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## USDA/APHIS INITIATIVES IN SUPPORT OF CISSIP

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**ABSTRACT:** In 2007-2008, APHIS assisted in conducting capacity building workshops in Puerto Rico, Nicaragua, Guatemala, Honduras, Costa Rica, Colombia, Ecuador, Jamaica, and Trinidad. These were conducted in partnership with several private and public cooperators from the Region. The workshops emphasized the need to eliminate pests at the source of imported agricultural products, so that clean product arrives at the ports of entry of the importing country.

In collaboration with the Inter-American Institute for Cooperation on Agriculture (IICA) two capacity building workshops on scale insects and mealybugs of economic importance were held; one in Barbados for Barbados and the Organization of Eastern Caribbean States(OECS), and the second in Jamaica for Jamaica, Trinidad and Tobago, the Dominican Republic, Bahamas, and Haiti.

Between 2005 and 2008 APHIS assisted the Caribbean Region with surveys for the Red Palm Mite and the Giant African Snail. A USDA APHIS malacologist from the Academy of Natural Sciences in Philadelphia, PA, an entomologist from the APHIS Center for Plant Health Science and Technology (CPHST), and an acarologist from the USDA-ARS Systematic Entomology Laboratory in Beltsville, Maryland were assigned to upgrade the surveillance and pest identification skills of technical officers in the Caribbean Region. Financial assistance was provided for pest detection programs in Caribbean countries, in particular those targeted to Tephritid fruit flies, red palm mite, giant African land snail, and mealybugs. APHIS supported the Tephritid fruit fly trapping programme by providing trapping supplies to most countries in the region.

APHIS cooperated with the Panama Ministry of Agriculture and the University of Panama to conduct plant pest surveys near the Panama Canal which is a major pathway for movement of commodities, and possibly plant pests, from Asia into the Greater Caribbean. The focus of these surveys has been on mealybugs, mites, wood borers and molluscs. APHIS provided support for regional meetings in the Caribbean concerned with the preparedness in the event the introduction of Highly Pathogenic Avian Influenza; these meetings resulted in the allocation of needed resources and strengthening safeguarding institutions in some countries.

APHIS collaborated with CABI, CARICOM, CIRAD FAO and IICA in assembling Plant Health Directors of many Greater Caribbean countries with the objective developing coordinated programs to accomplish, in part, the desired outputs of the CISSIP proposal. In 2009 APHIS will continue its assistance to the Plant Health Directors Forum and the latter's technical working groups.

APHIS helped implement the Caribbean Regional Diagnostic Network, a component of CISSIP, through the purchase of five state of the art internet connected distance digital diagnostic laboratory systems for deployment in five Caribbean countries.

**KEY WORDS:** coordinated regional safeguarding, introduced pests, Caribbean Plant Health Directors, pest surveillance, diagnostic network, information system, internet

## **INTRODUCTION**

In 2003, scientists, policy makers and trade officials from throughout the Caribbean Region, including the United States, met in Grenada to discuss the issues caused by introduced pests, and as a result, the Caribbean Invasive Species Working Group (CISWG) was formed. Subsequently the Council for Trade and Economic Development (COTED), a ministerial body within The Caribbean Community (CARICOM) endorsed CISWG and directed it to prepare a project proposal, "The Caribbean Invasive Species Surveillance and Information Programme (CISSIP)". Three interdependent sub-systems of CISSIP were developed which targeted three broad functions: (a) pest survey and inspection (the Pest Survey and Inspection Program or PSIP), (b) rapid diagnosis of pest problems (the Caribbean Regional Diagnostic Network or CRDN), and (c) information and communication (the Invasive Species Information System or ISIS).

As a result of a high level of synergy between the APHIS program of work for 2007-2008 and the expected output of CISSIP, capacity building workshops and program evaluations were conducted during 2007 and 2008 in several countries to promote high quality safeguarding systems. Workshops were held in Puerto Rico, Nicaragua, Guatemala, Honduras, Costa Rica, Colombia, Ecuador, Jamaica, and Trinidad. These were conducted in partnership with several private and public cooperators from the Region. The workshops emphasized the need to eliminate pests at the source of imported agricultural products, so that clean product arrives at the ports of entry of importing countries.

Financial assistance was provided for pest detection programs in the Caribbean countries, in particular those targeted to Fruit Flies, Red Palm Mite, Giant African Land Snail, and mealybugs.

The CARICOM Secretariat, CABI, CIRAD, FAO, IICA and USDA-APHIS assembled many of the the Plant Health Directors of the Greater Caribbean for the first time ever with the objective developing coordinated programs to accomplish, in part, the desired outputs of the CISSIP proposal. Also support for regional meetings in the Caribbean concerned with the preparation and readiness of the introduction of Highly Pathogenic Avian Influenza resulted in progress in allocating needed resources and strengthening safeguarding institutions in some countries in the region.

Safeguarding funds targeted for the Caribbean were used to help implement the Caribbean Regional Diagnostic Network, a component of the CISSIP proposal, through the purchase of five state of the art internet connected distance digital diagnostic laboratory systems for deployment in five Caribbean countries.

These activities are expected to significantly facilitate progress toward coordinated regional safeguarding as outlined in the CISSIP proposal.

The United States Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS) support for CISWG and ultimately the Caribbean Invasive Species Surveillance and Information program (CISSIP) had its roots in the development of a strategy for the Caribbean, called the Caribbean Regional Invasive Species Intervention Strategy (CRISIS).

CRISIS recognises that with increased market access and trade, there is a need to strengthen, improve and upgrade the resources, policies and programmes, laws, transparency and information sharing with the Greater Caribbean Region.

The overall purpose of CRISIS is to safeguard the Greater Caribbean from the threat of invasive alien species and to develop a framework for dealing with both indigenous and introduced pest species. This CRISIS document was presented to CARICOM's Council for Trade and Economic Development (COTED). COTED then directed the Caribbean Invasive Species Working group to fully develop two proposals.

1. Timely internet-based tracking of invasive pest introduction and interception
2. Development of a Caribbean pest and disease diagnostic system based on distance digital imaging internet-based communication

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CARICOM, APHIS, and IICA assembled the Plant Health Directors of the Greater Caribbean with the objective developing coordinated programs to accomplish, in part, the desired outputs of the CISSIP proposal.

The APHIS Mission Linkage to the Plant Health Directors was to strengthen safeguarding system domestically and in other countries by helping to build in them the capacity to address key animal, plant health and natural resource issues of concern to them, and to initiate efforts to protect the United States from dangerous exotic pests and diseases. Principally through these efforts, we were able to share many of the USDA's scientific and technical capabilities.

Safeguarding funds targeted for the Caribbean were also used to advance the implementation of the distance diagnostic and Information system module of the CISSIP proposal by procuring of five digital diagnostic laboratory systems (microscopes, digital cameras, etc.) and making them available for deployment in five Caribbean countries.

## **CAPACITY BUILDING PROGRAMS**

In collaboration with the Inter-American Institute for Cooperation on Agriculture (IICA) two capacity building workshops on scale insects and mealybugs of economic importance were held; one in Barbados for Barbados and the Organization of Eastern Caribbean States(OECS), and the

second in Jamaica for Jamaica, Trinidad and Tobago, the Dominican Republic, Bahamas, and Haiti.

The main objectives of these capacity building workshops were to:

1. Train Caribbean Ministry of Agriculture officials to detect and identify mealybugs and scale insects of economic importance for submission to the Systematic Entomology Laboratory or other US identification service institutions in order to determine the known Caribbean distribution of these target pests.
2. Assist these countries to gain the capacity to identify pests which will facilitate the development of the pest list of each country.

These capacity building workshops had their justification rooted in several key areas that affect the viability of sustainable agriculture in the Caribbean.

The first is based on the Jagdeo Initiative on repositioning Caribbean agriculture and better meet the needs of domestic and export markets. The Jagdeo Initiative has identified key binding constraints affecting agriculture. One of the key binding constraints addressed by this workshop was a lack of skilled high quality human resources. A recommendation of this initiative was for a positive intervention to improve the supply, capacity and competitiveness of skilled personnel. Through this pest identification workshop, technical officers in the Caribbean would be able to identify mealybugs and scale insects of economic importance to the region and by extension those affecting the wider Caribbean. With these workshops, it is expected that some enhancement of the region's capacity to control these pest problems will be achieved, leading to increases supply of the indigenous commodities now being prohibited to the West Indian diaspora in the United States.

Secondly, within the various Caribbean countries, increased fruit production has been identified as an important aspect of any crop diversification thrust. Generally fruit production has remained a backyard enterprise, except for some small acreages of mango, papaya, avocado and pineapple on some islands. Nevertheless, entrepreneurs can and do market sufficient fruit from such smallholdings or from backyard collections to earn significant income. St Vincent exports significant quantities of mango and avocado intra regionally. Grenada, too, continues to export to Trinidad and Tobago large quantities of soursop, sugar apple, sapodilla, mango and tamarind. St Lucia had a fairly substantial mango trade with Barbados and other neighboring islands before this trade was disrupted because of the presence of the mango seed weevil.

While any system of backyard or other small scale production is one in which pest populations will naturally tend to be kept at low levels, it is well documented that a shift to large-scale monoculture systems allows some pest insect species to achieve major pest status. Hence it may be fairly safe to predict that significant increases in fruit production in the region will result in the increased pest status of some pest species already existing in the country. To prevent this one has to ensure that adequate preventive pest management programmes are developed and implemented as an integral component of any scheme for increased fruit production. One important aspect of such an action is the proper identification of the in-country pests as a

foundation for developing and implementing a proper crop protection program.

Thirdly, the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS agreement) entered into force with the establishment of the World Trade Organization (WTO) on 1 January 1995. This SPS agreement while permitting governments to maintain appropriate sanitary and phytosanitary protection reduces possible arbitrariness of decisions concerning imports and encourages consistent rational science-based decision making. In particular, the agreement clarifies which factors should be taken into account in the assessment of the level risk involved in allowing certain imports. Measures to protect the health of animals and plants should be based as far as possible on the analysis and assessment of objective scientific data. In order to comply with the risk assessment process each country must identify all in-country pathogens and pests and compile a pest list, which will inform the risk assessment process.

### **Central and South American**

Since October 2005, APHIS has been cooperating with the Costa Rica Ministry of Agriculture and others in a program designed to reduce the number of pests encountered on *Dracaena* plant exports from Costa Rica. This program is called the “*Dracaena* Clean Stock Program” and currently encompasses ten *Dracaena* growers. The objective is to eliminate pests at the source of imported agricultural products, so that clean product arrives at ports of entry of the importing country.

APHIS is also cooperating with officials of the Panama Ministry of Agriculture and the University of Panama to conduct plant pest surveys near the Panama Canal which is a major pathway for movement of commodities, and possibly plant pests, from Asia to countries, states, and territories on the eastern side of the Canal. The focus of these surveys has been on mealybugs, mites, wood borers and molluscs. APHIS personnel are assisting with survey and diagnostics. The cooperating agencies have developed a target pest list and are exchanging information obtained from the surveys.

An APHIS-assisted activity planned for later in 2008 includes a “Citrus Certification (Plants) Program” in seven Central American countries. The program will concentrate on field inspection and identification of citrus pests and diseases.

APHIS conducted several seminars in Central and South American countries that were designed to educate regulatory officials, producers, and exporters concerning U.S regulations and inspection procedures for the importation of agricultural commodities. The seminars focused on pests commonly intercepted at U.S. ports of entry. The seminars focused on specific commodities of importance to the host country and on the pests commonly intercepted on those commodities. Trainers instructed participants on how to inspect for these pests, how to identify them, and techniques to mitigate them. In Colombia, the seminar focused on cut flowers. In Costa Rica and Guatemala, APHIS personnel conducted an export review on propagative plants, and on fruits and vegetables. A seminar was conducted in Ecuador with the focus on cut flowers, and fruits and vegetables. In Costa Rica, APHIS personnel provided training on pests of false coriander. Again, the objective of these activities is to eliminate pests at the source of imported agricultural products, so that clean product arrives at ports of entry of the importing

country.

## **CARIBBEAN PLANT HEALTH DIRECTORS FORUM**

Unlike most other regions of the globe, the Greater Caribbean had not yet put in place the mechanisms required to assure that free and fair trade is also safe trade. Indeed the insular Caribbean is one of the Regions of the globe that does not have in place a functioning regional organization to protect against invasive plant pests. The organizers hope that the Caribbean Plant Health Directors Forum will discharge some of the responsibilities for coordinated regional safeguarded normally undertaken by a Regional Plant Protection Organization.

This Caribbean Plant Health Directors Forum was expected to be a government-to-government activity that adopts the elements of a model plant health safeguarding system and implements these elements. Examples of such effective implementation were drawn from the Caribbean and the USA safeguarding programs. Forum speakers provided an overview of various technical issues to representatives of the Ministries of Agriculture from the Caribbean countries as a continuation of other phytosanitary training sessions related to pest detection and safeguarding that were conducted during the 2007-2008 fiscal years. During this meeting the plant health directors discussed the authorities, policies, and resource requirements needed for an effective national phytosanitary system. The following topics were discussed:

- The basic elements of a model plant health safeguarding system.
- Offshore risk management
- Regulatory exclusion and border bio-security
- Permit systems
- Pest diagnostics
- Domestic pest detection and surveillance
- Rapid response to pest introductions
- Pest management (banana, fruit flies)
- Risk analysis
- Risk mitigation and systems approaches
- Export programs
- Data management and communication networks
- The formation of six technical working groups each focused on priority pest or pest complex
- Mitigation measures to control/eradicate significant plant pests
- Caribbean Invasive Species Surveillance and Information Program (CISSIP)
- Caribbean Pathway Analysis Project

Expected Results/Deliverables discussed included:

- Increased support for technical staff within the Ministries of Agriculture,
- Improved ability of the Caribbean countries to identify and address pest risks,
- Increased trade opportunities for Caribbean countries realized by reducing the number of pests present in products eligible for trade in the global market place
- Improved safeguarding for the Region.



- Caribbean Pathway Analysis Working Group Meetings
- Formation of a CARICOM Chief Plant Health Forum and recommendations for adoption as a Regional Strategy.

Anticipated follow-up activities include:

- Technical assistance workshops by subject matter experts to respond to country-specific pest interception problems,
- Development of specific Terms of Reference for the technical working groups,
- Pest Risk Assessment training for appropriate technical personnel, and the formation of a Pest Analysis Unit for the region

## **WORKING GROUPS OF THE CARIBBEAN PLANT HEALTH DIRECTORS FORUM**

### Plan of action

Following the Plant Health Directors meeting on April of 2008, technical working groups were formed to address the highest priority pest concerns of the region. These technical working groups are: Fruit Flies, Giant African Snail (see Pollard et al., 2008), Red Palm Mite (Roda, et al. 2008), Palm Pest Complex, Banana Streak Virus, and Emergency Response. These working groups will meet to discuss a generic draft Terms of Reference and then adapt them to the specific working groups.

### How each activity or function will be accomplished

Each technical working group has been assigned a chairperson. The meeting of each working group will be held in the country of the assigned chairperson. Each working group function will be guided by a draft Terms of Reference, and it will schedule its plan of work. The technical working group will report on progress at the next Plant Health Directors meeting scheduled for February of 2009:

The specific **Terms of Reference** are:

1. To investigate (research) the nature and scope of the pest or pest complex
2. Determine the manner of spread
3. Determine the agents of transmission
4. Identify Countries – those infested and not infested, and those threatened via trade
5. Identify the commodities/plant species affected
6. Identify commodities/species serving as alternate hosts
7. Develop recommendations concerning pest to be placed on Regional and various National Priority Pest Lists
8. Identification of the reference materials for compilation of the Pest Lists
9. Assist in the conduct of pest risk analyses.
10. Determine and recommend system for prevention, control and or eradication of pests in the field and at the ports of entry where possible.

11. Determine the Best Management Practices for the pest for inclusion in a production manual and/or other technological packages.
12. Determine the level of diagnostics required for detection, control or eradication.
13. Advise on surveillance activities/projects/programs required
14. Develop recommendations for training and building capacity
15. Recommend emergency preparedness for outbreaks
16. Advise on Public awareness
17. Investigate new methods of prevention, spread, control, and eradication
18. Address emerging issues.
19. Prepare discussion papers if relevant
20. Assist with the development of notifications with respect to WTO obligations
21. Make recommendations for international, regional or national considerations (including ISPMs, etc.).
22. Report to the Meeting of Plant Health Directors
23. Verification and validation of information?
24. Advise on synergies with other initiatives, programs and projects
25. Advise on affiliations with other Groups and Associations

### **APHIS'S CONTRIBUTION TO THE CARIBBEAN REGIONAL DIAGNOSTIC NETWORK (CRDN)**

Timely and accurate information is the key to the detection, exclusion, eradication, control and management of invasive species. Clearly a regional internet-based invasive species surveillance and diagnostic network is needed to facilitate safeguarding the Region against harmful organisms that threaten food security, to protect biodiversity, for biosecurity and to meet obligations and enhance transparency under the various International Agreements and Conventions in order to facilitate global trade and prevent damage to national economies. The Caribbean Regional Diagnostic Network (CRDN) is a key component of CISSIP, and it would greatly enhance the Region's diagnostic capabilities. Currently the CRDN connects Florida, Puerto Rico, the Dominican Republic and Haiti.

A vital component of the USDA APHIS International Services mission continues to be infrastructure building through technical assistance that would strengthen safeguarding systems and build plant health awareness. To this end, USDA APHIS purchased five sets of microscopes equipped with digital cameras and appropriate software for expanding the CRDN regional network into five countries.

It was been suggested, that the distribution of these digital imaging systems be initiated in collaboration with the CISWG in advancing the CISSIP project. Thus the CARICOM secretariat is in process of facilitating the allocation of these resources to appropriate CARICOM countries. The countries selected to receive these diagnostic capabilities will include those CISSIP-Phase 1 countries that currently lack equivalent capabilities and as a second priority, a few of the CISSIP-Phase 2 countries. In order to facilitate early detection of invasive species arriving from outside the Region, the enhanced diagnostic facilities should be located in countries with international airports or seaports that handle substantial volumes of perishable agricultural commodities.

## **OTHER PROGRAMS**

Between 2005 and 2008 APHIS assisted the Caribbean Region with the survey for the Red Palm Mite and the Giant African Snail. A USDA APHIS malacologist from the Academy of Natural Sciences in Philadelphia, PA, an entomologist from the Center for Plant Health Science and Technology (CPHST), and an acarologist from the USDA-ARS Systematic Entomology Laboratory in Beltsville, Maryland visited the Caribbean to train technical officers in the region.

Fruit flies continue to be a major problem in the region, APHIS supports the fruit fly trapping programme by providing trapping supplies to most countries in the region.

## **CONCLUSIONS**

In 2007-2008, APHIS assisted in conducting capacity building workshops in Puerto Rico, Nicaragua, Guatemala, Honduras, Costa Rica, Colombia, Ecuador, Jamaica, and Trinidad. These were conducted in partnership with several private and public cooperators from the Region. The workshops emphasized the need to eliminate pests at the source of imported agricultural products, so that clean product arrives at the ports of entry of the importing country.

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CARICOM, APHIS, and IICA assembled the Plant Health Directors of the Greater Caribbean with the objective developing coordinated programs to accomplish, in part, the desired outputs of the CISSIP proposal. In 2009 APHIS will continue its assistance to the Plant Health Directors Forum and the latter's technical working groups. We anticipate challenges and rewards as we moved forward in our quest to reduce the threat of alien invasive species into the Region.

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