

Institutional Information Request Form

Southern Region: Value of Extension Services and Experiment Stations

The Battelle Memorial Institute is working with the leadership of the Association of Southern Region Extension Directors and the Southern Association of Agricultural Experiment Station Directors in producing analysis and a high-profile report on the special value of extension and experiment stations in the development of the 21st Century agbioscience economy. Each of the land grant universities in the 13 state and 2 U.S. territory southern region is collaborating in performance of this important project.

For each of the land-grant institutions participating in this project, Battelle is requesting information, data, project examples, etc. that will help illustrate the value of experiment stations and extension services. Completion of this information request is an important step in the information gathering required for this project. We are requesting that at each institution, the Experiment Station Director and the Extension Director jointly complete each section to the best or your collective ability. Note that within this form, Agbiosciences includes all aspects of agricultural, environmental, and biological sciences; as well as forestry, fisheries, wildlife, agro-tourism, and recreation; which are within the purview of the experiment station and/or extension service. Also, if you have additional supporting documents, reports, statistical summaries, etc. that you believe would be helpful to this project please forward them to the consulting team at Battelle together with your completed form. The form is set-up using MS-Word tables so you can type directly into the table boxes.

Please return the completed form to Simon Tripp at Battelle via email to tripps@battelle.org If you have questions please direct them to Simon at:

Simon J. Tripp
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Battelle Memorial Institute
Technology Partnership Practice
6 Jaycee Drive
Pittsburgh, PA 15243
412-276-1986
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Section 1: Institutional Profile

University Name	University of the Virgin Islands
Extension Service Director (name, phone, email)	Kwame Garcia, 340-692-4091, kgarcia@live.uvi.edu
Experiment Station Director (name, phone, email)	Robert Godfrey, 340-692-4042, rgodfre@live.uvi.edu

Personnel

Number of Personnel in Extension (FTE)	34
Number of Personnel in Experiment Station (FTE)	20

^{*} Please do not include student employees, graduate assistants or temporary personnel



Section 2: Income/Revenue Sources

Income Source	2011 \$ Income Received by Extension	Funding Trend for Past 3 Years	2011 \$ Income Received by Experiment Stations	Funding Trend for Past 3 Years
Federal Formula Funds	\$1,070,970	Increasing X StableDecreasing	\$1,133,270	Increasing Stable XDecreasing
State Appropriations	\$885,578	Increasing Stable X_Decreasing	\$611,153	Increasing Stable XDecreasing
Local Government Appropriations (Counties, etc.)	\$	Increasing Stable Decreasing		Increasing Stable Decreasing
Federal Grants and Contracts	\$ 635,013	Increasing X_StableDecreasing	\$480,860	X_Increasing Stable Decreasing
State Grants and Contracts	\$41,000	Increasing XStableDecreasing	\$	Increasing Stable Decreasing
Local Grants and Contracts	\$	Increasing Stable Decreasing	\$	Increasing Stable Decreasing
Industrial Grants and Contracts, including grants and contracts from commodity groups	\$	Increasing Stable Decreasing	\$35,000	Increasing X Stable Decreasing
Foundation Grants and Contracts	\$	Increasing Stable Decreasing	\$	Increasing Stable Decreasing
All Other Grants and Contracts	\$	Increasing Stable Decreasing	\$	Increasing Stable Decreasing
Sales of Products and Services	\$	Increasing Stable Decreasing	\$105,022	Increasing Stable XDecreasing
Intellectual Property Revenues	\$	Increasing Stable Decreasing	\$	Increasing Stable Decreasing
Gifts	\$	Increasing Stable Decreasing	\$	Increasing Stable Decreasing
Other	\$	Increasing Stable Decreasing	\$	Increasing Stable Decreasing
TOTAL	\$2,632,561	Increasing X_ StableDecreasing	\$2,365,305	Increasing Stable _X_Decreasing

Are these income/revenue numbers based on a cash or accrual accounting basis? Cash

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The Business of Innovation

Income Trends:

During the past five years, what trends have been observed in the funding for extension and experiment station activities? What are key funding challenges? Where have the most notable funding declines or increases occurred?

The economy of the USVI has taken a big hit in 2011 with the closure of a large oil refinery on the island of St Croix, resulting in the loss of 2,000 jobs. The ripple effect throughout the community and the economy is already being felt and has negatively impacted revenue generation of the local government, a major source of funds for UVI AES and CES. Austerity measures imposed by the local government and UVI have included an 8% reduction in salaries, hiring freezes and vacant position terminations.

There has been a slight increase (~5-10%) in research grant funds obtained by AES scientists in the past 5-year period. As the cost of operating the station has increased, finding funds to cover these increased expenses and still maintain functionality of our limited number of research programs has been critical and difficult. The loss of too much intellectual capital by downsizing research programs and facilities will lead to a decreased ability to fulfill our mission and continue to obtain grant funds. Because of our small size and location in the Caribbean much of our research is focused on tropical agriculture and does not address areas of national priority. This makes it is difficult for our scientists to be competitive for the large national grant programs. Some of our scientists have been able to develop collaborations with larger land grant institutions within and outside of the region to obtain grant funds from the larger national programs. One grant funding source, Tropical and Subtropical Agriculture Research (TSTAR), which was very relevant to our research, has been eliminated from the USDA-NIFA budget and this will have a significant impact on our grant funding.

Section 3: Research and Extension Activities

Key Initiatives, Institutes and Programs:

Please provide a description of <u>FIVE</u> key centers, institutes, programs or initiatives that are true signatures of experiment station and extension work at your institution. Here we are looking for descriptions of initiatives, centers, programs, etc. for which your university is internationally or nationally well-recognized as a leader.

- 1. The Aquaculture program in AES has developed an international reputation as a leader in the field of aquaponics. They developed the aquaponics system which combines fish and hydroponic plant production. The Aquaponics Short Course has taught 600 students from 45 states and 52 countries between 1999 and 2012, and continues to attract interested students from around the world.
- 2. The Animal Science program in AES has conducted research with local breeds of hair sheep (St Croix White) and beef cattle (Senepol) and is recognized as a leader in the field of tropical animal production. Research topics that have been recognized include reproductive management, assisted reproductive technologies, environmental physiology, parasitology, grazing management and sustainable production.
- 3. The Biotechnology & Agroforestry program in AES has been able to attract support and collaborators from around the world. Their work in tropical plant propagation using tissue culture and field trials of genetically modified pant species has led to collaborations with institutions within the region, internationally as well as with with industry.



5.

Special Research and Extension Infrastructure

Please provide a description of <u>FIVE</u> special assets or infrastructure investments that support agbioscience and related development at your institution. Examples might include pilot plant facilities, unique scientific research infrastructure, biosecurity facilities, camps, etc.

- 1. A 700 acre cattle ranch is used to house the Senepol cattle herd used in research by AES scientists. The breed was developed on St Croix and there has been a long term relationship between the local breeders, the breed association and both the Agricultural Experiment Station and the Cooperative Extension Service. The herd was donated by a local family and use of the land was included in the donation. Breeding stock and research data are the two primary products of the cow herd.
- 2. The Biotechnology & Agroforestry program of AES has established lab and field facilities for propagation of genetically modified crops such as papaya, cassava, rice and grapes. Work is supported by federal research and industry grants.
- 3. The Horticulture & Aquaculture program of AES has several small scale aquaponic systems that it uses for research and as part of the Aquaponics Short Course it offers several times a year. These facilities allow the class to have hands-on training in the field in addition to classroom lectures.

4.

5.



Most Notable Assets, Centers, Programs or Initiatives by Category

For each of the areas of focus listed below, please provide what you consider to be the top TWO most notable strengths (programs, assets and infrastructure, centers, etc.) of your institution:

Plant Sciences, Crop Science, Plant Genetics and Agronomy
1. Field facilities include research plots, greenhouses and a post- harvest field lab. These facilities are
used by 3 of the 4 research programs in AES. Off-campus plots are developed as part of on-farm
research as well.
2.
Animal Sciences, Animal Health, Livestock
1. Sheep Research Facility located on campus allows for research in many fields of study such as
reproduction, animal health, nutrition, environmental physiology and animal breeding. Local breeds of
sheep are evaluated for production traits to take advantage of local resources and inputs. Tours, open
houses and short courses offered in collaboration between the Agricultural Experiment Station and the
Cooperative Extension Service also take place at the facility.
2.
Food Science, Food Product Development, Advanced Nutrition and Health Products
1.
2.
Food Cafety and Disposition
Food Safety and Biosecurity
1.
2.
Industrial Bioeconomy, Biofuels, Biobased Chemicals, Biobased Materials and Fibers
1.
2.
Environmental Sciences, Natural Resources, Sustainability
1.
2.
Agritourism and Recreational Hunting and Fishing
1.
2.
Family Davidson and
Family Development
1.
2.
Youth Development
1.

Community and Economic Development

2.



1.		
2.		

Other, including multi-focus:

1.Because UVI has no academic programs in agriculture, AES collaborates with the other Insular Land Grants to obtain funds through the USDA-NIFA Resident Instruction Grants Program for Institutions of Higher Education in Insular Areas. These funds are used to support students conducting research in AES labs and presenting their data at regional, national and international scientific conferences.

2.

Intellectual Property

	2009	2010	2011
# of Invention Disclosures	0	0	0
# of Patents Applied For	0	0	0
# of Patents Awarded	0	0	0
# of Licenses Executed	0	0	0
# of Business Start-Ups	5	5	5
# of Plant Variety Protection	0	0	0
Certificates Applied For			
# of Plant Variety Protection	0	0	0
Certificates Awarded			
\$ Value of Income received from Plant	0	0	0
Variety/Germplasm Development			
\$ Value of Income received from all	0	0	0
other Intellectual Property			

Company Spin-Offs and Commercialization

Please provide examples of any start-up companies located in your state or the southern region that resulted from research discoveries, innovations or technologies developed at your institution in the past 10 years:

N/A

High Impact Innovations and Technology Development

Please provide FIVE examples of innovations or technology developments that have had a substantial impact on the field of agbioscience and/or associated agbio industries in the past 10 years. Examples might include crop varieties with enhanced yield characteristics, new processes or technologies introduced that significantly enhance productivity in industry, etc.

1) The Biotechnology & Agroforestry program of AES has developed varieties of Sorrel that produce



- out-of-season to extend the availability of this crop that has high local importance. Local producers have already adopted the new varieties and are expanding their market.
- 2) The Aquaculture program of AES has developed the aquaponics system of fish and plant production that has been used in many locations throughout the world. The technology is being used in commercial operations and as a teaching tool. The efficiency of production per unit of land area and minimal water loss from the system make it suitable to a wide variety of climates and environmental conditions.

Additional	comments or	items of no	ote regarding	g experiment	t station and	l extension i	mpacts:

Section 4: Extension Service Programs

Statistics: please provide basic metrics and statistical information for extension:

Metric	Number
Number of county/parish offices	3
Number of multi-county/multi-parish regional offices	
Number of major 4H camps	10
Number of 4H participants	655
Number of contacts with clients recorded by extension for the most recently completed year (include professional and volunteer contacts)	12,000
Number of volunteers for the most recently completed year and	43 volunteers
number of hours volunteered	3,752 volunteer hours

Please provide selected examples of notable/high impact projects or programs of extension that you would like considered for inclusion within the Battelle report. Please give consideration to including both rural and urban programs.

Business Development Programs/ Impacts

Community Development Programs/ Impacts

Family and Consumer Science Programs/ Impacts

- 1. Sewing and Clothing Construction Programs
- 2. Weight Management Programs

4-H and Other Youth Development Programs/Impacts



4-H Science and Energy Programs (Robotics)	

Other high impact/notable Extension programs

Computer Literacy Training and Technology Program

Additional comments or items of note regarding extension:

What diagnostic or other service facilities are operated by extension? What is the annual volume of business in number of clients and dollars?

- 1. The Plant Diagnostic Program has an annual volume of 200 people, netting \$9,600 annually.
- 2. The Pest Diagnostic Program has an annual volume of 200 people, netting \$4,000 annually

Section 5: Off-Campus Experiment and Extension Stations, Research and Extension Farms, and Outlying Research and Extension Centers

Please provide a listing of your off-campus agricultural experiment and extension station locations, including those near the main campus but not on campus, and other key research and extension locations across the state where faculty conduct research and/or extension activities, together with key characteristics or focus areas of each. *Note: please cut and paste table as needed to create enough entry places for all of your experiment station sites.*

Station 1

Station name	Beef Cattle Research Facility
Location (zip code)	00820
Size (acres), including owned and long-term leased land	700 acres
Key focus area(s) (e.g. poultry, crop demonstration, etc.)	Beef cattle research (reproductive physiology, environmental physiology
Notable or unique characteristics or assets	The Senepol breed of cattle was developed on St Croix and this herd was donated to UVI in 2006. Senepol is a tropically adapted Bos taurus breed and the cattle have traits that make them very well suited to the tropical climate.
Number of personnel (FTEs)	3.1

Station 2

Station name	
Location (zip code)	
Size (acres), including owned	
and long-term leased land	
Key focus area(s) (e.g.	
poultry, crop demonstration,	



etc.)	
Notable or unique	
characteristics or assets	
Number of personnel (FTEs)	

Station 3

Station name	
Location (zip code)	
Size (acres), including owned	
and long-term leased land	
Key focus area(s) (e.g.	
poultry, crop demonstration,	
etc.)	
Notable or unique	
characteristics or assets	
Number of personnel (FTEs)	

Additional comments or items of note regarding off-campus experiment and extension stations, county offices, etc.:

Section 6: Industry Partnerships

Please provide a description of <u>FIVE</u> notable partnerships that your experiment station and/or extension service has with industry. Examples might include a joint engineering center with an agricultural equipment manufacturer, plant breeding or transgenics programs with seed companies, bioprocess development with chemical or biofuels companies, food product development with food manufacturing companies, etc.

Provide details on companies, groups of companies, commodity groups etc. worked with, key results achieved and thoughts on benefits provided.

1. The Biotechnology & Agroforestry program obtains financial support from Ventria Bioscience to study
the production of genetically modified rice in the USVI and serve as a potential winter nursery. There
have been several research projects developed from this partnership such as evaluating herbicides on
rice germination and weed control, and comparing irrigated vs flooded rice production methods.
2.
<i>3</i> .
4.
5.

What areas of R&D at your institution do you believe hold the most promise for increasing industry engagement in the next five years?



Because of the climate and limited knowledge regarding tropical forages and other crops, the development of plant varieties for use as cover crops or high quality livestock feeds could be a significant area of focus. The ability to provide locally produced livestock feeds to producers would minimize the expense of using high-cost imported feedstuffs in livestock and poultry production systems and improve the economic efficiency of animal production in the Caribbean.

What agriculture, forestry, fisheries or wildlife and natural resource-related industries do you expect to see grow in the southern region during the next five years?

Small ruminant livestock production is prominent in the region and is gaining popularity. Niche markets for meat and dairy products from sheep and goats are being established and are very popular among certain ethnic groups in the region. Research methods on sustainable production and integration of animal, pasture and parasite management are areas with high potential.

Additional comments or items of note regarding industry partnerships:



Section 7: Regional Cross-Institutional & Governmental Partnerships

Please provide a description of <u>FIVE</u> projects, initiatives, centers or programs, etc. that your experiment station and/or extension service is engaged in together with other institutions in the southern region. Examples might include joint initiatives in biofuels development, food safely, biosecurity, rural economic development, etc.

1.	The Agronomy program of AES, in collaboration with the University of Tennessee, was awarded a
	USDA Sun Grant to evaluate switch grass and guinea grass for cellulosic biofuel production. The
	award is the result of a multi-state research collaboration to investigate the integration of legumes
	into bioenergy feedstock C4 grasses for sustainable biomass production. Specifically, this project
	will conduct experiments which establish and evaluate switchgrass and guinea grass for bioenergy
	feedstock production by comparing different biochar application rates and legume intercropping to
	conventional inorganic-N fertilization to maintain soil fertility.

conventional morganic-N jertilization to maintain son jertility.	
2 Plant diagnostics - CES	
3.	
4.	
5.	

What federal agencies do you partner with on major joint projects and programs? Please list the top 3 federal initiatives you are engaged with.

AES: USDA-NIFA Hatch funds; USDA-NIFA Resident Instruction and Distance Education in the Insular Areas

CES:

- 1. Natural Resource Conservation Service
- 2. Farm Services Agency
- 3. Rural Development (USDA)

What state agencies do you partner with on major joint projects and programs? Please list the top 3 state agency initiatives you are engaged with.

AES: VI Department of Agriculture through their Specialty Crops Block Grants CES:

- 1. Virgin islands Department of Agriculture
- 2. Department of Human Services
- 3. Department of Education

What do you believe are some of the unique assets of the southern region that make it particularly well-suited to leadership in the 21st Century agbioscience economy?

Because of our location and climate we are well suited to address issues relating to climate change. There are many species of plants that grow in this region that do not grow in others and are unique to the region. The same holds true for livestock, in that our animals are well adapted to the tropical climate and research on this adaptation can address issues of climate change. There are large numbers of small



communities and small scale farmers in the region that can take advantage of research/outreach that focuses on sustainable, small scale production.

Additional comments or items of note regarding potential or existing partnerships with other institutions across the southern region:

AES:

- Because of our small size several faculty in AES have developed relationships with other land grant institutions in the region and have been able to obtain adjunct appointments at these larger schools.
- 2) The Agronomy program of AES organized a multi-regional research team that includes the University of the Virgin Islands, the University of Puerto Rico Mayaguez and the University of Florida to investigate tropical leguminous cover crops, termination methods, and their continued use as surface sheet mulch compared to other cultural mulching practices in tropical crop production systems. This initiative is funded by the Southern SARE Research and Education Program.
- 3) Two faculty in AES are participants in multistate projects within the region. One deals with plant breeding (S-9) and the other deals with cattle production in harsh environments (S-1045).

CES:

- 1) University of Florida
- 2) University of Georgia
- 3) Auburn University



Section 8: Education and Human Capital Development

Student Population

Number of students graduated in most recent year with Bachelor's	0
degrees in related field of study	
Number of students graduated in most recent year with Master's degrees	0
in related field of study	
Number of students graduated in most recent year with Doctorate	0
degrees in related field of study	
Number of students graduated in most recent year with Associates or	0
other less than baccalaureate qualifications in related field of study	

Education and Training Programs

In a science and knowledge-driven economy, skilled human capital is a critically important asset for our states. Please provide details pertaining to education and skills development in the sections below:

New or innovative education programs or degree programs developed (for example: bioprocessing or biorefinery operator training, biosecurity training, education programs in new fields such as functional foods, nutraceuticals, etc.)

N/A

Continuing education programs or training for producers or industry

The UVI Aquaponics Workshop is offered quarterly as a 3-day class and is limited to 20 persons per class. The class provides instruction on the development and use of the aquaponics system developed at UVI. The class is open to students, producers, teachers and anyone interested in aquaponics.

Several AES faculty and staff have served as volunteers for Winrock International Farmer-to Farmer programs in various countries around the world (Nigeria, Bangladesh, Nepal).

Professional Certification Programs

Tropessional certification riogiams
Pesticide Application Training Certification
Leadership training, including civic, commodity, government, youth, etc.
N/A
Entrepreneur training and other special training or education initiatives
N/A

National defense, including National Guard, training or educational initiatives

N/A

K-12 specific educational programs and initiatives

N/A



Additional comments or items of note regarding education and training:

Two AES faculty have served as volunteers for SeaTrek BVI, an educational organization that focuses on marine science and the environment. AES volunteers have provided information to students on how agriculture interacts with the marine and terrestrial environments with a focus on the Caribbean, sustainable agriculture practices and how to conduct and interpret research.

Section 9: Into the Future

What key challenges does your institution face in the future:

Top 5 key challenges for the Experiment Station in your state

1. Employee retention - maintaining adequate staffing levels to keep intellectual capital and meet
funding commitments
2.Local funds are being cut and impact our ability to match federal funds
3.Mission creep imposed from central administration
4.High cost of doing business – utilities, fuel, infrastructure maintenance
5.Compensation is not competitive or fully tied to the cost of living

Top 5 key challenges for the Extension Service in your state

1.	
2.	
3.	
4.	
5.	

What emerging opportunities or trends do you see impacting your institution:

Top 5 emerging opportunities and trends for the Experiment Station

1. Younger scientists are branching out into new fields of study
2.Potential exists for more external funding opportunities by collaborating within and outside the region
3.Community awareness of food security gives more credibility to our work
4. Much of our research can relate to climate change, just because of our location and climate
5. Focus on sustainability will minimize use of limited or expensive/imported resources

Top 5 emerging opportunities and trends for the Extension Service

1.Technology
2.Ecotourism
3.Training of Young Farmers
4.
5.

For the southern region overall, what do you see as the top five challenges/issues moving forward

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1. Keeping students interest in agriculture at a high level by expanding the areas outside of just					
production agriculture.					
2.Obtaining funds to support high quality research and maintaining competitiveness for these funds.					
3.					
4.					
5.					

What are the top five differentiating factors of the southern region in agriculture, agbiosciences, community/family/youth development, etc. What makes the region unique or provides key comparative advantages.

- 1.We have two territories represented in the region that have unique environmental/economic and social issues that impact research and extension activities.
- 2.In much of the region there are increasing numbers of ethnic populations with specific cultural preferences for food and agriculture crops.
- 3.Small scale farming is one of the most common agriculture businesses in the region and they have issues that are different than large scale producers that must be addressed.
- 4.Teh environmental constraints for agriculture make our work very well suited to address issues relating to climate change, such as temperature and water limitations

5.

Section 10: Interview Suggestions

Battelle would like to interview some key stakeholders (outside of the land-grant institutions) across the southern region to discuss their perspective on the importance of extension and agricultural research. Please provide the names and contact information for three individuals who you would suggest for interviewing in your state:

Name	Title	Organization	Telephone	Email
Eldridge Thomas	Farmer	We Grow Food, Inc	340-774-5482	N/A
Dayle Brown	Farmer	Sejah Farm of the VI	340-277-9392	sejahfarm@unitedstates.vi
Warren Williams	Farmer	St. Thomas Livestock Association	340-642-4293	fatmot@live.com

Section 11: Additional Comments

Please provide any additional comments, information, data, case-studies, impact assessment results, etc. that you feel may be useful or relevant for inclusion in this project and resulting report:

At UVI, AES and CES are separate units and there are no joint appointments although we do work closely together on many projects and activities. Without an agriculture degree program AES and CES faculty & staff are not associated with an academic department as is common at most land grant institutions.