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TOWARDS OPERATIONALIZING THE CARIBBEAN REGIONAL INVASIVE SPECIES INTERVENTION STRATEGY (CRISIS)

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ABSTRACT: The Caribbean Regional Invasive Species Intervention Strategy (CRISIS) promotes a comprehensive and integrated approach to addressing the problem of invasive alien species that variously affect the environment, agricultural production, food security, trade, tourism, public health and agricultural competitiveness. CRISIS is a plan for assisting the Region in preventing and mitigating the introduction, spread and impact of invasive alien species, and for increasing awareness. CRISIS is a framework within which individual country and regional activities could be developed and strengthened, and the sourcing of funds could be facilitated. It encompasses all English, French, Dutch and Spanish speaking countries/territories in the Caribbean Basin including the states of the United States of America (USA) adjacent to the Gulf of Mexico and all invasive species with potential to be harmful to agriculture, natural ecosystems and human health. A Caribbean Invasive Species Working Group (CCISWG) is seeking to secure the adoption of CRISIS by all governments in the Region and by various international bodies. Currently the Working Group is giving high priority to the implementation of a two component project: (a) Timely internet-based tracking pest introductions and interceptions, and (b) Development of a Caribbean pest and disease diagnostic system based on distance digital imaging and internet-based communications.

KEY WORDS: regional safeguarding, internet-based tracking, distance digital imaging, Caribbean Invasive Species Working Group, National Agricultural Health and Food Safety (NAHFS) Committee

RÉSUMÉ: Le plan stratégique régional d'intervention pour lutter contre les espèces envahissantes vise à promouvoir (Caribbean Regional Invasive Species Intervention Strategy - CRISIS) une approche complète et intégrée pour contrôler les espèces étrangères invasives qui affectent à des degrés divers l'environnement, la production agricole, la sécurité alimentaire, le commerce, le tourisme, la santé publique et la compétitivité agricole. CRISIS est un plan d'appui régional de prévention et de contrôle de l'introduction, de la dissémination et de la réduction des impacts des espèces étrangères envahissantes, et de la sensibilisation du public à ce problème. CRISIS est un cadre à l'intérieur duquel chaque pays pourrait développer, co-construire des activités régionales renforcées et mobiliser des fonds spécifiques. Ce réseau regroupe tous les états anglophones, francophones, hispanophones et de langue hollandaise, les états du Bassin Caribéen dont les Etats-Unis d'Amérique (Etats-Unis) et ceux du Golfe du Mexique et concerne toutes les espèces envahissantes ayant un potentiel de nuisibilité pour l'agriculture, les écosystèmes naturels et la santé humaine. Un groupe caribéen de travail sur les espèces envahissantes (Caribbean Invasive Species Working - CISWG) s'est mobilisé, pour favoriser l'adoption de CRISIS par tous les gouvernements dans la Région et par diverses organisations internationales. Actuellement le groupe de travail accorde la priorité à l'exécution de deux projets : (a) Construction d'une Base de données régionale sur le web et actualisée en temps réel sur l'épidémiologie régionale, l'introduction et l'interception de parasites et maladies,

et (b) Développement d'un système caribéen de diagnostique de parasites et maladies basé sur la télé-transmission et la reconnaissance d'images numériques à distance via internet.

1.0. BACKGROUND

Invasive species are organisms whose establishment and spread threaten food security, human health and economic development. They also threaten biodiversity, productive agricultural systems and natural ecosystems. Once well established, invasive species are costly to eradicate or manage hence the need to take proactive or timely intervention to prevent introduction and subsequent establishment. They maybe alien if they were deliberately or accidentally introduced from another area.

The main driver in the spread of invasive alien species (IAS) is international trade. Many of these pests hitchhike on board ships, airplanes, trucks, and containers while a large number travel as or in commodities. The Convention on Biological Diversity (CBD) is addressing the issue of Invasive Species through prevention, eradication, control and mitigation of their impacts combined with legislation and guidelines at national, regional and international levels. Article 8 (h) notes that *“each contracting party shall, as far as possible, and as appropriate, prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species”*. Experience has shown that the best way to limit the impact of IAS is prevention rather than eradication or control after their introduction.

In 1997, the Global Invasive Species Programme (GISP) was established to develop the knowledge base; the scientific, technical, economical and institutional tools; and a global strategy to deal with invasive species, thus helping to maintain biological diversity. The GISP is coordinated by the Scientific Committee on Problems of the Environment (SCOPE) in the conjunction with World Conservation Union (IUCN), Center for Applied Biosciences International (CABI) and United National Environmental Programme (UNEP).

Regional cooperation and coordination has been encouraged to ensure that all countries in a region are addressing invasive species issues and that the efforts of one country are not undermined by the inaction of another. It is against this background that a symposium on invasive species was organized during the 2003 Caribbean Food Crops Society (CFCS) Meeting in Grenada. Since then a Caribbean Invasive Species Working Group (CCISWG) has been established with responsibility for the development, coordination and implementation of a regional safeguarding strategy – Caribbean Regional Invasive Species Intervention Strategy (CRISIS).

CRISIS promotes a comprehensive and integrated approach to addressing the IAS problem. It encompasses changes in the environment, and those that affect production, food security, trade, tourism, public health and agricultural competitiveness. It provides a plan that would assist the Region in preventing and mitigating the introduction, spread and impact of IAS, increase awareness, and a framework within which individual country and regional activities could be developed and strengthened, and facilitate the sourcing of funds. It encompasses all English, French, Dutch and Spanish speaking countries/territories in the Caribbean Basin including the states of the United States of America (USA) adjacent to the Gulf of Mexico and all invasive species with potential to be harmful to agriculture, natural ecosystems and human health.

2.0. PLAN OF ACTION

2.1 Actions implemented. In order to take the strategy forward at the Regional level, a regional workshop entitled “Facilitating Safer United States/Caribbean Trade: Invasive Species Issues”

was held in Trinidad in June 2004. The Workshop received comprehensive regional participation. The objectives were to provide a continuing platform to carry out the recommendations developed at the IAS Symposium in Grenada in 2002 and to convene a cadre of opinion leaders in dialogue to arrive at consensus on a proactive policy to address the invasive species issues in the Caribbean.

The Workshop concluded that a Greater Caribbean Basin-wide approach is necessary to effectively deal with IAS issues in the Region. The Caribbean Agricultural Health and Food Safety Agency (CAHFSA) is the logical regional coordinating entity to spearhead the regional IAS safeguarding strategy. The Workshop recognized that CAHFSA is specifically a CARICOM serving institution, recommended that it be structured such that its sphere of influence is extended beyond the boundaries of its member states. The Workshop further indicated that forging appropriate and strategic partnerships with the USA and other entities should be assigned high priority in structuring CAHFSA. In so doing, CAHFSA will be better able to mobilize the technical, institutional and financial resources required for extension of both its scope and effectiveness with the IAS issues. As CAHFSA proceeds with plans for a regional safeguarding strategy, serious efforts must be made from the very outset to address environmental, natural resources and biodiversity components of trade. As CAHFSA becomes operational, it may be prudent, given the resource constraints, but recognizing the urgency of the IAS problem to start incrementally with a two component project developed from those identified in the CFCS Action Plan document, (Annex I) viz:

- a) Timely internet-based tracking pest introductions and interceptions
- b) Development of a Caribbean pest and disease diagnostic system based on distance digital imaging and internet-based communications

Finally, the Workshop voted unanimously to send a resolution with related material, outlining the important issue of invasive species to CARICOM, to be brought to the attention of the CARICOM Council of Trade and Economic Development (COTED). The resolution was presented to the COTED in June 2004 which requested that the CRISIS document as a regional strategy on invasive species be presented together with specific project proposals for action. Additionally, a letter outlining the important issue of invasive species was also sent to individual governments in the Region. The letter and resolution were also sent to certain agencies in the Dominican Republic, Puerto Rico and the French West Indies.

A planning session of the CCISWG was held during the Caribbean Food Crops Society Meeting in St. John's, United States Virgin Islands in July 2004, and another in Trinidad in March 2005.

At the Trinidad Meeting, it was agreed that CARDI also should send the letter to appropriate Government agencies in the British Virgin Islands, Bahamas and Cuba as well as to Ministries of Health, Environment, Trade and Fisheries (where these are not under the agriculture portfolio). A minor editing of the letter was agreed for non-governmental agencies. In January 2005, Professor Waldemar Klassen of the University of Florida made a presentation on behalf of the CCISWG entitled *Vulnerability of Agriculture to Invasive Species* at the Forum of CARICOM Ministers of Agriculture. In May 2005, CRISIS together with a progress report of the activities of the CISWG was presented to the COTED. Member States:

- i. Endorsed the Caribbean Agricultural Research and Development Institute (CARDI) as the lead agency in building the necessary strategic partnerships for the control and management of invasive species in the Region
- ii. Recognized the CISWG

- iii. Requested the CISWG to continue to develop further fundable project proposals with a view to implementation
- iv. Further requested a report from the CISWG on the mobilization of resources and the strategy for implementing projects
- v. Noted the CRISIS paper
- vi. Requested CARDI to circulate CRISIS to all Member States for comments by August 31, 2005; and
- vii. Urged Member States to facilitate and support the investigation on the current state of preparedness of the Region regarding invasive species

2.2 Actions Proposed or in Progress.

2.2.1 Coordination of the Plan of Action. The CISWG consisting of the following institutions has been at the forefront of actions on invasive species:

CABI
 CARICOM Secretariat
 CARDI
 Centre de Cooperation International en Research Agronomic pour le developement (CIRAD)
 Florida A&M University (FAMU)
 Food and Agriculture Organization (FAO)
 Inter-American Institute for Cooperation on Agriculture (IICA)
 University of Florida
 University of the West Indies (UWI)

This CISWG, chaired by CARDI, will provide policy direction, political guidance, and coordination for the overall Plan of Action. The University of Florida will coordinate the United States interests in the multi-institutional initiative. In this regard University of Florida has obtained a grant from the Tropical and Subtropical Agricultural Research (T-STAR) Programme for “Facilitation and Coordination of the Florida/Caribbean Basin Inter-Institutional Invasive Species Initiative.”

The CISWG will meet at least once a year but will be in contact through other means of communications. It will ensure that all countries within the Caribbean Basin participate in the implementation of the strategy. It will encourage cooperation and coordination amongst countries and the regional organizations in the region. It is worthy of note that the CISWG is evolutionary in nature and may expand to reflect the diversity of the issues and representation of the Caribbean Basin entities. The Caribbean Development Bank (CDB) has provided generous financial support to the work of CISWG could be invited to be a member of the CISWG. Also, that CAHFSA is in the planning stage as a CARICOM safeguarding agency and that its specific role and scope is yet to be worked out.

The National Agricultural Health and Food Safety (NAHFS) Committee in the countries will be designated as the implementation leader for the programmes at the national level. This Committee is a multi-sectoral committee consisting of the Public Sector (Ministries of Agriculture, Health, Environment and Trade) and the Private Sector. The NAHFS Committee would be closely affiliated to Biodiversity Committee or Committee performing such a function in the country.

2.2.2. Greater Caribbean Basin-Wide Approach. The Greater Caribbean Basin-wide Plan of Action comprises of the following components – Advocacy, Regional Projects and Actions, National Level Activities and Monitoring and Evaluation.

2.2.2.1. Advocacy. An overarching objective of the Greater Caribbean Basin-wide Plan of Action is for the Strategy to be endorsed by the Governments in the Caribbean Basin. All countries and institutions in the Caribbean Basin will input to achieve this. Advocacy will be at the CARICOM Meetings of Ministers responsible for Health and Environment in addition to the continuation of the initiatives at the Meetings of the Ministers of Agriculture and Trade (COTED). Advocacy will also be undertaken in the other countries in the Caribbean Basin outside of CARICOM including those of the French Caribbean, Cuba, Central America, South America, the USA and the Dependents of the United Kingdom. Support will be given for the ongoing discussions regarding the establishment of the CAHFSA. However since CAHFSA is mainly agriculture and food safety, efforts will be made to have areas of environment and natural resources included.

The Implementation Group, NAHFS Committee or similar body, will be encouraged to take advocacy roles with their national ministers and other contacts at the national level. Available sources of information will be provided including the strategy document, information briefs, policy papers, and a workshop would be held to discuss specific actions in the Greater Caribbean Basin Plan of Action. It is expected that the CISWG and Implementation Groups will meet at least once per year to plan operations.

In addition to the endorsement by the governments, support will be sought for the implementation of the CRISIS by all institutions operating in the Greater Caribbean Basin. Strategic partners will be developed with financial institutions and others where funding may be sourced.

2.2.2.2. Regional Projects and Actions. A set of projects and actions (Annex I) which addresses key issues within the strategy will be undertaken. The following section describes the projects, the prioritization of the projects, the process of submitting the projects for funding and a work plan for the projects with assigned responsibilities. With regard to the actions, some activity has been initiated by CIRAD and will be reported on separately.

2.2.2.2.1. Selected Projects. Attached to the strategy document is a document “*Proposed Invasive Species Projects for the Caribbean*” consisting of the list of projects identified during the 2003 Caribbean Food Crops Society Meeting in Grenada. Projects: a) Timely internet based tracking of invasive pest introductions and interceptions and b) Development of a Caribbean pest and disease diagnostic system based on distance digital imaging and internet based communications have been combined into the “Caribbean Alien Invasive Species Information System (CAISIS)”. CABI has developed a proposal “Mitigating the threat of Invasive Alien Species in the Insular Caribbean” for funding. The remaining projects if selected will be elaborated and funding will be sought together with any new projects identified.

2.2.2.2.2. Prioritizing the Project. The projects have been prioritized as follows:

1. Project: Caribbean Invasive Alien Species Information System (CIASIS). There is a need for a capability to diagnose and identify IAS. Information needs to be collected, evaluated, synthesized and communicated to the countries. There is need for supportive research and the development of a database.

1a. Project: Development of a Caribbean pest and disease diagnostic system based on distance digital imaging and internet based communications. There is need for an assessment of the diagnostic capabilities in the countries and develop a network of laboratories and specialists based on the findings. Seek funding to facilitate purchase of equipment, travel of specialists to provide training and to seek solutions to constraints. There is need to determine the pest status in the countries and provide outreach training and educational programmes.

1b. Project: Timely Internet-based tracking of invasive pest interceptions/introductions. There is a need to determine resource status (personnel, equipment) devoted to invasive species. Develop

the capability to record and keep track of invasive pests. Maintain and update listing of key invasive species threatening the region and generate and post pest alerts.

2. Facilitation and Coordination of the Florida/Caribbean Basin Inter-institutional Invasive Species Initiative. The overall objective is to improve the effectiveness of safeguarding against alien invasive species in the Greater Caribbean Basin that pose major threats to Florida. A long term goal is the establishment of a regional safeguarding mechanism in which the USA would play an important role, and which would give maximum protection to Florida.

3. Project: Mitigating the Threat of Invasive Alien Species in the Insular Caribbean. To establish a consultative process for the development, proofing and implementation of natural, sub-regional and regional policies, strategies and technologies for the prevention and management of IAS.

4. Project: Assure Region-Wide Adoption of the Emergency Preparedness Plan and Develop Specific Emergency Actions Plans for Key Pests. An Emergency Preparedness Plan is available for the Caribbean. Countries will be encouraged to adopt this general plan. In addition, as part of their National Plan of Action (NPA), countries will identify organisms which are invasive species threats and develop specific emergency plans for each pest.

5. Project: Arouse Public Awareness of the Invasive Species Crisis. There is a need to develop public interventions tailored to specific interests and to establish an annual Caribbean wide “Invasive Species Awareness Week”. Develop news releases, posters, catchy slogans etc., or to use on radio, televisions, posting at ports of entry.

6. Project: Take advantage of opportunities to obtain funding of critical invasive species research and development needs from USDA-APHIS and USDA-ARS. Submit short project proposals to USDA-APHIS and USDA-ARS to support extra mural research to fill critically needed information and/or technology gaps in the systems for combating specific invasive species.

7. Project: Engage non-USA scientists in the Caribbean in T-STAR funded research on Invasive species. T-STAR Administrators should encourage their faculty to involve scientists in various Caribbean countries in developing and submitting joint proposals to the T-STAR Programme.

8. Project: Early Detection of Carambola Fruitfly. Design and submit a Carambola Fruitfly early detection programme in the island with Trinidad in the south through St. Martin in the north.

9. Project: Restoration of National areas Infested with Non-Native Invasive Plants. There is need for training/workshop with key personnel of the countries to provide hands on experience at removal of species and restoration of national area(s).

10. Project: Appoint a Caribbean Region Standing Committee to serve as watchdog on the arrival of new invasive species, or on alarming developments in the spread with footholds in the region. The Watchdog Committee would discuss developments and determine whether formation of regional coalitions of public and private sector interests should be recommended to mount appropriate and effective counter measures.

2.2.2.2.3. Submitting the Projects for Funding. The projects will be submitted for funding through the process (outlined in Table I). Project proposals may be submitted directly if the funding source is known and committed.

Table 1: Process for Submitting Projects for Funding

Steps	Activity
1	Terms of Reference for project proposal developed
2	Concept note development and nomination of CISWG coordinators
3	Comments obtained on concept note by members of the CISWG
4	Funders approached and proposal prepared in required format
5	Proposal submitted through the leader of the CISWG
6	Project funded and started

The current status of the projects is summarized in Table 2. Actions are being addressed through the French Caribbean Invasive Species Safeguarding Programme.

2.2.2.2.4. Work Plan for Projects. Next step and responsibilities for projects are to be discussed

2.2.2.3. National Level Activities. This is divided into National Level Awareness Raising and Implementing Mechanisms for National Plan of Action.

2.2.2.3.1. National Level Awareness Raising. Support will be given to the NAHFS Committee in its public awareness activities on invasive species and the strategy designed to address the issue. These activities can be through face-to-face meetings with Ministers, relevant authorities and stakeholders using available materials (CRISIS document, information briefs, or policy papers). Within each community, a local group of persons will be identified to undertake public awareness activities. One week of each year will be designated as “Invasive Species Awareness Week” during which awareness activities on invasive species will be intensified using amongst others communications materials (videos, posters, leaflets).

2.2.2.3.2. Implementing National Plans of Action. Each country will be encouraged to develop a National Plan of Action (NPA) to implement national elements of the Strategy. The NAHFS Committee will be responsible for coordinating activities since the process requires working in partnership with other Ministries, private sector, non-governmental organizations and community based organizations. The process of development of the NPA requires extensive consultation, therefore meetings will be held with stakeholders to receive their input. The “tool kit” of best prevention and management practices for invasive alien species prepared by the Secretariat of GISP will be available. The *tool kit* provides a step-by-step approach for developing, implementing, monitoring and evaluating NPA for invasive species. It is anticipated that an important component will be the strengthening of technical capacity for effective prevention and management of IAS. A task force comprising CABI, FAO and IICA supported by CARDI will determine what information is available on the state of preparedness of the countries with regards to invasive species.

Some countries (Bahamas, Jamaica and Dominican Republic) have prepared a specific list of and prioritization of IAS.

2.2.2.4. Monitoring and Evaluation. Countries will assist in evaluating the success or failure of the efforts by completing questionnaires and monitoring forms distributed at various stages of implementation. Countries will also evaluate progress of their efforts based on chosen criteria.

2.2.3. Cooperation at International Community Level. Countries cannot be complacent, hence they must be cognizant of emerging threats and act to address these threats. The major trade routes to the region and between countries will be analyzed in order to identify and prioritize possible pathways for the introduction of invasive species. The cooperation of the international community will be solicited in an effort to manage the risk associated with these pathways. It is expected that all countries both regional and international, will cooperate to achieve this. Standards developed by the international committee will be adapted. The CISWG will establish relationship with other international organisations working in that area.

The support of various US Government agencies and departments will be solicited. The European Union, Canada, China and Japan may also be willing to provide funding.

3.0. CONCLUSION

The success of this Plan of Action requires acceptance by all countries, citizens and institutions operating in the Greater Caribbean Basin. The Plan has individual components that demand close cooperation amongst Government agencies, and stakeholders at the national and regional levels. It targets local (in-country), national and regional boundaries.

4.0. REFERENCES

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- UNEP/CBD/SBSTTA/6/INF/10: Toolkit of Best Prevention and Management Practices for Invasive Alien Species – GISP, 215 pp.

Table 2: Status of Projects

PROJECTS	Strategy No.	¹CISWG Coordinators	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
			<i>Terms of Reference</i>	<i>Concept Note Developed</i>	<i>Reviewed by CISWG</i>	<i>Proposal Developed</i>	<i>Proposal submitted</i>	<i>Funded and started</i>
1a. Timely internet-based tracking of invasive pest introduction	2	University of Florida		² CISIS	√	√		
1b. Caribbean pest and disease diagnostic system	4			³ DDIS				
2. Facilitation and Coordination of the Florida/Caribbean Basin Inter-institutional Invasive Species Initiative	-	University of Florida				√	√	√
3. Mitigating threat of IAS in the Insular Caribbean	-	CABI				√	√	
4. Adoption of general invasive species emergency plan	5							
5. Arouse public awareness	1							
6. Take advantage of opportunities for funding from USDA	3							
7. Engage non-USA scientists in the Caribbean in T-STAR research	6							
8. Early detection of Carambola fruit fly	7a							
9. Restoration of natural areas	8							
10. Appoint a Caribbean Region Standing Committee as watchdog	7b							

¹CISWG is the Caribbean Invasive Species Working Group; ²CISIS is the proposed Caribbean Invasive Species Information System; ³DDIS is the Distance Diagnostic and Identification System.

Projects and Actions Identified

a. Project Title

- Early Detection of Carambola Fruit fly
- Restoration of natural areas infested with non-native invasive plants
- Timely internet based tracking of invasive pest introductions and interceptions
- Develop a Caribbean pest and disease diagnostic system based on distance digital imaging and internet based communications
- Arouse public awareness of the invasive species crisis
- Engage non-USA scientists in the Caribbean in T-STAR funded research on invasive species
- Assure region wide adoption of the General Invasive Species Emergency Plan and develop Specific Emergency Action Plans for key threats
- Appoint a Caribbean Region Standing Committee to serve as a watchdog on the arrival of new invasive species, or on alarming developments in the spread of invasive species with footholds in the region
- Take advantage of opportunities to obtain funding of critical invasive species Research and Development needs from USDA-APHIS and USDA-ARS

b. Actions

- Impact of the introduction of new hybrid varieties of bananas and plantains on the dynamic balance of the populations of some pathogenic agents and pests: nematodes, fungus and virus.
- Support of a sugar and rum sustainable production and preservation of the agricultural landscape in the Caribbean by optimizing the processes of variety selection.
- Promotion of a sustainable citrus fruit cultivation and plant health observatory.
- Improvement of the market gardening productions: creation of diseases and pest resistant tomato and peppers adapted to the Caribbean environment.
- Towards a global research programme on integrated control of the coconut lethal yellowing disease in the Caribbean.