TROPICSAFE

RESEARCH

EU HORIZON 2020 FUNDED PROJECT-TROPICSAFE

Insect-borne prokaryote-associated diseases in tropical and subtropical perennial crops

Dr. Wayne A. Myrie
Prof. Assunta Bertaccini

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727459

coconut INDUSTRY BOARD

OUT OF MANY ONE PEOPLE

Horizon 2020 project

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Horizon 2020 was the EU's research and innovation funding programme from 2014-2020 with a budget of nearly €80 billion.

Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness

Consensus by Europe's leaders and the Members of the European Parliament. They agreed that research is an investment in our future and so put it at the heart of the EU's blueprint for smart, sustainable and inclusive growth and jobs.

By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science

How to apply for Horizon 2020 project

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727459

Tips, resources and useful links for the application process

The grant application process

Grant application is a five-step process:

1. Find a suitable Call for Proposals
2. Find project partners or apply as an individual
3. Create an account on the EU portal
4. Register your organization on the Horizon 2020 portal
5. Submit your project proposal to the European Commission

Project Consortium

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Tips, resources and useful links for the application process

Our grant application process

1. Capable and interested Scientists from proposed disease affected countries was asked to indicate their personal and institutions' willingness to collaborate.

2. A consortium of scientists with varying skills was assembled.

3. Concept note on the proposed crops and specific issues was written and circulated for suggestions and inputs.

4. Initial Project was submitted indicating the consortium intention to work with the suggested crops

5. Approval was obtained to submit a full project proposal.

6. Project proposal was submitted through the participant portal.

7.Project proposal reviewed and subsequently accepted to be funded by Horizon 2020 European Union.

8.Submit your project proposal to the European Commission

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Insect-borne prokaryote-associated diseases are seriously affecting the trade and import of agricultural products and materials worldwide.

1. **Lethal yellowing in palms,** (*'Candidatus* Phytoplasma' species)
2. **Yellows in grapevines,** (*'Candidatus* Phytoplasma' species)
3. **Huanglongbing** in citrus (*'Candidatus* Liberibacter' species)

- These are severe infectious diseases that have been recently described, and for their effective, efficient and sustainable management there was the need to fill important knowledge gaps.

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Citrus "huanglongbing"
Coconut lethal yellowing
Grapevine yellows

Citrus Greening

Coconut Lethal yellowing

Grapevine yellows

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TROPICSAFE

Insect-borne prokaryote-associated diseases in tropical and subtropical perennial crops

Generate new knowledge

Obtaining data and information on insect-borne prokaryote-associated diseases, their epidemiological cycles, insect vectors and alternative host plants

Reduce environmental impact of control measures

Developing rapid and reliable innovative methods for detecting pathogens and devising integrated pest

Achieve socio-economical sustainability

Scaling up demonstration activities and field trials, aimed to improve livelihoods of farmers, agricultural

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Insect-borne prokaryote-associated diseases in tropical and subtropical perennial crops

Twenty–two partners from twelve different countries involved

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TROPICSAFE specific objectives were the following:

1

Obtain updated data and information on **Lethal Yellowing** (LY), **Huanglongbing** (HLB) and **Grapevine Yellows** (GY) diseases in the selected countries. It was done by identifying the pathogens associated with these diseases, their alternative host plants and insect vectors.

2

Generate new and deeper knowledge on **epidemiological cycles of the studied diseases** in subtropical and tropical areas. Plant and insect hosts potentially involved were identified.

3

Develop advanced **Integrated Pest Management and New Pest Management strategies**, to reduce the environmental impact of plant protection strategies, prevent the selected pathogens and pests from entering the UE and contain them to prevent spread in countries already infected. Knowledge about germplasm susceptibility/resistance characteristics was also improved.

4

Develop rapid and reliable methods for detecting pathogens and identifying insect vectors **to reduce cost and environmental impact of phytosanitary control measures** (field-validated protocols for early, cheap and specific pathogen detection)

5

Evaluate the **socio-economic sustainability and feasibility of the new technologies** and Integrated Pest Management strategies (IPM) (scale-up of the demonstration activities, field trials: comparison before and after the innovation introduction, costs estimation related to the adoption of the new practices, study of distributive effects on different social classes)

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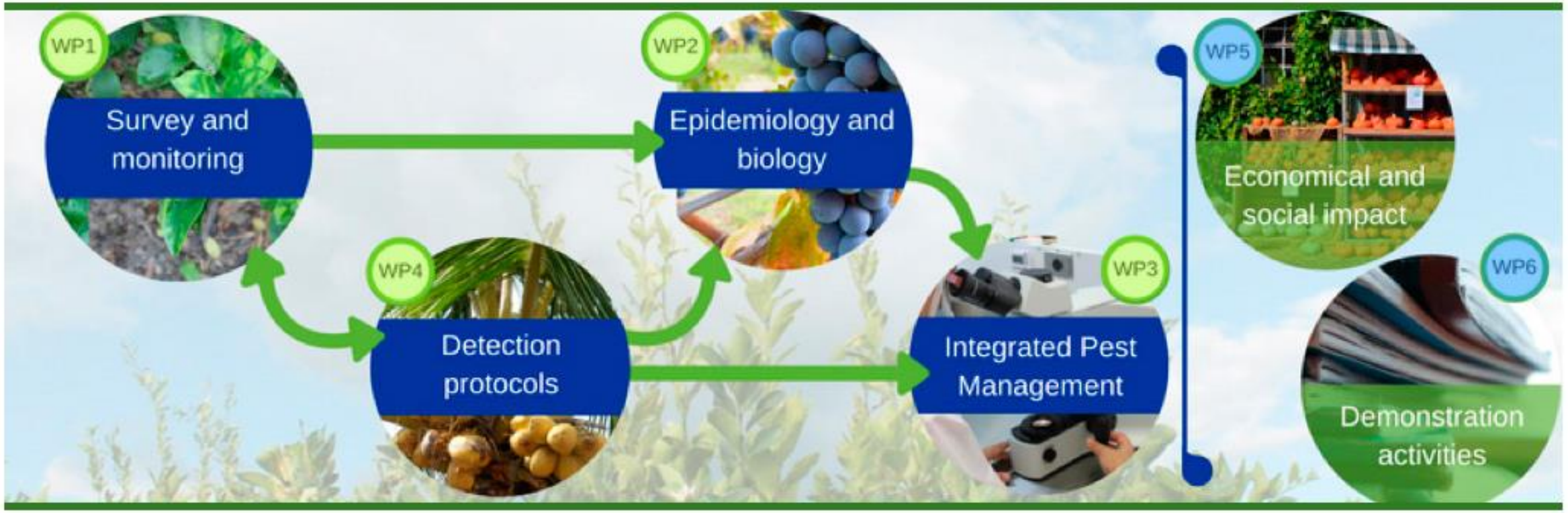
Work Plan



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Partners

Alma Mater Studiorum – Università di Bologna | UNIBO

Council for Agricultural Research and Economics | CREA

University of Nottingham Plant Sciences | UNOTT

Coconut Industry Board | CIB

University of Pretoria | UP

Cooperativa Agrícola y Vitivinícola Loncomilla Ltda. | CAVL

Centro de Investigación Científica de Yucatán A.C. | CICY

Council for Scientific and Industrial Research – Oil Palm Research (Coconut Program) | CSIR- OPRI

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Colegio de Postgraduados | COLPO

Stellenbosch University | SUN

AGRITEST SRL | AGRI

AARHUS UNIVERSITY | AU

NATIONAL INSTITUTE OF BIOLOGY | NIB

UNIVERSIDAD DE CHILE, FACULTAD DE CIENCIAS AGRONÓMICAS | UCHIL

RESEARCH INSTITUTE IN TROPICAL FRUIT GROWING | IIFT

Fundación Empresa Universidad Gallega | FEUGA

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CENTRE DE COOPÉRATION INTERNATIONAL EN RECHERCHE AGRONOMIQUE POUR LE DÉVELOPPMENT | CIRAD

INSTITUTO VALENCIANO DE INVESTIGACIONES AGRARIAS | IVIA

ECOPRODUCTORES DEL TRÓPICO HÚMEDO, ASOCIACIÓN CIVIL | ECOTH

SSOFWI | ASSO

VINPRO | VINPR

PATHO SOLUTIONS (PTY) Lt | PTHSL

TROPICSAFE partners

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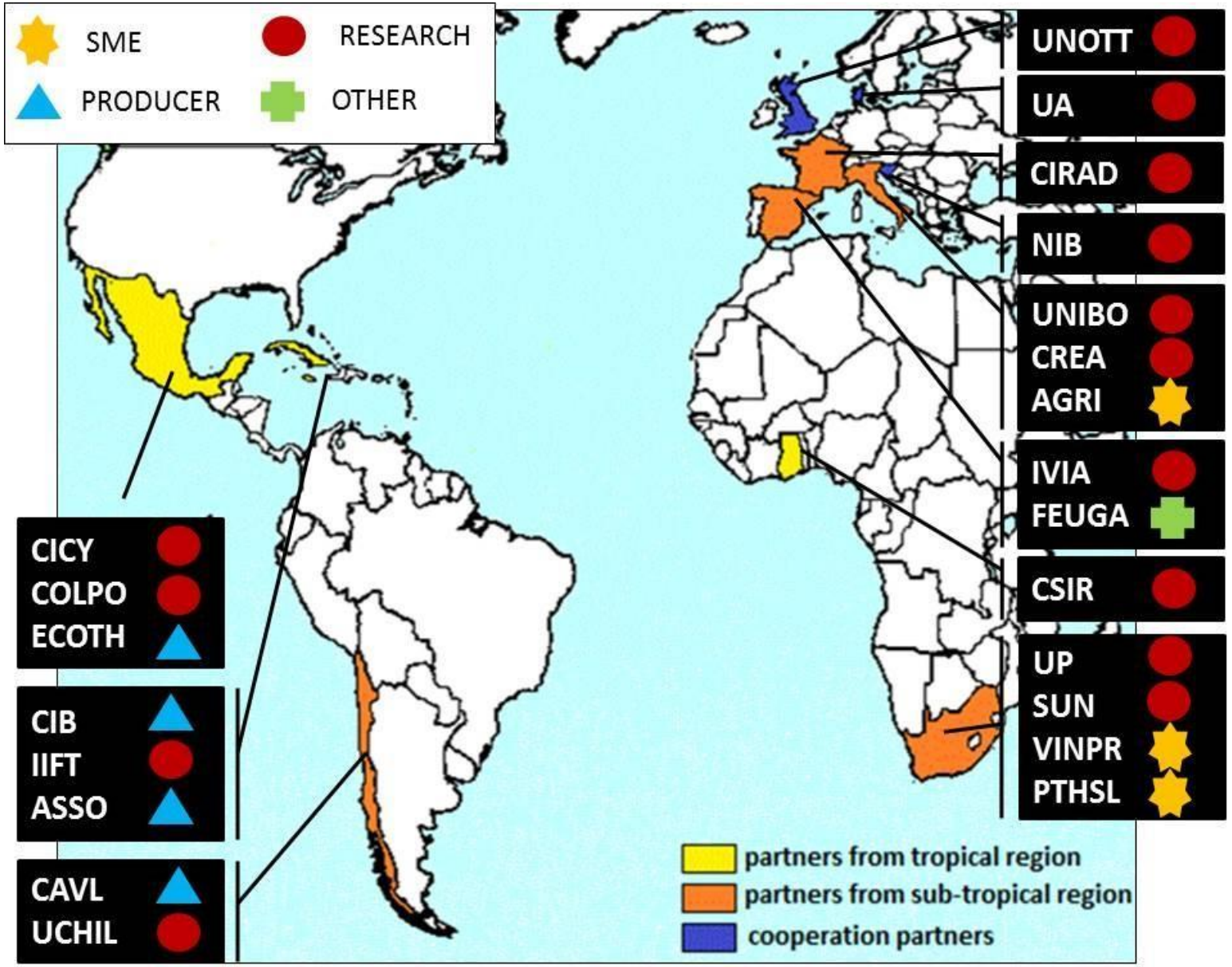

SURVEY ON CASE STUDIES COUNTRIES

IDENTIFICATION OF DISEASE VECTORS AND BIOLOGICAL CYCLES

DEFINITION AND FIELD VALIDATION OF IPM STRATEGIES AND IDENTIFICATION TOOLS

INNOVATION

- LOSSES REDUCTION
- ENVIROMENTAL IMPACT REDUCTION
- SOCIAL BENEFITS
- INCREASED CONSUMER SAFETY

IMPACT

Publication

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727459

Guidelines explain the rules on open access to scientific peer reviewed publications and research data that beneficiaries have to follow in projects funded or co-funded under Horizon 2020

WHAT IS OPEN ACCESS?

Open access (OA) refers to the practice of providing online access to scientific information that is free of charge to the end-user and reusable.

In the context of research and innovation, 'scientific information' can mean:

1. peer-reviewed scientific research articles (published in scholarly journals) or
2. research data (data underlying publications, curated data and/or raw data).

Open Access to Scientific Publications

"The European Research Council supports the basic principle of Open Access to research data. It therefore recommends to all its funded researchers that they follow best practice by retaining files of all the research data they have produced and used during the course of their work, and that they be prepared to share these data with other researchers whenever they are not bound by copyright restrictions, confidentiality requirements, or contractual clauses."

H2020 Programme Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020

Publication

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TWO MAIN ROUTES TO OPEN ACCESS

A. **Self-archiving / 'green' open access** – the author, or a representative, archives (deposits) the published article or the final peer-reviewed manuscript in an online repository before, at the same time as, or after publication. Some publishers request that open access be granted only after an embargo period has elapsed.

B. **Open access publishing / 'gold' open access** - an article is immediately published in open access mode. In this model, the payment of publication costs is shifted away from subscribing readers. The most common business model is based on one-off payments by authors. These costs, often referred to as Article Processing Charges (APCs) are usually borne by the researcher's university or research institute or the agency funding the research. In other cases, the costs of open access publishing are covered by subsidies or other funding models.

Misconceptions about open access to scientific publications

In the context of research funding, open access requirements do not imply an obligation to publish results. The decision to publish is entirely up to the grant beneficiaries. Open access becomes an issue only if publication is chosen as a means of dissemination.

H2020 Programme Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020

Publication

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WHY HAVE OPEN ACCESS TO PUBLICATIONS AND DATA IN HORIZON 2020?

The Europe 2020 strategy for a smart, sustainable and inclusive economy underlines the central role of knowledge and innovation in generating growth. Broader access to scientific publications and data therefore helps to:

- **Build on previous research results (improved quality of results)**
- **Encourage collaboration and avoid duplication of effort (greater efficiency)**
- **Speed up innovation (faster progress to market means faster growth)**
- **Involve citizens and society (improved transparency of the scientific process).**

This means making publicly-funded scientific information available online, at no extra cost, to European researchers, innovative industries and the public, while ensuring that it is preserved in the long term.

MANDATE ON OPEN ACCESS TO PUBLICATIONS

Article 29.2 of the Model Grant Agreement sets out detailed legal requirements on open access to scientific publications: **under Horizon 2020, each beneficiary must ensure open access to all peer-reviewed scientific publications relating to its results.**

H2020 Programme Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020

	A	B	C	D
1	A new species of planthopper belonging to the genus Oecleus Stål, 1862 (Hemiptera: Fulgoroidea: Cixiidae) from coconut palm (Cocos nucifera L) in Jamaica			
2	DOI. Please check or correct the information about the publication and fill-in the additional information. If no DOI has been imported from OpenAIRE, and a DOI for the publication exists, it is recommended to start by specifying it. Please note that data that were imported from OpenAIRE or linked to the DOI are read-only.			
3	Type of publication	Publication in Conference proceedings/workshop		
4	Repository Link. 'Repository link': link to a copy of the published version or the author's accepted manuscript that has been deposited in a repository for scientific publications, or to a page within that repository providing access to the deposited version (possibly after the end of an embargo period, where applicable). This is NOT a link to the publication on the journal / publisher website, and it is NOT a link to a personal or institutional homepage where the publication may have been posted.	https://doi.org/10.11646/zootaxa.4712.1.9		
5	Link to the publication. If the publication doesn't have a DOI, please enter a link to the publication on the journal/publisher website	https://doi.org/10.11646/zootaxa.4712.1.9		
6	Title	coconut palm (Cocos nucifera L) in Jamaica		
7	Authors	*WAYNE MYRIE, ERICKA E. HELMICK, CHARLES R. BARTLETT, ASSUNTA BERTACCINI, BRIAN W. BAHDER*		
8	Title of the Journal/Proceedings/Books series/Book (for book chapters)	Zootaxa		
9	Number, date or frequency of the Journal/Proceedings/Book	No. 1; Vol 4712		
10	Relevant Pages	127-137		

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B3 Publication in Conference proceedings/workshop

	A	B	C	D
9	Number, date or frequency of the Journal/Proceedings/Book	No. 1; Vol 4712		
10	Relevant Pages	127-137		
11	ISSN/eISSN	1175 5326/1175-5334		
12	Publisher	Magnolia Press		
13	Place of Publication	Auckland, New Zealand		
14	Year of publication	2019		
15	Is this publication available in Open-Access, or will it be made available?	Yes, available in Green Open Access		
16	Length of the Embargo, if any. To fill if you answer Green Open Access.	Always		
17	Processing charges for Gold Open Access. The total amount charged fort the publisher.	no		
18	Is this a peer-reviewed publication?	yes		
19	Is this a joint public/private publication? Both the joint publications coming from public and private project participants as well as from private/public project participants with public/private organisations outside the consortium (as long as they are related to the funded project) should be reported	no		
20				
21				
22				
23	Aricle in Journal			
24	Publication in Conference proceedings/workshop			
25	Book/Monograph			

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Online Manual

My Area — User account and roles

Grants

Applying for funding

Find a call | Find partners | Register an organisation | Submit a proposal

Evaluation & Grant signature

Admissibility and eligibility check | Evaluation of proposals | Grant preparation | Grant signature

Grant management

Keeping records | Amendments | Reports & payment requests | Deliverables & milestones

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the time the employee actually spent on the action and provided that this is recorded reliably.

Example 4 (part-time use of the research infrastructure for the action):

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INTELLECTUAL PROPERTY RIGHT

- If the project involves, uses or generates information that should not be made public (e.g. commercially sensitive information, business or trade secrets, confidential market data, valuable results not yet protected by **intellectual property rights,** security-sensitive information, etc), it should be identified and handled as 'sensitive' in accordance with the provisions in Article 13.1

- Best practice: In order to avoid issues, it is recommended that beneficiaries inform each other and the granting authority in case they know about laws that would require disclosing sensitive information. This can allow to work together to minimise any negative effects.

- **The right to use the beneficiaries' materials, documents and information is granted in the form of a royalty-free, non-exclusive and irrevocable licence,** for the whole duration of the industrial or intellectual property rights concerned.

- **Beneficiaries may ask the granting authority to include a copyright notice (e.g. by including such a notice in the material).**

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INTELLECTUAL PROPERTY

Ownership of results

- **The granting authority does not obtain ownership of the results** produced under the action. 'Results' means any tangible or intangible effect of the action, such as data, know-how or information, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights.

ARTICLE 16 — INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS —ACCESS RIGHTS AND RIGHTS OF USE 16.1

Background and access rights to background

The beneficiaries must give each other and the other participants access to the background identified as needed for implementing the action, subject to any specific rules.

'Background' means any data, know-how or information — whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights — that is: - If background is subject to rights of a third party, the be**held by the beneficiaries before they acceded to the Agreement and - needed to implement the action or exploit the results.** neficiary concerned must ensure that it is able to comply with its obligations under the Agreement.

Lethal yellowing

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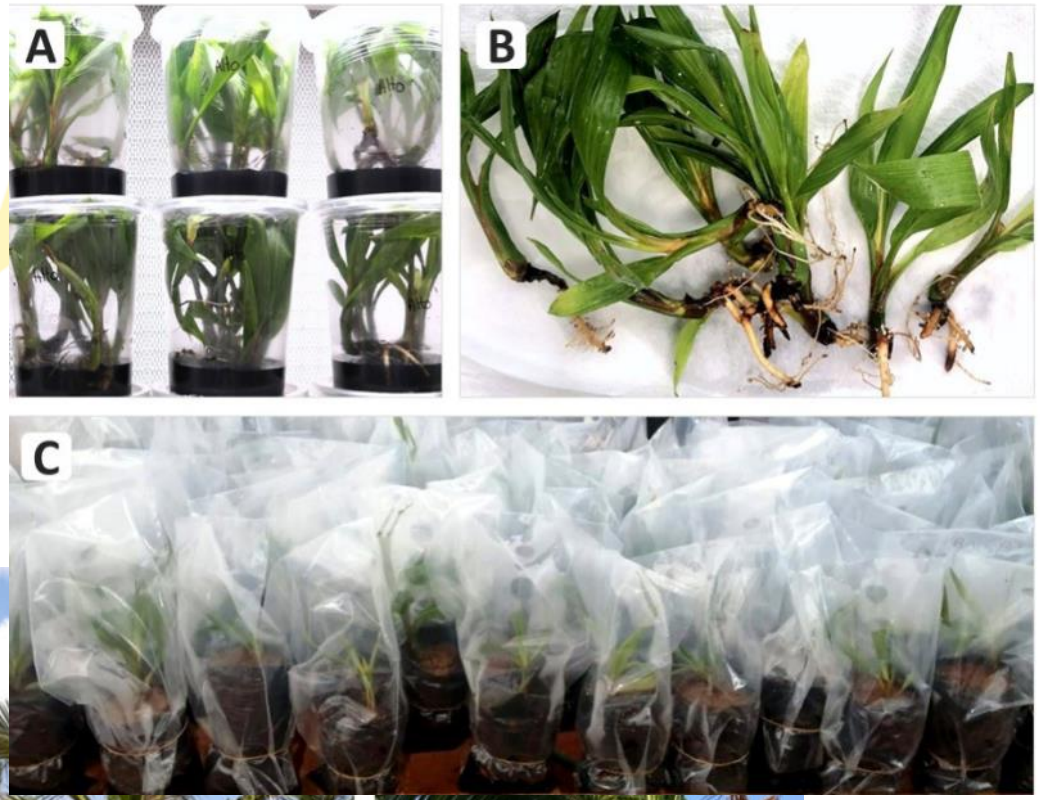
America

'Candidatus Phytoplasma palmae' (16SrIV-A, -D)

Cuba - Jamaica & Mexico



Lethal yellowing

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Africa

'Candidatus Phytoplasma palmicola' (16SrXXII-A, -B)

Ghana & Mozambique

Putative insect vectors and alternative host plants for the phytoplasmas were identified. A specific LAMP test for in field detection of phytoplasmas was produced and validated in order to find and eliminate infected plants as soon as possible.

Four dwarf varieties under evaluation resulted not infected and agronomically suitable to recovery coconut industry

Grapevine yellows

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America

'Candidatus Phytoplasma pruni' (16SrIII-J)

Chile

Leafhoppers vectors of 16SrIII-J phytoplasmas were identified using experimental transmission trials with insects captured in the infected Chilean vineyards

The plants used in the transmission trials and positive for phytoplasmas, start to show symptoms two months after the beginning of the trials

These information allowed to produce specific management practice to contain the disease spreading

Grapevine yellows

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Africa

'Candidatus Phytoplasma asteris' (16SrI-B)

South Africa

In South Africa, the epidemiological cycle encloses *Mgenia fuscovaria*. Bermuda grass and *Aconeurella prolixa* detected positive for 16SrI-B phytoplasmas suggest an hypothetic cycle that include grapevine and different poaceous hosts

A '*Ca*. P. asteris' strain. Specific management plans were produced and disseminated to be applied to contain the disease spreading

Some specific phytoplasma detection methods (LAMP and IFAS) were developed and validated to be applied in field for early pathogen detection

Grapevine yellows

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Europe

'Candidatus Phytoplasma solani' & "flavescence dorée"

Italy

Genotyping and sequencing to find molecular markers linked to resistance were done using crossed F1 progenies between susceptible and scarcely susceptible varieties

An ELISA protocol was developed for "flavescence dorée" phytoplasmas detection and discrimination between his two main epidemic strains (FD-C and FD-D) it was validated under diverse laboratory conditions on diverse plant and insect species materials

The test can be used for wide surveys in fields in order to detect and eliminate the infected plants and also to reduce the infected insect vectors to allow the collection of propagation materials only in areas where the disease is not present

Thank you for your attention

Wayne Myrie

Coconut Industry Board, Kingston, Jamaica

waynemyrie@hotmail.com,

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