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THE 'VIRGIN FRESH' APICULTURAL PROJECT: DEVELOPMENT AND EXPANSION OF THE U.S. VIRGIN ISLANDS APICULTURE INDUSTRY

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ABSTRACT: The Virgin Fresh Apicultural Project, sponsored by the Virgin Islands Department of Agriculture and the University of the Virgin Islands Cooperative Extension Service, explored the production and market potential of apicultural products. These commodities are usually available from local beekeepers, but there was no organized system to increase their supply and market them as packaged specialty items to the hospitality industry and local markets. Agriculture professionals, farmers and interested residents participated in beekeeping classes designed to create a group of entrepreneurs to develop and expand the local apiculture industry. The topics included in a series of twelve-week training classes were basic first aid; safety in and around the hive; tools of the trade; hive management; business planning and marketing; and bee biology and diseases. Over one hundred persons completed the training classes. The Virgin Fresh Apicultural Project increased the number of ecologically-sustainable and economically-profitable apicultural businesses in the U.S. Virgin Islands. This project established a model system for the production, harvesting, and marketing processes required to create and maintain sustainable, profitable apicultural businesses and to stimulate growth of the local apicultural industry. The increased beekeeping activity has allowed the implementation of a marketing campaign highlighting apicultural products, the most popular of which is honey. The campaign consists of branding the locally produced honey with the 'Virgin Fresh' seal to differentiate it from imported honey. The project has increased the public's awareness of locally produced apicultural products and is creating a source of alternative, agricultural, entrepreneurial ventures to stimulate economic development.

Keywords: apiculture, beekeeping, *Apis mellifera*, honey, hive management, bees

INTRODUCTION

Apiculture (beekeeping) is an untapped industry in the U.S. Virgin Islands (USVI - St. Croix, St. Thomas, and St. John). Each island has a healthy bee population that consistently creates beehives in both rural and urban, residential and commercial areas. The perceived hazard of bees in these areas has created a market for bee removal services. When bees are properly removed without the use of pesticides, they can then be placed in hive boxes and used as the nucleus (nuc) for new bee colonies. Apiaries are therefore created by placing these hives in areas with ample nectar-producing plants and by continually dividing the hives as they grow. As the hives multiply, the bees eventually produce enough honey, beeswax, and pollen for the beekeeper to harvest, package, and sell these items as apicultural products. This apiary establishment process is relatively simple to learn and potentially generates three sources of income (bee removals, product sales, and apiary tours). Prior to the start of the *'Virgin Fresh' Apicultural Project* in October 2008, there were fewer than 15 individuals in the USVI involved in apiary establishment. The purpose of the *'Virgin Fresh' Apicultural Project* was therefore to teach farmers and entrepreneurs about the science and business of beekeeping and to expand the availability of apicultural products and services to local niche markets. Funding for this

project was provided by the U.S. Department of Agriculture, Agricultural Marketing Service's Specialty Crop Block Grant (AMS SCBG) program.

Beekeeping Training Courses: Classroom and Hands-On Education: The Virgin Islands Department of Agriculture (VIDA) and the University of the Virgin Islands Cooperative Extension Service (UVI CES) led a series of beekeeping courses, free of charge, for anyone interested in learning "beekeeping as a business." Three courses were held on each island (St. Croix, St. Thomas, and St. John) in 2008 and 2009, with the assistance of various project partners. A total of 114 students (55 St. Croix, 26 St. Thomas and 33 St. John) were trained in the science and business of beekeeping. Each course consisted of classes, held once per week (4 to 5 hours per class) with a total of twelve classes over a three-month period. The classroom training sessions were held at UVI CES and VIDA facilities and the hands-on beekeeping training sessions were held at VIDA and local beekeepers' apiaries. The schedule of topics covered in the training classes include introduction-safety around bee hives; bee biology; introduction to the bee hive/colony; constructing bee boxes/hives; introduction to hive management; practical hive management; products from the hive; business planning; honey extraction; and bee food and feeding.

To encourage students to participate in the course, the VIDA and UVI CES purchased beekeeping supplies⁸ needed to start an apiary and these items were resold to the beekeeping students at cost. The bulk purchasing reduced the unit price and shipping cost of the items; this bulk buying presented students with the opportunity to purchase bee supplies at subsidized prices.

Pre-surveys were used at the beginning of each 12-week course to determine the students' knowledge levels about beekeeping whereas post-surveys were employed at the end of each 12-week course to determine students' knowledge level about beekeeping after the sessions. At the end of each course, an official graduation ceremony was held for the students who attended at least 10 of the 12 classes to confirm their completion of the course with a certificate

Advanced Education for the Beekeeper Trainers: Six of the eleven local beekeepers employed as trainers were sent to a three-day Bee College seminar at the University of Florida in 2009. The purpose of this seminar was to enhance the trainer's knowledge of the latest research and management practices employed in the U.S. beekeeping industry. It was also to help the trainers become aware of the pests and diseases that affect bees and the appropriate control methods being used. Upon their return, the trainers applied the knowledge gained in their own apiary management as well as in training the students in the beekeeping classes.

1st Annual USVI Bee Forum: In February 2009 the VIDA and UVI CES hosted the *1st Annual USVI Bee Forum*, where local beekeepers and students were able to interact with beekeeping experts from the Florida Department of Agriculture, the Trinidad & Tobago Beekeeping Association, and the Kentucky Beekeeper's Association. The primary role of the expert beekeepers was to discuss how beekeeping in the USVI compares to beekeeping in their respective home states/countries. The Bee Forum was held concurrently with the annual Virgin Islands Agriculture and Food Fair (AgriFest) so that the Forum's participants were also able to interact with AgriFest visitors who were interested in the Beekeeping Project.

Branding Locally Produced and Bottled Honey as Virgin FreshTM: Bottled honey was purchased from the trainers and distributed to a variety of potential buyers at different events. These trainers already had business labels for their beekeeping products, so a Virgin FreshTM sticker was placed on the

⁸ Supplies included bee suits/jackets, boxes, frames, foundations, smokers, hive tools, bee brushes, pollen traps, glass/plastic bottles, etc.

bottles to differentiate the locally produced honey from imported honey. Many of the new beekeepers are being encouraged to develop their own label/brand, and these products will eventually be labeled with the Virgin Fresh™ sticker once they meet certain quality standards.

Marketing Virgin Fresh Honey: Virgin Fresh™ beekeeping products were promoted at the CES's "Farmer-Chef Connection" in December 2008 as part of the "Linking Agriculture and Tourism: Constraints and Opportunities" project (Crossman, 2009). Produce and honey were purchased from local farmers and beekeepers and these items were donated to eight participating restaurants on St. Croix and five on St. Thomas to be prepared and presented at a dinner and a luncheon on each island. The marketing purpose of the events were to

1. Educate chefs about the availability of local honey for purchase and the value of supporting the local apicultural industry.
2. Introduce chefs to farmers and vice-versa to open the lines of communication for future purchases.

Sample honey products were also distributed to various potential buyers at the following events:

- The Virgin Islands and the St. Thomas *Agriculture & Food Fairs*, where 200-mL honey bottles were distributed to local and visiting government officials (Figure 3, February 2008 and 2009; November 2008 and 2009).
- *A Taste of St. Croix*, an annual fine dining fundraiser for local charities, where honey bottles were distributed to 50 restaurants and smaller samples were served to patrons (Figure 4, April 2008 and 2009).
- The 1st *Annual Banco Popular V.I. Ultimate Chef Challenge* which is a cooking competition where chefs compete to make the best dish using local and imported items (Figures 5 and 6, April 2008 and 2009).

Many of the individuals who received the complimentary bottles of honey were unaware of the Virgin Fresh™ Beekeeping Project and the honey available from the trainers and students.

Marketing Surveys: Survey instruments were developed to gather information about consumer perceptions of the local beekeeping industry and the products offered. Surveys were distributed during marketing events and consumers were enticed to complete the survey by entering them into a raffle for a bottle of honey.

Beekeeping as a Businesses and Economic Development: The ultimate goal of this project is to create an economically viable beekeeping industry in the USVI which can provide employment and revenue streams to beekeepers. Data collected from the VIDA's "No Pound Left Behind" record keeping campaign revealed that one beekeeping student generated revenues of \$5,236.00 USD from his apiculture venture in 2010, with 85% of the revenue coming from bee removal services and the other 15% coming from honey and beeswax sales. As a result of the interest in beekeeping created by the course, one of the beekeeping trainers was able to sell numerous hive nuclei (nucs) for \$100 each to beekeeping students.

A survey of USVI beekeepers prior to the start of the course in October 2008 revealed that there were approximately 300 bee hives being actively managed by beekeepers. Between the start of the course in October 2008 and its conclusion in December 2009, over 150 hive boxes were sold to beekeeping students, and this number potentially represents 150 new bee hives in the territory. Formal surveys will be conducted in 2011 to assess the exact quantity of hives in the USVI and quantify the growth in the industry on the basis of these hive numbers.

The bee hive boxes sold during the class do not include boxes that have been built by students or purchased from the Bureau of Corrections (BOC). The VIDA and CES partnered with the BOC to use the course to 1) equip inmates scheduled for parole with both social and beekeeping skills, and 2) assist with apiary maintenance during the project. The project encouraged the production of bee boxes at the BOC's carpentry shop, boxes which they now manufacture and sell to local beekeepers as an alternative to importing bee boxes.

Future Project Plans: The following actions will be completed in the future to continue the project:

- Encourage the formation of a Beekeeping Cooperative/Association on each island to reduce beekeepers' purchasing and operations costs, and to increase the production and sale of honey.
- Survey all former beekeeping students to determine how they have progressed and what challenges they may be facing.
- Integrate the apicultural marketing campaign into a larger "*Buy Local, Eat Fresh!*" campaign promoting all USVI agricultural products.
- Establish quality standards for locally produced apicultural products.
- Implement a beekeeping safety campaign to educate the public about safety around bees. Target audiences will include the general public and medical first aid responders.

CONCLUSIONS

The '*Virgin Fresh*' Apicultural Project has stimulated growth in the USVI apicultural industry and therefore increased the supply of locally produced apicultural products in the USVI. Consumers, chefs, and specialty supermarket managers are now aware of these apicultural products, and sales are expected to grow continuously as they have over the past two years. The relatively high cost of locally produced honey remains a challenge limiting purchases by a wider range of buyers. Further steps are needed to continually expand the industry and form cooperatives that can take advantage of the cost savings inherent in economies of scale.

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REFERENCE

Crossman, S., C. Robles, L. Petersen, D. Stanley, and E. Wailes, 2009. Virgin Islands agriculture and tourism linkage: creating farmer-chef linkages through niche marketing Virgin Fresh produce. Proceedings of the Caribbean Food Crops Society 45: 138-140.



Figure 1. Students receive hands-on training with bees during the beekeeping class.



Figure 2. Students learn to build bee hive boxes during the beekeeping class.



Figure 3. Trainers teach St. Thomas Agriculture fair-goers about beekeeping using an observation hive and apicultural product samples including beeswax, massage oils, honey salad dressing, and honey vinegar (pictured on table).



Figure 4. Locally produced and bottled honey from two beekeeping trainers and a student presented at *A Taste of St. Croix*.



Figure 5. Chefs cook with local honey as their secret ingredient during Banco Popular's Ultimate Chef Challenge in St. Thomas.



Figure 6. Bottles of honey were awarded to the Ultimate Chef Challenge competition winners.