CABI in the Americas and Caribbean

Strengthening partnerships for Food Security and Biodiversity Conservation

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Member Countries Regional Consultation: Americas and Caribbean

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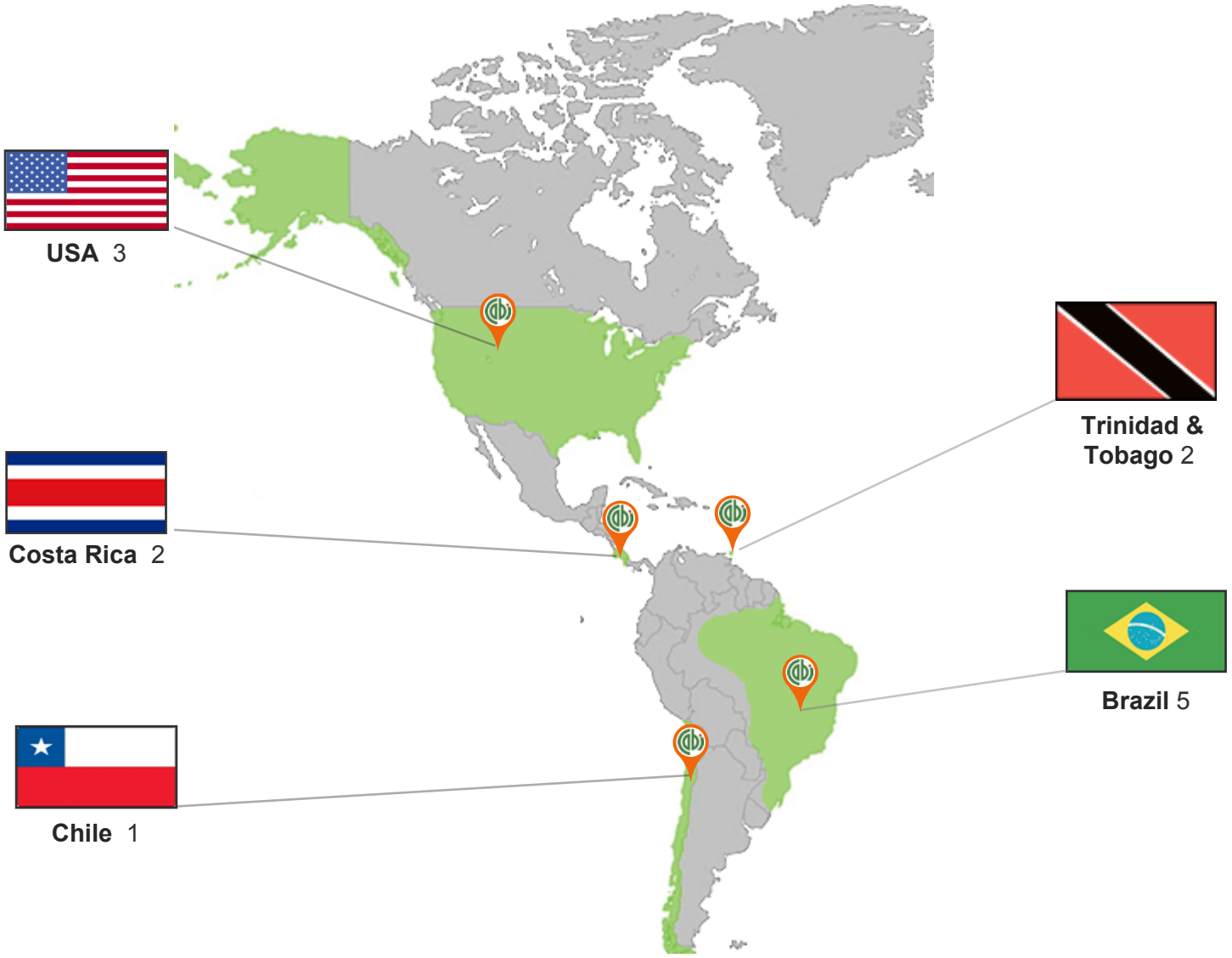
KNOWLEDGE FOR LIFE

CABI

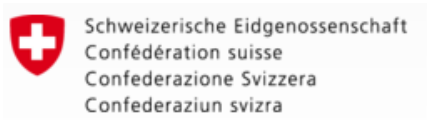
Outline of the Presentation

- CABI in the Americas and the Caribbean
  - Presence
  - Key partners
  - Working environment
- Member country priorities identified in 2016
- Responding to member country priorities in the Americas and the Caribbean
  - Plant health
  - Invasive species and biodiversity
  - Food and nutrition security
  - Trade and market access
  - Knowledge management, communication and use

CABI presence in the region



Key Partners in the region



Latin America & Caribbean

- High Biodiversity
- Intense movement of people and products

Introduction of new pests and diseases

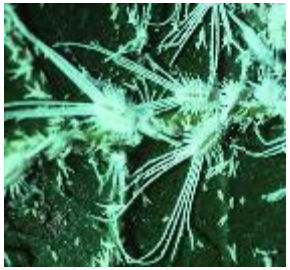
European canker of Apple

Zebra Chip
Liberibacter solanacearum

Plum pox virus

Lethal Yellowing

Tomato spotted ringspot virus



Rastrococcus invandens

Frosty pod rot
Moniliophthora roreri

Colletotrichum kahawae - Café

Helicoverpa armigera

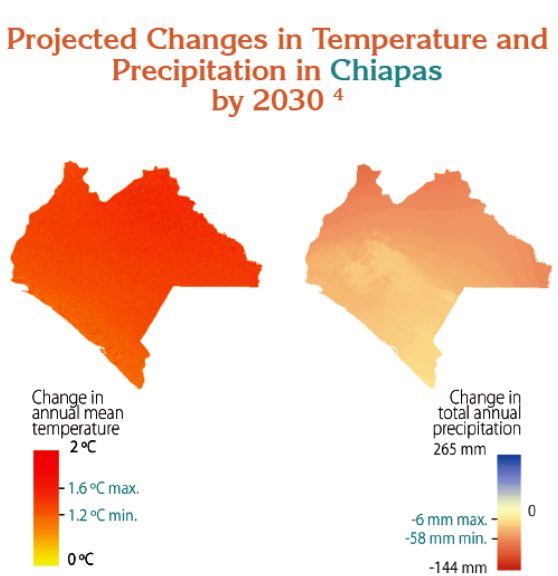
Diaphorina citri

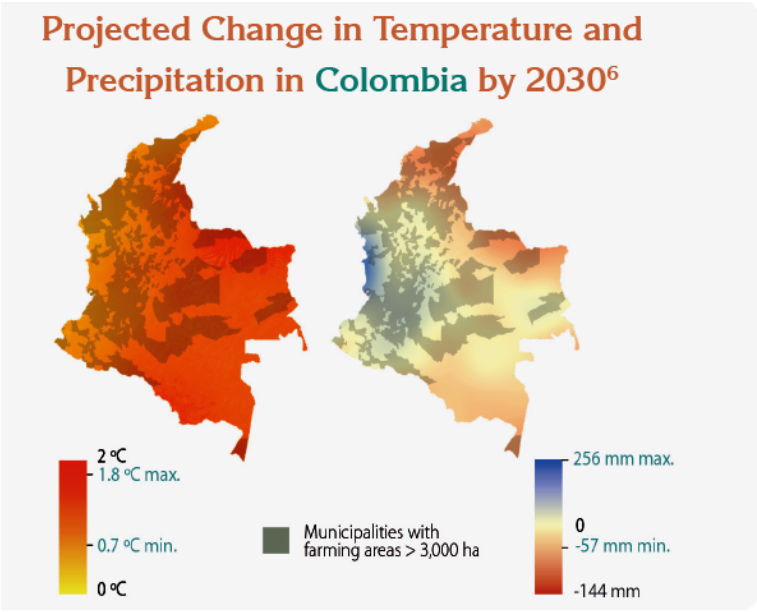
Sago Palm Scale

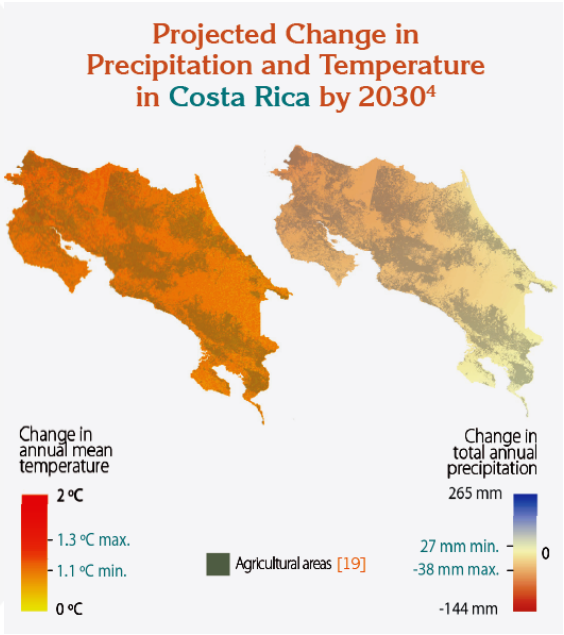
Erwinia amylovora

Climate Change

How Latin American countries look in the modeling and projections





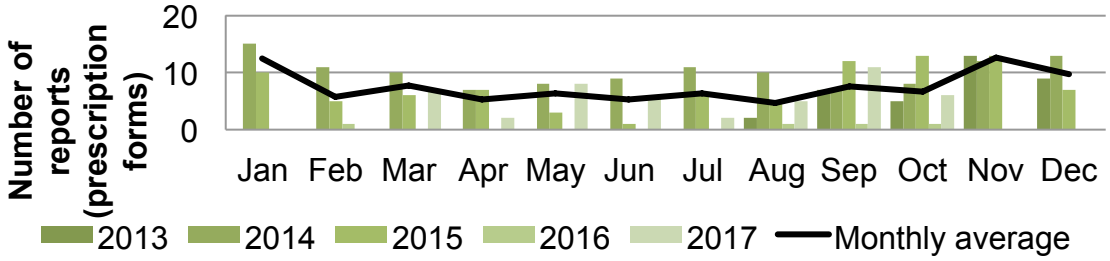


- Increasing Temperatures
- Extreme
  - Drought
  - Flooding

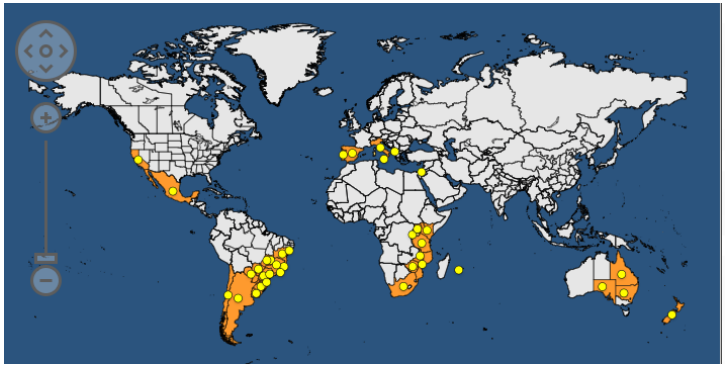
Source: http://sdwebx.worldbank.org/climateportal/doc/agricultureProfiles/CSA-in-Colombia.pdf
http://sdwebx.worldbank.org/climateportal/doc/agricultureProfiles/CSA-in-Costa-Rica.pdf
http://sdwebx.worldbank.org/climateportal/doc/agricultureProfiles/CSA-in-Chiapas-Mexico.pdf

Climate change effects

Crop Distribution



Pest incidence

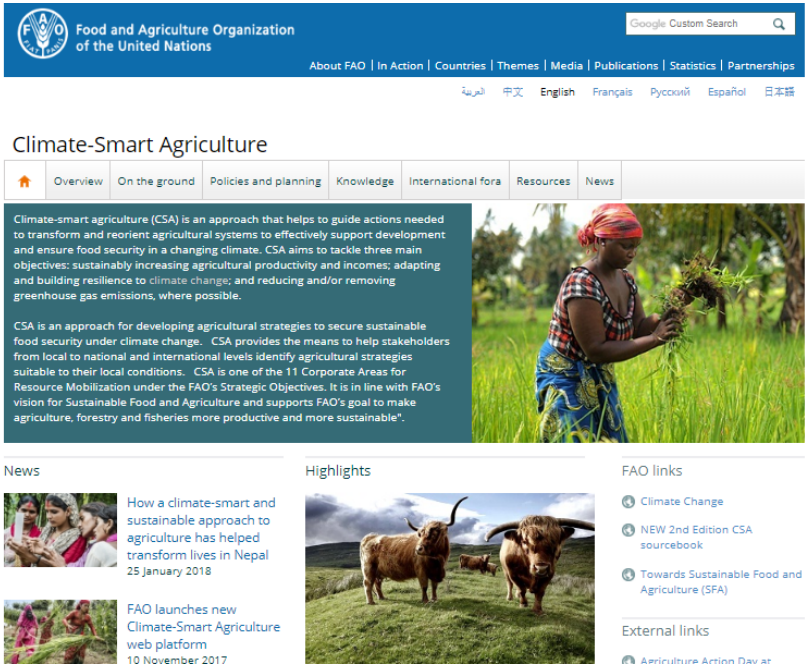


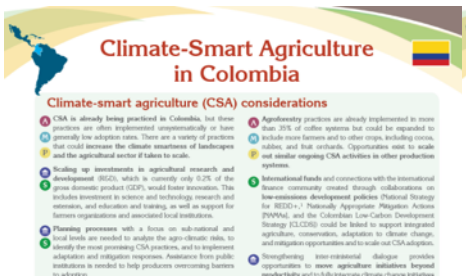
Introduction new pests

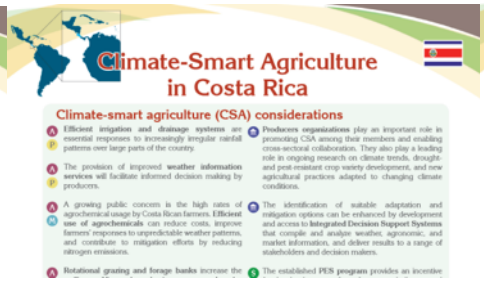
Biological control agents

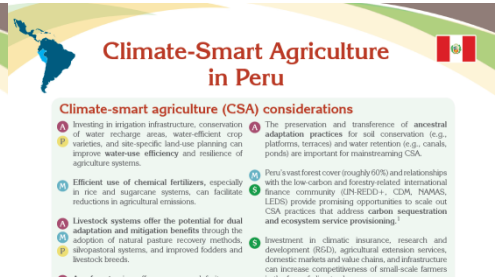
Climate Smart Agriculture

Regional efforts linked to global platforms









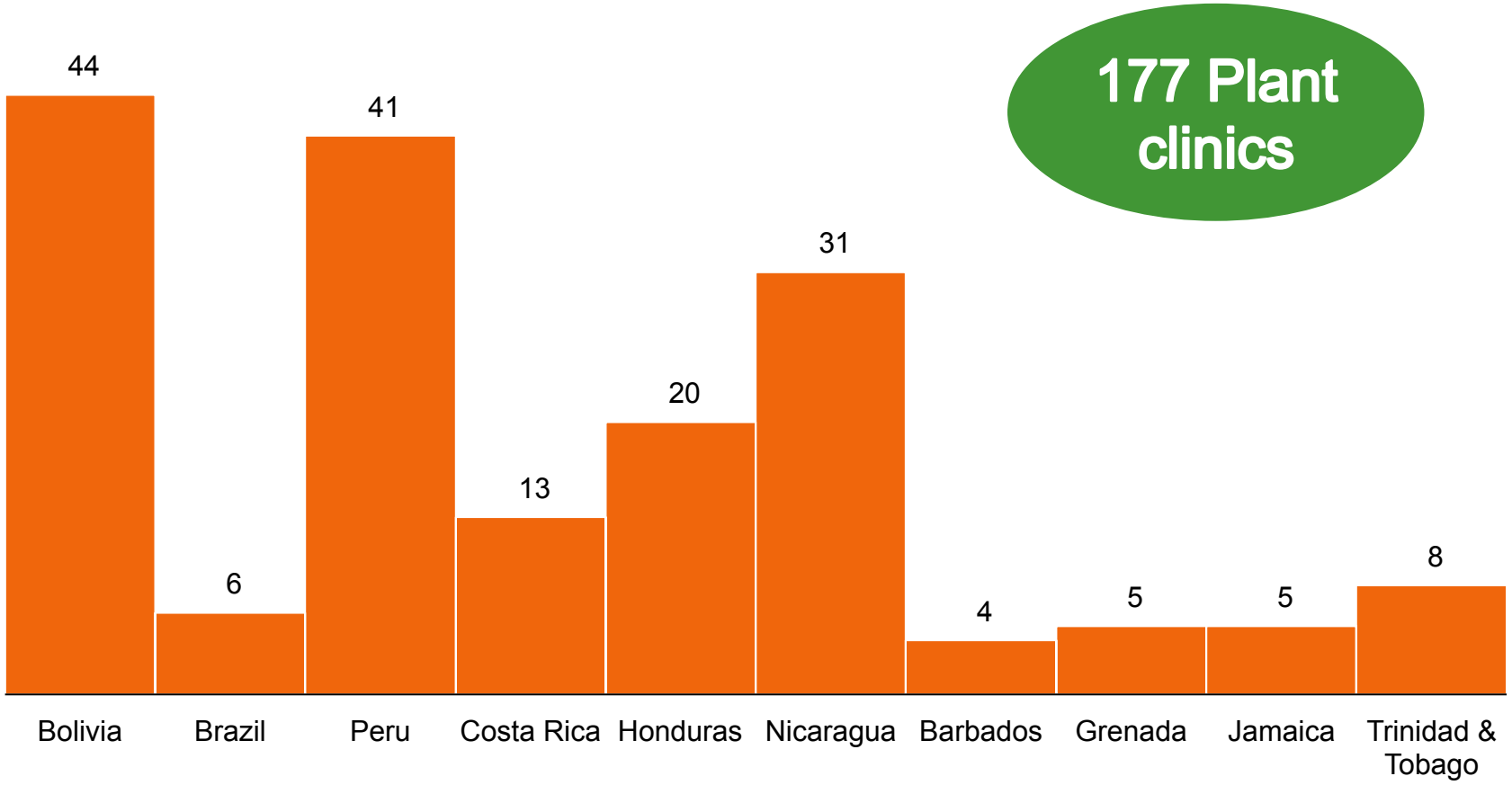
Member country priorities – 2016

- Plant health systems
- Invasives species and biodiversity
- Food and nutrition security
- Trade and market access
- Knowledge management, communication and use
- Cross cutting issues
  - Capacity building and governance
  - Public-private partnerships
  - Enable, empower and employ women and youth
  - Embed monitoring, evaluation and impact analysis

Responding to Member Country Priorities in the Americas and the Caribbean

- Plant health
- Invasive species and biodiversity
- Food and nutrition security
- Trade and market access
- Knowledge management, communication and use

Plant Health
Plantwise in Latin America and the Caribbean



Plant Health
Plantwise in Latin America and the Caribbean

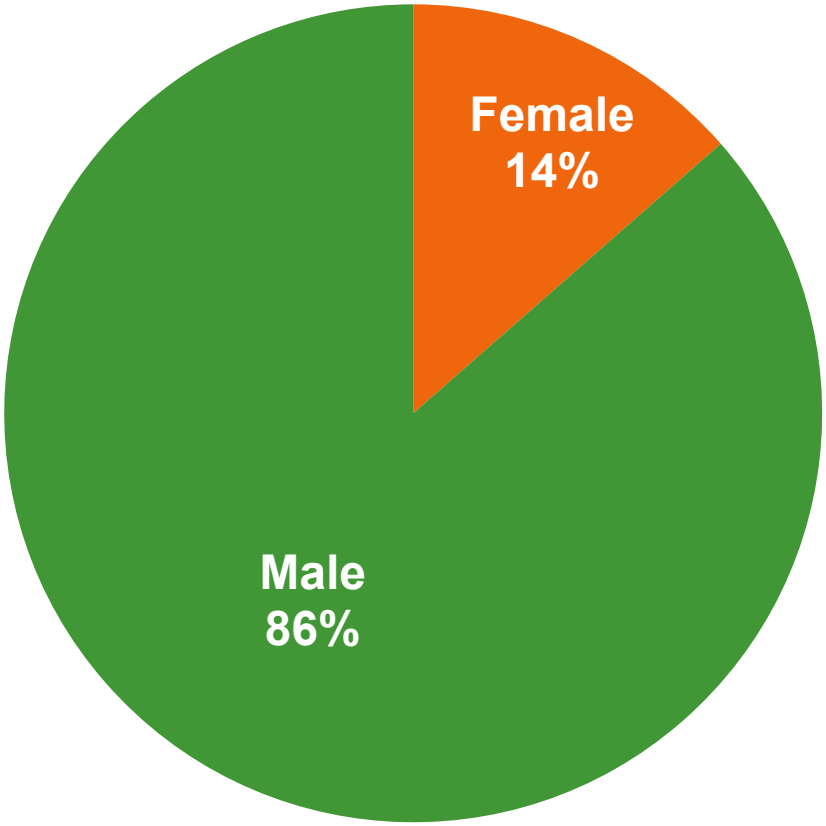
27,603 Farmer's queries recorded

Costa Rica	578
Honduras	883
Nicaragua	1,781
Barbados	726
Grenada	349
Jamaica	586
Trinidad & Tobago	1,601
Bolivia	15,687
Peru	5,258

Plant Health
Plantwise in Latin America and the Caribbean

1,230

Plant doctors trained



Gender of farmers reached

Biodiversity and invasive species management – prevention and early detection

Preventing the COSTS of Invasive Alien Species (IAS) in Barbados and the OECS Countries:

- The objective of this project is “Prevention, early detection, control and management frameworks for IAS that emphasise a risk management approach by focusing on the highest risk invasion pathways of Barbados and OECS countries”
- **Component 1 and 2** addresses needs of Antigua and Barbuda, Barbados and St. Kitts and Nevis in relation to national frameworks for IAS prevention, early detection, management and control. Pilot projects will lead to improved local capacity to deal with particular IAS impacting biodiversity
- **Component 3** is regional, and as such will be oriented towards addressing common needs of the OECS countries in relation to IAS

Invasive species early detection system established for key species – CABI Central Diagnostic Lab

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First report of *Moniliophthora roreri* causing frosty pod rot on *Theobroma cacao* in Jamaica

E.S. Johnson [1], M.A. Rutherford [2], S. Edgington [2], J. Flood [2], J. Crozier [2*], G. Cafá [2], A.G. Buddie [2], L. Offord [2], S.M. Elliott [3] and K.V. Christie [4]

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Keywords: Caribbean, cocoa, fungal disease

Frosty pod rot (FPR), caused by the basidiomycete *Moniliophthora roreri*, is a devastating disease of cacao. First discovered in Ecuador in 1917, FPR is present in the main cacao producing countries of Southern and Central America, except Brazil (López & Enríquez, 1980; Evans, 2016) but it has not been previously reported in the Caribbean. In August 2016, unusual symptoms were observed on cacao pods on farms in Crooked River located in the parish of Clarendon in Jamaica. Examination of affected pods and fungal spores by officers of the Research and Development Division (Ministry of Industry, Commerce, Agriculture and Fisheries) led to a tentative diagnosis of FPR.

Following this discovery, infected pods were dispatched to the CABI Diagnostic and Advisory Service, Egham, United Kingdom for examination and analysis. Symptoms typical of FPR (Evans, 1981) were observed, namely necrotic lesions, white fungal mycelium and cream/beige sporulation on the pod surface (Fig. 1) along with extensive brown necrosis of the internal pod tissues (Fig. 2). Spore samples were removed from the surface of pods with a sterile needle and tissue samples aseptically excised from both the surface tissues and internal pod tissues. Samples were plated on tap water agar, potato dextrose agar (PDA) and 2% malt extract agar (MEA) and incubated at 25°C. Emergent fungal colonies were purified by sub-culturing. Morphological characteristics of sporulating fungal colonies on MEA and PDA after 5 to 7 days growth were indicative of those of *M. roreri* as described previously (Evans, 1981).

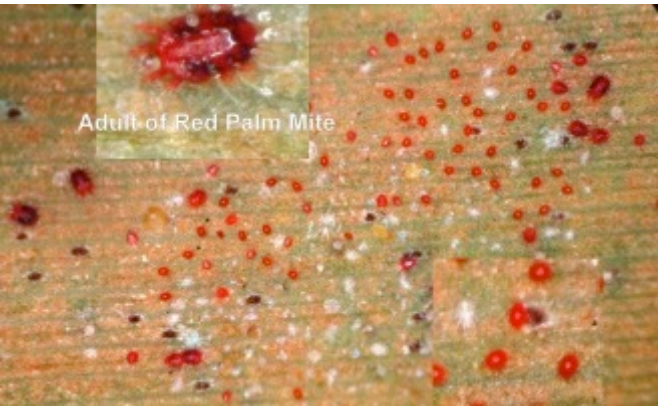
Biodiversity and invasive species management – Management and Control

- Biological Control of “Rubber vine” *Cryptostegia madagascariensis* in Brazil. This collaborative work is funded by Johnson and SC Johnson
- Following a successful biocontrol project against another invasive rubbervine (*Cryptostegia grandiflora*) in Australia, new project development activities were focussed on the Caatinga habitat of Ceara state in northern Brazil where the sister species *C. madagascariensis,* common name devil’s claw, is threatening the fragile ecosystem as well as the endemic Carnauba Palm
- **Invasive Species**: Early detection system established for member countries targeting key species in the Caribbean and Latin American countries – CABI Central Diagnostic Lab

Biodiversity and invasive species management – Ecosystem Restoration

Darwin Initiative – Chile

- Rescue and restoration of the native flora of Robinson Crusoe Island in the Juan Fernández Archipelago National Park
- Area: Isla Robinson Crusoe, Chile
- Why Juan Fernández? High Biodiversity – Endemic species
- Evaluation of the microorganisms – Dr. Andrés Frances, INIA
- Excellent results obtained



Food and Nutrition Security

Several Regional initiatives contribute to food and nutrition security

Quarantine pest platform

- Strengthening the collaboration among key institutions in the region. Coordinated by EMBRAPA with CORPOICA-INIA-CABI

Caribbean Plant Health Directors Forum

- Collaborative efforts and unified strategies to strengthen plant health safeguarding throughout the Greater Caribbean Region. Coordinated by USDA-APHIS, CARICOM, IICA

South American Biological Resource Centre Network

- Establish a South American regional Biological Resource Centre Network. Coordinated by INIA Chile and CABI

Trade and market access: improving market access – heavy metals in cocoa from Peru and Venezuela

- New food safety legislation in the EU
- For cocoa, concerns include levels of pesticide residues and heavy metal contamination
- With partners in South America, CABI examined heavy metal contamination from cocoa farms (soil and beans)
- General recommendations included:
  - increase soil pH to reduce availability
  - avoid use of phosphate fertilisers
  - avoid irrigation with contaminated water
  - remove cocoa waste materials (pod husks, pruned material)
- EU continues to discuss issue resolution with producing countries
- Ongoing work with ICCO and regional partners to mitigate and remediate contaminated cocoa soils

Knowledge management and Capacity Building

Rational Pesticide Use

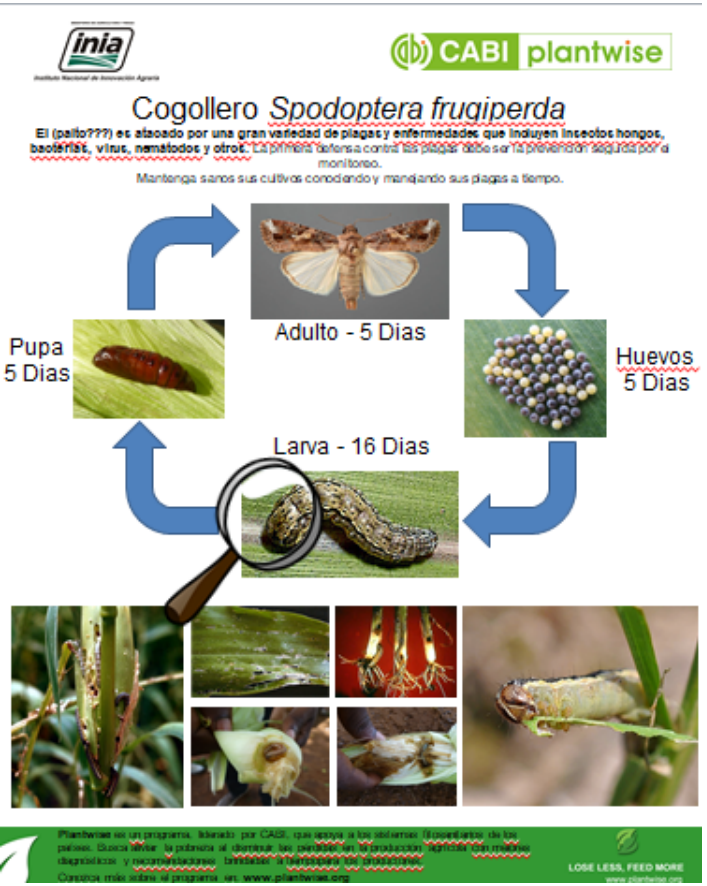
- Collaborative work with the government and private companies to train extension officers and farmers in Colombia, Trinidad and Tobago and Barbados

Invasive species

- Establish technical capacity and early detection systems for key species in the Caribbean and Latin American countries

Diagnostic and pest management

- Around 1,500 extension officers and technicians trained in Latin America and Caribbean as part of the Plantwise programme



Invasive Species and Knowledge Management

Classical Biological Control

Spodoptera frugiperda and *S. eridania*

- Both species (*S. frugiperda* and *S. eridania*) are originally from the region, causing losses in key crops
- Evaluation of the natural enemies in Colombia, Brazil, Bolivia and Costa Rica, to establish an Integrated Pest Management package which can also be transferred to other regions around the world where these species were introduced and are causing problems
- Experience on the management of these species from Latin America and Caribbean – South to South Cooperation

Review Article

REVISÃO DA BIOLOGIA, OCORRÊNCIA E CONTROLE DE *Spodoptera frugiperda* (LEPIDOPTERA, NOCTUIDAE) EM MILHO NO BRASIL

BIOLOGY REVIEW, OCCURRENCE AND CONTROL OF Spodoptera frugiperda (LEPIDOPTERA, NOCTUIDAE) IN CORN IN BRAZIL

70 years of research collaboration between Canada and CABI

- Strong research collaboration in the field of biological control of arthropod pests and weeds has been established
- Strong scientific output and a large number of Canadian internships at CABI (over 105 from 21 different universities)
- Joint publishing initiatives are also a feature of this special relationship. Co-authored by CABI scientists and their Canadian counterparts, CABI published five volumes of “Biological Control Programmes in Canada (1910 to 2012)”

A strong collaboration network

BC Ministry of Forests, Lands and Natural Resource Operation:
Susan Turner

University of Alberta:
Felix Sperling

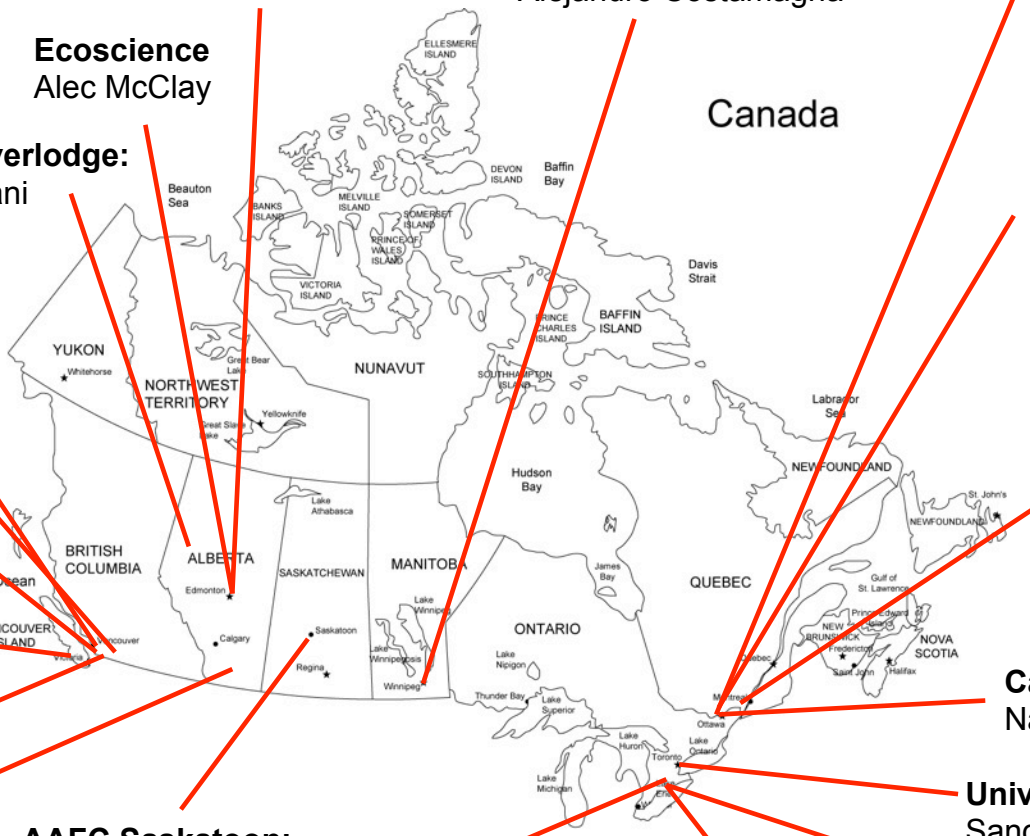
Ecoscience
Alec McClay

University of Manitoba:
Alejandro Costamagna

AAFC Ottawa:
Peter Mason
John Huber
Gary Gibson
Andy Bennett
Hume Douglas
Jose Fernandez
Patrice Bouchard

AAFC Beaverlodge:
Jennifer Otani

Pest Management Centre Ottawa
Leslie Cass
Kathy Makela



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University of Victoria
Rachel Richmond
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University of Toronto:
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Robert Bourchier
Kevin Floate
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Ross Weiss
Meghan Vankosky
Boyd Mori
Owen Olfert
Martin Erlandson

University of Guelph:
Rebecca Hallett

OMAFRA:
Hanna Fraser

AAFC London:
Tara Gariepy

Development of invasive species management approaches

Current targets

- Apple leaf curling midge, *Dasineura mali*
- Diamond back moth, *Plutella xylostella*
- Brown marmorated stinkbug, *Halyomorpha halys*

Future targets

- Spotted lanternfly, *Lycorma delicatula*
- Allium leaf miner, *Phytomyza gymnostoma*
- Oriental fruit moth, *Grapholita molesta*
- European grapevine moth, *Lobesia botrana*

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Agriculture and Agri-Food Canada

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Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC