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Annual Meeting 2010**

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**“Protected agriculture: a technological option for competitiveness of the Caribbean”**

**“Agricultura bajo ambiente protegido: una opción tecnológica para la competitividad en el Caribe”**

**“Agriculture sous ambiance protégée: une option technologique pour la compétitivité de las Caraïbe”**

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T-STAR Sponsored Invasive Species Symposium**

**Toward a Collective Safeguarding System for the Greater Caribbean Region:  
Assessing Accomplishments since the first Symposium in Grenada (2003)  
and Coping with Current Threats to the Region**

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## USDA T-STAR INVASIVE SPECIES PROJECT: OVERALL ASSESSMENT OF ACCOMPLISHMENTS AND SHORTCOMINGS

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### BACKGROUND

The risk of alien invasive species (AIS) and their potential for injury to a country's plant, animal, and other biological resources has always been recognized. In recognition of this risk, countries have established the institutional capacity and regulatory instruments to protect their biological resource base from the entry of harmful foreign pests and diseases. At the international level, initiatives have included various conventions and agreements as a framework for the prevention of the spread of such organisms.

Globally, as well as in the Greater Caribbean Region, increased transmission of invasive species has been noted to have major impacts in recent years. Increased transmission together with the relatively weak institutional and regulatory sanitary and phyto-sanitary capacity in some countries increases the vulnerability of the region to the entry of alien invasive species. In response to this vulnerability, the Caribbean Invasive Species Working Group (CISWG) was formed in 2003. The work of CISWG in developing a regional capacity to reduce the risk of entry /transmission of AIS has been supported by the T-STAR-sponsored Symposium hosted as part of the Annual Caribbean Food Crop Society Meetings since 2003.

This paper assesses the overall accomplishments achieved by the Symposia since 2003. It is comprised of seven sections. Section 1 Sections 2 and 3 review the factors contributing to the greater risk and vulnerability of the Region to AIS. Sections 4 and 5 examine the Regional response, in particular the establishment of CISWG and the underlying conceptual model for reducing the risk of entry of AIS into the region. Section 6 assesses the accomplishments of the T-STAR initiative and the paper concludes with a discussion on the gaps and the way forward in Section 7.

### REGIONAL CHARACTERISTICS — VULNERABILITY TO IAS

The Greater Caribbean Region (GCR), which includes the islands in the Greater Caribbean Sea Space and the bordering territories of the mainland countries of South and Central America and the Southeast United States, is particularly vulnerable to IAS for a number of features, including the following:

1. **The High Degree of Intra-regional Movement of Goods and Persons:** There is a high volume of people and goods traffic among the islands of the Caribbean as well as between the Caribbean and the Southeast United States. Travel includes both air and ocean transport with the latter accounting for a particularly large flow of traffic on due to the popularity of the Cruise and luxury Yacht businesses. Additionally, there is a fair

amount of undocumented travel among the islands of the Caribbean. With respect to goods, containerized cargo movement is particularly heavy from the United States to the Region, primarily in the form of finished/manufactured goods. On the other hand, trade between the islands and the mainland countries within the GCR and the United States is dominated by agricultural produce. Also, intra-regional trade among the islands of the Caribbean and the mainland is mainly with respect to agricultural produce, some of which is of an informal nature, outside the ambit of the regulatory authorities.

2. **The Weak SPS Regulatory Capacity in Many of the Countries in the Greater Caribbean:** Other than the United States, most of the countries of the Greater Caribbean have relatively porous borders. This is especially so for the smaller economies and island states of the Region where limited financial and technical resources are major constraints. Relevant agencies are usually under-resourced and, as a consequence, understaffed with respect to trained personnel, as well as being handicapped in terms of limited physical infrastructure and diagnostic laboratories.

The inability to provide effective protection against AIS by countries in the English-speaking Caribbean is in part due to the prevailing institutional structure for the provision of sanitary and phyto-sanitary (SPS) regulatory functions. Issues here include the fragmented institutional responsibilities typically shared between the Ministries of Agriculture & Health and involve a number of agencies. This, together with the weak coordination of the efforts of these various agencies, tends to make the SPS system ineffective. Additionally, the capacity of the SPS system to deliver efficient and effective protection with respect to the indigenous plant and animal biota is severely compromised by the outdated legislation and regulations, many dating back 50 years and more.

3. **Tendency / Reluctance of Countries to Disclose Information on the Discovery of AIS:** Evidence from past occurrences of AIS in the Region suggests that public officials choose NOT to disclose the entry / presence of AIS in their countries for fear of loss of export markets. Case in point was the entry of the Hibiscus Mealy Bug into the Caribbean Region in the 1990s. As a result, the continued export trade of agricultural produce in the presence of the Hibiscus Mealy Bug within the exporting country resulted in the rapid spread of the organism among countries of the Region.

4. **Relatively Low Priority Accorded to Risk of Entry of AIS:** The underfunding of SPS institutions is a reflection of (1) the small economic base of the countries of the GCR and (2) the relatively low priority accorded to the risk of AIS and their potential impact on agricultural and the biological resource base of countries. The latter is gleaned from the relatively small allocation of resources to SPS in comparison to other public sector activities. Failure to recognize the relative national importance of protecting a country from the entry of alien invasive species is in part the result of the relative absence of a sensitization of public officials on the risks of AIS and on the potential social and economic losses from the entry of AIS. Scientists could certainly do more to encourage public sector policy support for the strengthening of the SPS regulatory system by highlighting the nature and extent of potential losses from AIS, the pathways for the entry of AIS, and quantifying the extent of economic losses possible. A case in point is the estimate of losses from the Hibiscus Mealy Bug in Trinidad & Tobago and the social benefit-cost ratio of eighty dollars for each dollar of expenditure (B:C = 80:1) on the biological control of the organism.

## **GLOBAL POLICIES & RISKS OF AIS**

The increased risk of the transmission of AIS in recent years is in part due to the increase in global trade, particularly agricultural produce. The liberalization of trade under the WTO in 1995 resulted in increased trade volumes; a larger number of developing countries participating in global trade; and a wider range of agricultural produce exports, including exports from countries with relatively weak SPS regulatory systems.

The increase in the volume of world trade since 1995, including agricultural produce, also meant that the Caribbean Region was now importing more, particularly since the Region is a net importer of food. Additionally, with the growth in the tourism sector in recent years, the demand for food has increased and so has imports, with a significant quantity being imported from cheaper sources, including the Far East. All these factors have contributed to the greater probability of AIS entering the Region.

### **CISWG — A RATIONAL RESPONSE TO A REGION-WIDE PROBLEM**

The Caribbean Invasive Species Working Group (CISWG) had its genesis in the institutional collaboration between the University of Florida (FRED/IFAS) and University of the West Indies (DAEE/Faculty of Agriculture) from the mid-1980s. The collaboration executed under a Memorandum of Understanding included staff and student exchange, and collaboration in research activities and hosting regional meetings / conferences. In the early 1990s, this institutional collaboration expanded with the inclusion of CARDI.

By 2003, there was evidence of an increasing incidence of AIS globally, driven in part by increased trade as a result of liberalization of trade policies. As a consequence, it was obvious that the Caribbean Region was now more vulnerable. It was thus logical that the deliberations of the Caribbean Food Crop Society (CFCS) Meeting in 2003 in Grenada included a session on alien invasive species. The meeting recognized that if the Caribbean States were vulnerable, then so too was the Greater Caribbean, including the French, Dutch, and Spanish States; Central American Countries; and the United States. It was evident that effectively reducing the risk of AIS would require a coordinated effort on the part of all countries in the Greater Caribbean.

In response to this threat, the Grenada meeting initiated the process of addressing the risk of AIS to the Region by establishing a Caribbean Invasive Species Working Group (CISWG), with membership from the key institutions of the Region. Towards this end, the UF/UWI/CARDI collaboration provided a ready platform for wider institutional collaboration involving relevant government agencies and regional and international agencies.

**What is the Appeal of the CISWG Model to SPS Risk Management?** Recognizing the nature of the risk of AIS entry into the Region, CISWG developed a risk management model that would be low-cost and effective in minimizing the entry and spread of AIS. Conceptually, the model called for collaboration among countries of the Greater Caribbean, with a view to harmonizing strategies, building capacities among member countries, and establishing an effective information sharing/intelligence system. The CISWG model essentially involved the establishment of a third spatial border around the Greater Caribbean Region for the sole purpose of minimizing the risk of IAS entry into the Greater Caribbean Region. Enhanced capacity of individual countries and the operation of an effective intelligence / information sharing system would also minimize the spread of AIS among member countries should AIS enter one of the countries. The benefits of a third border concept thus include the following:

- lower cost than going it alone
- enhanced effectiveness & reduced risk
- opportunities to strengthen the SPS capacity of small states with limited economic base
- facilitates the adoption of a more comprehensive approach to AIS risk management
- more sustainability

## ACCOMPLISHMENTS OF THE UNIVERISTY OF FLORIDA T-STAR PROJECT

Since 2003, the work of the CISWG has been facilitated in part by the following two consecutive UF/T-STAR Projects (Roberts 2008):

- Facilitation and Coordination of the Florida/Caribbean Basin Inter-Institutional Invasive Species Initiative (PD, Carlton Davis; Co-PD, Waldemar Klassen)
- Building Technical and Institutional Policy Support Platforms for an Effective US/Caribbean Basin Invasive Species Safeguarding System (PD: E.A. “Gilly” Evans)

Most important, these two projects have hosted the Invasive Species Forum at the Annual CFCS Conference and have facilitated the participation and contribution of members of the CISWG and other contributing scientists and policy makers to the forum dialogue. The UF/T-STAR project has also facilitated meetings of the members of the CISWG to advance the regional collaboration among countries of the Greater Caribbean Region.

These various initiatives under the UF/T-STAR project have advanced the work of the CISWG in creating awareness of the AIS risk, and the cooperation and collaboration among institutions and member states in the Region. We briefly discuss the main contributions of these initiatives over the past ten years.

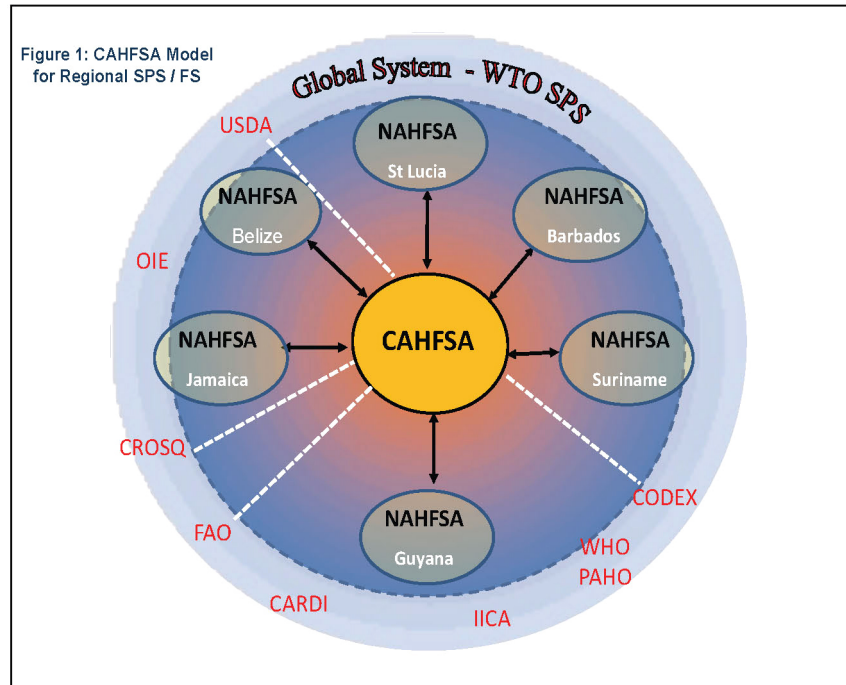
It should be noted that many T-STAR research projects on invasive species in the Greater Caribbean Region have been funded during the 27 years since the U.S. Congress established the Tropical and Subtropical Agricultural Research (T-STAR) program under Public Law 89-106 27 (Roberts 2008).

1. **Creation of a Heightened Awareness of the Risk of AIS in the Region:** The choice of the annual CFCS meeting as the occasion to host a forum on IAS in the Region provided an opportunity for a wide cross-section of scientists, policy makers, and agribusiness and institutional representatives to participate in the forum. This clearly created awareness among participants of the associated risks of AIS and the pathways for the entry and spread of AIS. The forum also promoted the strategic importance of cooperation and collaboration among agribusinesses, regional institutions, and member countries in minimizing the risk of AIS entry and spread in the Greater Caribbean Region. In addition to the impact on persons attending the AIS Forum, the communication of the CISWG, including the production of technical reports and policy papers helped to create awareness among key institutions and policy-making bodies, including the relevant Ministries in member states, the CARICOM Secretariat and regional / international institutions. This latter initiative was instrumental in placing the issue of AIS high on the policy agenda of CARICOM and its member states.



2. **Facilitated Collaboration among Key Institutions in the Region:** The work of the CISWG and the IAS Forum provides an opportunity for key national, regional, and international institutions to participate in the discussions, and facilitates collaboration and the pooling of scientific resources toward the creation of a policy platform for an effective approach to the threat of AIS. In this regard, key institutions included the University of Florida, University of the West Indies, UPR-Mayaguez, CABI, CARDI, CIRAD, APHIS, USAID, IICA, FAO, PAHO, CARICOM Secretariat, Plant Health Divisions of the Ministries of Agriculture, CARIBVET, and the Nature Conservancy, among others. Concomitantly, several countries greatly strengthened their safeguarding programs in the Caribbean, including the Dominican Republic (Mercedes 2010; Reyes et al. 2009), France (Iotti et al. 2008; Wicker et al. 2008), and the United States (Lemly 2009). Also, T-STAR provided important support to the creation of the GEF/CABI project on mitigating the threat of invasive alien species in the insular Caribbean (Krauss et al. 2008), which deals largely with marine invasive species.
3. **Preparation and Dissemination of the Caribbean Regional Invasive Species Intervention Strategy:** As the basis for establishing an effective regional policy and mechanism for the management of AIS, the CISWG initiated the process with the development of a regional strategy for the management of risk of AIS in the Caribbean—*the Caribbean Regional Invasive Species Intervention Strategy (CRISIS)*. The CRISIS document was widely circulated to key institutions and agencies in the Region. At the level of CARICOM, the CRISIS document was tabled at the meeting of COTED and accepted as a regional strategy. Also CRISIS was endorsed by the governments of Costa Rica, the Dominican Republic, France, and the United States.
4. **Development of the Caribbean Invasive Species Surveillance & Information Program (CISSIP):** The operational plan for CRISIS commenced with the development of a surveillance and information program on AIS — CISSIP. The aim of this program was to facilitate the collection / sharing / dissemination of information among countries and institutions of the Greater Caribbean Region on invasive species. However, support for CISSIP in the Region was too weak to attract funding at the Agricultural Donors' Conference organized by CARICOM, FAO, and IICA and held in Port of Spain in June 2007 (Kalloo 2008). In attempting to build an effective regional intelligence / information system to facilitate detection and notification of AIS, capacity building was a major activity of the program. In this regard the Caribbean Pest Diagnostic Network was formed, with the University of Florida taking the lead on this initiative supported by funding from USDA / T-STAR
5. **Establishing the Caribbean Plant Health Directors Forum:** The University of Florida T-STAR project also assisted in the establishment of the Caribbean Plant Health Directors Forum. This facilitated dialogue among key agencies, representing Ministries of Agriculture in the Caribbean and the adoption of a common strategy in addressing the risk of AIS. Through the work of the Plant Health Directors Forum, individual directors were now in a position to influence policy on AIS within their respective countries.
6. **Establishment of the Caribbean Agricultural Health and Food Safety Agency (CAHFS):** Through various efforts as outlined above, the work of the T-STAR project created the awareness and need for policy action at the level of CARICOM. Recognizing the urgent need for strengthening regional capacity in managing the risk of AIS, CARICOM launched CAHFS in March 2010, with a mission similar to that outlined in

the CISSIP document. The CAHFSA model represents the outcome of a search for a more cost-effective model — a lean budget. Implied in its design structure is the linkage with resident capacities within various agencies / institutions that could provide technical service support in building regional capacity in SPS / Food Safety. Additionally, the CAHFSA model is intended to modernize the current SPS legislation and regulatory environment in the Region to meet the challenges of today’s AIS risks.



## TOWARDS A COMPREHENSIVE SPS/AIS RISK PROTECTION PROGRAMME — The GAPS

The focus to-date of the CISWG has been in the realm of sensitization on the need for a more effective **regulatory mechanism, including regional coordination**. This was so, given the urgency required in addressing the regulatory weaknesses in the SPS system in the context of increasing levels of risks of AIS. However, more effective and cost efficient risk protection calls for much more than regulations. It requires a **comprehensive approach** including **non-regulatory measures**. This is based on the recognition that the impact of alien invasive species of pests and pathogens could be widespread across sectors, including agriculture, the environment, and tourism.

Specifically, impact on agriculture includes:

- Food insecurity
- Income /exports
- Livelihoods

The Environmental effects include:

- Aesthetics
- Soil degradation
- Adverse consequences for water conservation
- Biodiversity

Tourism effects include resource quality degradation and the loss in environmental aesthetics, such as the destruction to coconut groves and ornamental palms, as a result of disease or insect attack.

**Recommended Further Developmental Work:** Given the scope and complexity of the problems of AIS in that there are many pathways that essentially involve many sectors and entities (travelers, traders/importers, agencies, etc.), the following non-regulatory initiatives are recommended:

1. **Conduct Risk Analysis Studies of Alternative Pathways:** Assessment of risk along alternative pathways would provide the basis for the design of effective strategies to minimize the entry and spread of AIS.
2. **Develop an AIS Pathways Awareness / Sensitization Program with Key Sectoral Stakeholders:** Given that activities and businesses in some sectors are likely to provide important pathways for the entry of AIS these should constitute the priority focus for preventative action. In addition to regulations we suggest an awareness /sensitization program among sectoral stakeholders and businesses on the possible pathways and familiarity /detection mechanisms for AIS. In this regard an effective strategy is one in which a partnership is created with key sectoral stakeholders, including private firms, customers, and governmental agencies.
3. **Develop a National Awareness / Sensitization Program on the Risk of AIS:** We suggest a comprehensive sensitization program to inform the national community on the potential impact of AIS and to provide information on emerging AIS threats and aid detection / identification where feasible.

## THE WAY FORWARD

In furtherance of the above recommendations, we suggest that the institutional collaboration initiative of CISWG be widened and strengthened and its work program include the following:

- Developing strategies to promote a more comprehensive approach to AIS risks, including conceptualizing and demonstrating the benefits of a more comprehensive approach
- Liaising with policy making entities to market the concept
- Providing technical support for the integration of AIS in the development process

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