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**CARIBBEAN FOOD
CROPS SOCIETY**

45

**Forty Fifth
Annual Meeting 2009**

**Frigate Bay
Federation of St. Kitts and Nevis**

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Number 1
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St. Kitts Marriott & Royal Beach Casino
Frigate Bay, St. Kitts and Nevis

**“Reality and Potential of Food Security and Agricultural Diversification in Small Island
Developing States”**

**“Realidad y Potencial de la Seguridad Alimentaria y la Diversificación Agrícola en
Pequeños Estados Insulares en Desarrollo”**

**"Sécurité alimentaire et diversification agricole dans les petits états insulaires en
développement: réalisations et perspectives".**

**United States Department of Agriculture,
T-STAR Sponsored Invasive Species Symposium**

**INVASIVE SPECIES SAFEGUARDING: IMPERATIVE FOR CARIBBEAN
REGIONAL AGRICULTURAL DIVERSIFICATION AND FOOD SECURITY**

**Special Symposium Edition
Edited by
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THE CARIBBEAN REGIONAL DIAGNOSTIC NETWORK: STATUS AND PROSPECTS FOR EXPANSION TOWARDS COORDINATED REGIONAL SAFEGUARDING

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ABSTRACT. The explosive growth of tourism and international trade of agricultural products in recent decades has resulted in a great increase in the arrival in the Caribbean of harmful exotic plant pests and pathogens. Under the rules of the World Trade Organization, infested agricultural products cannot be rejected unless the receiving country can show that the pests or pathogens in the imported cargo do not already occur in the country. Under the Sanitary and Phytosanitary Agreement, countries are required to list the pests and pathogens within their borders and to provide this information to their trading partners. Thus each country is under pressure to know the pests in our countries and to quickly identify newly arrived pests and pathogens. However, it is permissible to exclude new pests and pathogens. Therefore, when a new pest or pathogen first arrives, it is very important to quickly detect and identify it and to take measures to prevent its establishment, to eradicate an incipient infestation, or failing to achieve eradication to mitigate the damage by the unwanted organism. Clearly we face daunting challenges to fulfill the technical requirements of international agreements with the WTO, US-DR-CAFTA; DR-CARICOM and others. Therefore we must greatly enhance the development of the technical capacity to diagnose and identify pests and diseases promptly. The Dominican Republic has assembled the needed equipment, laboratories and trained technical personnel in order to build a Nation - Wide Diagnostic Network (SNDPE). Moreover, the Republic has set out to help form the international Caribbean Regional Diagnostic Network (CRDN) to connect with the United States, Puerto Rico, Haiti and eventually with other countries in the Caribbean. We believe that this collaborative effort to construct the CRDN will result in (1) a standardized and reliable diagnostics system, (2) prevention of the introduction of some new invasive species, (3) prompt identification of pests and diseases through the network, and (4) enhanced domestic and international cooperation, collaboration and communication. Some essential activities involved in constructing the CRDN include: (1) training sessions of local specialists to diagnose pests and diseases through the network, (2) acquisition of laboratory equipment and software, (3) image

taking training sessions for local specialists, and (4) the development of standardized protocols. In the Dominican Republic our highest priority at this time is the formation and development of a National Diagnostic Operations Committee. The Operations Committee is working to establish rules and protocols to govern the work of all technicians and specialists that are part of the network.

KEY WORDS: collective security, operations committee, secure two-way communications, region-wide network of institutions and government regulatory agencies, operating protocol

THE PROBLEM

Since the voyages of Christopher Columbus, pests and diseases of crops and livestock have made their way into the Western Hemisphere. However, the rate of establishment of unwanted exotic species was fairly low prior to about 1950. Thereafter the airline industry began to strongly promote the Caribbean as a destination for tourists. Cruise ship voyages began on a tiny scale in the late 19th century but gained popularity at an increased rate from the 1980s onwards. Descendants of indentured servants brought to the Caribbean following abolishment of slavery in the 1830s have maintained their family ties in China, India, and Indonesia through family visits and commerce. Numerous invasive species from south Asia have entered the Caribbean in recent decades.

The Caribbean has long been involved in agricultural trade and especially since the time of Columbus. For five centuries agricultural trade involving the Caribbean was largely restricted to Europe and the Americas. World trade in agricultural products was greatly expanded by the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), which created the World Trade Organization in 1995. The WTO provides a framework for negotiating trade agreements, and a dispute resolution process aimed at enforcing adherence to WTO agreements such as the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). Under the SPS Agreement the WTO may override a country's use of the precautionary principle –a principle which allows a country to act on the side of caution if there is no scientific certainty about potential threats. Under SPS rules, the burden of proof is on countries to demonstrate scientifically that something –such as a plant pest or pathogen– is dangerous before it can be regulated. Thus in order to engage in trade each country needs to have available an inventory of plant pests and pathogens in order to be able to judge whether imported products pose a risk.

Thus we must cope with a new scenario: increased tourism and trade have unleashed an influx into the Caribbean of invasive species from around the Globe. In the past three decades, more than 150 exotic arthropods, pathogens and invasive plant species have arrived in the Dominican Republic. These unwanted organisms have been documented by IDIAF in the T-STAR Symposia Proceedings and elsewhere as listed below. These unwanted invasive alien species create great difficulties for the Dominican Republic in fulfilling its obligations under the SPS Agreement, the US-DR-CAFTA, and CARICOM-DR Free Trade Agreement.

Examples of exotic pests and pathogens that have become established in the Dominican Republic include *Tibraca limbativentris* Stål, the rice stalk stink bug; *Diaphorina citri* Kuwayama, the

Asian citrus psyllid and a vector of *Liberobacter* sp. which causes citrus greening disease; *Phyllocnistis citrella* Stainton, the citrus leafminer; *Thrips palmi* Karny, the melon thrips, which is a major pest of cucurbits, egg plant, beans, etc.; *Bemisia argentifolii* Bellows & Perring, the sweetpotato whitefly whose toxic saliva causes unequal ripening of fruit and silvering of squash leaves, and which vectors the tomato yellow leaf curl virus and other geminiviruses; *Mycosphaerella fijiensis* Morelet, the fungus which causes Sigatoka Negra (Black Sigatoka); *Maconellicoccus hirsutus*, the pink hibiscus mealybug; and *Hypothenemus hampei* Ferrari the coffee berry borer, which is the most damaging pest of coffee.

Our difficult experiences in coping with these terrible pests have taught us that the sudden unexpected introduction of a new invasive species has the following consequences:

1. It has a negative effect on commerce as a result of the disruption of local production.
2. It creates the incapability of penetrating, developing or maintaining new markets.
3. It undermines food security and the food supply at the local level.
4. A new pest or pathogen not only damages production, but it can result in loss of access to export markets. Examples of pests which can cause the above consequences include the oriental fruit fly, *Bactrocera dorsalis* (Hendel, 1912), which infests a very wide variety of fruits and vegetables; *Diaphorina citri* and *Liberobacter* sp., which destroy citrus production and prevent exports of citrus to other citrus producing countries; *Scirtothrips citri*, which harms production and prevents the sale of citrus propagating material

Therefore, when a new pest or pathogen first arrives, it is very important to quickly detect and identify it and to take measures to prevent its establishment, to eradicate an incipient infestation, or failing to achieve eradication, to mitigate the damage from the unwanted organism.

THE NEW SCENARIO

Under the Sanitary and Phytosanitary Agreement, countries are required to list the pests and pathogens within their borders and to provide this information to their trading partners. Thus we are under pressure to know the pests in our countries and to quickly identify newly arrived pests and pathogens.

Clearly we face daunting challenges to fulfill the technical requirements of international agreements with the WTO, US-DR-CAFTA; DR-CARICOM and others. Therefore, we must greatly enhance the development of the technical capacity to diagnose and identify pests and diseases promptly. This is imperative if we are to facilitate trade of agricultural products with less risk and to maintain transparency and trust in all aspects of the export of produce.

Accordingly in the Dominican Republic it was necessary to assemble equipment, laboratories, and to train technical personnel in order to build a Nation - Wide Diagnostic Network (SNDPE). Moreover, we have set out to help form the international Caribbean Regional Diagnostic Network (CRDN) to connect with the United States, Puerto Rico, Haiti and eventually with other countries in the Caribbean.

The Caribbean Regional Diagnostic Network (CRDN), as described by CISWG in the CISSIP document is a “secure, two-way, up-to-date web-based record-keeping and communications

system for use by first responders, diagnosticians, taxonomists, etc. It entails the linkage of a region-wide network of institutions and government regulatory agencies into a cohesive, distributed system to quickly detect high consequence invasive alien species that have been introduced into the Caribbean's agricultural and natural ecosystems and food system, and report them to appropriate responders and decision makers. As the computer network is developed, the information on invasive alien species from all of the network's laboratories, clinics and specialists will be shared as appropriate throughout the wider Caribbean Region."

Clearly all countries in the Region must recognize that once an exotic pest or pathogen is present somewhere in the Caribbean it soon spreads between neighboring land masses. Therefore a collective security approach to mitigating invasive species is vitally important not only for the CARICOM countries as they move toward a CARICOM Single Market and Economy, but also for all of the non-CARICOM countries in the Greater Caribbean Region.

Let us recall that in 2006 CISWG proposed the Caribbean Regional Invasive Species Intervention Strategy (CRISIS). To implement this strategy, in part, CISWG proposed the Caribbean Invasive Species Surveillance and Information Programme (CISSIP).

CISSIP is envisioned as an-internet based system of early detection and rapid response. CISSIP would be the foundation of a collective security approach for the entire Greater Caribbean Region. The main components of CISSIP are

- (1) a Pest Survey and Inspection Programme,
- (2) a Caribbean Regional Diagnostic Network (CRDN)
- (3) an Invasive Species Information System, and
- (4) a Public Education Program.

EXPECTED RESULTS FROM CONSTRUCTION OF THE CRDN

We believe that the collaborative effort to construct the CRDN will result in

1. A standardized and reliable diagnostics system
2. Prevention of the introduction of some new invasive species
3. Prompt identification of pests and diseases through the network
4. Enhanced domestic and international cooperation, collaboration and communication.

Some essential activities involved in constructing the CRDN include:

1. Training sessions of local specialists to diagnose pests and diseases through the network
2. Acquisition of laboratory equipment and software
3. Image taking training sessions for local specialists
4. Development of standardized protocols.

In the Dominican Republic our highest priority at this time is the formation and development of a National Diagnostic Operations Committee. The members of this Committee are Ing. Modesto Reyes, PhD; Ing. Leandro Mercedes, MSc.; and Ing. Caridad Nolasco, MSc. This Committee is focusing on the development of a framework for collaborative work between the national agencies, i.e., The Secretariat of State for Agriculture (SEA), Instituto Dominicano de Investigaciones Agropecuarias y Forestales (IDIAF), Consejo Nacional de Investigaciones

Agropecuarias y Forestales (CONIAF), Santo Domingo Autonomous University (UASD), Centro para el Desarrollo Agropecuario y Forestal (CEDAF) and Universidad Instituto Superior de Agricultura (UISA).

Thus the Committee is working to establish rules and protocols to govern the work of all technicians and specialists that are part of the network.

In addition we have the following priorities:

1. To develop a secure two-way, web-based record keeping and communications system for use by first responders, diagnosticians/taxonomists and regulatory officials
2. To build a cohesive distributed detection/diagnostic system in each Caribbean state to rapidly detect and diagnose/identify high consequence invasive species
3. To link together the detection/diagnostic systems in all Caribbean states to form the CRDN for the Greater Caribbean Region
4. Provide leadership and appropriate training for first detectors, diagnosticians and identifiers
5. Increase the effectiveness of the Laboratory Network shown in Figure 1.

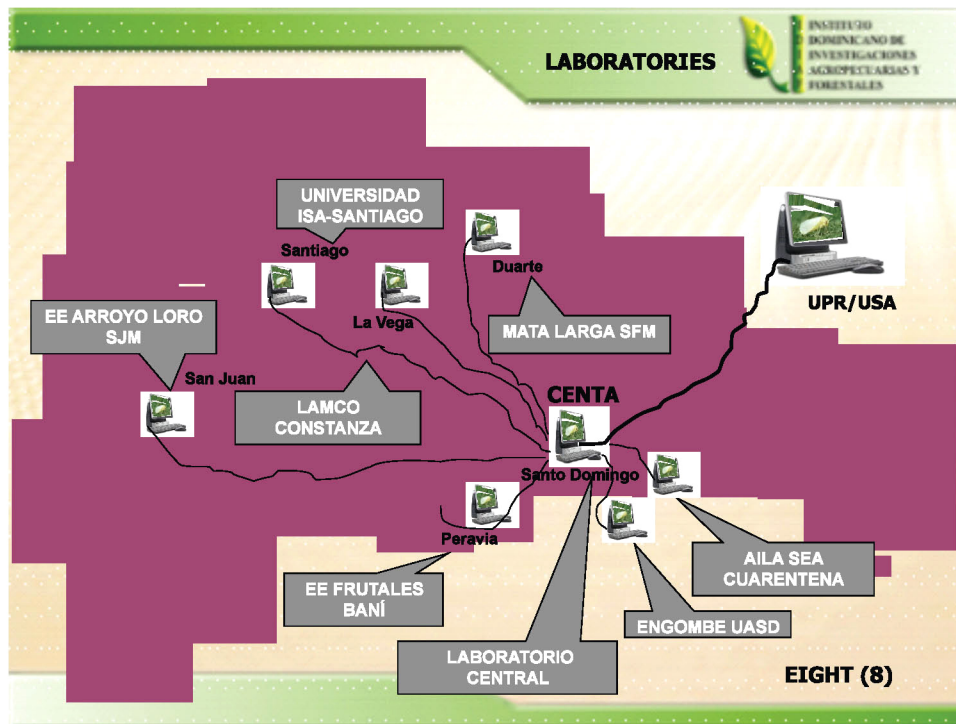


Figure 1. Network of plant diagnostic laboratories in the Dominican Republic.

The overall goal of this network of diagnostic laboratories is to rapidly detect and correctly diagnose new invasive species (See Figure 2).

TERMS OF REFERENCE OF ALL PERSONNEL IN THE DIAGNOSTIC NETWORK

The Terms of Reference of all personnel involved in surveillance and diagnostics/identification are as follows:

- (1) Agree completely on the appropriate roles and the responsibilities of each of the involved institutions.
- (2) Deeply respect the unique and exclusive responsibilities and prerogatives of the regulatory authority (Sanidad Vegetal) to make the announcement of every new pathogen or pest that has been found in our country and to explain what its significance may be.
- (3) Adhere to an operations protocol in accordance with a set of roles and responsibilities of each participating institution.

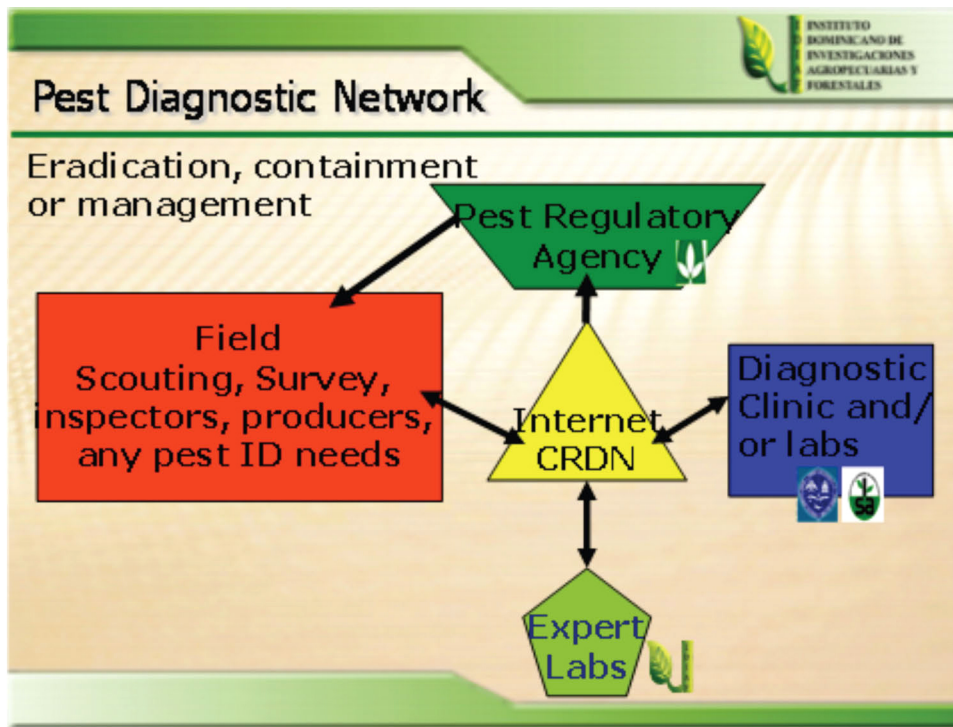


Figure 2. Schematic diagram showing the flow of information through the various components of the plant diagnostic network.

THE CURRENT STATUS OF CONSTRUCTION OF THE CRDN

Diagnostic laboratories considered as part of the emerging CRDN have been equipped in the Dominican Republic, Haiti, Florida and Puerto Rico. USDA-APHIS has procured five sets of microscopes, computers and software needed to add five diagnostic laboratories to the network. Each of five additional countries will receive one of these sets of equipment. The diagnostic laboratories in Martinique and Guadeloupe have internet access, and they may join the CRDN.

A CRDN server is being operated provisionally at the University of Florida.

A Pest Diagnostics and DDIS training workshop were conducted in 2007 in the Dominican Republic, and in 2008 both in the Dominican Republic and in Haiti. USDA T-STAR funds are available to hold two training workshops at the University of Florida for new members of the CRDN.

The first meeting of the CRDN Operations Committee was held on Monday, at 4 pm July 13, 2009 here in the St. Kitts Marriott & Royal Beach Casino, Frigate Bay, St. Kitts and Nevis. This meeting was open to current member countries or states and to others by invitation only.

REFERENCES

- Abud-Antún, A. J. 1992. La mosca prieta, *Aleurocanthus woglumi* Ashby (Homoptera: Aleyrodidae), una nueva plaga en los cítricos de la República Dominicana. Reporte. Junta Agroempresarial Dominicana, Santo Domingo, Rep. Dominicana. Unpublished report.
- Abud A., A. J. 1995a. La broca del café en la República Dominicana. *Agroempresa* (Dominican Republic) 8(4):38-40.
- Abud-Antún, A. J. 1995b. Plagas introducidas a la República Dominicana. *Naturalista Postal* No. 7/95.
- Abud-Antún, A. J. 2001. Presencia de *Diaphorina citri* Kuwayama (Homoptera: Psyllidae) en la República Dominicana. Junta Agroempresarial Dominicana, Santo Domingo, República Dominicana. Unpublished report.
- Alayón García, G., L. F. De Armas & A. J. Abud-Antún. 2001. Presencia de *Cyrtophora citricola* (Forskål, 1775) (Araneae: Araneidae) en las Antillas. *Rev. Ibérica de Aracnología* Vol. 4: 9-10.
- Guerrero, K. A., D. Veloz, S. L. Boyce & B. Farrell. 2004. First New World Documentation of an Old World Citrus Pest, the Lime Swallowtail *Papilio demoleus* (Lepidoptera: Papilionidae), in the Dominican Republic (Hispaniola). *American Entomologist* 50(4): 224-226.
- Kairo, M., B. Ali, O. Cheesman, K. Haysom and S. Murphy 2003. Invasive Species Threats in the Caribbean. A Report to the Nature Conservancy, CAB International. 825-836.
- Schmutterer, H. (1990): Crop pests in the Caribbean - Plagas de las plantas cultivadas en el Caribe. *Deutsche Gesellschaft f. Technische Zusammenarbeit (GTZ)* (eds.), Eschborn, Germany, pp. 640.
- Segura, Y., C. Serra & J. Arias. 2003. El efecto de *Melanagromyza obtusa* (Malloch) (Diptera: Agromyzidae) en la producción y calidad del grano de guandul y el manejo con insecticidas convencionales y selectivos. Resúmenes *Coloquio de Protección Vegetal*, Programa Nacional de Protección Vegetal, Centro de Biotecnología y Biodiversidad (CIBIO), Inst. Dominicano de Investigaciones Agropecuarias y Forestales (IDIAF), 26-27/11/02, Sto. Domingo, Rep. Dominicana, p. 6 (in press).
- Serra, C.A. 2005. Manejo Integrado de Plagas de Cultivos - Estado Actual y Perspectivas para la República Dominicana. Proyecto 'Entendimiento Consensual sobre Sostenibilidad y Pobreza Rural, Fundación Kellogg/Centro de Desarrollo Agropecuario y Forestal (CEDAF), Sto. Domingo, Rep. Dominicana, pp. 130 (in press).

- Serra, Colmar A. 2005. Update on invasive species initiatives in the Dominican Republic. *Proceedings of the Caribbean Food Crops Society* 41(1): 110-124. A peer reviewed paper.
- Serra, C. A., P. E. Jorge, A. J. Abud-Antún, P. Alvarez & B. Peguero. 2003a. Invasive Alien Species in the Dominican Republic: Their impacts, and strategies to manage introduced pests. T-STAR sponsored Symposium: Challenges and Opportunities in Protecting the Caribbean, Latin America, and the United States from Invasive Species, 39th Annual Meeting 2003, Grenada, Proc. *Caribbean Food Crops Society (CFCS)* Vol. 39(1): 102-118.
- Serra, C.A., S. García, Y. Segura & J. Arias. 2003b. Dramatic impact of the recently introduced Asian pigeon pea pod fly, *Melanagromyza obtusa* (Malloch) (Diptera: Agromyzidae), in the Dominican Republic. Poster abstract. 39th Annual Meeting 2003, Grenada, Proc. *Caribbean Food Crops Society (CFCS)* Vol. 39(1): 40.
- Serra, C.A., C.A. Nuñez & S. García. 2004. El Control Natural y Biológico Clásico de una Plaga Invasiva en la República Dominicana: la Cochinilla Rosada de los Hibiscus, *Maconellicoccus hirsutus* (Green) (Hemiptera: Sternorrhyncha: Pseudococcidae). Proc. REDBIO 2004, V Encuentro Latinoamericano y del Caribe sobre Biotecnología Agrícola, 21-25/6/04, Boca Chica, Dominican Republic (see: <http://www.redbio.org>)
- Serra, C.A., S. García & M. Ferreira. 2005. Evaluación de *Mangifera indica*, *Spondias* spp. (Anacardiaceae) y *Psidium guajava* (Myrtaceae), hospederos de Moscas de las frutas, *Anastrepha* spp. (Diptera: Tephritidae), en cuanto a la presencia de parasitoides en diferentes zonas de la República Dominicana. 51st Annual Meeting, Inter-American Society for Tropical Horticulture (ISTH), Sto. Domingo, Dominican Republic (in press).
- Taveras M., R. 2000. Fluctuación del minador de la oja de los cítricos (*Phyllocnistis citrella* Stainton) y la identificación de sus parasitoides. 36th Annual Meeting 2000, Sto. Domingo, Dominican Republic. Abstract Proc. *Caribbean Food Crops Society (CFCS)*, Vol. 36: 111.
- Ventura T., L., H. Mercedes Rivas & T. Rojas. 1990. La mosca de las frutas del género *Anastrepha* (Diptera: Tephritidae) en la República Dominicana. Tesis de Ingeniería Agronómica, Universidad Autónoma de Santo Domingo (UASD), Santo Domingo, República Dominicana, pp.53.