural resources, maximize production, enhance economic viability, and benefit the overall Virgin Islands community.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In response to the needs of the Virgin Islands farming community, our agency conducted an interactive six-month short course that consisted of six training modules that were designed to address local challenges faced by producers. In addition, each training session included problem-solving group activities that encouraged active participation. Based upon verbal comments from the trainees in addition to their responses to the post training survey, our goal of increased knowledge and awareness was clearly achieved.

Producers also benefitted from a **Produce Safety** training activity which was specifically designed to impart knowledge regarding the Food Safety Modernization Act (FSMA). This training was divided into seven interactive modules, covering topics such as health and hygiene, water quality, soil amendments, and postharvest handling. The presentation format effectively encouraged inquiries, comments, and discussions about their respective operational procedures.

Another important activity was the **Tax Filing** presentation that was conducted in partnership with the V.I. Internal Revenue Bureau. This training was designed to enhance the business skills of farmers with regard to recordkeeping and addressing tax obligations.

The Cooperative Extension Service outreach staff and partners conducted a webinar on the topic of **Organic Farming and Biological Amendments**. The presentation was well received and satisfied one of the stated objectives to provide training on the principles and practices of organic farming to producers. In addition, since many farmers utilize animal manures in their production systems, the training included a segment on best management practices for using biological materials.

A second webinar focused on the **Use of Inputs in Sustainable Agricultural Practices**. This activity was effective in achieving our planned overall goal because it provided practical tools for limited resource producers who manage small scale operations.

Briefly describe how your target audience benefited from your project's activities.

As a result of conducting a six-month training activity entitled **The Cooperative Business Model Short Course** more than 40 producers increased their knowledge and awareness of the Cooperative Business Model. The trainees increased their knowledge regarding the history of cooperatives, the principles of cooperative development, conflict resolution, financing opportunities, and steps to forming a cooperative.

Upon the completion of the short course, the participants applied the information obtained by forming core groups to explore the feasibility of establishing two types of cooperative business enterprises.

As a result of the Cooperative Business Model training the participants also benefitted by having access to a broad network of trainers, experienced cooperators, and cooperative enterprises that can provide on-going support for their efforts.

In other trainings efforts to educate farmers about suggested business practices, 40 producers increased their knowledge and awareness the importance of recordkeeping and **tax filing** practices.

Regarding the **Produce Safety** Training, 35 farmers increased their knowledge and awareness of the Food Safety Modernization Act which requires mandatory compliance for all farmers. Upon completion of the training, producers were equipped with the necessary tools to improve their on-farm production and handling practices and procedures to provide a safer fruit and vegetable supply.

As a result of conducting the training activity on **Organic Farming and Biological Amendments**, 30 producers increased their awareness and knowledge regarding the theory and practices of organic production. As a less costly alternative to the USDA Certified Organic Program, farmers were also introduced to the Naturally Certified Grown Program.

The webinar on the **Use of Inputs in Sustainable Agricultural Practices** provided valuable information for 55 farmers who increased their knowledge regarding the selection and proper application of production resources and the availability of low impact tools to promote sustainability.

Briefly describe how the broader public benefited from your project's activities.

As a result of farmers' increased knowledge and awareness of hygienic and safety practices associated with food production and handling, the Virgin Islands community is expected to benefit from the availability of a safer, more sanitary food supply.

Concerning the cooperative business training, once producers organize themselves using this business model, the general public is expected to benefit from the formation of an organized group of producers who are better prepared to meet the local market demand.

Finally, the environmentally friendly practices utilized by farmers ultimately benefit the entire community through the conservation and protection of natural resources.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

The project implementation period coincided with the COVID-19 Pandemic. During a portion of this time the outreach staff worked from their respective home locations and made revisions to the agency's normal mode of operation regarding client engagement. The project goals and objectives were achieved through a combination of site visits, and the delivery of in-person and virtual presentations. Due to office closures and restrictions imposed as a result of the pandemic, the activity schedule was revised with fewer planned training events. However, one of the greatest challenges noted was the lack of access to computer units and internet connectivity for some producers. For this reason, alternative preparations should be considered to address this need in the future.

Critical Issue

Tropical Horticulture

[Garden Smart in Urban Areas using the Integrated Pest Management \(IPM\) Approach](#)

Project Director

Amy Dreves

Organization

University of the Virgin Islands

Accession Number

7001077



Garden Smart in Urban Areas using the Integrated Pest Management (IPM) Approach

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Locally produced food makes up a tiny fraction of the total food consumed in the USVI. Greater local production would improve island self-sufficiency, particularly during pandemics and natural disasters, and fresh local food would have better nutritional value than imported food. Pest problems are a major hindrance to increased production of local food, and an Integrated Pest Management (IPM) strategy is a big part of the solution to pest problems. We are committed to the IPM approach to improve crop profitability, stabilize crop yields, decrease severity of pest infestations, reduce pest resistance from overuse of pesticides, and increase consumer confidence in production, safety and quality of food and value-added products.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The overall goal is to empower, educate, and encourage farmers to manage diseases, insects, weeds and other factors (drought, excessive rain, wind) that affect crop production, safety & yields. The main objectives of our activities are to: i) increase farmers' knowledge and skills by introducing an assortment of sustainable best management practices, emphasizing the growth of strong and healthy crops and soil; ii) promote practical, cost-effective, environmentally-sound and socially-acceptable ways for protecting crops with least possible disruption and minimum risks to human health, the environment and

natural resources (water, air, soil, non-target organisms); iii) reduce dependence on pesticide use and endorse safety and proper use of less-risk products; and iv) evaluate and measure farmer implementation & effectiveness of chosen & combined practices.

Briefly describe how your target audience benefited from your project's activities.

The target audience includes new and seasoned farmers, agricultural and natural resource professionals and consultants, Extension & research specialists, and government officials. This audience will benefit in learning the importance of local, safe, secure, and available year-round food sources. IPM education will provide multiple benefits for long-term agriculture production including: prevention measures such as growing crops with optimal conditions from the start, the necessity of early and regular scouting for pests, record-keeping, accurate identification of pests and beneficial organisms, strategic planting time and rotation of crops, water management, preserving and protecting natural habitats, timing and reduction of damaging pests, the safety and timing of products, and the need of making good use of local resources and knowing the latest research and experience.

Briefly describe how the broader public benefited from your project's activities.

The target audience includes new and seasoned farmers, agricultural and natural resource professionals and consultants, Extension & research specialists, and government officials. This audience will benefit in learning the importance of local, safe, secure, and available year-round food sources. IPM education will provide multiple benefits for long-term agriculture production including: prevention measures such as growing crops with optimal conditions from the start, the necessity of early and regular scouting for pests, record-keeping, accurate identification of pests and beneficial organisms, strategic planting time and rotation of crops, water management, preserving and protecting natural habitats, timing and reduction of damaging pests, the safety and timing of products, and the need of making good use of local resources and knowing the latest research and experience.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Local events such as Agri-Fest, World Food Day, IPM concept trainings and demonstration workshops were cancelled due to UVI policy, had greatly reduced attendance, or got low attention. Morale was low due to the Covid pandemic. A foundation of education is being laid, but adoption of an integrated tool set is low.

Opportunities for training and professional development

There have been plenty of opportunities to attend virtual trainings are offered in the IPM and Pesticide Safety field. Slowly conferences and meetings are opening to in-person events such as the 10th International Integrated Pest Management conference in Denver, CO and the 2022 Joint Southeastern Branch and American Phytopathological Society – Caribbean Division Meeting in Puerto Rico.

(7) How results have been disseminated to farming communities

Education, training, and hands-on demonstrations will increase trusting partnerships and grower awareness, knowledge and confidence for implementing new practices on a seasonal and long-term basis. Ultimately, farmers will understand the thoughtful consideration of pest management practices; and adopt practices they view as practical, economical, and valuable to their farming activities and clients' interests. Understanding farmers' perceptions of pest problems, their current practices, and economic status will lead to flexible assistance in choosing a combination of different IPM tactics. We will encourage personal selection of the right tools and products that fit into their farming system. By determining the baseline of what each grower is currently doing, we can report adoption of best practices and reduction of pesticide use, both of which lead to the growth and expansion of food production.

(8) Any new activities regarding what the project or program plans to do during the next reporting period to accomplish the goals.

A unique evaluation plan is being designed to measure program impact and adoption of the IPM approach including prevention measures, conserving land and resources, and adopting BMP's for IPM in Pollinator Health, Nursery and Greenhouse, Backyard Gardeners, Specialty Crops, and Animal Production. An iPM Score Card (an acronym standing for innovative Pest Management) for the Stairway to Sustainability and Land Stewardship is being fine-tuned and will be implemented in 2022 for program participants including farmers, gardeners, plant nurseries and animal producers. Baseline data will be collected on current practices used, an array of practices to familiarize farmers will be introduced with references, and a training to assist individuals in selecting new tools will be implemented. In addition, I am learning a new platform called VeVox to increase active learning.

Urban gardening

Project Director

Louis Petersen

Organization

University of the Virgin Islands

Accession Number

7001069



USVI Urban Gardening Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

A continuously growing number of Virgin Islands residents have expressed an interest in engaging in urban gardening activities to supplement their income, reduce household expenditures, and improve family health by producing fresh fruits and vegetables around their homes and communities. However, there is a general lack of knowledge or limited knowledge among residents regarding the concept and practices of urban gardening. In addition, most K-12 grade students have a limited level of appreciation for the value and importance of urban gardening as well as the tasks involved in urban food production.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

One of the major activities during the reporting period was the Plant a Seed Challenge that was conducted in partnership with other entities. This competition engaged young adults (ages 5 -17) in urban gardening through a fun and educational activity. The use of social media (WhatsApp) as a communication tool among the participants served to enhance interest, enthusiasm, and learning about urban gardening. This medium was also used by our agency's staff to provide technical support and assistance to the contestants.

The AgDiscovery Summer Enrichment Program was effective in increasing knowledge and awareness of urban gardening principles and practices as a result of employing live demonstrations that showed practices and procedures from start to completion.

In the case of other training activities, including the Rites of Passage program, the use of a hands-on approach was instrumental in stimulating interest, enthusiasm, and learning.

Briefly describe how your target audience benefited from your project's activities.

As a result of implementing the Plant a Seed Challenge initiative 150 increased their enthusiasm, awareness, knowledge, and skills regarding urban gardening. In addition to their gardening skills, the participants learned about the economics associated with production by calculating the reduction in household expenditure as a result of their production.

During the implementation of the UVI AgDiscovery Summer Enrichment Program 24 junior and senior high school students increased their knowledge of the principles and practices of urban gardening and composting. Presentations included live demonstrations on box garden and compost bin construction. Based on the questions and comments from the students, the step-by-step approach used in the training encouraged learning. The results of the post-activity survey also indicated increased knowledge and retention by the students.

Our staff's involvement in the Rites of Passage initiative provided an opportunity to work closely with 14 young adults and impart information about the principles and practices of urban gardening. Through hands-on activities, the participants increased their level of knowledge and skills regarding how to start and maintain a garden.

Topics covered as a part of the training activities included site identification and preparation, crop variety selection, seeding, transplanting, drip irrigation, mulching, water harvesting, pest monitoring, identification, and management.

Finally, other training presentations were delivered to other adult and youth audiences through a series of webinars, school and home visits, workshops, exhibits, and demonstrations to share information about the principles, and practices associated with urban food production, composting, and plant propagation.

Briefly describe how the broader public benefited from your project's activities.

As a result of the project activities, residents of the Virgin Islands increased their knowledge regarding the value and importance of urban gardening. Based on feedback from community members, it was obvious that project participants were effective in influencing and sharing information with family members, friends and neighbors about the topic of urban gardening. This was most evident by the number of residents who requested that the Plant a Seed Challenge be repeated.

The community in general also benefitted as a result of the increased number of gardens (and food production) throughout our residential areas and schools. The sharing of fresh produce among neighbors, family members, and friends contributed to household savings and good health.

Critical Issue

Urban Forestry

Urban Forestry Education

Project Director

kenneth Davis

Organization

University of the Virgin Islands

Accession Number

7000404



Urban Forestry Education

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The urban forestry project issues are centered on competing demands for the rapidly changing and limited terrestrial land spaces of the Virgin Islands. These issues can make management decisions, concerning urban trees/forests very difficult. Urban forestry management issues have been further complicated by destructive hurricanes and the senescence of many urban trees. Both policymakers and landowners face challenging situations that may require CES technical advice and assistance to deal with tough decision-making positions about the management of trees/forest resources

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The major program activities focused on addressing the many requests from the community for technical information about urban forestry trees situated in public and private landscapes. Exchange of this information often implicitly furthered the program goal to make the community aware of the value of trees/forests, what they provide to the local economy and the valuable contributions they make to the quality of life of residents. Major activities also supported the program objectives to i) educate public and private agencies, policy makers, community organizations, and individuals about the preservation and conservation of urban/street trees, ii) increase the knowledge of the target audiences about the management of urban/suburban tree populations in our communities, iii) increase the awareness of our young people to be involved in the management of trees in urban and other forest communities

Briefly describe how your target audience benefited from your project's activities.

The target audience includes 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, property owners and residents. During this reporting cycle Virgin Islands (VI) government personnel benefited from the project's activities. CES provided technical assistance related to the protection and/or restoration of urban forest landscapes to various Virgin Islands' (VI) governmental departments. Staff responded to requests from the VI Waste Management Agency (WMA), Department of Public Works (DPW) and the Department of Planning and Natural Resources Division of Fish & Wildlife Service (DPNR-FWS) for on-going technical assistance and information about VI urban trees in public areas. CES staff members attended monthly meetings (started 4/2021) hosted by DPNR-FWS. The working group included five local plant experts (two from CES) representing St. Croix, St. Thomas and St. John who were recruited to help DPNR-FWS update and develop plant lists that will be compiled and merged into a "VI Plant Restoration Master List". Additional sublists include plants suitable for landscaping and protection in VI urban forests. When completed, this information will be available on-line for VI governmental personnel, those applying for building permits and the public. In another project, DPW and WMA requested that CES provide a list of "VI Special Trees" with commercially valuable or useful wood to be included the departments' combined VI Debris Management Plan developed to mitigate disaster recovery. This plan is required by FEMA to maintain eligibility to receive on-going FEMA funding not related to disasters. As requested, CES created a list of special VI trees with photos to assist identification. CES also was included in periodic WMA-DPW phone or MS Teams staff mtgs to discuss urban tree issues and other topics. CES also benefited other targeted audiences by participating in planning meetings focusing on urban forestry issues with VI NGO's, forestry council members/agriculture advisory groups (VI Department of Agriculture Forest Stewardship Program and Forest Legacy Program) and UVI personnel (UVI partner departments). CES was able to help clients by sharing information about native, commercially valuable and heritage trees during tours/site visits with youth groups, property owners, and farmers. At the same time, CES was able to draw attention to the importance of maintaining well-managed and biologically diverse urban forest landscapes through proper pruning and integrated pest management techniques.

Briefly describe how the broader public benefited from your project's activities.

The project activities strengthened partnerships that benefited public/private agencies, community leaders and the broader public. CES provided education, information about urban trees/forests, and technical advice to various agencies that will benefit the broader public through the creation of VI hazard mitigation plans including management strategies for urban forests with an emphasis on resilience, in anticipation of future climate change events.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

In FY 2021, the COVID-19 pandemic reduced, but did not eliminate, in-person direct contact outreach activities. Contacts and continued partnerships with NGO's and VI government agencies potentially will lead to future opportunities for training. Project results have been disseminated to communities of interest in forms of printed Information and media outreach. For the next reporting period, plans already are being developed by the "Plant Restoration Working Group" to encourage the propagation and sales of locally sourced native trees by nurseries and/or farmers. This group is concerned that local native plants can and are being threatened genetically by the importation of natives from Florida and elsewhere. Pests coming into the Territory with imported plants have already damaged local native species. For example, the important native sea grape tree (*Coccoloba uvifera*) has been severely impacted by this problem on St. John. CES also has been contacted by educators at VI schools and NGOs who want to plant trees at VI schools and elsewhere based on various initiatives such as the Earth Change (<https://earthchange.org/>) and Tiny Forest Academy (<https://www.tinyforestacademy.ca/>). The project anticipates that educators and NGOs will require technical assistance from CES and its partners with how to select and propagate locally sourced native trees and/or how to safely import native plants that will not threaten local native plants.

Type	Projects / Programs
Projects / Programs without a Critical Issue	0
Not Provided	