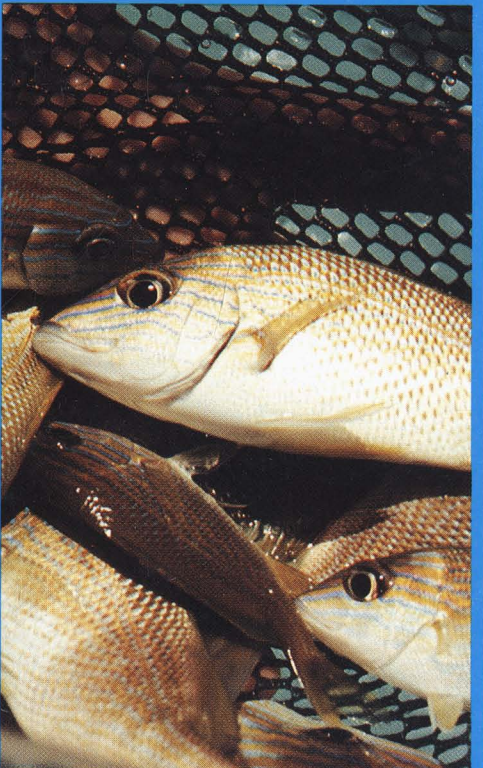
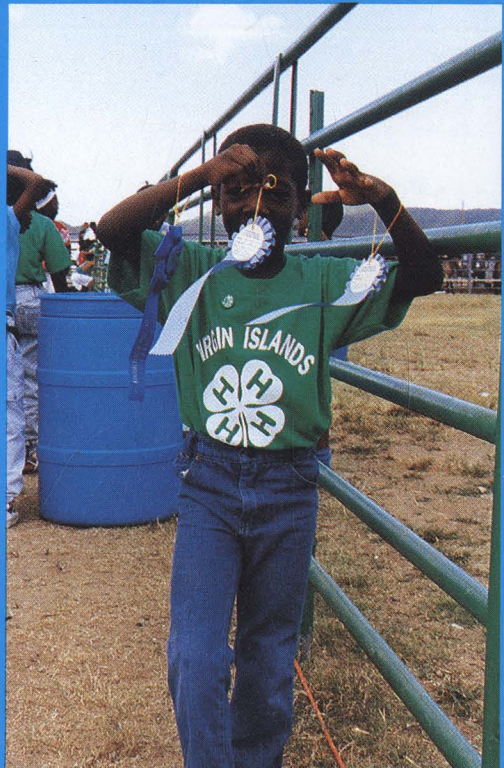
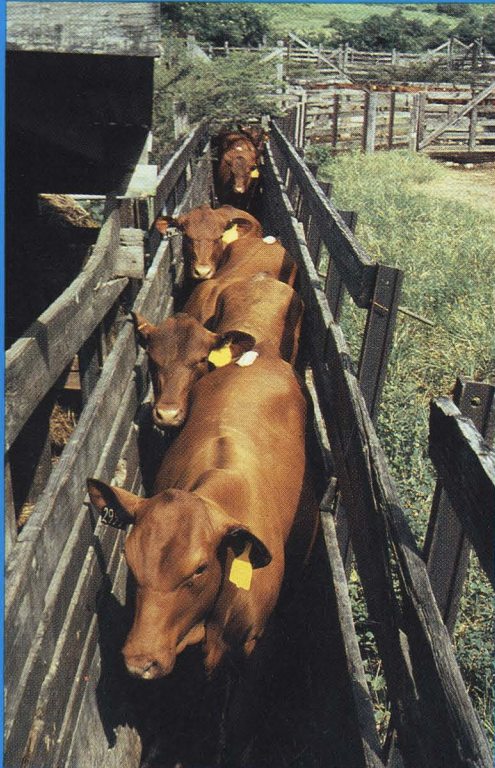
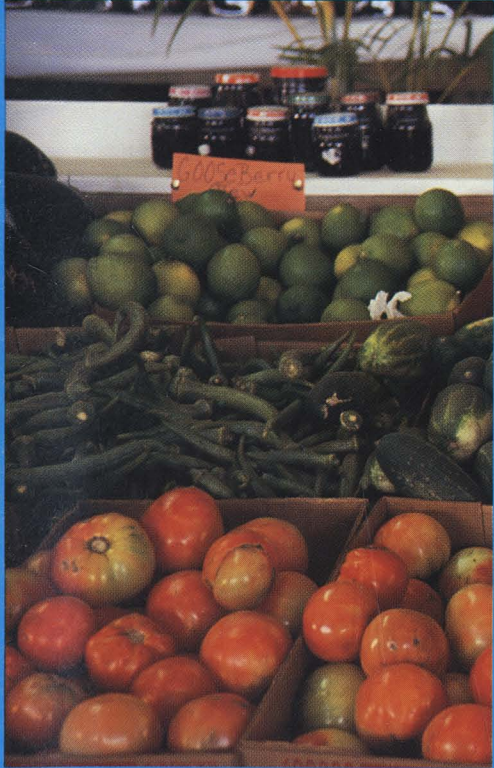


FINDING THE ANSWERS and SHARING THE KNOWLEDGE

TWENTY YEARS OF EXCELLENCE



An Accomplishment Report of the University of the Virgin Islands
Agricultural Experiment Station and Cooperative Extension Service



Senepol cattle grazing on St. Croix

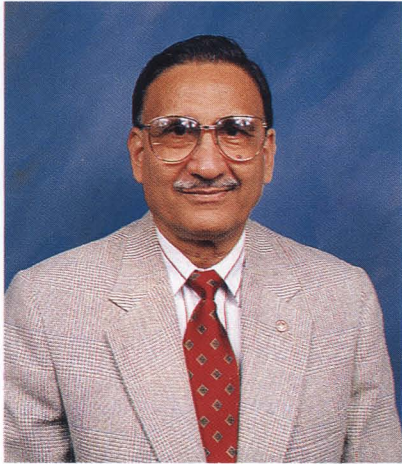
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1992

A publication of UVI Land-Grant Programs, Communications Unit

Robin Sterns, Editor



Foreword

"In the last analysis civilization is based upon the food supply."

*Will Durant
The Story of Civilization*

This publication, celebrating the 20th anniversary of Land-Grant status of the University of the Virgin Islands, highlights two areas of which we are extremely proud: excellence and collaboration.

Included here are program histories from the units comprising the Agricultural Experiment Station (AES) and Cooperative Extension Service (CES). Some stretch back much farther than the official life of our organization.

At the back of this publication, you will find a database listing of the nearly 500 publications issued by AES researchers and CES educators since 1972.

In addition, located throughout the text are historic and brand-new photographs representing moments of pride, accomplishment and history of these programs.

I would like to take a moment to highlight salient accomplishments of the Land-Grant Programs of which we are particularly proud:

- We have fought hard and successfully won the trust of our clientele in the U.S. Virgin Islands. This is our most basic mission.
- We have become active participants and leaders for such regional and international organizations as the Caribbean Food Crops Society (CFCS) and Caribbean Basin Administrative Group (CBAG). Their stories are included in these pages.
- We have played an active role in the growth of the annual Agriculture and Food Fair on St. Croix and the expansion of the event to St. Thomas/St. John. Combined attendance at these showcases for local agriculture, food products and socio-cultural activities is one of the largest for any single event in the U.S.V.I.
- Although our programs are small compared with the major stateside land-grant universities with whom we must compete for grant monies and quality staff, we have been successful at winning competitive grants and receiving national and international awards.
- We have trained a team of local research and extension specialists who are prepared to assume leadership roles in the future and developed an infrastructure with state-of-the-art physical facilities.
- We were instrumental in collaborating with the local cattle industry in standardizing and promoting the Senepol breed of cattle, native to St. Croix.
- International symposia held at UVI on Senepol cattle and on hair sheep made us a global hub for research efforts on these important breeds.

- Our unique recirculating fish culture and vegetable hydroponics system was recognized as a promising new development in May of 1992 by the Worldwatch Institute.
- Our fruits researchers successfully identified the bacteria that had been wreaking havoc with local papaya trees until the early 1980's, threatening this important crop. Current efforts are concentrating on selecting resistant varieties.
- Both AES and CES efforts in research and information dissemination have encouraged local adoption of drip irrigation as the most efficient, water-saving and productive method for local agriculture.
- Extension efforts in the Virgin Islands have concentrated on providing educational programs that help families cope with economic, occupational and social change. We assist a wide range of age groups with programs that encourage leadership and positive activities for youth, parenting and marketable skills, and community programs for the elderly.
- A two-year instructional program in agriculture was initiated to fulfill the University's land-grant mission in the area of teaching.
- Locally produced publications get our messages to the people, ranging from one-page factsheets on gardening to The Heart of the Pumpkin, a CES cookbook featuring nutritional breakdowns of local recipes, to scientific AES articles published in internationally recognized journals.

We work as a team. The accomplishments you will read about in these pages have been made possible by teamwork among colleagues within the Land-Grant Programs and the larger University community, among researchers and specialists at other similar institutions, and among citizens of the Caribbean region and the United States.

The history of UVI's Land-Grant Programs is a Virgin Islands success story in which our people can take pride. For myself, it has been a privilege to serve as the captain of such a winning team and as an active participant in the pursuit of excellence. I gratefully acknowledge the support of all who have made these accomplishments possible.

D. S. Padda
Vice President,
Research and Land-Grant Affairs



UNIVERSITY of the VIRGIN ISLANDS

Office of the President

Greetings!

This year has been one of celebration for the University of the Virgin Islands. We are celebrating our 30th anniversary as an institution of higher learning and our 20th anniversary as a land-grant institution. There is much for us to be proud about.

The Land-Grant Programs at UVI have contributed tremendously to our reasons for celebrating in 1992. Under the leadership of Dr. Darshan Padda and through the creative efforts and dedication of researchers and staff, Land-Grant Programs excelled during the past 20 years establishing UVI as a leader in the region, in the nation, and in the international arena.

High among Land-Grant's most noteworthy accomplishments are its unique work on Senepol cattle, research on regional agriculture and food production, its many scholarly and popular publications, and its immensely successful agricultural and food fairs on both St. Croix and St. Thomas.

This component of the University has moved the institution closer to the fulfillment of its mission in improving the region, in building nations, and in changing society for the betterment of all.

Congratulations to Dr. Padda and all the men and women who have contributed toward these outstanding accomplishments. We are extremely proud of their achievements.

Orville Kean

Orville Kean, Ph.D.
President

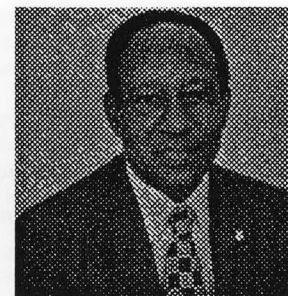


Message from Dr. Orville Kean
President,
University of the Virgin Islands

Message from
Patrick N. Williams
Chairman,
UVI Board of Trustees



Message from Oscar E. Henry
Chairman,
Territorial Advisory Committee,
UVI Research and
Land-Grant Affairs



It is with great joy that I extend my congratulations to the University's Land Grant Program under the leadership of Dr. Darshan Padda as we celebrate the twenty years of its existence.

I have had the distinct honor and privilege of working closely with Dr. Padda during my tenure as Commissioner of Agriculture, and as a member of the Board of Trustees for many years. Over these years I have found the services provided by this component of the university to be of substantial benefit to the farming community of the Virgin Islands through its research and other services rendered to the people of the Virgin Islands, our neighbors in the Eastern Caribbean, Puerto Rico, and even within certain parts of the United States.

As chairman of the Board of Trustees, and on behalf of my colleagues on the Board, I extend to Dr. Padda and his staff of dedicated individuals our heartfelt thanks for a job well done. Please continue the good work and keep UVI as a leader in this most important industry.

Sincerely,

A handwritten signature in black ink, appearing to read "Patrick N. Williams". The signature is fluid and cursive.

Patrick N. Williams
Chairman
Board of Trustees

Before the Virgin Islands had the benefit of a territorial land-grant institution, the United States Department of Agriculture had a program in research and extension in the Virgin Islands for a number of years. Some excellent scientists came here to help develop agriculture. However, over the years, the program became almost a disappointment: local farmers were not getting the service they needed.

I was very pleased in 1972 when the then College of the Virgin Islands (CVI) got Land-Grant status. It brought new hopes. Substantive change didn't occur right away, however. In the early 1970's, Darshan S. Padda joined the local department of agriculture, and I had the opportunity to work with him. I then encouraged him to join CVI in 1974. In 1976, newly elected Governor Cyril E. King asked me to serve as Commissioner of Agriculture. I was first reluctant; however, Dr. Padda convinced me I had the right qualifications to help the local agriculture industry.

During my term as Commissioner, Dr. Padda and I worked closely together. We traveled to Washington, D.C. and received tremendous support at all levels, including the U. S. Secretary of Agriculture Dr. Butz. Many things came from our collaborative effort: Senepol cattle development, garden plots on St. Croix, a successful sorghum program and expanded three-day St. Croix Agriculture and Food Fair are only some of the examples of our joint efforts.

After I completed my term as Commissioner, I continued my relationship with the university as chair of the Territorial Advisory Committee and as the Virgin Islands non-institutional member of the national Council for Agricultural Research, Extension and Teaching.

I have always been impressed with Dr. Padda's ease of interaction at national and international levels and the excellent quality of programs that he has developed locally and throughout the Caribbean. The prestigious awards he has received have made us all proud.

I feel tremendous pride to have played a role in the development of the University of the Virgin Islands (UVI) Land-Grant Programs. I wish to commend the University and join in celebration of the 20th anniversary. I sincerely hope the current level of excellence will be maintained.

This is a challenge for UVI's new administration.

A handwritten signature in black ink, appearing to read "Oscar E. Henry". The signature is cursive and somewhat stylized.



Message from
Dr. Lawrence C. Wanlass
CVI President Emeritus

Connecting the past with the present, I am happy to join with Dr. Padda and the members of his staff in celebrating the first 20 years of the University's land-grant programs.

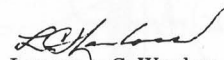
The original mission, goals and objectives of the then College of the Virgin Islands were limited in scope and purpose. In 1962, when the first planning was done, the College was conceived of as a two-year college which might be organized around having the institution serve as a model for possible adoption by underdeveloped countries.

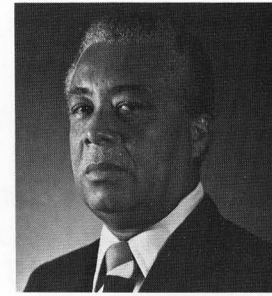
It soon became apparent to those of us charged with actually developing the institution that a more important mission for the College would be to serve the Virgin Islands through education, research, and community service in the same manner as the successful land-grant universities serve their states on the mainland.

Resolved to achieve this goal, we sought federal land-grant legislation for the Virgin Islands. Finally, in 1972, after working for six or seven years with three of the standing committees of the Congress, this status was accomplished.

The programs and achievements of Dr. Padda and his staff, based on land-grant status, are recounted in the pages which follow.

If it was my privilege to be of help in bringing research and community service to the Virgin Islands, making university status possible, the real sense of accomplishment belongs to Dr. Padda and his staff. They have labored long and successfully to write this most important chapter in the growth of the University of the Virgin Islands.


Lawrence C. Wanlass
President Emeritus



Message from
Dr. Arthur A. Richards
UVI President Emeritus

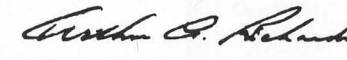
August 19, 1992

I offer my congratulations upon the occasion of the twentieth anniversary of the award of land-grant status to the then College of the Virgin Islands. It was a momentous achievement, and it was due principally to the efforts of President Lawrence Wanlass and Trustee Chairman Ralph M. Paiewonsky.

Many changes, advancements occurred during the ensuing years, but the Agricultural Experiment Station and the Cooperative Extension Service expanded and improved under Dr. Padda's leadership. Service is available to all the people of the Virgin Islands as well as to others who request it. In this connection, I am happy that Dr. Padda's and my beliefs were the same: that the children of low income persons and the wealthy are entitled to the same quality of service.

One of the highlights of my presidency was to witness unprecedented growth and acceptance of the land-grant programs not only in the Virgin Islands but the larger Caribbean and the United States as well, and especially the national and international recognitions that Dr. Padda has received through many prestigious awards.

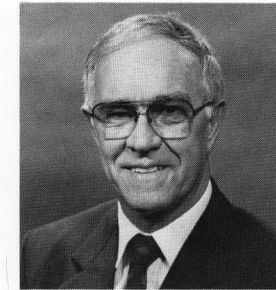
Dr. Padda and his colleagues have accomplished much beneficial research at the Agricultural Experiment Station, and the Extension Service has carried that research and other pertinent information to the people. I am glad that I played a role. Carry on.


Arthur A. Richards, Ph.D.
President Emeritus

Message from
Dr. John Patrick Jordan
Administrator,
USDA Cooperative State
Research Service



Message from
Dr. Myron D. Johnsrud
Administrator,
USDA
Extension Service



United States
Department of
Agriculture

Cooperative
State Research
Service

Office of the
Administrator

Washington, D.C.
20250

Dear Dr. Padda:

August 11, 1992


Twenty years ago, in 1972, the College of the Virgin Islands was given Land Grant University status by the U.S. Congress. That was a milestone for the people of the Virgin Islands. This new status provided an expanded mission for the College, now the University of the Virgin Islands.

Through the establishment of the Virgin Islands Agricultural Experiment Station and the Virgin Islands Cooperative Extension Service, the University was no longer limited to principally classroom activities. The University now has territory-wide research and education responsibilities for all the citizens of the United States Virgin Islands. The whole territory is now the University's classroom and all the citizens are its students. Students of all ages.

This is what the concept of Land Grant University status is all about: service to everyone. During its first 20 years, research and extension education efforts by the faculty and staff have left their mark. Scientists are generating new information and technology while extension specialists are carrying the messages to the people.

President Abraham Lincoln started the idea. It is still valid today. We all benefit from the Land Grant Programs of the University of the Virgin Islands. Congratulations to you and all the people involved.

Sincerely,


JOHN PATRICK JORDAN
Administrator



United States
Department of
Agriculture

Extension
Service

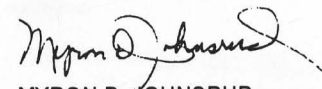
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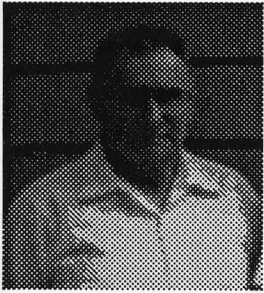
Washington, D.C.
20250-0900

Greetings to University Colleagues and Clientele:

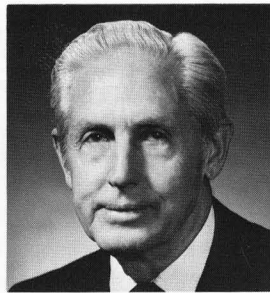
I am pleased to extend a very warm and hearty congratulations to the University of the Virgin Islands on your 20th Anniversary. During your relatively brief history as one of the 74 national land-grant universities, you have accomplished and endured much. The birth and maturity of organizations, like individuals, requires thoughtful and caring leadership, support, and a sincere desire to succeed. Your University and its leadership have possessed all these attributes. And you have encountered some stormy challenges during this 20 year period including the devastation of a hurricane and securing the resources to not only rebuild but also establish the basic facilities. Each of you should stand tall with great pride for your many accomplishments in just two decades.

I have thoroughly enjoyed visiting your University and working with your Vice President. Your USDA-Extension Service partner looks forward to continuing this excellent partnership in the decades ahead as you pursue your dreams and aspirations for the University of the Virgin Islands.


MYRON D. JOHNSRUD
Administrator



Message from
Dr. James E. Halpin
Retired Director at Large,
State Agricultural
Experiment Stations



Message from
Dr. Roy L. Lovvorn
Former Administrator,
USDA Cooperative State
Research Service



Message from
Dr. Fenton B. Sands
Former Director,
CVI AES and CES

Dear Vice President Padda:

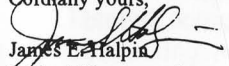
The University of the Virgin Islands is celebrating a milestone: 20 years of Land Grant University status, the great majority of which have been under your leadership. Having cooperated with the development of this program, since its inception, I have had the pleasure of watching it expand, increase in relevance to the islands, and mature into a fine research and extension educational institution with island wide missions. A lot has been accomplished in a very short time under your leadership.

You have brought together, at the University, a fine collection of dedicated scientists to accomplish important research and extension activities. These scientists are aware that the major relevance of their activities is through better understanding and use by the public of new technology. Their stature within the world wide research community has been enhanced. And the extension education activities are models for others to follow!

CONGRATULATIONS !

The University of the Virgin Islands can be proud of its accomplishments, the spirit of cooperation it provides to other institutions, and the concept of mission established under your leadership. The people of the islands have been well served. Few universities have the record you and your people have developed in such a short time. Also, the opportunities available for the future. The University of the Virgin Islands is, in many ways, the model for the Land Grant University concept as established by President Lincoln.

My best wishes to you and your staff, as well as to the people of the Virgin Islands, upon your successful completion of 20 years of service!

Cordially yours,

James E. Halpin
Retired Director at Large,
State Agricultural Experiment Stations

Dear Dr. Padda:

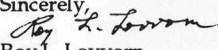
I remember so well the morning your predecessor and I sat with the President of the University and "created the Agricultural Experiment Station" of the University of the Virgin Islands! What a historic event. The Congress had just passed legislation bringing your University into the Land-Grant University System and provided some small but significant funds for research and extension.

As the administrator of the Cooperative State Research Service, I was to join later with Dr. McDougal of the Federal Extension Service in an orientation visit with you. It was a tremendous experience for all three of us in planning for what has become an integral part of the University and an economic force in agricultural development on the islands.

After my retirement I was invited on two different occasions to visit your program and to review the research underway and also to visit some of your agricultural leaders. In those early days the concept of a Land-Grant University was new to your constituents, but even then, the interest was there. This was true not only from you and your staff but from your community leaders as well.

Twenty years have passed! What a great period in the history of the Virgin Islands. You have demonstrated leadership and vision in recruiting a capable staff, in maintaining morale among them, and in obtaining support, both local and national. In addition, under your leadership, the research and education programs are recognized and appreciated throughout the Caribbean area.

This 20th anniversary is a wonderful story and I salute the University, its administrators, faculty and supporters on this historic occasion. I am grateful for having had a small role in its development.

Sincerely,

Roy L. Lovvorn
Former Administrator
USDA Cooperative State Research Service

Dear Dr. Padda:

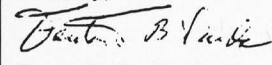
It is a real pleasure to send you greetings and congratulations on the 20th anniversary of the University of the Virgin Islands as a land-grant institution. The honor of being the first director posed a distinct challenge to me and all who assisted in initiating the program. However, being the product of the land-grant system and having seen it, or modified versions, function in the many foreign countries I had worked in, I knew it would be successful.

The various congressional acts that make up the land-grant system, namely the Morrill Acts of 1862 and 1890, the Hatch Act of 1887 and the Smith-Lever Act of 1914, have had a tremendous impact on the lives of American citizens. Although the system cannot change the natural environmental features of any country or territory, it does enable the people to maximize the use of their natural resources such as rainfall, soil, water, winds and sunlight to improve their quality of life. Such has been the goal of the University of the Virgin Islands.

To obtain an objective and in-depth appraisal of the agricultural industry when we started, a series of feasibility studies on various agricultural enterprises were undertaken. These reports, prepared by the V.I. Agricultural Experiment Station, identified the limiting factors associated with crop and livestock production, provided insight on the need for training and education of farmers and recognized the gaps in our knowledge about crops and livestock on the islands. The factors revealed by the study became the basis of the extension and research programs.

With the opening of the new Research and Extension Center, I am sure the land-grant program will significantly raise the level of education, training and research thereby improving the quality of life for the people of the Virgin Islands.

My sincere good wishes for continued success.

Cordially,

Fenton B. Sands, Ph.D.



OVERVIEW: A HISTORY OF AGRICULTURE RESEARCH AND EXTENSION IN THE U.S. VIRGIN ISLANDS

"It was a 'labor of love'"

Dr. Lawrence C. Wanlass, President Emeritus,
on the process of achieving Land-Grant status

The College of the Virgin Islands (CVI), now the University of the Virgin Islands (UVI), became a Land-Grant institution on June 23, 1972, when U.S. President Richard M. Nixon signed the Education Amendments Act. Since then, the Land-Grant Program has developed and expanded into a vigorous research and extension arm of the university, its most direct connection to the citizens of the Virgin Islands.

These pages contain histories of the programs that make up the research arm of the component, the Agricultural Experiment Station, and the information dissemination arm, the Cooperative Extension Service. These histories summarize the major struggles and successes these entities have had, locally, regionally and internationally, as they have grown over 20 years.

But an understanding of UVI Land-Grant requires an understanding of the Land-Grant system, as well as an understanding of the status of agriculture research and extension in the Virgin Islands prior to 1972.

The Land-Grant System

When CVI was granted Land-Grant status, it joined what is in 1992 an educational network of 74 colleges and universities in the United States and its territories, all of which have a mission of providing research-based practical information and education to the people.

According to the National Association of State Universities and Land-Grant Colleges, Thomas Jefferson first proposed in 1806 the concept of using "grants of land" as a way to endow a national university. The concept did not become a reality, however, until Abraham Lincoln signed the Morrill Act into federal law in 1862. This act provided that practical education should be available to all interested students, not just the wealthy.

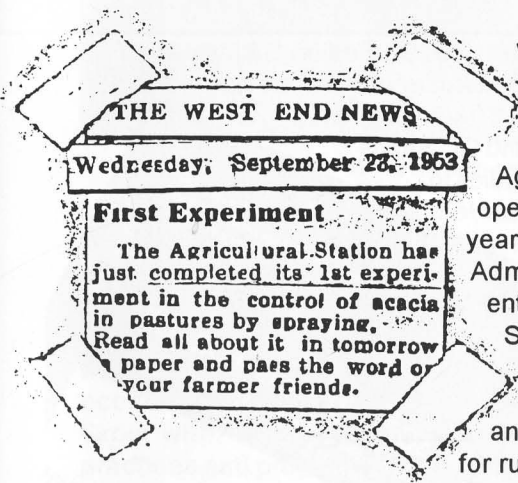
With the signing of the Hatch Act in 1887 and the Smith-Lever Act in

Produce display at 1991 St. Thomas/St. John Agriculture and Food Fair.

1914, the Land-Grant concept expanded to include two major services to the people in each region: an Agricultural Experiment Station (AES) and a Cooperative Extension Service (CES). Simply put, AES scientists conduct research to solve local agricultural problems and assist farmers in achieving greater economic returns. CES specialists and agents pass this research on to the people.

While in the beginning Extension efforts were clearly divided between "hard" agriculture and domestic science, time and the changing priorities of Americans have made these efforts much more technical, diverse and urban. Today's Extension staff provide assistance in areas as specialized as the unique nutrition needs of diabetics, youth drug abuse prevention, propagating ornamental plants by grafting and managing home-based businesses.

Agriculture and Extension in the Virgin Islands



Agricultural research and extension was by no means new to the Virgin Islands in 1972. According to Richard M. Bond, former officer in charge of the local United States Department of Agriculture (USDA), offices had been operating on St. Croix and St. Thomas for years. Specifically, the Farmers' Home Administration (FmHA), a farm financing entity, had been in operation (as Farm Security) since 1939. In a 1961 letter to The Daily News, he noted that FmHA had 40 outstanding loans in the territory and was making low-cost loans available for rural housing on all three islands.

The Soil Conservation Service (SCS) also has a long history in the Virgin Islands. Bond noted in 1961 that SCS was concentrating its efforts in water conservation and had designed and supervised the construction of more than 140 dams on the three islands.

The Virgin Islands Agricultural Program was started in 1952, with a Federal Experiment Station (now the USDA Agriculture Research Service, located adjacent to the UVI St. Croix campus) and an Extension Service conducting home economics information dissemination and supervising 4-H clubs. A St. Croix West End News report on October 22, 1953, titled "One Year's Work Reviewed," noted that the Experiment Station had already cleared land for experimental plots and begun 28 experiments on

fruit and nut varieties, weed control, pasture improvement and fertilizers for sugarcane. Four 4-H clubs had already been started, as well, and a community development project had been organized to beautify New Works Village.

USDA also had a Plant Quarantine Division with offices on St. Thomas and St. Croix, and a reforestation and forest management project on all three islands being coordinated by the U.S. Forest Service, which had been in the Virgin Islands since the early 1950's. A 1953 Daily News article, for example, noted that the Forest Service had conducted an experimental sowing of mahogany seeds from a chartered airplane over St. Croix and St. John.

Two-inch high headlines in the January 26, 1966, issue of The Daily News screamed, "LACK OF FUNDS MAY END V.I. AGRICULTURAL WORK," and the February 17, 1966, issue of The Virgin Islands Times ran the story, "Agriculture Station Faces Closure Here." President Lyndon B. Johnson had just announced plans to severely cut the budget for the Agriculture Research Service in 1967, and decisions were made locally to continue programs with a skeleton staff, saving 4-H but virtually eliminating the work at the federal Experiment Station.

In 1967, however, an August 21 article in The Daily News noted that plans had been laid for the formation of an Agriculture and Research Extension Program, under the direction of USDA, but with the cooperation of the College of the Virgin Islands. Mr. Harold Clum was appointed director, Mr. Morris Henderson, associate director, and Mrs. Amy McKay named home economics supervisor. Both Mr. Henderson and Mrs. McKay continued their association with the programs after Land-Grant status placed them under the CVI umbrella.

Moving from cooperation to Land-Grant status, however, was not a

THE DAILY NEWS, MONDAY, AUGUST 21, 1967

11

Agriculture-Research Extension Program

Last November Morris R. Henderson and Mrs. Amy B. Mackay, who were working for the Agricultural Research Division under the United States Department of Agriculture, began to lay out on paper the formation of the Agriculture and Research Extension Program.

On July 5, the director of the newly formed program, Harold V. Clum assumed his duties, and a four-point education program through the College of the Virgin Islands and in cooperation with the U.S. Department of Agriculture was launched in St. Croix.

Miss Margaret Oliver, who is a U.S. Agriculture department program leader for 13 southern states, Puerto Rico and the Virgin Islands explained that the program normally functions between land grant colleges and the Federal government;

the group, will conduct small educational counselling sessions with local residents in the areas of: child development, and parent education, nutrition, family health, family safety, home improvement, with emphasis on home food production.

During the months of July and August Mrs. Mackay and Henderson have met three times with VISTA members in St. Croix, who will assist in the development of 4H Clubs, by helping to develop local leadership and local residents to act as lay leaders.

Mrs. Mackay said, "We will draw upon the assistance of local agencies such as the Department of Social Welfare when we find that we are in need of highly specialized assistance."



VIRGIN ISLANDS EXTENSION SERVICE, associate director Morris Henderson, Miss Margaret Oliver, program leader for the U.S. Department of Agriculture, and Mrs. Amy Mackay, home economics supervisor for the Virgin Islands Extension Service. (Daily News Photo)

Released by: James K. Ready

FOR IMMEDIATE RELEASE

June 8, 1972

It is with considerable pleasure that we have learned that the U.S. House of Representatives today passed the Omnibus Higher Education Bill by a vote of 218 to 180, Lawrence C. Wanlass, president of the College of the Virgin Islands, said today. The bill now awaits the signature of the President of the United States.

Included in the bill is a provision to give land grant status to the College of the Virgin Islands. This would provide the College with an endowment of \$3 million, plus an annual income of \$450,000. The bill additionally includes provisions for other revenues of importance to the College of the Virgin Islands.

If the bill becomes law, it will have great overall significance for higher education in the Virgin Islands and will greatly assist in the College's plan for the development of the St. Croix campus of the College.

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underwriting the mission of the new College of the Virgin Islands.

Earliest assistance came from Wayne Morse, an influential Senator from Oregon, Wanlass said.

He said the legislation "churned its way" through three House of Representatives standing committees, and unfortunately became the basis for a jurisdictional dispute among the Interior Committee, the Agricultural Committee and the Labor and Education Committee, which made passage of the legislation much more difficult. Wanlass credits "major help" from 14 or 15 U.S. Senators and Representatives, including Hubert Humphrey, Henry "Scoop" Jackson, Phil Burton and Carl Perkins, for eventual passage of the legislation.

simple or brief process for the college. According to Dr. Lawrence C. Wanlass, CVI President Emeritus, it took six years. He said the origins go back to plans he formulated in agreement with the Board of Trustees in the early 1960's, while defining and

Sec. 506, (a) The College of the Virgin Islands and the University of Guam shall be considered land grant colleges established for the benefit of agriculture and mechanic arts in accordance with the provisions of the Act of July 9, 1902, as amended (18 Stat. 503; 7 U.S.C. 301-305, 307, 308). (b) In lieu of attending to the Virgin Islands and Guam those provisions of the Act of July 9, 1902, as amended, relating to donations of land or land scrip for the endowment and maintenance of colleges authorized to be appropriated pursuant to this section shall be held and used for the benefit of agriculture and mechanic arts in the Virgin Islands and Guam subject to the provisions of that Act applicable to the provisions from the sale of the provisions of that Act applicable to the amended Act adding at the end thereof the following new section: (c) Section 25 of this Act, June 29, 1905, as amended (49 Stat. 459; 7 U.S.C. 321-326, 328), is further amended: (1) by striking out "and Puerto Rico" wherever it appears and inserting in lieu thereof the following: "Puerto Rico, the Virgin Islands and Guam"; and (2) by striking out "\$7,900,000" and inserting in lieu thereof the figure "\$3,000,000"; and

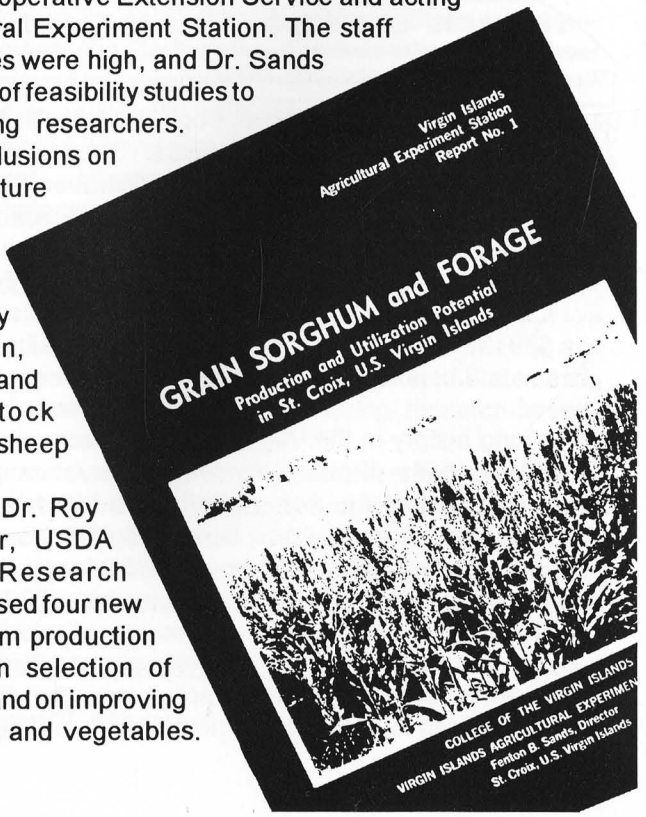
agricultural demonstration and production, community resource development and dissemination of information to the public.

Essentially, then, a tradition of agricultural research and information dissemination had been set up in the Virgin Islands long before the ten-year old College of the Virgin Islands took in 1972 what was a very unusual step: it achieved Land-Grant status and took over responsibility for AES and CES without first having been an "agriculture school."

The Feasibility Studies

Once Land-Grant Status was designated, Dr. Fenton Sands was named director of the Cooperative Extension Service and acting director of the Agricultural Experiment Station. The staff was very small, but hopes were high, and Dr. Sands commissioned a number of feasibility studies to be conducted by visiting researchers. These reports drew conclusions on the potential for agriculture markets and profitability in the areas of grain sorghum and forage, beef production, dairy farming, hog production, poultry production, fruits and vegetables, livestock products, and goat and sheep enterprises.

In a 1974 letter to Dr. Roy Lovvorn, Administrator, USDA Cooperative State Research Service, Dr. Sands proposed four new AES projects, on sorghum production for grain and silage, on selection of superior forage grasses, and on improving production of local fruits and vegetables.



Include V.I. In Education Bill, With Land Grant Status CVI

\$3 Million Endowment Will Assist Development St. Croix College Campus

By Thomas W. Orr (AP) — An omnibus higher education bill including the Virgin Islands on an equal par with the states passed final congressional approval yesterday. Virgin Islands Rep. Ron deLoach said The Associated Press in Charlotte, N.C. from his Washington office that the omnibus Higher Education Bill passed the House of Representatives by a vote of 218 to 180. The Senate had passed it earlier. "This is the most important piece of educational legislation passed by the House of Representatives that has ever been applied to the Virgin Islands," deLoach declared. "Most importantly, he pointed out, the federal legislation will extend land grant status to the College of the Virgin Islands."

at the same time.

In 1973, the then director of the Virgin Islands Extension Service Dr. Fenton Sands noted in a Virgin Islands Agriculture and Food Fair article that Land-Grant status would mean an expansion of existing programs in 4-H and its summer day camp, the Expanded Food and Nutrition Education Program (EFNEP),

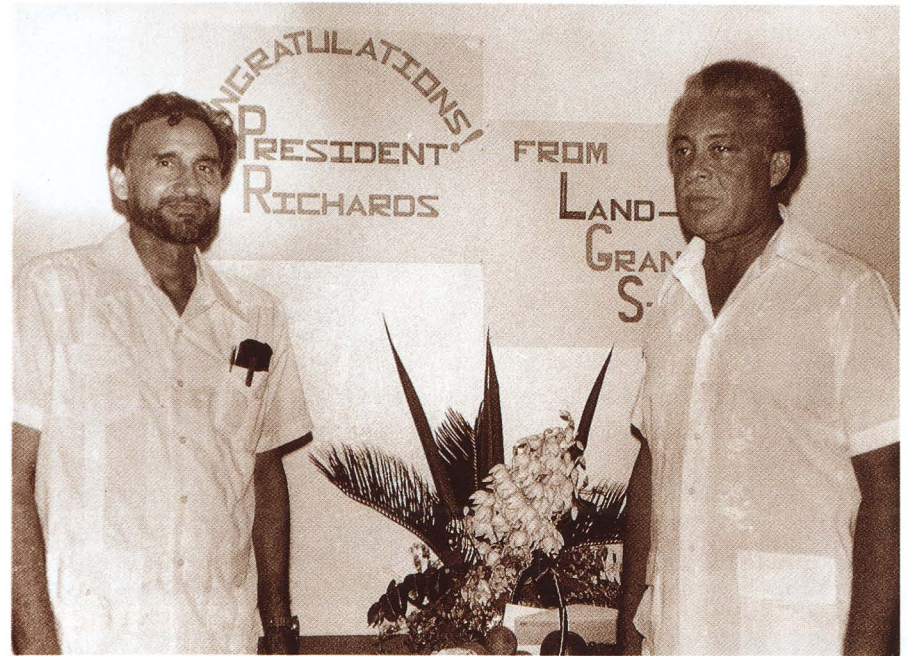


Dr. Wanlass (with family) during his term as first CVI President.

He called these projects "a natural out-growth from the feasibility studies that were undertaken over the last year and a half."

Soil chemist Dr. Bill Ott, now Professor Emeritus of the Texas A&M Agricultural Experiment Station, led the research group for the feasibility study on grain sorghum and forages. He said the group, which included agronomist Dr. Marvin Riewe and agricultural economists Dr. Ronald Kay and Dr. Raymond Dietrich, came to St. Croix with the goal of determining the current status of production practices and projecting future potential. He remembers being escorted around the island very graciously by Mr. Roy Rogers, and his impressions of the island in 1974 were of a beautiful place, under heavy population pressure and almost totally dependant on imports. The group's findings eventually became AES Report No. 1, and the 19-page summary includes cultural practices of the time, the potential for replacing imported feed grains with local production, and the break-even point and rate of return for production and processing.

The book was printed in 1974 and reprinted the next year, and it formed a cornerstone for the variety of AES research reports and scholarly articles listed at the end of this book.



Dr. Padda congratulating Dr. Richards as second CVI President in 1981.

Growth and Excellence

Dr. Darshan S. Padda joined AES in 1974 as research horticulturist, and was named acting director in 1975. He became director of both AES and CES in 1976, and in 1984 was promoted to Vice President of UVI's Research and Land-Grant Affairs component.

"The history of this component is my history, too," he has said, and, indeed, the majority of Dr. Padda's professional career has been spent directing and expanding AES and CES, directing the university's research efforts in general, overseeing the UVI Water Resources Research Institute and extending the university's collaborative relationship with individuals, institutions and governments. As you will read in the histories to follow, under his leadership the component has grown from a skeleton staff with few resources to a productive group of research faculty and extensionists engaged in 25 AES projects and 28 CES programs. Formula and competitive grant funding are ten times what they were in 1972, and a third of the residents of the Virgin Islands are regular clientele of CES.

Along the way he has been proud to lead a responsive team, and he has been rewarded for his efforts by his peers many times. The following are highlights. He was awarded the Rafi Ahmed Kidwai Memorial Prize for



Agricultural Research for 1978-1979, for his "outstanding contribution in the field of horticulture." He received the USDA's Distinguished Service Award in 1983, for "exceptional foresight and leadership in developing and conducting extension education programs that serve as models for technology transfer systems in the Virgin Islands, Caribbean and other developing countries." In 1987, the USDA Office of International Cooperation and Development presented Dr. Padda its International Honor Award.

Awards that hold special meaning for Dr. Padda include a 1977 Commendation Plaque "for exceptional ingenuity" for his part in the Virgin Islands Senepol Association; a Distinguished Service Award from the Board of Directors of the Agriculture and Food Fair of the Virgin Islands in 1979; and a Certificate of Award from the Black History Committee of the UVI Student Government Association for an "outstanding achievement in the field of agricultural science" in 1987.

He has also chaired the Caribbean Basin Administrative Group since 1986, has served the Caribbean Food Crops Society as president in 1983-1984 and as chair since 1986, and, in 1992, was appointed to the national Extension Committee on Organization and Policy, the highest national policy-making body on extension programs. He also serves as secretary of the Association of Southern Extension Directors.

Hurricane Hugo

Hurricane Hugo churned its 140-mile-per-hour winds across St. Croix on September 17, 1989, leaving behind an astonishing path of destruction and damage. For everyone who was here at the time, history will forever be measured in terms of "before Hugo" and "after Hugo."

As Dr. Padda noted in his 1991 Virgin Islands Agriculture and Food Fair article on the hurricane, its effect on the St. Croix campus eclipsed all past accomplishments in a single night.

Two CES buildings were completely destroyed. The Great House, which had housed the administrative offices, was largely destroyed and later condemned, and in 1992 is still awaiting renovation. The space occupied by Home Economics, Agriculture and 4-H was ruined.

The newly-completed AES biotechnology laboratory was blown off its foundation and destroyed. The greenhouses were reduced to heaps of twisted metal. The aquaculture program lost 17 tanks and thousands of fish.

More heartbreaking than the damage to facilities, however, was the loss of critical research data and information. As Dr. Padda noted, it was a very sad experience to survey a field littered with hundreds of water-soaked books amid broken test tubes containing tissue cultured plants.

However, two days after the hurricane, the majority of staff were back



Dr. Padda (with Mrs. Padda, top photo) being awarded the Rafi Ahmed Kidwai Memorial Prize by Ambassador K.R. Narayanan, now Vice President of India. Bottom photo: receiving the USDA Distinguished Service Award in 1983, awarded by USDA Secretary John Block.



Top: Extension Great House Building in 1973. Bottom: Same building, just after Hurricane Hugo in 1989.

on the job, assessing the damage done to farmers, distributing food to the needy, cleaning up the campus, sorting through debris for salvageable equipment and files and generally rebuilding their programs.

The USDA damage assessment report predicted it would probably take two years for AES' research programs to be fully operational. That turned out to be true. The 1992 issue of the normally annual AES research report, for example, is the first one to be published since the storm.

The Research and Extension Center

While staff has been limping along since Hugo, tripling up in offices, squeezing past filing cabinets in hallways, and begging computers that went through the storm to function a little while longer, 1992 marks a new era for the component, with the completion of the 10,000-square foot Research and Extension Center on the St. Croix campus. It will house the Vice President's office; three laboratories for plant science, biotechnology and human nutrition; fourteen offices, a resource room with displays of AES and CES publications of interest to the public; and four seminar rooms. Completion of this building, new greenhouses and storage and work rooms means the component is fully operational again.



Groundbreaking, 1991.

The Future

In his 1992 book on the future of our planet, "Earth in the Balance" (Houghton Mifflin Co., Boston), Vice President-Elect Al Gore outlines a world-wide cooperative plan calling for the increased use of a number of "new, environmentally appropriate agricultural technologies." These include (1) refinements in irrigation technology that reduce water consumption while increasing yields, (2) low-input crop management to reduce soil erosion, (3) advances in plant genetics to introduce natural resistance to diseases and predators while reducing pesticide and herbicide uses, (4) new discoveries in aquaculture and fishing techniques to offer alternative to destructive practices, and (5) more sophisticated techniques of food distribution to reduce costs and losses during distribution, especially among less developed nations (p. 322).

Gore also decries the "steady loss of genetic diversity" in a number of important food crops around the world, noting that every plant and animal on our planet fights off extinction through the genetic ability to respond to changes in its environment. He notes that The United Nations International Board for Plant Genetic Resources lists "most at risk" fruits and vegetables including avocado, cassava, coconut, mango, okra, pepper, sorghum, sugarcane, sweet potato, tomato and yam (p. 137).

As the histories on the following pages will indicate, the University of the

Virgin Islands Agricultural Experiment Station is already actively responding to these global needs, by conducting studies into the responses of various crops to water-conserving irrigation systems; testing many varieties of fruits and vegetables for their viability in semi-arid climates around the world; seeking plant varieties that are naturally disease- and insect-resistant; promoting an inexpensive, dependable and environmentally responsible source of protein through aquaculture; fighting erosion and species loss through reforestation; improving the quality of feed available to local animal species; and improving the animals themselves, to the benefit of all consumers.

The UVI Cooperative Extension Service has also responded to these needs, by promoting environmental responsibility and awareness to its clientele, emphasizing natural resources, teaching safe and limited use of pesticides while offering natural alternatives whenever possible, and passing along the research results of AES experiments conducted at UVI and at other similar institutions to the people.

Finally, through its CES home economics program, which emphasizes the relationship between nutrition and health, and through the component's active involvement in the Caribbean Food Crops Society, UVI Land-Grant has already made a priority of promoting a better food source for the people of the Virgin Islands and the Caribbean.

We are a small group, and our work is just 20 years old. But we are committed to a vision of the future, committed to collaboration, and committed to excellence. We promise to redouble our efforts to improve the lives of Virgin Islanders and make our beautiful island home a paradise our grandchildren can inherit with pride.



Aquaculture Research Specialist Bill Cole with the new UVI-AES marine finfish culture tanks on St. Croix. Seawater circulates through these tanks, which are being used to grow popular marine food fish to market size.

AGRICULTURAL EXPERIMENT STATION PROGRAM HISTORIES



Dr. Stefan Buzdugan, AES Horticulturist, with a drip irrigation trial in the early 1980's. At the time, irrigation research was being conducted on tomatoes, papaya, watermelons and pineapples.



HISTORY OF THE AES ANIMAL SCIENCE PROGRAM

Dr. Stephan Wildeus, Animal Scientist

The first animal-related research work conducted at the newly established Agricultural Experiment Station at CVI were several feasibility studies. Consultants produced profitability reports on beef production, dairy farming, poultry production, hog production and sheep and goat enterprises as well as the marketing potential of livestock products. These early reports were followed by a visit of animal scientists in April of 1976 to appraise the beef cattle situation on the islands, with special reference to the Senepol cattle native to St. Croix. The recommendations of this group included the need to establish performance testing procedures, characterize the production potential of the breed and subsequently compare the performance of the Senepol cattle to that of established breeds.

To implement these recommendations CVI-AES became a cooperating member in the S(southern)-10 regional research project on "Breeding Methods for Beef Cattle in the Southern Region." A cooperative research project with the USDA-ARS Subtropical Agricultural Research Station in Brooksville, Florida, was initiated at this point under the direction of their research geneticist Dr. Will Butts. It involved the shipment of semen samples from local bulls to the USDA-ARS station for breed comparison studies. The cooperative research links with the USDA-ARS Subtropical Agricultural Research Station and the Animal Science program at UVI-AES have remained strong to the present day, involving a number of different scientists.

In 1977, Dr. Harold Hupp was hired as the first resident AES animal scientist. Dr. Hupp's initial efforts were directed towards assisting the fledging Senepol breed association and the publication of an Experiment Station report on the history and development of the breed. His subsequent work was directed towards the establishment and implementation of a performance testing program to determine breed standards and improve the breed through selection. He developed and published a manual on the performance testing procedures for the Senepol breed, and the testing program is still a vital part of the livestock extension program today.

Under Dr. Hupp's leadership data sets were developed on the Senepol cattle on St. Croix that resulted in two master's degree theses and one Ph.D. dissertation in conjunction with Clemson University, Michigan State University

Senepol cattle on St. Croix.

and the University of Arkansas. Apart from the routine performance data, additional data were collected on growth potential in feeding trials, milking ability, and the characteristics and palatability of Senepol carcasses. The results of these data have been reported at scientific meetings and published in the scientific press. Dr. Hupp was an active participant of the S-10 regional research project, served as its secretary, and in 1981 AES hosted the annual technical committee meeting of this group on St. Croix.

Dr. Hupp also became involved in some on-farm performance recording of the local Virgin Islands White hair sheep, and the results of these efforts were published as part of book of a Winrock International study on Hair Sheep of Western Africa and the Americas by Drs. Fitzhugh and Bradford.

Following Dr. Hupp's departure from the AES in 1984, the emphasis of the research work on Senepol cattle shifted from performance testing to aspects of reproduction under his successor, Dr. Stephan Wildeus. AES remained involved in S-10 until the termination of the project in 1988. Research was conducted on reproduction in the female and male, involving puberal development, calving interval, sperm production and seasonality of reproduction. AES hosted an international research symposium in 1987 that resulted in published proceedings summarizing the scientific knowledge of the breed at this point. The symposium had participation by both scientists

Animal Science Program hair sheep in the field.



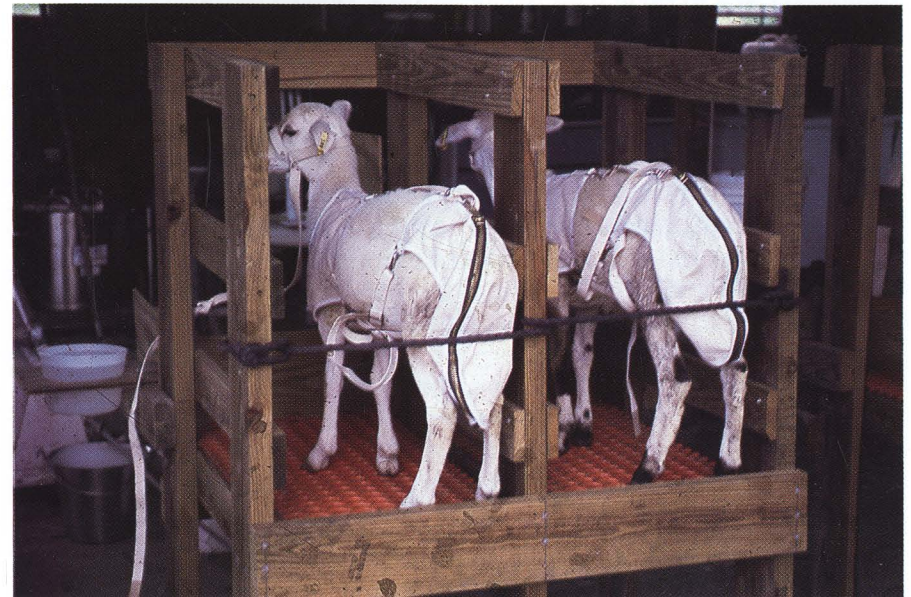
and commercial cattleman.

In 1986 emphasis of the livestock research changed from the Senepol cattle, which were now well covered under the CES beef cattle performance program, to the Virgin Islands White (St. Croix) hair sheep. A small hair sheep research facility was developed on part of the St. Croix campus and stocked with animals from a number of local farms. With time this facility expanded, and today it houses approximately 200 head, representing three breedtypes, including Barbados Blackbelly and Florida Native wool sheep in addition to the Virgin Islands White.

Initial research was concerned with the characterization of the breed under local conditions and the preservation of the available germplasm. Extramural funding was obtained to conduct studies on the reproductive performance of these sheep, in conjunction with Dr. Warren Foote at Utah State University. Additional funding was secured for research on gastrointestinal parasitism in a joint project with Dr. Charles Courtney of the College of Veterinary Medicine at the University of Florida. This work was followed by a project on strategic supplementation of sheep on tropical grass pastures, in cooperation with Dr. Andrew Hammond at the USDA-ARS Subtropical Agricultural Research Station.

To expand the scope of the sheep research AES became a member of

Metabolism trials use "diapers" to tell researchers how efficiently sheep are able to use feeds.



the NC(north-central)-111 regional research project on "Increasing Prolificacy in Sheep and Its Impact on Nutritional Needs." AES hosted the annual meeting of the technical committee of this group in 1991 on St. Croix. In conjunction with this meeting, AES also hosted an international hair sheep research symposium, in which data were presented from the Caribbean, the continental U.S., South America, Africa and Asia. The presentations of this symposium were summarized and published in a proceedings.

Community outreach with hair sheep research has taken the form of field days with demonstrations of management techniques and the presentation of research findings, guided tours of the facility to the public (i.e., schools) and the dissemination of breeding stock to interested farmers. Research data resulting from the work conducted in the Animal Science Program have been published in several scientific articles, apart from the published proceedings from the two symposia.

Dr. Wildeus has just left the AES program to work on a new animal science project at Virginia State University. Current staff include Mr. Mark Gray, research specialist; Ms. Joni Rae Collins, research analyst; and Mr. Victor Callas, agricultural aide.



Above: In 1982, (from left) Douglas Wright, Audrey Valmont Schuster, Yvonne Horton, Amy Lawaetz, Alan Schuster and Dr. Harold Hupp. Below: Research Analyst Joni Rae Collins talks to second graders about sheep, 1992.



HISTORY OF THE AES AGRONOMY PROGRAM

Dr. Martin B. Adjei, Agronomist

On St. Croix, the extensive sugarcane farms and the sugar industry ceased to exist with the demise of the Virgin Islands Corporation in 1966. Various agricultural alternatives were considered and examined, including vegetables, fruits, grain crops, forages, beef cattle and dairying, but eventually, dairying emerged as the most important agricultural enterprise on St. Croix. In addition to dairy cattle, approximately 5,000 beef cattle were maintained on about 3,000 acres and raised to slaughter weight on grass in 1973.

In the U.S. Virgin Islands, the most limiting factor to feed-grain and crop production is effective soil moisture. Average annual rainfall is 1100 mm, with approximately 50 percent of it falling between September and December. Open pan evaporation is constantly high and exceeds 1800 mm, yearly. The climate, therefore, is semi-arid, characterized by alternate wet and dry seasons, yearly moisture deficit and thus periodic acute feed shortages (both quality and quantity) on limited land holdings.

Because of the feed-grain deficit, approximately 95 percent of the Virgin Islands livestock feed was imported prior to 1973, and local leadership had a strong desire to supplant feed imports with local production. One of the initial AES feasibility studies was conducted by a team of specialists from Texas who looked at the production and utilization potential of grain sorghum and forages in St. Croix. Based on the specialists' recommendations in 1975, the initial agronomic research efforts at AES focused on the perennial dry season feed deficiency problem and its solution.

The years from 1976 to 1985 saw considerable progress at the UVI-AES in grain and forage sorghum research for silage production as a means of forage conservation for the dry season. From replicated field performance trials, conducted by A.J. Conje, suitable sorghum varieties adapted to Virgin Islands conditions were identified, including the Taylor-Evans Silomaker and Yieldmaker intermediate varieties which were capable of producing 10 to 15 tons dry forage per acre, yearly.

Agronomic research results made available to local farmers through several AES publications included information on land and seedbed preparation; planting date and row-spacing; rates of fertilization; weed, insect and disease control; harvesting and storage methods. There was a corresponding increased response in sorghum crop production for silage by

Former AES agronomist Dr. Ahmed El Nadi Hegab with sorghum.

local farmers and an upsurge in beef and dairy output for the Virgin Islands market.

By 1982, the livestock industry at St. Croix was comprised of 5,000 cattle (both beef and dairy) and 5,000 sheep and goats on 6,000 hectares of farmland (U.S. Dept. of Commerce, 1983). Despite the earlier success with silage conservation, the livestock industry was supported primarily by native grasslands which are dominated by guineagrass (*Panicum maximum*) and leucaena (*Luecaena leucocephala*) in productive areas and by hurricane grass (*Bothriochloa pertusa*) and casha (*Acacia* spp.) in overgrazed, deteriorated sites. A 1986 AES survey determined that the noxious weed casha had invaded 90 percent of St. Croix's pastures and decreased useable pasture by up to 26 percent. As a result, the period from 1986 marked a clear departure from sorghum research toward concentration on the study of management systems for native grasslands in the U.S. Virgin Islands.

The overall objectives of this study initiated in 1986 by Michael and Joy Michaud were to ascertain the management methods that promote dry matter production, improve forage quality and maintain the integrity of indigenous pastures, as well as to determine ecological and environmental factors affecting the ingress of malevolent plant species such as hurricane grass and casha into the native swards.

Several important reports emerged from those studies between 1986 and 1990 that defined for the first time, the composition and productive capacity of native pastures. Appropriate establishment procedures and cutting management for guineagrass-based pastures were developed, and promising native and introduced legumes and grasses for pasture improvement in the Virgin Islands were selected.

Pasture development recommendations formulated from research were made available to local farmers on the topics of land preparation, seeding rates, time of planting, and cutting heights and frequencies. Grasses recommended for pasture improvement included green panic (*Panicum maximum*) and buffelgrass (*Cenchrus ciliaris*) for dry sites and pangola grass (*Digitaria decumbens*) for wet sites. Adapted legumes recommended for commercial plantings were perennial soybeans (*Neonotonia wightii*), Siratro (*Macroptilium atropurpureum*) and teramnus (*Teramnus labialis*).

A few of the acreages established by farmers to recommended species persist on the islands. However, due to a lack of appropriate grazing management guidelines, most renovated pastures have reverted to their native situation.

A new and broader phase of the forage research program at UVI-AES was initiated in 1990 by M.B. Adjei, based on the successes and failures of previous programs. It attempts to merge forage conservation with pasture and grazing management in one package. One project aims at the selection

of grass-legume mixtures with a potential for forage conservation (silage or forage bank) and the development of low-input cropping systems (e.g., alley-cropping) for sustainable forage production. Under this project, seeded and perennial pearl millet x elephantgrass (both *Pennisetum* spp.) interspecific hybrids are being selected in mixtures with local legumes as an alternative to sorghum for silage production. These mixtures overcome the need for and expense of yearly establishment and nitrogen fertilization.

Another project has just been initiated to examine the possibility of improving the quality of locally-produced guineagrass hay through urea treatment. In addition, grazing trials are being conducted to determine the animal carrying capacities of native and improved pastures as a means of preventing continued range deterioration. Mechanical and chemical methods for the control of casha are being evaluated.

As the tourist industry and urban development in the U.S. Virgin Islands continue to expand, agricultural land available for livestock grazing will continue to diminish and become more expensive. Economical methods for pasture improvement coupled with sustainable forage and grazing management strategies will hold the key to any future survival and success of the dairy, beef, sheep and goat industry. The AES forage research program is aware of the challenges ahead and will continue to provide the necessary research and information for that success.

Research analyst Cyndi Wildeus is leaving the program. Agricultural aides are Osvaldo Lopez and Antonio Rodriguez.

Agricultural aides Osvaldo Lopez (left) and Antonio Rodriguez.





HISTORY OF THE AES AQUACULTURE PROGRAM

Dr. James E. Rakocy, Aquaculturist

The Aquaculture Program began in 1973 with a project on cage culture of fish using tertiary treated water. A second project on clam culture in treated wastewater, conducted in cooperation with Columbia University's Lamont-Doherty Geological Observatory on St. Croix, was added in 1974. These projects took advantage of the large quantity of treated wastewater available from St. Croix's newly-constructed tertiary wastewater treatment plant.

The clam project was directed by Dr. Ken Haines of the Lamont-Doherty Laboratory. The program's first employee was Mr. Donatus St. Aimee, who was hired in 1974. During his employment, he conducted research related to his project to obtain a masters degree from the West Indies Laboratory (Fairleigh Dickinson University). He left the program in 1976 to become the St. Lucia Representative to the United Nations.

Tilapia fish have been the focal point of the research program. Although the Mozambique tilapia (*Oreochromis mossambicus*) has inhabited the inland waters of St. Croix since its introduction in 1953, several other species have been studied by the program. In 1987, a study showed that the Nile and Florida red tilapia were the fastest growing species. All subsequent work has concentrated on these species.

The first research facilities consisted of concrete and fiberglass tanks at the wastewater treatment plant and four dug ponds adjacent to the Golden Grove Correctional Facility. These were eventually abandoned as better research facilities were developed on the St. Croix campus.

Ms. Lauren Bishop, a VISTA (Volunteers in Service to America) Volunteer, worked for the program in 1976 and maintained the facilities until the arrival of Dr. Robert Busch. During his three years at AES, he built a cage culture research facility in a pond at the V.I. Department of Agriculture in 1977 and established a water quality laboratory on the St. Croix campus.

The tilapia produced in the experiments were sold to the public in an effort to interest farmers in raising this fish. After one experiment, the CES Home Economics staff conducted tilapia tasting demonstrations in ten housing projects on St. Croix and distributed questionnaires to assess the participants' response, which was overwhelmingly (96%) favorable.

In 1978, the program joined a southern regional research project on freshwater food animals and began to lay plans to develop a backyard fish

Research specialist John Hargreaves and research analyst Don Bailey collect and weigh tilapia grown in marine cages in 1988.

culture research facility in plastic swimming pools. AES also funded a ciguatera fish poisoning project in 1978, directed by Dr. Joe McMillan on the St. Thomas campus. When people on St. Croix suffered fish poisoning, the aquaculture staff collected the remaining fish and sent them to St. Thomas where Dr. McMillan attempted to extract and purify the toxic compounds for chemical identification. This was usually a piecemeal, one-fish-at-a-time operation until one weekend when dozens of people became ill after eating toxic red snappers at three St. Croix restaurants. The 200 pounds of toxic fish supplied to Dr. McMillan were enough for several year's work.

Another new project was initiated in 1979 by Mr. Barnaby Watten, a research analyst hired in 1977. He wanted to go to graduate school, but he was told by an admissions officer that he needed to demonstrate his research capability. With the cooperation of AES, he built and tested an integrated recirculating system for tilapia and tomato production in his backyard. The project was a success and led to the program's first professional journal article. Mr. Watten went on to obtain a M.S. degree from Oregon State University and a Ph.D. from Auburn University, both in aquaculture engineering. As the developer of several patents, an author, and an expert on aquaculture aeration systems, he is the foremost alumni of the aquaculture program to date.

Hydroponic lettuce.



In 1979, Mr. Jim Clarke joined the aquaculture program as a research aide, and in 1980 Mr. Watten was replaced by Mr. Ayyappan Nair, a research specialist. Also in 1980, Dr. Jim Rakocy replaced Dr. Busch as program leader. Dr. Rakocy implemented the plans for an aquaculture research facility on the St. Croix campus, on a one-acre parcel of land. Thirty-six vinyl-lined, steel-walled swimming pools of varying sizes were erected. Six of these tanks became recirculating systems, as they were connected to a water treatment component consisting of a settling tank, a reservoir and two hydroponic beds.

The facility was used to breed tilapia and raise fingerlings for production experiments in cages and recirculating systems integrated with vegetable hydroponics. Experiments were conducted with tomatoes, Chinese cabbage, pac choi and lettuce. A backyard model of this system was made from oil barrels and displayed at the 1981 Agriculture and Food Fair where it generated considerable interest, since it was able to produce a hundred pounds of food (tilapia, tomatoes and lettuce) in a single three-and-a-half-month production cycle.

The program had a number of challenges perfecting its facilities, including toxic and brittle vinyl tank liners, holes poked by nutsedge, fish that liked to eat the lining material, and leaching herbicide that killed the hydroponic vegetables one week before AES hosted the 1984 annual meeting of the southern regional aquaculture project.

In 1980-81, the program staff assisted in the redesign of the cage culture facility at the V.I. Department of Agriculture, which was having problems with vandals. Thirty cages of improved design were moved to the Annally Farm pond located behind the processing plant. Unfortunately, no sooner had one problem been solved when a drought hit. There was little rain in 1982, and the pond level dropped by ten feet. The fish were returned to tanks at the Station and the cages were removed for safekeeping.

In 1983 the cages were redeployed in three new ponds with sufficient water to conduct an experiment on the use of demand feeders, which allowed fish to feed themselves and reduced the labor of fish farmers by 90 percent. This work led to several publications, a presentation at an international conference in Bangkok, Thailand, and a masters thesis at Auburn University by Mr. John Hargreaves.

In 1986 the cage culture facility was moved once again to Chimney Bush Pond in Estate Bethlehem. The cages were integrated into St. Croix's first commercial operation, Virgin Islands Food Fish Farm, Inc., which provided logistical support, security and an opportunity for the aquaculture program to develop commercial-scale production systems. Two experiments were completed and 18,500 pounds of tilapia produced when Hurricane Hugo brought an end to the farm and the facility. A recent economic analysis of

the project, however, indicates that cage culture of tilapia is economically feasible in the U.S. Virgin Islands. The hurricane also destroyed a cage culture project in Salt River Bay to test the feasibility of culturing tilapia in saltwater.

A number of personnel changes occurred during this period. Mr. Marc Pacifico worked for the program as a research analyst during 1981-82. He was replaced by Mr. Hargreaves, who served the program twice, as a research analyst from 1983-85, and as research specialist from 1987-91. Mr. Hargreaves is currently working on his Ph.D. in aquaculture at Louisiana State University. Mr. Daniel Miller, an M.S. student on leave from Auburn University, filled in as research analyst from 1985-86. Mr. Clarke left the program in 1982 and was replaced by Mr. Vernon Smith, who worked from 1983-87. In 1988, a new position was created for a research analyst in water quality. Mr. Eric Kuster served in this position from 1989-90, followed by Ms. Angela Rangel, from 1991-92. The position has recently been filled by Mr. Kurt Shultz.

The current aquaculture program staff includes Mr. Donald Bailey, who joined the program as a research analyst in 1986 and this year assumed a research specialist position in charge of economic studies. Mr. Bailey distinguished himself by becoming the first employee in the program to obtain a MBA degree from UVI. Mr. Ezekiel Clarke has worked in the program as a research aide since 1987. Mr. William Cole joined the program in 1991 as a research specialist. Dr. Rakocy expanded his duties by becoming the assistant director of AES in 1987 and associate/research director in 1989.

Hurricane Hugo provided the impetus to remodel and upgrade the aquaculture research facilities. All of the damaged tanks were finally replaced with fiberglass. Three 22,000-gallon water storage tanks provide a catchment capacity of nearly one million gallons per year. Six new tanks hold fingerlings and marketable fish. A concrete block building offers a cold storage room for feed. One of the new greenhouses is being used for the production of vegetable transplants for hydroponic experiments.

The program has embarked on several new research initiatives. One researches the marine cage culture of tilapia. A research facility to explore the potential of culturing marine finfish like snappers, groupers and grunts has been constructed on private property in Cotton Valley. Two commercial-scale integrated systems have been constructed at the aquaculture research facility and are being run on a sustained basis to collect data for the development of enterprise budgets. Finally, a project has been initiated to study the integration of tilapia tank culture with the field production of vegetables. In the first experiment, culture water and sludge from the 20-foot tanks are being used to irrigate a field crop of bell peppers.



Above: New research looks at marine finfish, like these white grunts. Below: Letter from Jinnie Richards, Good Hope School, grade 5, after a tour of the aquaculture program.

9/24/92

Dear Mr. Bailey,

Thank you for showing us
ground on your fish and plant farm.
When we got back to school, we
had our test. So don't worry
the information you told us about didn't
come in one ear and out through the
other. I learned where the gills of
a fish are and how we get good
lettuce and tomatoes.

Do you know who
I am? I'm Jinnie Richards! You know
the class that you taught on 9/29/92.
I'm sure you remember now!

Your friend
Jinnie
Richards



HISTORY OF THE AES VEGETABLE CROPS PROGRAM

Dr. Manuel C. Palada, Horticulturist

The Vegetable Crops Program, a unit of the UVI horticulture program, began in the mid 1970s as a response to the declining production output of fruits and vegetables in the islands after government development priorities were focused on tourism and industrialization.

Before actual field research in horticulture was started, a feasibility study was conducted to determine production, consumption potentials and marketing problems of fruits and vegetables in the Virgin Islands. This study identified the major physical, biological, technical and socio-economic constraints to fruit and vegetable production, but suggested that commercial production of fruits and vegetables can be economically viable given the opportunities for year-round production, increased local consumption and a favorable market. In general, the program's efforts since that initial study have been aimed at providing local growers with specific information on individual crops in the Virgin Islands.

The program plays a major role in promoting and stimulating vegetable production in the Virgin Islands. Its objectives are developing appropriate technologies for improving vegetable production and cooperating with the extension service to provide and disseminate research information to local vegetable growers and the community.

Since its beginning, the program has focused research into five major areas: germplasm evaluation; drip irrigation; soils and fertilizers; weed, insect and disease control; improved cultural management practices; and introduction of new crops with economic potential in the Virgin Islands.

The search for superior varieties suitable for growing in the Virgin Islands has been a continuing effort. Evaluation of vegetable varieties was initiated in 1978, and since then hundreds of varieties of vegetables ranging from broccoli to tomatoes, okra and sweet potato, have been conducted.

The results of more than 10 years of research on variety evaluation have provided information on new and high-yielding varieties that can be extended to vegetable growers in the islands.

Limited water for crop production has been a major constraint to successful farming in the Virgin Islands. Without supplemental irrigation, commercial vegetable production is not economically feasible. Since 1980, the program has conducted studies to determine water requirements of fruits

Research Assistant Albion Francis with eggplants, 1985.

and vegetables in the Virgin Islands. Field trials were conducted from 1981-1983 on the effect of trickle (drip) irrigation on yield and economic returns of vegetable crops and fruits, including tomatoes, watermelon, sweet corn, cucumber and bell peppers.

Most of these studies indicated that under limited water and energy supplies, the use of drip irrigation is the most appropriate, efficient and economical method of irrigating high value crops. As a result of more than a decade of irrigation research with vegetable crops at the experiment station, many Virgin Islands growers now consider drip irrigation an essential component of their vegetable production enterprise.

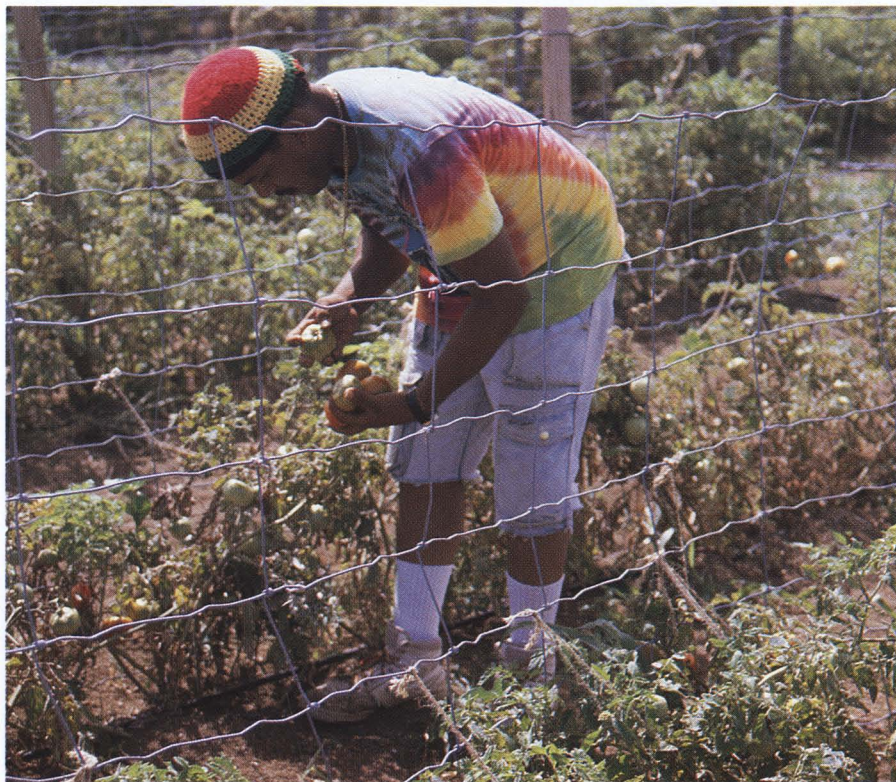
Root crops such as sweet potato, yam and cassava are popular in the Virgin Islands and other Caribbean nations. In terms of hectareage and production, sweet potato ranks first followed by cassava and yam. These crops are a major source of energy, carbohydrates and vitamins. The program conducted research projects between 1988 and 1991 to evaluate germplasm suitable for growing in the Virgin Islands and improve crop

management practices for increased local production. These studies continue, as well as research into the control of the sweet potato weevil.

Herbs and spices are horticultural crops with economic potential in the Virgin Islands and most of the Caribbean region. Although sales from herbs contribute a major source of cash income for small-scale farmers in the Virgin Islands, little research has been done to improve crop management and increase production. Since 1988 the program has been responding to this need through a grant from USDA/CSRS. This project addresses germplasm collection and multiplication, as well as major production constraints experienced by herb growers in the Virgin Islands, including inefficient water and fertilizer use; insect, disease and weed control problems; inadequate planting materials and spacing needs.

The program is presently conducting studies on techniques that can reduce evapotranspiration and soil moisture loss, such as mulching, hedgerow intercropping, windbreaks, water absorbing polymers and drought tolerant crops. Studies will continue to determine minimum water requirement of other vegetable crops with economic importance in the Virgin Islands.

Research on soil water conservation will also include the use of



Left: Agricultural Aide Nelson Benitez with tomato trial. Below: 1992 harvest from sweet potato variety trials.



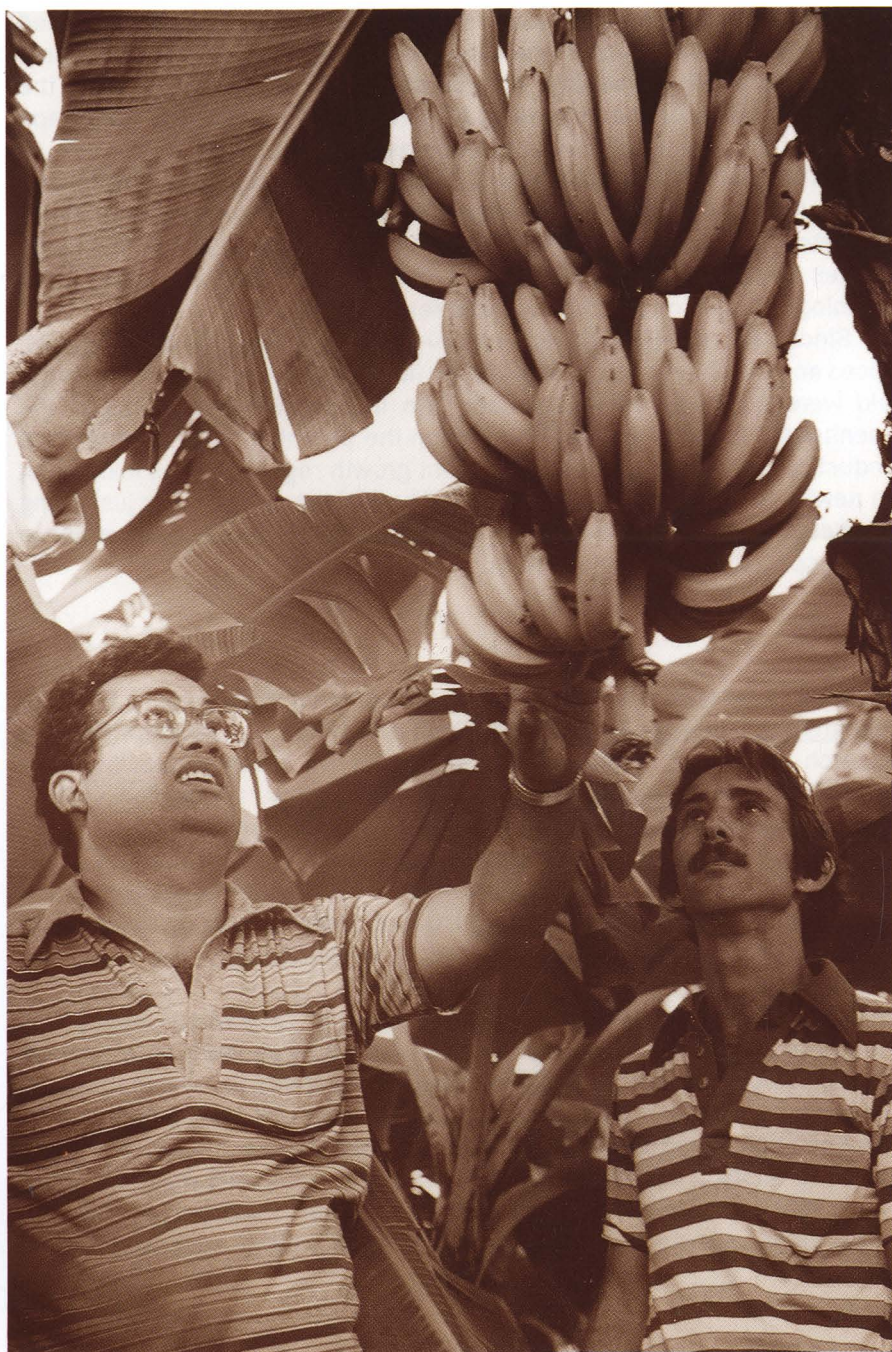
alternative water sources for irrigation. For example, a project on integrating fish culture in tanks with field production of vegetable crops to conserve water and provide fertilizer is being initiated this year. Another new project is testing the use of saline or brackish water for irrigating vegetable crops.

A new research emphasis of the program is alley cropping or hedgerow intercropping, a method of sustainable agriculture that is receiving international attention. It is a form of agroforestry in which food crops are grown in association with trees or shrubs. The crops benefit from the trees in many ways, including improved soil fertility, erosion control, windbreak and sustained crop yields with low inputs. Many research studies in alley cropping have focused on agronomic crops, but its applicability to vegetable crops has not been adequately investigated. A research grant has been awarded to the Vegetable Crops Program to initiate this research project. The three-year grant will cover studies which screen potential tree and shrub species for alley cropping with vegetable crops and investigate the effect of alley cropping on soil fertility, soil water, evapotranspiration and total productivity.

Current staff includes Dr. Manuel Palada, horticulturist; Mr. Stafford M.A. Crossman, research specialist; and Mr. Charles Collingwood, research analyst.



Top, this page: papaya trial from 1990. Bottom: UVI Board of Trustees and President Kean tour ornamental horticulture facility in 1991. Next page: Horticulturist Christopher Ramcharan and Station Superintendent Eric Dillingham with bananas in the early 1980's.



HISTORY OF THE AES FRUIT CROPS PROGRAM

Dr. Christopher Ramcharan, Horticulturist

Initial feasibility studies in production and consumption potentials of fruits and vegetables in the U.S Virgin Islands conducted in June, 1974, concluded that profit potential for farmers in St.Croix appeared best for tomatoes, mangos, papaya and okra. Another study in 1977 (published as Prospects for Growing Grapes in the U.S. Virgin Islands, AES Report No. 10) examined the potential for table grape production. Based on these surveys, a ten-year Hatch Act project entitled "Improvement of Tropical Fruit Production in the Virgin Islands" was initiated in 1975. Prior to this, papaya production using the well known Solo cultivars from Hawaii had shown good prospects for the domestic and export markets. This was, however, severely curtailed by papaya ringspot virus and St. Croix decline disease.

Field trials for identifying resistant papaya cultivars and incorporating resistance into the Solo cultivar through plant breeding techniques were therefore the basis for the initial fruit crops research. A grape orchard was also established. High soil pH-induced nutrient deficiencies and mildew disease problems were the major grape-growing constraints, but a highly tolerant local rootstock was identified. This has been selectively propagated and has the potential for facilitating commercial production grafting techniques.

In 1981, further projects in papaya and new studies in banana, plantain, citrus and minor tropical fruits were initiated. Major field testing of several papaya cultivars was conducted to identify tolerance to Papaya ringspot virus and, more critically, St.Croix decline disease. Another major study involving nutrients, soil-applied sulfur and methyl bromide fumigation concluded that the papaya decline problem was caused by airborne rather than soil-based pathogens, and this eliminated a considerable amount of future research in identifying a control method.

Also during this period, a citrus germplasm study incorporating 22 cultivars was initiated on a one-acre site to evaluate the feasibility of growing citrus in the Virgin Islands.

At the 1981 CFCS meeting in Venezuela, tissue culture techniques, particularly of banana and plantain, were exhibited, and a field evaluation of 'Grande Naine' banana and Maricongo plantain was initiated later that year from a donation of plants from the original tissue culture lab in Florida. This technology was ideal for the Virgin Islands since it overcame plant quarantine problems and the scarcity of local planting materials. As a result, the Banana/Plantain program at AES received a significant boost. The 'Grande Naine'

banana became firmly established as the ideal cultivar for the Virgin Islands, and several thousand plants were distributed to local backyard gardeners and farmers. At the same time, ongoing research identified irrigation methods, nematicides and appropriate manures and fertilizers for growing banana. Also of significance was the selection of a Dwarf French Plantain from the tissue culture lab that produced bunches with an average of over 120 fruits. This cultivar was later distributed to researchers in Honduras, Israel, Nigeria and Australia.

Work in the Musaceous crops reached its peak with invited presentations on the Dwarf French plantain at the Third International Association for Research in Plantain and Cooking Bananas in the Ivory Coast in May, 1985, and on the 'Grande Naine' banana at the Second International Working Group on Banana Physiology in Costa Rica in 1986.

By 1983 the Fruit Crop Program had become well-established and a research specialist was hired. In 1984, a USDA-CBAG project on heat stress physiology of fruit and ornamental plants was approved. This also allowed Mr. Christopher Ramcharan, as a co-investigator, to do research at the University of Florida and fulfil the requirements for a Ph.D. Critical root-zone temperatures for potted banana, ixora, dracaena and citrus were characterized, and several publications on this topic were written. Simultaneous work on St. Croix resulted in methods of container color, pot spacing, and mulching materials to reduce and control high temperature buildup in container nursery plants.

During this time, a plant pathologist was hired to continue the work on the decline disease in papaya. Extensive investigations elucidated an *Erwinia* sp. bacteria as the pathogen responsible for the decline problem. Most significant, however, was the discovery that the Barbados solo cultivar was highly tolerant to bacterial infection, and that when papaya were intercropped with species such as pigeon pea, cassava, and *Moringa*, there was a significant decrease in bacterial infection. Windbreak protection and intercropping with these species therefore became a standard recommendation for controlling decline disease, which has since been termed "papaya stem canker."

In 1985, pineapple work revealed that most pineapple cultivars were highly susceptible to high pH-induced iron chlorosis on St. Croix. This deficiency severely retarded growth and plants became highly susceptible to insect-induced wilt disease and heart rot. Studies identified most- and least-resistant varieties under local conditions. Plants started from tissue culture were found to grow and produce better since they were less infested with insects and could acclimatize better to local soil conditions.

With the return of the Dr. Ramcharan in 1987, the decision was made to convert the former plant pathology lab to a newly reorganized biotechnology

lab. A CBAG project on the micropropagation of breadfruit was developed and approved and a research specialist in tissue culture was hired to conduct the research. At the same time, ornamental horticulture was included in the program because of the increasing importance of interior and landscape plants and the new emphasis on environmental horticulture.

In 1989, an ornamental horticulture greenhouse was constructed and a tissue culture lab fully refurbished when Hurricane Hugo struck and completely decimated both projects. In addition, all fruit tree crop orchards, including mangoes being used for a flowering project, were totally destroyed, and phenology studies on mahogany were severely disrupted.

Since 1991, all efforts have been devoted to rebuilding the greenhouses, offices and the biotechnology lab. Mango flowering studies abandoned in the field were continued in a modified form in containerized plants in the greenhouse. In 1991, a CBAG project on the potential for ornamental pot production from local species using plant growth regulators was initiated in the newly-rebuilt greenhouses at AES. The biotechnology lab is just being completed within the new Research and Extension complex and a tissue culture specialist will be hired soon.

Forestry

In 1976, a report was issued by the AES entitled Virgin Islands Forestry Research: A Problem Analysis. The report outlined the need for forestry research in the U.S. Virgin Islands and listed six areas of possible AES research: town forestry, medium-leaf mahogany, forest recreation, watershed protection, wildlife and production of Christmas trees.

At the time of the report both the Institute of Tropical Forestry (U.S. Forest Service) and the Forestry Division of the V.I. Department of Agriculture (now Economic Development and Agriculture) were conducting research on St. Croix. Since then, research activities by these two agencies have been greatly curtailed.

AES officially began forestry field research in 1989 when funding was granted by the USDA to initiate research on the three mahogany species found in the Virgin Islands: small-leaf, medium-leaf and big-leaf mahogany. Research Analyst Mr. James O'Donnell is presently conducting research on the phenological and physiological response of the three species to drought stress. In addition to the mahogany studies, future forestry research at the station will be directed toward adaptability of other tree species to conditions in the Virgin Islands and development of agroforestry systems for local agriculture.

COOPERATIVE EXTENSION SERVICE PROGRAM HISTORIES



This Daily News photo accompanied the story of the first-ever Virgin Islands 4-H Achievement Day and Fair, held at Nisky Demonstration School on St. Thomas, in May of 1965. One club competed from St. John, five from St. Croix and two from St. Thomas.



HISTORY OF THE CES HOME ECONOMICS PROGRAM

Josephine Petersen-Springer, Program Leader

Twenty years ago, like today, the CES Home Economics program emphasized the entire family. Traditional programs include assistance to homemakers in cooking and sewing skills. New programs target the elderly, child care, teen pregnancy and youth at risk, along with managing money and other resources. These reflect the change in attitudes of Virgin Islanders, and the continued requests and demands many government agencies and private concerns make of the program. Foods, nutrition, and diet are becoming increasingly important: diabetes, hypertension, cancer and obesity are all prominent diseases in our island community that receive our attention.

According to Mrs. Agatha Ross, hired in 1969 as the second Home Economics Extension Aide, working with the program back then was challenging and exhilarating. She says that after the program was established, all she did was “blow the horn for my car” and the clients came out.

Mrs. Amy McKay, a Virgin Islander and the first Home Economics Program Leader, who retired in October of 1969, set the stage for the second Program Leader, Mrs. Anne Postell. Mrs. McKay published a book of local recipes entitled Le Awe Cook. Mrs. Postell brought to the Virgin Islands many USDA recipes prepared for use with the donated Foods Commodity Program launched in the territory.

Because donated food recipients were tired of cooking the same foods over and over, the extension aide introduced recipes prepared in both Spanish and English to low-income clients. Like today, the program then focused on reading labels and shopping wisely. Because of the tremendous demand for new ideas to use the donated foods, sessions were conducted in clusters or groups, instead of a one-to-one basis, shortly after the program started.

The aide was also responsible for the 4-H program. She taught 4-Hers fund-raising ideas using baked goods. Plant distributions and follow-up visits with agriculture agent Mr. David Farrar were also integrated with the program.

Food demonstrations began with the very first Agriculture and Food Fair sponsored in 1970 at the Christiansted Market Place. Donated food recipes were distributed and prepared for sampling using a coal-pot, a dripping pan with cover and a spoon. Mrs. Olivia Henry, a foods and nutrition specialist

Mrs. Agatha Ross, who retired in 1982, looks over the Home Economics collection of dried bush teas.

PRESS RELEASE

THE FARMER'S CORNER

by

M. R. HENDERSON, Extension Agent
Virgin Islands Agricultural Program
United States Department of Agriculture

USING THE AVOCADO

Today our third in a series of three articles on fruits in season comes from our Home Demonstration Agent for the benefit of our Homemakers. Avocados are versatile in the menu, teaming up well in many combinations. The Avocado is attractive in appearance and has a delicate, nut-like flavor.

It is high in fat content, therefore, high in calories. Contrary to popular belief, it is not a good source of protein. One-half of a medium West Indian Avocado contains about 1.9 grams of protein and 200 calories. Compare this to one serving of lean meat which contains 18.4 grams protein and 244 calories. Avocado contains a fair amount of Iron, Vitamin A and the B Vitamins.

In selecting avocados, hold the fruit and press gently. If the avocado "gives" a little, it is soft enough for same-day serving. Avocado may be frozen in Puree form to be used later in molded salads, sandwich fillings, ices and dips. Whole or sliced avocado does not freeze well.

MAKING JELLIES THE MODERN WAY

by Mrs Amy Mackay

In grandmother's days she had to have both skill and experience in order to be a successful jelly maker. She had to experiment with different kinds of fruit to find out which were the "good jellifying" fruits. She had to guess at the amount of sugar she would need. Then she had to boil the mixture until it reached the "jelly stage", using tests that were not always reliable. But with all her experience, she could never be sure that every batch of jam or jelly would be successful every time.

Today anyone can make delicious jelly with any kind of fruit and with a minimum of effort. Science has simplified and controlled jelly-making methods so that even the beginner can be sure of success. Guess work and long slow cooking have been eliminated.

Today we use the short-boil method. (Using added Pectin) that has revolutionized in this time-saving method, the fruit is prepared, then the jam, jelly, or marmalade mixture is brought to a full rolling and boiled only 1 minute! This short boil is just enough to sterilize the mixture and prevent spoilage. Without added pectin, most jellies and jams must be boiled 20 to 30 minutes in order to concentrate the mixture to the point where proportions of fruit acid, sugar, and pectin are in the right balance to make the mixture "jell".

The modern jelly-maker makes jelly the short-boil way and is limited to using only "good jellifying" fruits. The new pectin and recipes that assure the correct ratio of fruit, sugar, and pectin, no matter what fruit is used. So now, even the beginner can make the easy, time-saving, short-boil method.

who served as the program's third program leader, continued the emphasis on food demonstrations, including canning and freezing of fruits and vegetables, demonstrations using sorghum flour, the use of tilapia (freshwater fish cultivated on campus), and the compilation of recipes using local foods.

Three cookbooks using local foods were prepared under her direction: Native Recipes, Breads, and Holiday Cooking. Two leaflets were published on table manners and tea leaves of St. Croix. These publications are still widely circulated and constantly requested in the community.

Once the Food Stamp Program replaced the Donated Foods Program in 1972, and with the introduction of the Expanded Foods & Nutrition Education Program (EFNEP) through the Extension Service Home Economics Program, consumers' attention to nutrition and creativity with foods was lost, according to current program leader Mrs. Josephine Petersen-Springer, who decries the fact that food stamps are used for multiple reasons with little emphasis on nutrition and price as is reflected in shopping carts piled with chips, soft drinks and candies.

In the early years, the Donated Foods Program supplied CES Home Economics program with foods for demonstration purposes. Today the program pays directly for foods at a local supermarket. In spite of these changes, extension assistants (this has since replaced the title "aides") continue to make a difference in the lives of consumers enrolled in the EFNEP Program.

Another notable difference in the foods program in the "good old days" was that the homemakers or clients received a certificate at graduation three years after enrollment. The extension aides met with them a maximum of twice a month since there were many other subject areas and community centers and villages to reach. Today, however, certificates can be earned in six months to one year of EFNEP training.

As a spin-off of the Donated Foods Program, Extension Homemakers Clubs were formed, where graduates were encouraged to assume the leadership roles for this national volunteer program which was very active "back then," according to the extension aide. Today, the V.I. Extension Homemakers Council's new name is the V.I. Family Community Education Program, with its mission of developing leadership skills in volunteers to improve the family, and community.

The clothing construction and cultural arts and crafts programs continue to be popular and attract people from all walks of life. Mrs. Beulah Thompson, Mrs. Hope Murphy, Mrs. Esther Mischer, Alma Wesselhoft, Leona Cline, Anabelle Frett and Mrs. Josefina Monell followed Mrs. Ross' footsteps in providing the workshops which met three hours per week, with an emphasis on beginner and intermediate classes.

Early on, the 4-H program was part of the Home Economics program, and extension aides established clubs and trained 4-H leaders. Once a week, an after-school clothing construction session was held for all interested youths. Eventually, because of the continued interest, machines were taken from the Cooperative Extension Home Economics program to the respective communities for the residents to use for their sessions. Later on, a Mrs. Bostic, who served in the capacity of an agent, traveled from St. Thomas to conduct evening sewing class, prior to the hiring of Ms. Loomis Bryan of St. Croix.

As a result of the clothing construction after-school program, the Home Economics Summer Teen Program was established, offering youth of the families of the annual program something to do during the summer months. Basic garments using three to five pattern pieces continue to be the basis for the beginners classes with more difficult patterns for the intermediate classes. In the beginning, the extension aides transported clients of the clothing construction classes to the Textile Mills to select their materials and notions for their initial sessions. Today, however, there are many outlets from which to purchase supplies

and materials and accessible transportation to the stores.

Currently, the clothing laboratory can accommodate up to 15 persons at a time, with modern sewing machines and video tapes to guide the clients along. Modeling or fashioning the completed garment at a pre-arranged time continues to be the norm.

The first summer teen program started in 1979 to celebrate the Year of the Child. In 1984 the first Food Procurement Workshop was conducted on St. Croix; Senior Citizen's Day, Creative Cooking, Canning with Kerr representatives at the 1982 Agriculture and Food Fair, and the Wide Awake Overcomers Group with the Department of Mental Health were also activities of the home economics program at the time.

Mrs. Josephine Petersen-Springer, a family life and consumer economics specialist, became the fourth program leader for the program in 1988. Under her leadership, the traditional focus on the family continues, but with emphasis on building coalitions with existing community agencies and groups to maximize Extension's limited human resources, organizing program delivery necessary to monitor the impact of the programs offered, encouraging volunteer community involvement to assist with program delivery, and expanding food research, particularly as it affects persons with common

Nutritionist Mrs. Ramonita Caines shares diabetes information with Ms. Val Henderson of The St. Croix Avis at the 1992 World Food Day activities.



diseases such as diabetes.

In 1989, foods and nutrition specialist Nan M. Lenhart published The Heart of the Pumpkin, the first UVI cookbook to offer a complete nutritional analysis, including information on calories, fat, protein, carbohydrates, sodium and cholesterol, for recipes using Caribbean fruits and vegetables.

Like twenty years ago, staffing continues to be uncertain, with continued demand on the extension assistants to deliver technical information professionally to our clientele.

The program currently has two professional staff, Mrs. Ramonita Caines and Ms. Fern Callwood; in addition to the program leader, Mrs. Josephine Petersen-Springer; an administrative assistant, Mrs. Evannie Jeremiah; and four extension assistants, Mrs. Rosalind Browne, Mrs. Dorothy Gibbs, Ms. Miriam Greene, and Ms. Blanche Mills.

According to Mrs. Petersen-Springer, our emphasis now should be on giant steps to help resolve the multiple social ills that now plague our beautiful Virgin Islands community. Government social services program cannot resolve the ills because of the bureaucratic red tape involved. Extension Service might just be the catalyst of change needed, because of our commitment to improve individuals and families.

Miss Blanche Mills (left), Extension assistant, with St. Thomas EFNEP group.





History of the CES Agriculture and Natural Resources Program

Clinton George, Program Leader

Mr. David Farrar joined the Virgin Islands Cooperative Extension Service in October, 1973. At that time, the staff was small, and the agriculture program staff was comprised of one paraprofessional and the Extension director, Dr. Fenton B. Sands, who devoted about ten percent of his effort and time to agriculture development. The St. Croix Extension staff was housed in what is now Extension Building A. Office space comprised two small rooms and a storage area. Because of limited funding and a lack of agriculture program definition, there was no agriculture staff in the St. Thomas/St. John district.

Shortly after Mr. Farrar joined the staff, he was assigned all agriculture-related responsibilities. Under the circumstances, the assignment provided many challenges. Production of most food products was low in the three islands. More than 95 percent of the food consumed by Virgin Islanders and thousands of visitors was imported. Fresh milk and milk products were the only locally produced food items in nearly sufficient supply. Five to six dairy farmers on St. Croix and St. Thomas produced the bulk of fluid milk. A short drive through communities quickly provided evidence that fruit and vegetable growers needed technical assistance.

Also, livestock raisers needed to do a better job of pasture management and growing legume and forage crops for hay and grain for supplemental feed during prolonged dry periods. And, as one would expect in a tropical environment, there was a crying need for pest control strategies.

The V.I. Agricultural Experiment Station lacked competent staff and therefore was unable to provide the research data necessary for comprehensive program planning. Consequently, most information was collected from a variety of locally-based federal agencies and farmers. The agronomist and horticulturist at the V.I. Department of Agriculture, for example, gave valuable input regarding grain sorghum production, fruit and vegetable production and marketing. Dr. D. S. Padda joined the AES staff in 1974, as research horticulturist. Right away, AES and CES formed a linkage which increased the capability of the agencies to transfer locally generated research results to anyone who requested it.

When Dr. Sands resigned in 1975, Dr. Padda was appointed acting director. He soon became AES/CES Director. After a few months the

Local farmer Oscar E. Henry, whose property is sometimes used for Extension demonstrations, and his prized mangoes.

program accelerated.

The first project of the Natural Resources Program to be implemented was the Pesticide Applicator Training Program in 1976. Since that time large numbers of applicators of restricted use pesticides, both private and commercial, have been trained in preparation for certification by the Virgin Islands Government. Collaboration with a commercial dealer and consulting firm in Puerto Rico enabled the program to provide frequent up-to-date information on numerous pesticides with application potential in the territory. This program was coordinated by Mr. Farrar until his retirement in 1990.

The Integrated Pest Management (IPM) and Pesticide Impact Assessment Programs started to function independently of each other in 1979, developed and directed by Dr. Walter Knausenberger. IPM practices have clearly led to significant reductions in crop losses that could be attributed to pests, especially in tomatoes and bananas. IPM assistance soon was extended to include ornamentals and turf as well as dwellings and other structures.

The years 1979-1985 were golden. Professional and paraprofessional staffing more than tripled on each of the three islands. Clientele interest rose noticeably. Distribution of educational materials increased. Office space and facilities improved.

In the early 1980's, Mr. Ezekiel Farrell (left) and Mr. Clinton George display produce.



By this point, activities and services provided included the following: communicating local experiment station research results to groups and individuals; conducting workshops, short courses, seminars, and meetings; conducting farm and home visits to provide commercial, organic and home gardening assistance, small livestock and poultry improvement assistance; providing dairy herd improvement assistance to local dairymen and Senepol assistance to local cattlemen; offering tractor operation and maintenance workshops; maintaining Extension demonstration plots for gardening, legumes and forage crops; holding pesticide applicator training and certification classes; and providing exhibits for annual agriculture fairs on St. Croix and St. Thomas.

In 1981 a new horticulture specialist, Mr. Clinton George, was employed to work with the agriculture program. His major area of responsibility included the planning and implementation of horticultural programs for crop farmers, home gardeners and other residents of the Virgin Islands. After conducting a preliminary needs assessment survey, he developed two programs to assist small growers and home gardeners improve fruit and vegetable production techniques, using workshops, seminars, result demonstrations, guided tours and clientele visits.

In 1982 a soil diagnostic laboratory was established which tested soil,

Box gardening demonstration by Mr. Charles Smith, Extension assistant, 1992



water and plant tissue samples for residents on the three U.S. Virgin Islands.

Dr. Knausenberger started the Natural Resources Program *per se* in 1982 with the Non-Point Source Pollution and the Rangeland Management programs. The function of the former was primarily to evaluate the Extension Service role in assembling land use data while the latter's role has developed from the initial survey of the flora in pasture land to providing assistance to farmers in optimal management of range and pasture land. Effective weed management in pastures is being investigated continually. Through workshops and demonstrations the improvement of modern chemical control over the traditional method of using diesel oil has been clearly shown.

In 1983 other aspects of natural resources were added to the activities of the program staff. As interest in environmental issues increased, CES became recognized as a source for expert information on the territory's terrestrial flora as well as other natural resources issues. From the very beginning, attention was placed on the development of a herbarium as well as providing information of ethnobotanical interest. Many public agencies and individuals have made use of the staff's expertise, particularly in relation to rare and endangered plant species. The carefully acquired information on the medicinal values of locally available plants has also been of continuing interest.

During the years 1984-1987, the V.I. government purchased 2,000 acres for the development of agriculture in the territory. Extension's horticulture and Community and Rural Development (CRD) specialist, along with the AES irrigation specialist, played a major role in drafting plans for the agriculture development of Harvland property. This study was submitted to the V.I. Department of Planning and Natural Resources for implementation.

For the next four years, the agriculture program increased emphasis on food crop production management, including work on irrigation systems. Eventually this effort paid off, as the number of growers incorporating drip irrigation into their production systems increased from five to 50 growers, territory-wide. Also, growers significantly improved their crop production methods to include the use of recommended crop varieties and better cultural practices. Additionally, through our fruit and ornamental propagation program, interested farmers and other residents learned to multiply plants using modern plant propagation techniques.

Between 1988-1991, several significant changes took place. The programs were consolidated into Agriculture and Natural Resources (ANR). Mr. George was promoted to program leader, and the CRD agent was transferred to the ANR program. Also, several integrated programs were initiated where multi-disciplinary efforts from the various components of CES, AES and other agencies are coordinated. The integrated programs include Extension Exhibitions and Fairs, Alternative Crops, and Integrated

Farming Systems.

The alternative crop production and marketing program evaluates and develops alternative food and industrial crops with good marketing potential. The integrated farm systems program was initiated to strengthen the farming sector and to improve mixed (crop and livestock) farming in the Virgin Islands. This study facilitated the coordination of multi-disciplinary efforts between CES, AES and the Department of Economic Development and Agriculture. Five "model" farms in crop and livestock production were developed emphasizing adoption of low-input farming techniques. These farms demonstrated the effectiveness of integrated farm systems to the rest of the farming community. Several field tours were conducted to expose our farmers to the system.

In 1989, Hurricane Hugo interrupted all ANR programs. The building occupied by ANR was destroyed, along with all our files and records. The most devastating loss, however, was the destruction of the homes and farms of our clientele. Farmers suffered a tremendous loss of crops, livestock, facilities and equipment.

After the hurricane, the ANR staff assisted 275 farmers territory-wide in assessing damages to their farms. Over 10 million dollars in damages was incurred by our farming community. The verified information on the farm damage assessment reports was used by local and federal agencies in offering disaster assistance to our farmers.

In 1990-1991, a series of educational activities were conducted to assist farmers and home gardeners return to optimal levels of production after the hurricane and help farmers to better organize their agriculture enterprises.

For the future, the ANR program plans to coordinate efforts with all the federal and local agriculture-related agencies in an effort to move towards developing fruit, vegetable and herb production as an industry in the Virgin Islands. The Agriculture Support Network will be established among the agencies to plan development activities.



CES LIVESTOCK PROGRAM HISTORY

Kofi Boateng, Extension Program Supervisor, Small Livestock

The initial feasibility studies conducted on dairy, poultry and general livestock production and management in the Virgin Islands showed that the territory has the resources to develop a very promising livestock enterprise. This is particularly true because of two local breeds, Senepol cattle and Virgin Islands White (St. Croix) hair sheep. What was needed were production and management techniques that could add value to the resource and enhance its marketability.

The first livestock specialist, Dr. Harold Hupp, was employed in 1976 to help develop the livestock industry by starting programs in Animal Science. In 1977 the beef performance testing program was initiated with about seven beef producers. Most of these producers were Senepol farmers with small herds. This program assisted in the identification and classification of the Senepol breed of cattle. A registry association was also initiated and the Senepol breed became registered. The success of this effort was demonstrated by the first shipment of cattle to the U.S. mainland. During this time the dairy herd management program was initiated to assist the islands dairy operations in proper management techniques.

Between 1979 and 1981, the livestock program developed with cattle shipments to the mainland and the increase in the rolling herd average of milk production.

In 1982, the program was extended to include all small livestock, as the potential of the Virgin Islands White hair sheep gained prominence. A computer database for the

Left: Extension agent Sue Lakos with Senepol at Annaly Farm on St. Croix.

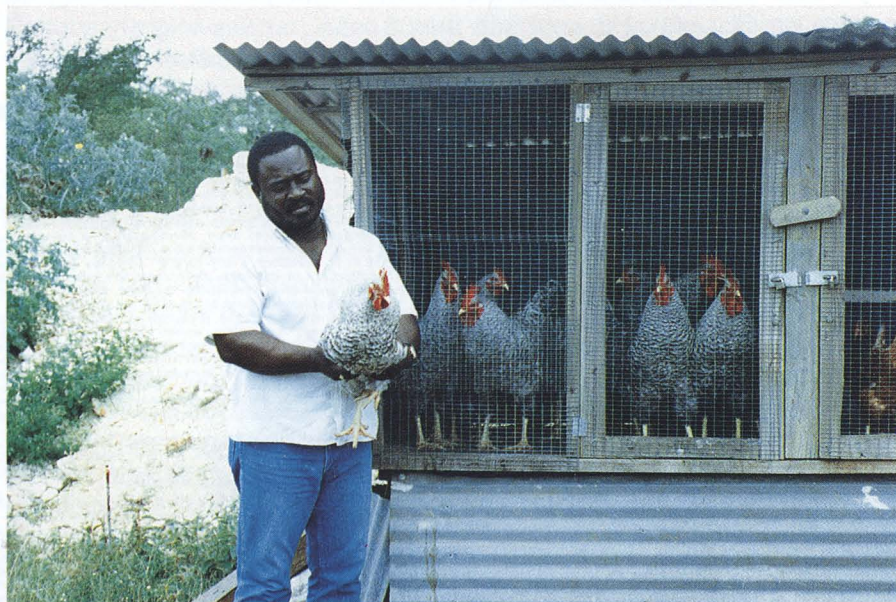


herds on St. Croix was initiated to give large operations more control over their herds for inventory. Small livestock specialist Mr. Ray Hill was employed in 1982-1983 to assist with the development of the small livestock program.

In March of 1984, Nana Kofi Boateng, was hired as Extension specialist in small livestock. He developed specific programs for the production and management of sheep and goats, poultry and swine. During this period an average of one workshop per species per month was organized for local farmers to assist them with breeding, parasite control, pasture management and general livestock management. The beef performance testing program was also expanded through the use of computerized records. Mr. Allan Schuster, the dairy Extension assistant, transferred to the AES sheep research program, and Mr. Phillip Ruiz was employed as the dairy assistant.

In 1986, the program was consolidated and a new Extension agent for beef, Ms. Sue Lakos, was employed. In the same year, the Breeders Exchange Program was initiated. This program was designed to assist farmers in preventing inbreeding and also putting more value on their breeding stock for sale. Through this program, shipments of animals were made to other Caribbean islands and the mainland. Also, we started assisting poultry farmers by importing day-old chicks to replenish their enterprises. A new cattle scale and milk meters were also acquired to facilitate more accurate records in beef and dairy production.

Extension assistant Edgar Austrie with chickens, 1991.



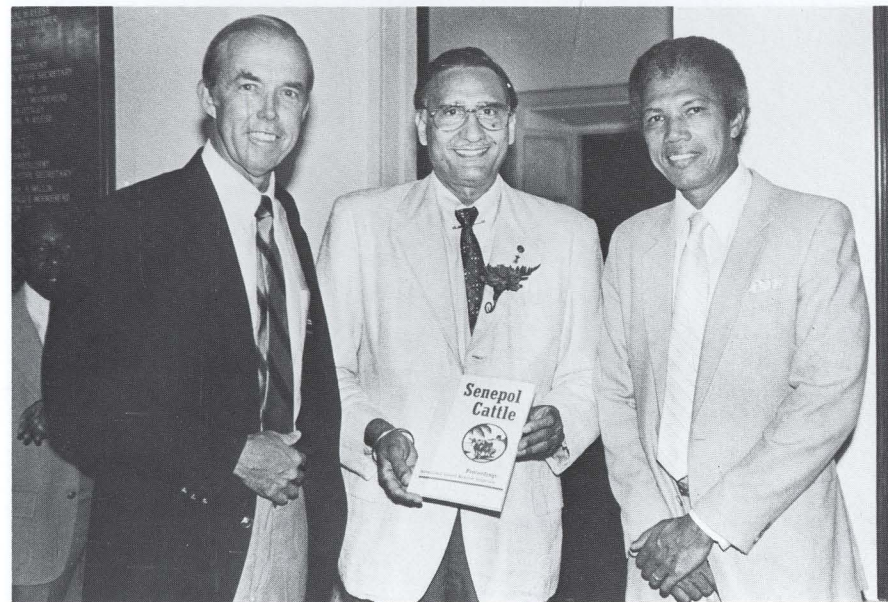
In 1988, Dr. Padda commissioned an ad-hoc committee to increase milk production. A feasibility study was conducted on the use of artificial insemination and embryo transplant in dairy herds. A joint program with American Senepol Limited helped in the collection of beef embryo for experimentation. During this year, Mr. Edgar Austrie joined the livestock program as dairy assistant.

From 1989 to 1991, after Hurricane Hugo, the livestock program staff provided assistance to beef and dairy farmers in herd inventory and reconstruction. We developed new plans for corrals and working facilities for beef, dairy, and swine producers for replacement of destroyed facilities.

In 1990, rabbit and chicken projects for schools were initiated on both St. Thomas and St. Croix, in conjunction with the 4-H program. The program was expanded with the importation of breeding stock from the U.S. mainland.

In 1992, rebuilding continues with emphasis on updating the computer records for enhancement of the beef testing program. We are looking forward to growing as the livestock industry develops in the territory. There has been a sudden increase in swine and poultry production enterprises, and we have responded by placing more emphasis in this area. We also plan to expand the youth and livestock school projects.

The Land-Grant Programs have had a long-term association with Senepol breeders, as illustrated by this 1987 presentation of the International Senepol Symposium Proceedings by Hans Lawaetz, President of the Senepol Association (left) and Dr. Padda (center) to then UVI Executive Vice President Orville Kean.





HISTORY OF THE 4-H PROGRAM

Kofi Boateng, Acting Program Leader

The 4-H Program in the Virgin Islands started in 1950 on the island of St. Croix at the Slob elementary school. The 4-H Program started as part of the school curriculum, according to Mrs. Enid Meyers, then a teacher at the school. It was a country school, attended mostly by the children of sugarcane cutters, and 4-H was the only after-school activity. Children and teachers had the opportunity to involve themselves in gardening, handicrafts and cooking. The children had their own gardens and cooked their own food with the produce from the gardens. They also had a livestock program where sheep, goats and cattle were raised by the students. Competitions were held and awards were presented.

In 1962, the 4-H program was extended to the private schools and the community, starting with the local housing projects. Clubs were established in DeChabert, Kennedy and Jackson Terrace, and other neighborhoods. In the housing projects, the program concentrated on foods and nutrition, arts and crafts, sewing and sports. In neighborhoods such as Mon Bijou and Glynn, 4-H concentrated in sewing and gardening projects.

Robert Lindstrom, hired in 1973, was the first full-time youth agent. When he arrived, there were only about 60 youth involved in 4-H. Traditional clubs were on St. Croix only. St. Thomas had sewing clubs, and there was nothing on St. John. He went into the school system and housing projects to spread the word about 4-H, and immediately got 300-400 students involved.

Another big effort was the Summer Program. He credits Julia Pankey for providing invaluable assistance on getting the program going. Collectively, the staffs of CES/AES came up with the curriculum, and participants were given awards for participation.

The next year, he expanded the program to St. Thomas and the following year to St. John. He flew to St. Thomas and St. John every Tuesday.

Triumph at the 1992 Virgin Islands Agriculture and Food Fair, St. Croix.

From our scrapbook, circa 1965

What Is 4-H Club Work

By Amy B. Mackay

Since September is the month we organize 4-H Clubs in the Public Schools of the Virgin Islands, we would like to tell you a little of the Program. 4-H work is the youth phase of the Agricultural Extension Service program sponsored by the Federal Experiment Station. Membership is open to a boy or girl between the ages of 10 and 18. To become a 4-H member, a boy or girl fills out an enrollment card. He or she may then start a work project. Boys and girls are developed through projects, exhibits, demonstrations, and other club activities. Boys and girls organize into a club, elect their own officers, and "learn by doing" under the guidance of a local leader. They attend meetings and take part in club programs. They also participate in other 4-H activities including camps, achievement days, tours, demonstrations, judgings, exhibits, and fairs. The success of 4-H Club work depends largely on how parents, project leaders and other resource people are involved.

Good 4-H Club need favorable parent attitude and interest and active parent cooperation. Boys and girls gain most from 4-H Club work when their parents take an active part.

The National 4-H Club emblem is the four-leaf clover with the letter "H" on each leaf. The four H's represent the four fold development of HEAD, HEART, HANDS and HEALTH. The National Club Motto is, "Make the Best Better," and the National club colors, Green and White. The green of the 4-H insignia symbolizes nature's most common color in the great out-of-doors, and is also emblematic of youth, life, and growth.

Another effort involved Mr. Stacy Lloyd, the owner of Island Dairy, who donated calves each year to the program for projects. Mr. Lindstrom also started container gardening with free seeds from Burpee and other major seed companies and started a woodworking project with donated pieces of mahogany from the St. Croix Leap mahogany project.

Although Mr. Lindstrom left CVI in 1975, and eventually became a member of National 4-H Council staff in Washington, D.C., his involvement with the program has remained strong.

In the later part of the 1970's, 4-H programming concentrated on agricultural irrigation and school beautification projects. The Frangipani 4-H Club received a nationally-sponsored community beautification grant from the Reader's Digest Foundation. A stone wall was built with a mahogany plaque with the name of the community and the 4-H emblem on it.

One of the most significant contributions 4-H made to the community and the St. Croix campus was the development of the UVI Snack Bar. Mrs. Primrose Joseph, then the president of the 4-H Volunteer Leaders Council, was asked by the 4-H volunteers to represent them at the snack bar to help raise funds. This continued for years and helped fund 4-H program activities until 1982 when it was turned over to a private concern.

In March of 1980, Dr. Padda appointed Mr. Alan Oliver program leader. Mr. Oliver brought with him extensive experience, having worked with the 4-H programs in Washington, D.C. and New York. Paramount in Mr. Oliver's programming efforts was the development of a healthy "triangle" identity - being a resident of the Virgin Islands as well as becoming a member of the Caribbean region and the United States. Another noteworthy accomplishment was the first Caribbean Youth Conference, held in 1980, and attended by 60 delegates representing several neighboring Caribbean islands/nations.

In the latter part of 1980, Miss Zoraida Jacobs was appointed the first 4-H Youth Specialist. Sarah Dahl also joined the 4-H program as an Extension Agent in 1982. At this time, the Virgin Islands forged a cooperative relationship with Michigan 4-H. Three 4-H members and a staff member visited Michigan's annual 4-H Exploration Days in 1983. The annual 4-H Summer Day Camp also offered specific learning tracks for the first time, including a "learn to swim" program, theatre and the Teen Apprenticeship Program. The latter provided teens with on-the-job training and skills such as resume writing, interview techniques and exploring careers.

In 1984, a second Extension Agent, Mr. Shelton Shulterbrandt, joined the staff. The program reached its peak in 1985, with clubs, membership and 4-H projects at an all-time high. In November of that year, the program sponsored "Caribbean Youth in the Year 2001", and nearly 150 youth delegates representing almost all the islands in the Caribbean participated. Keynote speaker was Dr. Ezra Naughton, Director of Minority Research and

Teaching Programs, USDA, and a Frederiksted native.

In 1986, due to severe budget constraints, the need arose for 4-H to directly canvass the business community to raise funds for our annual 4-H Summer Day Camp Program, resulting in a very limited camp. This year marked the 15th anniversary of the 4-H Summer Day Camp Program in the Virgin Islands.

In 1987, an ancient African game of strategy was reintroduced through the 4-H program. This game, Oware, was shared in the schools, clubs and communities. A play-off competition was held at the annual Agriculture and Food Fair.

Mr. Darwin King was appointed the new 4-H Youth Specialist in 1988. Miss Zoraida Jacobs left her post as 4-H Program Leader to return to school.

In 1989, Mrs. Josephine Petersen-Springer was appointed Acting Program Leader and served as joint program leader for Home Economics and 4-H. Recognizing the need to incorporate livestock projects for smaller animals, the 4-H rabbit project was introduced the same year.

In 1990, the first 4-H Livestock "Explo" was launched, offering 4-H projects featuring nearly all livestock species and enrolling 32 members its first year. Mr. Joseph Fulgence was appointed new 4-H Youth Specialist, and since October, 1991, Mr. Kofi Boateng has been Acting Program Leader.

Ms. Zoraida Jacobs (third from left) and 4-H staff discuss bush tea display in 1981.



ST. THOMAS/ST. JOHN DISTRICT, COOPERATIVE EXTENSION SERVICE

Dr. Louis E. Petersen, District Supervisor

Today, Dr. Michael Ivie is professor and curator in the Department of Entomology at Montana State University in Bozeman. But in 1978 he was a young man with a bachelors degree looking for his first real job when he became the first CVI-CES agriculture/natural resources agent on St. Thomas. He and home economics agent Cynthia Yobs were the entire staff.

During his two years on St. Thomas, he says he "got control" over New House, CES headquarters, including putting in landscaping, enclosing the porch and illegally digging a parking area. He started the soils laboratory and a photography lab, built up the CES library, and wrote a regular newspaper column called "The Limin' Gardener," which covered home gardening concerns about pest control, soil fertility and the like. He eventually established an office on St. John.

Most importantly for his clientele, he set up demonstration plots and began researching and providing information for the people of St. Thomas. Most of the information from St. Croix had been available to them, he said, but they had not been making use of it or it was not appropriate for the different growing conditions of the island, which, for example, has a much more acid soil than St. Croix.

There was also little information on variety selection for St. Thomas. He recalls asking St. Croix CES horticulturist John Gerber to help set up a demonstration plot on improved sweet potato varieties. People were skeptical about changing from their favorite types, he said, but a comparison of the harvest, where new varieties produced mounds more of potatoes than the old ones, spoke volumes.

He also worked hard to provide information on organic gardening to an interested, but largely urban and inexperienced group of Rastafarians on St. Thomas.

Carlos Robles, who later became St. Thomas Extension agent, worked for Ivie one summer as an undergraduate intern.

Ivie left St. Thomas in 1980 to pursue graduate studies at Ohio State University. Interesting enough, his graduate career took direction from a casual suggestion made to him during his CES interview. Dr. Padda suggested that while he was on St. Thomas, Ivie might want to catalog the insects of the Virgin Islands.

Sixteen years later, in 1992, Dr. Ivie is preparing for press a 1,500-page book on the beetles of the Virgin Islands, a volume with 40 authors from as

far away as Poland and Australia. When he got to St. Thomas, some 250 kinds of beetles had been identified in the Virgin Islands. That number is now over 900, including one he named *strongylium paddai*, in honor of that suggestion made back in 1978.

These days, the natural resources program on St. Thomas/St. John has established a diagnostic herbarium that houses dried and mounted specimens representing over 1,000 plant species. These specimens represent the natural flora of the U. S. Virgin Islands. This collection has been of great academic value to environmental specialists and university and secondary school students, from the Virgin Islands and neighboring Caribbean islands. The program has also been participating in conservation activities, such as the creation of an environmental trail and restoration efforts in the Alphonso Nelthropp Arboretum at Magens Bay.

Strong professional ties have been developed between the Environment Studies Program of the Department of Education and the natural resources program staff in promoting environmental awareness and observing annual events such as Coast Week and Earth Day. A series of campus maps and plants lists, featuring over 200 plant species on both the St. Croix and St. Thomas campuses of UVI, have also come out of this program. Collaborative efforts are continuing with the Virgin Islands Resource Management Cooperative and Island Resources Foundation on an inventory of the vegetation on St. John.

St. Thomas/St. John home economics has been active since 1972. Specialized efforts include individualized assistance to clients, which has greatly increased participation, and networking with agencies like the Department of Human Services, The Answer Program, the Food Stamp Office and the Women, Infant and Children Program.

The agriculture program's demonstration garden is still located next to the St. Thomas office, and it continues to be a source of information for students and the public. The soil, water and plant diagnostic laboratory is an important service offered not just to farmers and home gardeners in the U.S. Virgin Islands, but also to clients from St. Kitts, Dominica and Tortola.

The program works closely with such groups as the Department of Education, the St. Thomas - St. John Chamber of Commerce and the Neighborhood Support Group.

John Matuszak replaced Michael Ivie as Extension Agent in 1980, and served as Coordinator 1981-1986. Ellen Craft was Extension Specialist - Agronomy between 1985-1987, and Extension District Supervisor, 1987-1991. Dr. Louis E. Petersen became District Supervisor at that time.

THE VIRGIN ISLANDS AGRICULTURE AND FOOD FAIRS

Pride in local food products and production has long been a part of the Virgin Islands character. Any public or family event is an occasion to share special recipes, and growers are always proud of their best fruits and vegetables.

CES photo archives have photographs going back for years, showing, for example, canned goods proudly displayed at the 1958 Christmas Food Festival Fair. The Virgin Islands Agriculture and Food Fair, an annual St. Croix event co-sponsored by the Virgin Islands Department of Economic Development and Agriculture and UVI-AES and CES, grew out of that tradition.

Since 1971 (except in 1990, after the hurricane), the fair has been a showcase for local foods and the bounty of the island's agricultural harvest. Farmers, food vendors and craftspeople display and sell their offerings. Children compete in three-legged races and groom their carefully-tended livestock. Mocko jumbies and quadrille dancers remind fairgoers of their roots, while reggae bands and calypsonians speak of the present.

Included in what has become a three-day extravaganza of sounds, tastes and colors are educational displays, from groups as diverse as the agriculturists on Tortola, elementary schoolchildren, and the St. Croix Environmental Association. UVI Land-Grant staff are very active at these fairs, as each program prepares an educational display for the public, often highlighting recent research results. Staff members work throughout the fair, passing out material and answering questions.

For nearly every year, a bulletin of articles on foods, nutrition and agriculture issues has been produced and distributed to the public as part of the fair. The majority of these articles each year are written by AES and CES staff. In 1991, UVI-CES published a collection of nearly 100 of the articles from past food fair books, a 500-page compendium of research-based material on local soils, water, fruits, field crops, animal husbandry, fisheries, foods and nutrition, edited by Dr. Padda.

The St. Croix fair has become a major event, drawing more than 25,000 Virgin Islanders and visitors in 1992. Since 1980, the event has expanded to St. Thomas, where the St. Thomas/St. John Agriculture and Food Fair is held in November. It is sponsored by UVI-CES with support from the agricultural community, and it is held on the grounds of the Reichhold Center on the St. Thomas UVI campus.

Top: Governor Cyril E. King (center) and family look over Food Fair produce with Dr. Padda (right) and Mrs. Olivia Henry (left). Bottom: Governor Juan Luis (center) and Miss St. Croix cut ribbon at Food Fair with dignitaries including V.I. Delegate Ron DeLugo (far right) and Senator Lilliana Belardo de O'Neil (far left).



UVI-AES AND THE CARIBBEAN BASIN ADMINISTRATIVE GROUP

by Dean F. Davis, CBAG Program Manager,
University of Florida Institute of Food and Agricultural Sciences

Shortly after the University of the Virgin Islands was designated a Land-Grant Institution, the U. S. Department of Agriculture began a program of research in Tropical and Subtropical Agriculture at a very modest level of funding. The focal points for the research were the "U. S. Institutions in the Caribbean and Pacific Basins."

Since the U. S. Virgin Islands were the deepest penetration of the United States into the Caribbean, the new Agriculture Experiment Station at the University of the Virgin Islands became a participant in the new program. The Caribbean Basin Administrative Group (CBAG) was formed to administratively oversee the research program, and Dr. Darshan Padda, as AES Director, was named a member of CBAG. Later, CBAG selected Dr. Padda as its chairman.

As might be expected from the environment of the Virgin Islands, the research initially funded by CBAG at the UVI Experiment Station was concerned with irrigation water management for selected tropical crops, followed by a study on water use management for small farming systems. Added to this effort was research on establishment of forages for Virgin Islands animal production.

From 1986 through 1991, CBAG funded Dr. Stephan Wildeus in studies of Virgin Islands White (St. Croix) hair sheep, a major interest to Virgin Islands agriculture. Included were studies on the reproductive potential of the breed, on parasitic gastroenteritis in the breed and on diet supplementation requirements for sheep grazing on native pastures. All of these studies have been very productive and have produced information of vital interest to Virgin Island agriculture.

Since 1989, CBAG has funded research on the culture potential of selected Caribbean marine finfish at the UVI Experiment Station. Although this work was hampered by Hurricane Hugo, the studies have begun to identify some promising opportunities that could lead to commercialization.

Currently, CBAG-sponsored research at the Experiment Station includes techniques for using plant growth regulators in the production of ornamental root crops by Dr. Ramcharan, the role of urea in improving forage feeding of farm animals by Dr. Adjei, development of a closed system of vegetable production in a tank culture system of tilapia by Dr. Rakocy, and vegetable production in a new system known widely as "alley cropping" by Dr. Palada.

As the UVI Agricultural Experiment Station has grown in facilities and staff, so has the special program in Tropical and Subtropical Agriculture in the U. S. Department of Agriculture. From its meager beginning, the program has been recognized for its efficiency and productivity and has become a major research activity. With the environment of the Virgin Islands being so representative of the Caribbean Basin, the UVI Agricultural Experiment Station is visualized as the "living laboratory" for tropical agriculture and is considered a vital link in the program of research in tropical agriculture sponsored by the U. S. Department of Agriculture.

As we look back 20 years to remember the early work at the UVI-AES, we look with great pride at the five current research projects valued at nearly a quarter of a million dollars annually, and we can visualize the continued important role the Experiment Station will play in the future in the CBAG-sponsored agricultural research. We congratulate AES on its first 20 years, and we look forward to an even greater future marked by the development of agricultural production systems that are highly specialized for the unique Virgin Island environment that is representative of the environment of much of the Caribbean Basin.

1990 CBAG meeting on St. Thomas.



UVI AND THE CARIBBEAN FOOD CROPS SOCIETY

The Caribbean Food Crops Society (CFCS), founded in 1963, has a non-profit membership of some 350 research, extension and teaching scientists from 35 Caribbean countries, the U.S. Virgin Islands, Puerto Rico, and the U.S. mainland. Official languages of the organization are the four major language groups of the Caribbean: English, French, Dutch and Spanish.

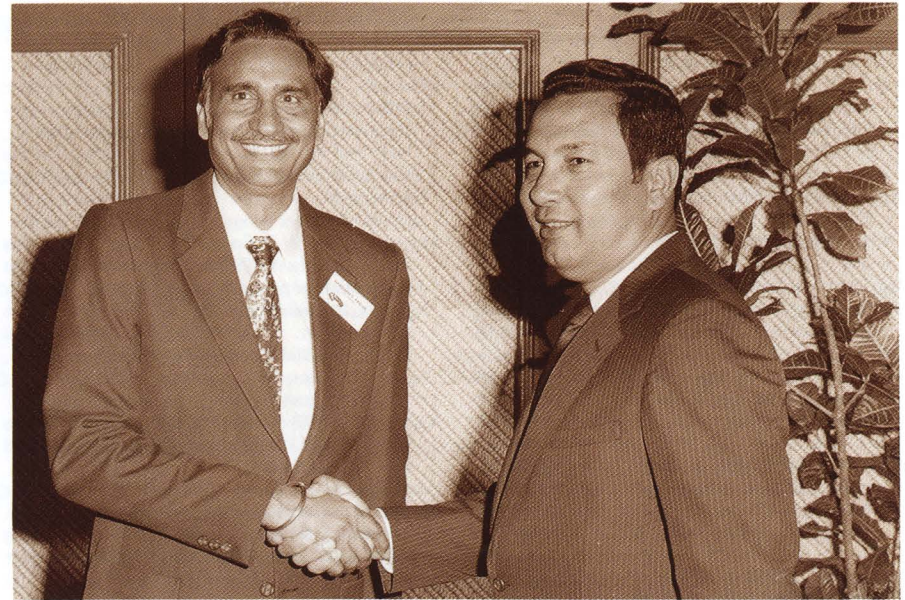
CFCS aims are to advance Caribbean food production, processing and distribution, and to facilitate information exchange through coordination of research efforts and development of cooperative programs. This effort has been facilitated by participation of the University of the Virgin Islands AES and CES; University of Puerto Rico Department of Agriculture; Florida Agricultural Experiment Station, and USDA Agriculture Research Service. CFCS also seeks to improve levels of nutrition and standards of living in the Caribbean.

The group meets annually in a different location each year, and the membership present technical papers that are published in a proceedings. CFCS members take the opportunity of the annual meeting to learn more about the host country through tours and discussions, and use their combined expertise to assist agriculturists and food distribution specialists in that region cope with specific problems or challenges.

Annual meetings have been held, for example, in the Virgin Islands, Dominican Republic, Guyana, Barbados, Jamaica, Trinidad-Tobago, Guadeloupe, Martinique, Suriname, Venezuela, Puerto Rico, St. Lucia, Antigua. The 1993 meeting is scheduled for Martinique, and Cuba hopes to host the 1994 meeting.

UVI has been involved from the beginning, as St. Croix hosted the first-ever annual CFCS meeting in 1963, and again in 1972. The listing of Land-Grant publications at the end of this book will attest to the participation of AES and CES staff in CFCS over the years. St. Croix also hosted the 20th annual meeting, in 1984, under the presidency of Dr. Padda. Patrick N. Williams, then Commissioner of Agriculture and now chair of UVI's Board of Trustees, was CFCS vice-president. Robert Webb, Walter Knausenberger and Lisa Yntema edited the resulting proceedings, on the theme of "Small Farm Systems in the Caribbean."

Since 1987, Dr. Padda has been chairman of the Board of Directors of CFCS, and in 1992, with the appointment of Kofi Boateng as secretary and Clarice C. Clarke as assistant secretary, the secretariat is located on St. Croix.



Top: Dr. Padda being congratulated as incoming president of CFCS, by outgoing president Dr. Alejandro Ayala at the 1983 meeting in Puerto Rico. Bottom: CFCS opening ceremonies in Guadeloupe in 1989. Dr. Padda serves as chair.

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Dr. Myron Johnsrud (far right) and dignitaries plant a baobab tree on the St. Croix campus to honor the 75th anniversary of the Extension Service in 1989.



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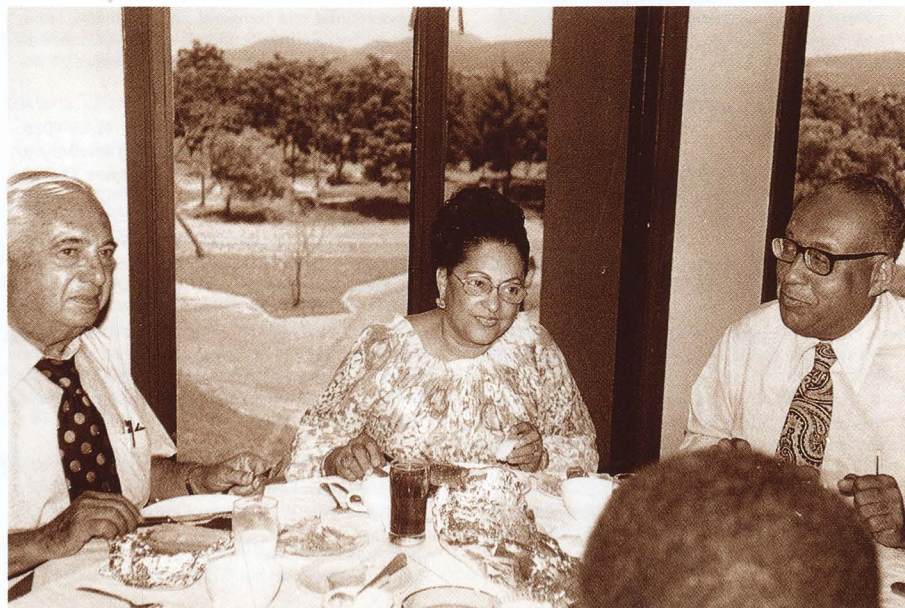
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From far right, Governor Melvin H. Evans, Attorney Edith Bornn, and Governor Ralph Paiewonsky.



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CES Associate Director Mr. Kwame Garcia (left) presents Dr. Padda with his tax publication, 1981.



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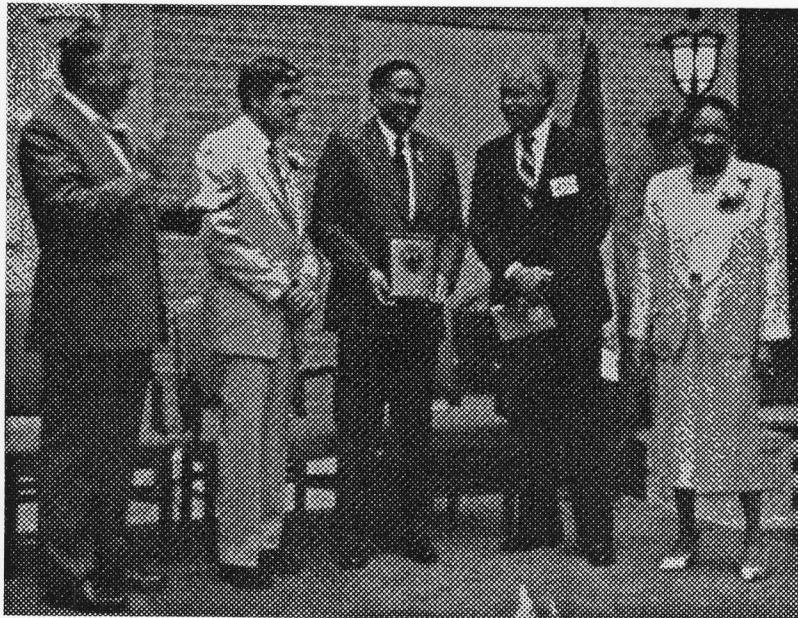
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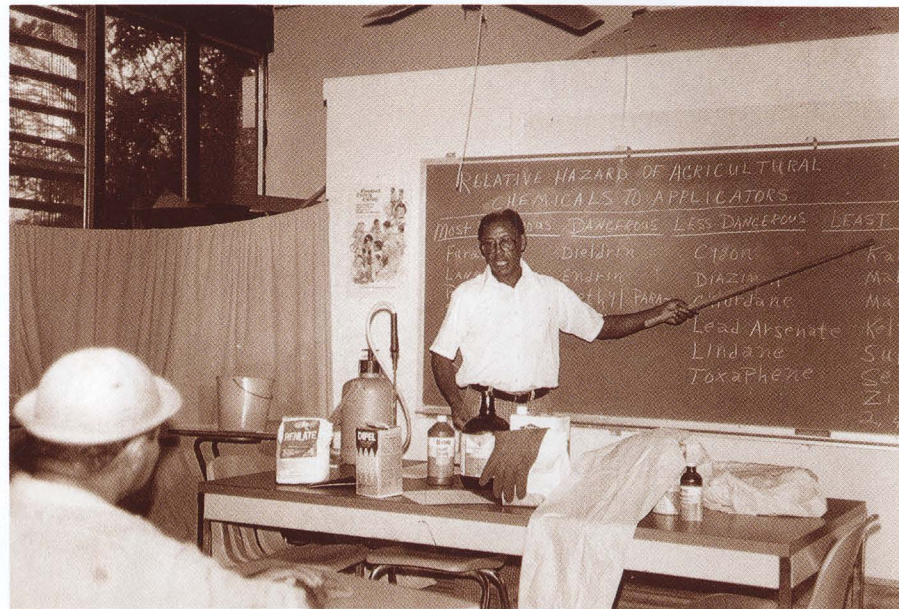
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UVI President Arthur Richards stands by as Dr. Padda (center) is awarded the 1987 International Honor Award from OICD-USDA.



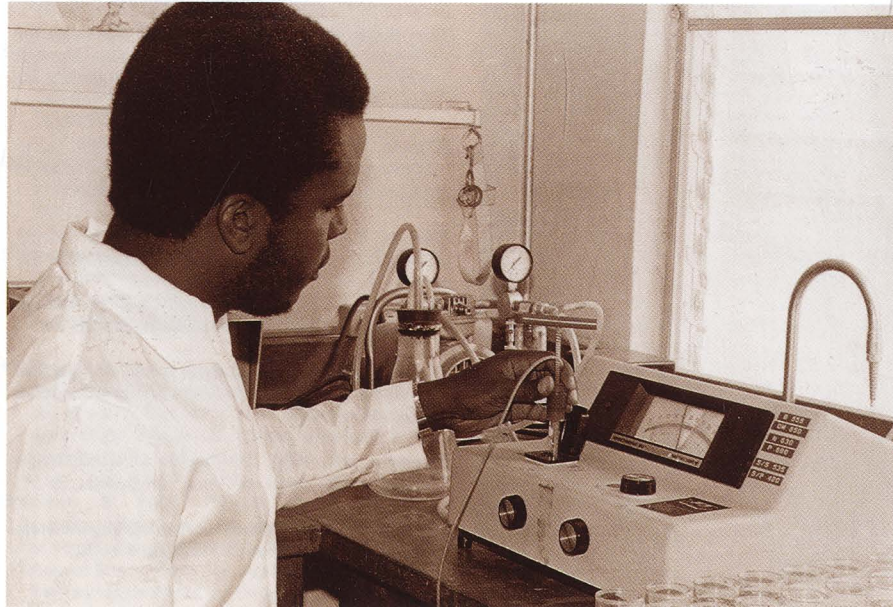
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Scanned illustrations:

- 9 Article, The West End News, Sept. 28, 1953
- 9 Headline, The Daily News, Aug. 21, 1967
- 10 Recreation of CVI news release, June 8, 1972
- 10 Headline, The St. Croix Avis, June 9, 1972
- 10 Detail from Public Law 92-318, Higher Education Act of 1972, p. 115.
- 10 Cover of CVI-AES' first published feasibility study.
- 23 1992 Letter to Mr. Don Bailey of the AES Aquaculture Program, from Miss Jinnie Richards, fifth grader at St. Croix's Good Hope School, after a tour of the program.
- 31 Extension articles by Mr. Morris Henderson and Mrs. Amy McKay, The St. Croix Avis, Sept. 17, 1962.
- 36 Article, The St. Croix Avis, June 24, 1977.
- 38 4-H article by Mrs. Amy McKay, source unknown (UVI scrapbook), c. 1965.

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