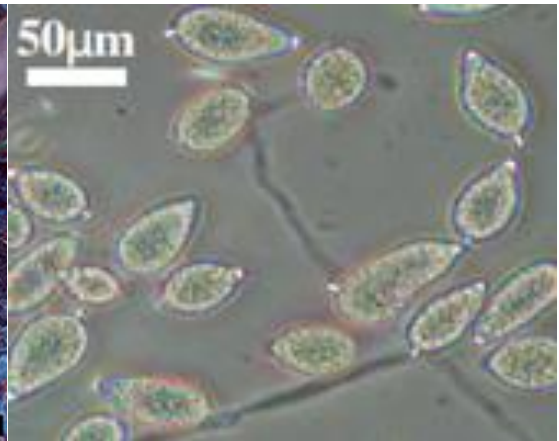
ESPAMMFL

ESCUELA SUPERIOR POLITÉCNICA AGROPECUARIA DE MANABÍ MANUEL FÉLIX LÓPEZ

- **Situación actual de *Phytophthora palmivora* en cultivos de importancia agrícola**

- Sergio Miguel Vélez Zambrano, Jefferson Vélez Olmedo, Jennifer Nathalie Decloquement

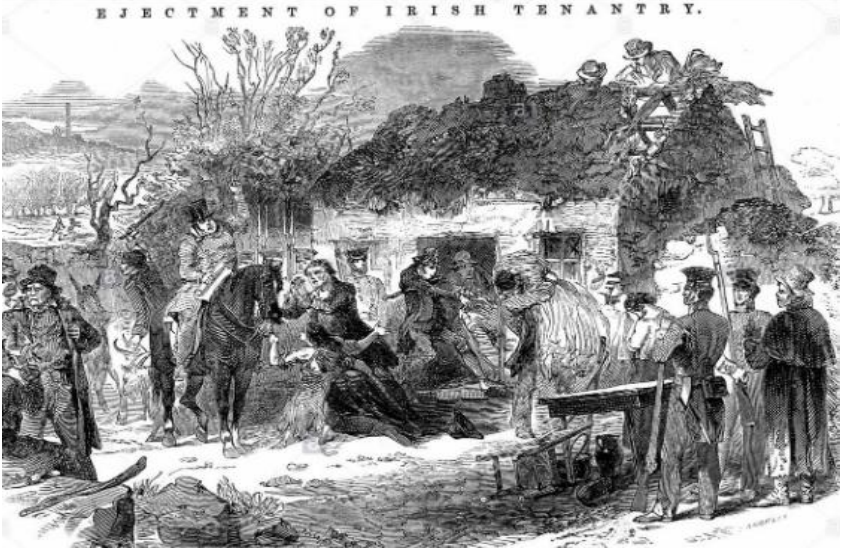




Tópicos

- Historia
- Diferencias de Oomycota con Reino Fungi
- Taxonomía
- Hospederos, Distribución geográfica
- Identificación
- Situación en cultivos
- *Phytophthora palmivora* en cacao

Historia de *Phytophthora*



- Anthon de Bary
- *Phytophthora infestans* (tizón tardío)
- Phyton= planta, phthora=destructor
- 1845-1849
- ¼ da población de Irlanda (1 millón muertas y 2 millones emigraron

botit.botany.wisc.edu

www.britannica.com

SINTOMAS

P. Infestans **papa**

P. Cinnamomi **aguacate**

P. citrophthora **cítricos**

P. nicotianae **en fresa**

Phytophthora **spp cacao**

Marris, 2009

Kubertli et al., 2018

Diferencias de Oomycota con Reino Fungi

Rossman, 2006

Table 1. Major distinctions between the Oomycota in the Chromista and the true Fungi (Chytridiomycota, Glomeromycota, Zygomycota, Ascomycota, Basidiomycota)

Character	Oomycota	True Fungi
Product of sexual reproduction	Produces oospores	Oospores not produced; sexual reproduction results in zygospores, ascospores or basidiospores
Nuclear state of vegetative mycelium	Diploid	Haploid or dikaryotic
Cell wall composition	Beta glucans-cellulose	Chitin, cellulose rarely present
Type of flagellae on zoospores, if produced	Heterokont, of two types, one whiplash directed posteriorly, the other fibrous, ciliated directed anteriorly	If flagellae produced, usually of only one posterior whiplash type
Mitochondria	With tubular cristae	With flattened cristae

TAXONOMIA

Clasificación taxonómica

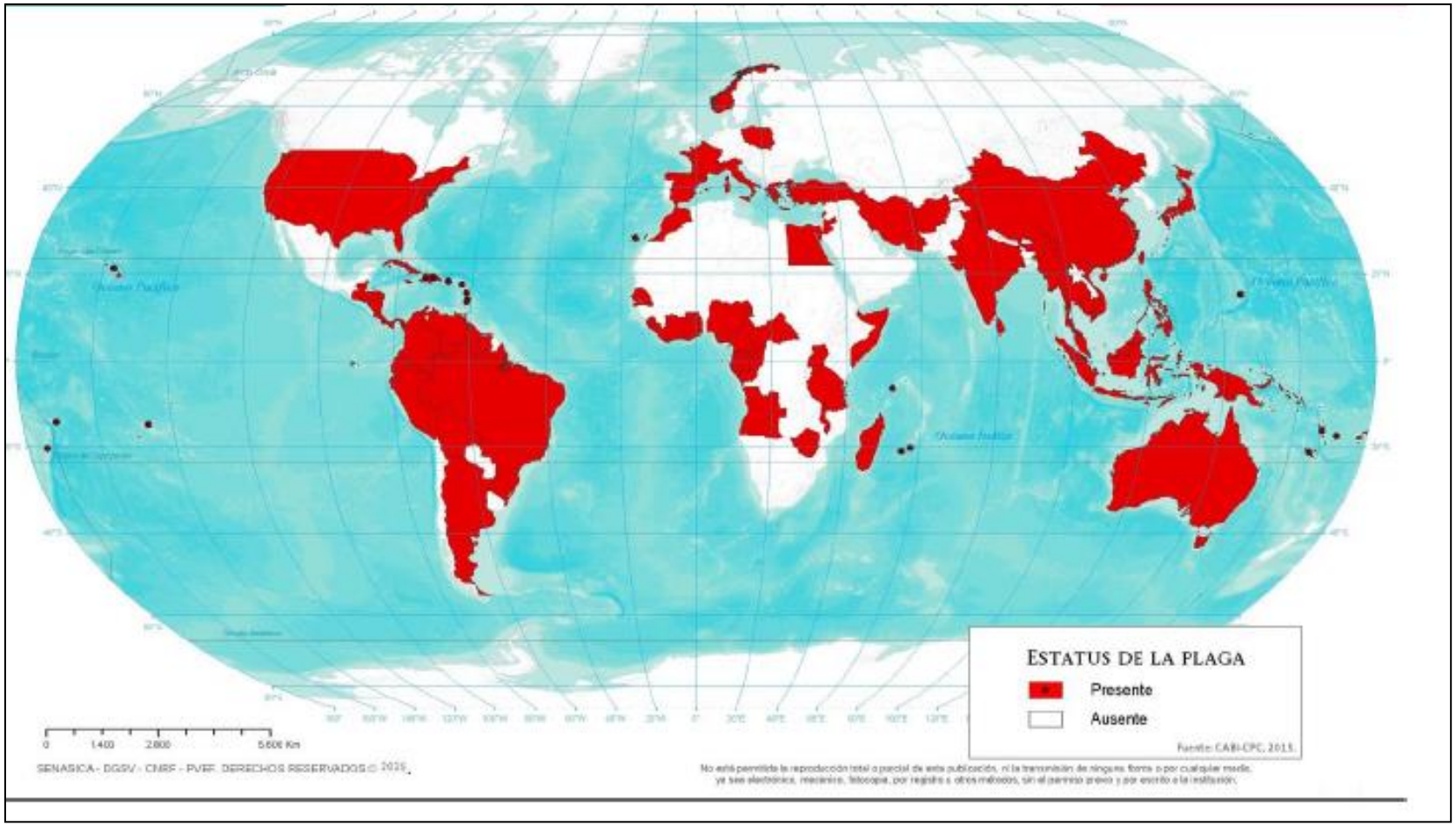
Dominio: Eucarya
Reino: Chromista
Phylum: Oomycota
Clase: Oomycetes
Orden: Peronosporales
Familia: Peronosporaceae
Género: *Phytophthora*
Especie: *P. palmivora*

Hospederos

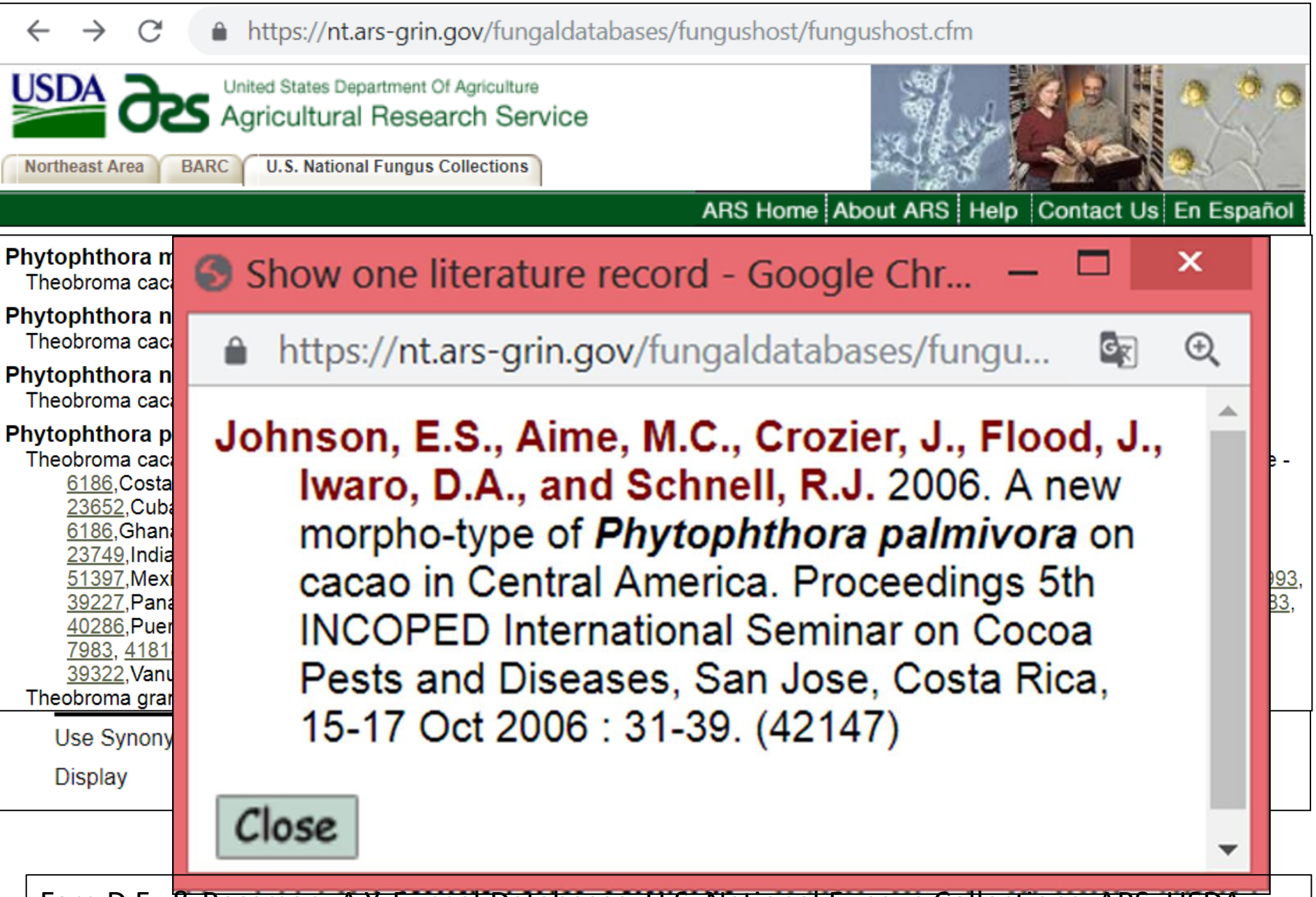
Host Latin Name	Host Common Name	Symptoms	Habitat	Region
Acacia mangium	Brown salwood	Canker	Forest	Indonesia
Acer rubrum	Red maple	Canker, Root rot	Forest	Canada, USA
Artocarpus altilis	Breadfruit	Blight, Fruit rot	Forest	American Samoa, India
Borassus flabellifer	Palmyra palm	Bud rot	Agricultural setting, Forest	India
Carica papaya	Papaya, Pawpaw	Canker, Fruit rot, Root rot	Agricultural setting	American Samoa, Australia, Brazil, Hawaii, Mexico, Spain, Sri Lanka, Taiwan
Citrus spp.	Citrus	Collar rot, Fruit rot, Root rot	Agricultural setting	India, Japan, USA - Florida
Cocos nucifera	Coconut palm	Bud rot, Fruit rot	Agricultural setting	India, Indonesia, Jamaica, Pacific Islands, Philippines, USA - Florida
Durio spp.	Durian	Fruit rot, Leaf necrosis, Root rot	Agricultural setting	Australia, Indonesia, Malaysia, Thailand
Hevea brasiliensis	Rubber	Canker, Dieback, Leaf necrosis	Agricultural setting	Brazil, China, Côte d'Ivoire, India, Malaysia, Nigeria, Philippines, Sri Lanka, Thailand, Vietnam
Mangifera indica	Mango	Canker, Collar rot, Root rot, Seedling disease	Agricultural setting	India, Philippines
Piper nigrum	Black pepper	Collar rot, Root rot	Agricultural setting	Asia - SE, Caribbean, Pacific Islands, South America
Theobroma cacao	Cacao	Canker, Fruit rot	Forest	Brazil, Cameroon, Costa Rica, Nigeria, Puerto Rico, Sri Lanka, Vietnam

Widmer 2014

DISTRIBUCIÓN GEOGRÁFICA



Phytophthora?



Farr, D.F., & Rossman, A.Y. Fungal Databases, U.S. National Fungus Collections, ARS, USDA. Retrieved July 16, 2019, from https://nt.ars-grin.gov/fungaldatabases/

Record Details:

Phytophthora palmivora var. theobromae (L.C. Coleman) Orellana, *Phytopathology* **49**: 212 (1959)

Editorial comment:
The generic name in this combination is not considered to apply to an organism within the fungal clade

Basionym:
Phytophthora theobromae L.C. Coleman 1910

Citations in published lists or literature:
Index of Fungi 2: 517 **Page Image in Published List**

Position in classification:
Peronosporaceae, Peronosporales, Peronosporidae, Peronosporea, Incertae sedis, Oomycota, Chromista

Species Fungorum current name:
Phytophthora palmivora (E.J. Butler) E.J. Butler 1919

GSD:
Species Fungorum synonymy

Index Fungorum Registration Identifier 352397; click here to update this record

Index Fungorum UUID: {43B9FDA6-2960-4246-8E47-6B0FD0B7B6AF}

Please contact Paul Kirk if you have any additions or errors to report. Data contributors.

Kirk et al., 2019

Phytophthora palmivora (isolate P80) 18S ribosomal RNA (18S rRNA), 5.8S ribosomal RNA (5.8S rRNA), and 28S ribosomal RNA (28S rRNA) genes

GenBank: L41384.1

FASTA Graphics

Go to:

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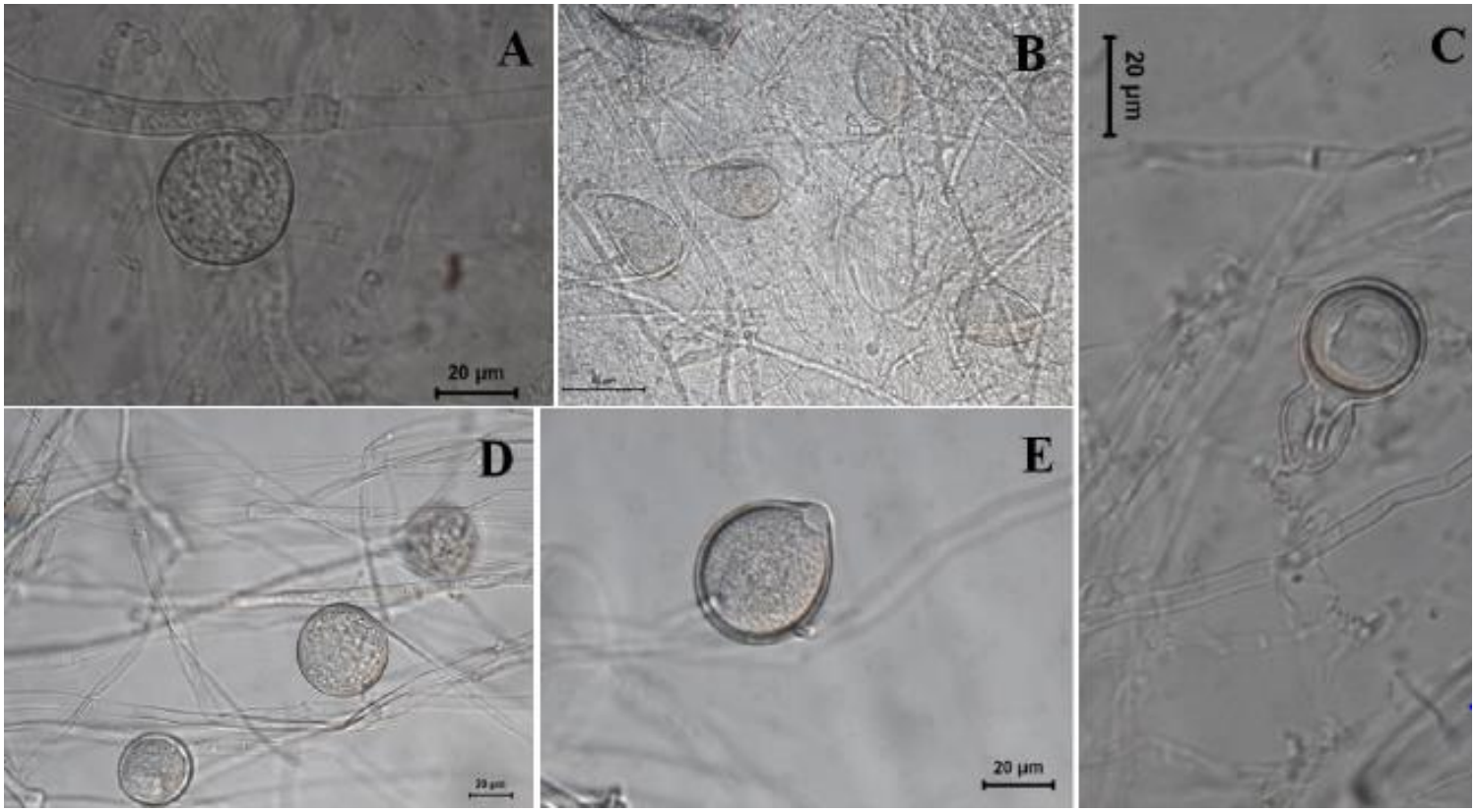
LOCUS       L41384                   827 bp    DNA     linear   PLN 01-JUL-2005
DEFINITION  Phytophthora palmivora (isolate P80) 18S ribosomal RNA (18S rRNA),
            5.8S ribosomal RNA (5.8S rRNA), and 28S ribosomal RNA (28S rRNA)
            genes.
ACCESSION   L41384
VERSION     L41384.1
KEYWORDS    18S ribosomal RNA; 28S ribosomal RNA; 5.8S ribosomal RNA; internal
            transcribed spacer 1; internal transcribed spacer 2; ribosomal RNA.
SOURCE      Phytophthora palmivora
  ORGANISM  Phytophthora palmivora
            Eukaryota; Stramenopiles; Oomycetes; Peronosporales; Phytophthora.
REFERENCE   1  (bases 1 to 827)
  AUTHORS   Crawford,A.R., Bassam,B.J., Drenth,A., Maclean,D.J. and
            Irwin,J.A.G.
  TITLE     Evolutionary relationships among Phytophthora species deduced from
            rDNA sequence analysis
```

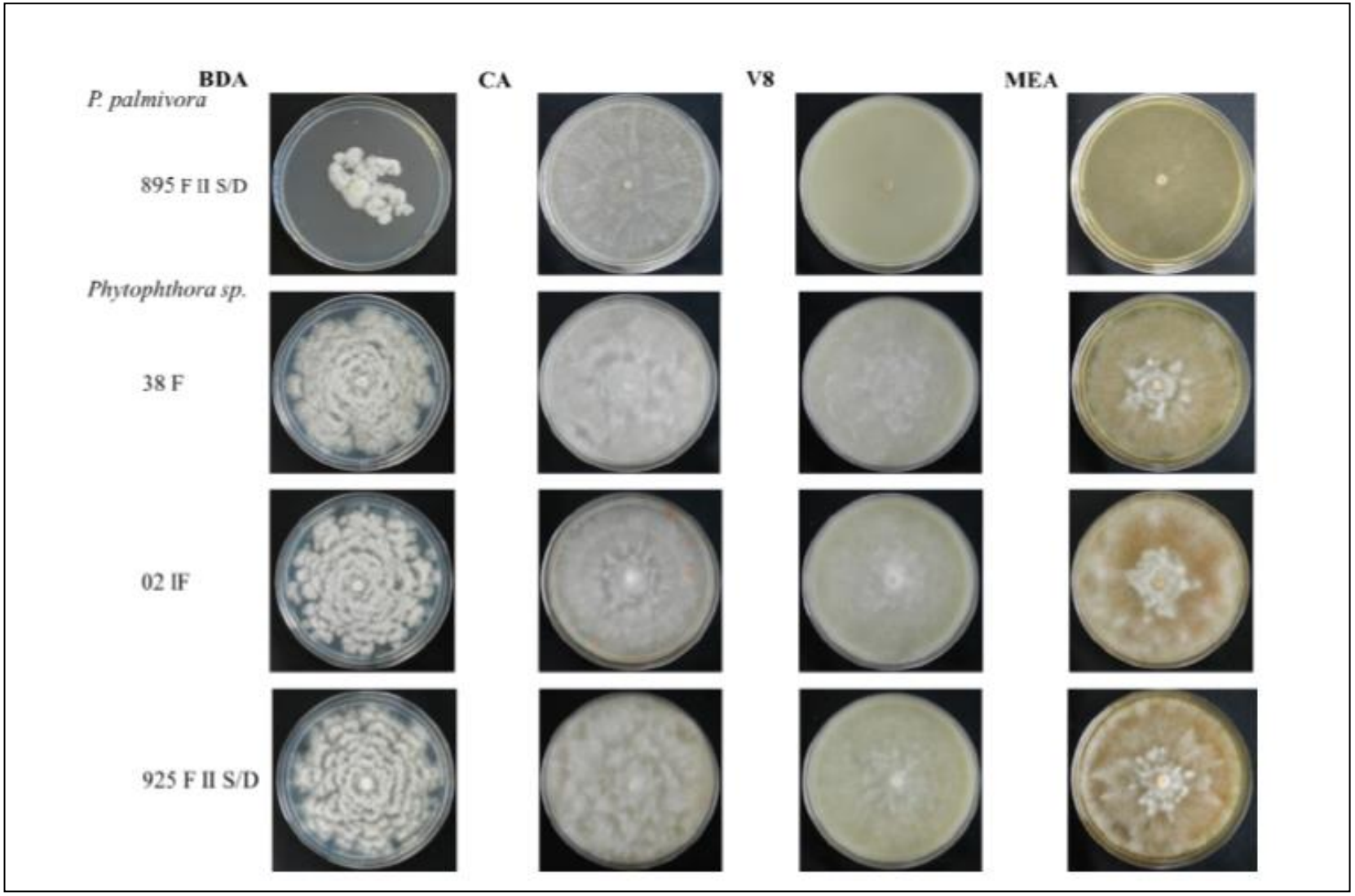
Identificación morfológica

- Zentmyer 1976, en base a esporangios.
- Tamaño y forma de esporangios, papilas, clamidosporas



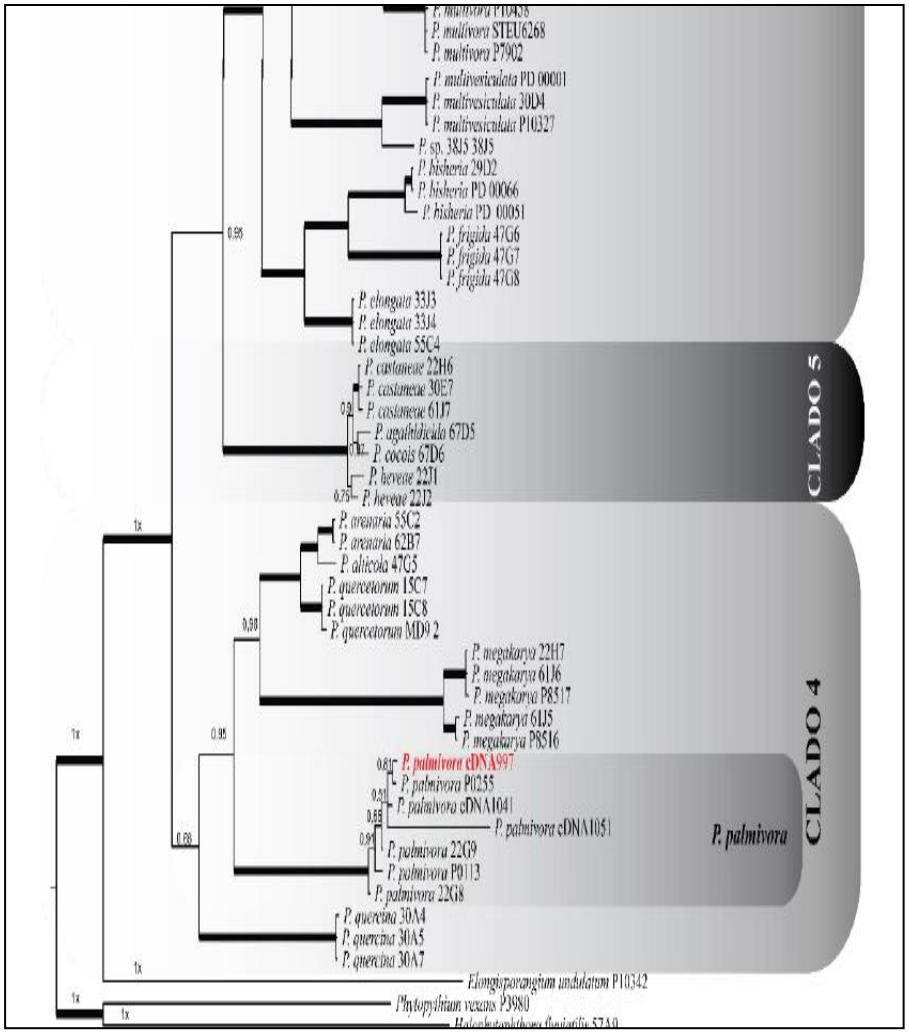
Decloquement 2018

Caracterización cultural



Identificación molecular

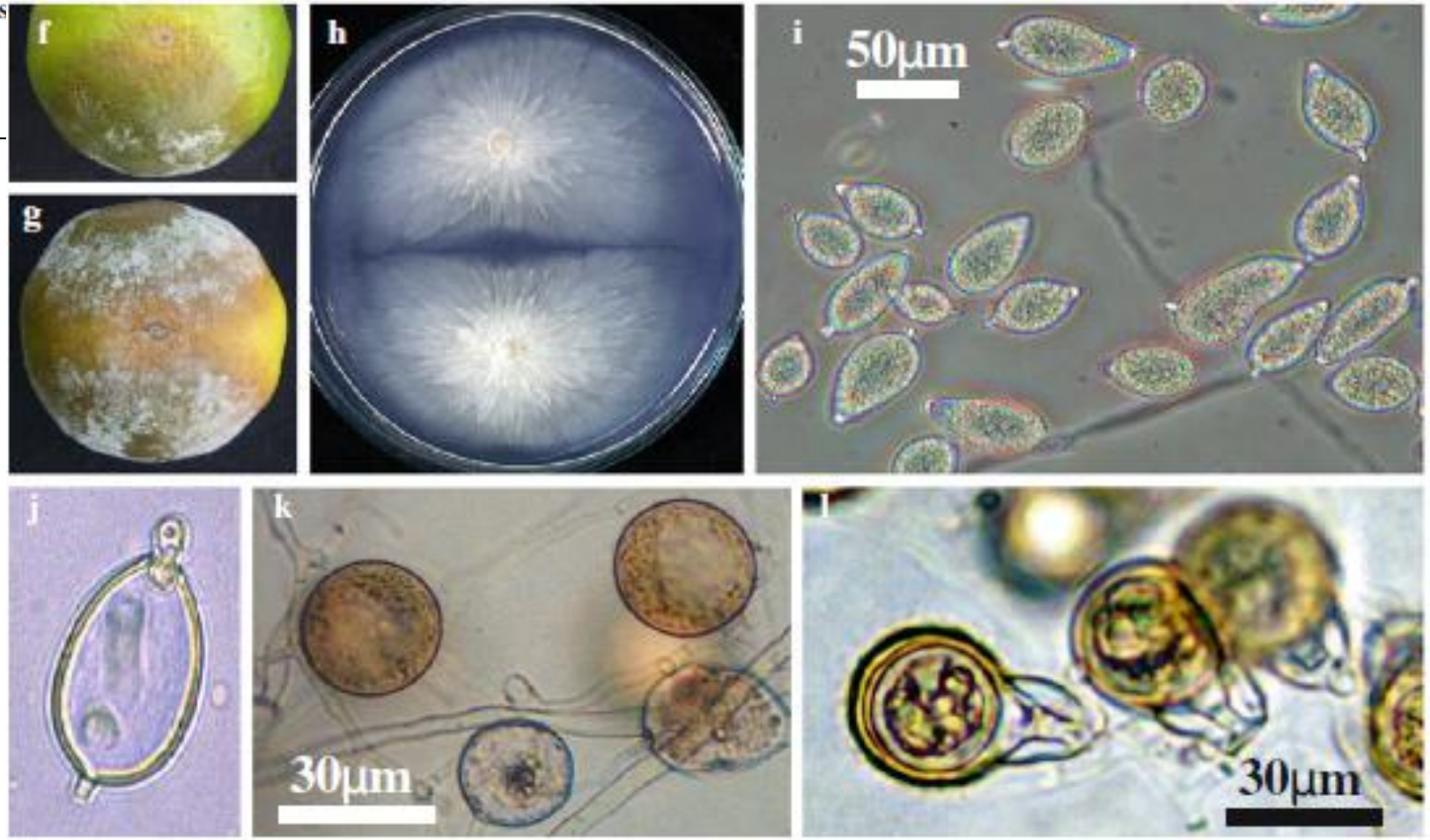
- Morfológica puede ser difícil
- Se usó proteínas totales, isoenzimas, polimorfismos de adn y arn, serología
- Abordaje multigénica
- β-tubulina **(β-tub),** Citocromo Oxidasa Subunidad II **(COXII),** Fator de Elongación 1α **(EF1α)**, *Internal Transcribed Spacer* **(ITS)** e *Heat Shock Protein* 90 **(HSP90)**



DISEASE NOTE

First report of *Phytophthora palmivora* as a causal pathogen of citrus brown rot in Japan

Nobuya Tashiro · Seiji Uematsu · Youichi Ide · Masafumi Mats



Can. J. Plant Pathol., 2015
Vol. 37, No. 3, 390–396, http://dx.doi.org/10.1080/07060661.2015.1055517

Taylor & Francis
Taylor & Francis Group

Disease report / Rapport des maladies

Fir ed by

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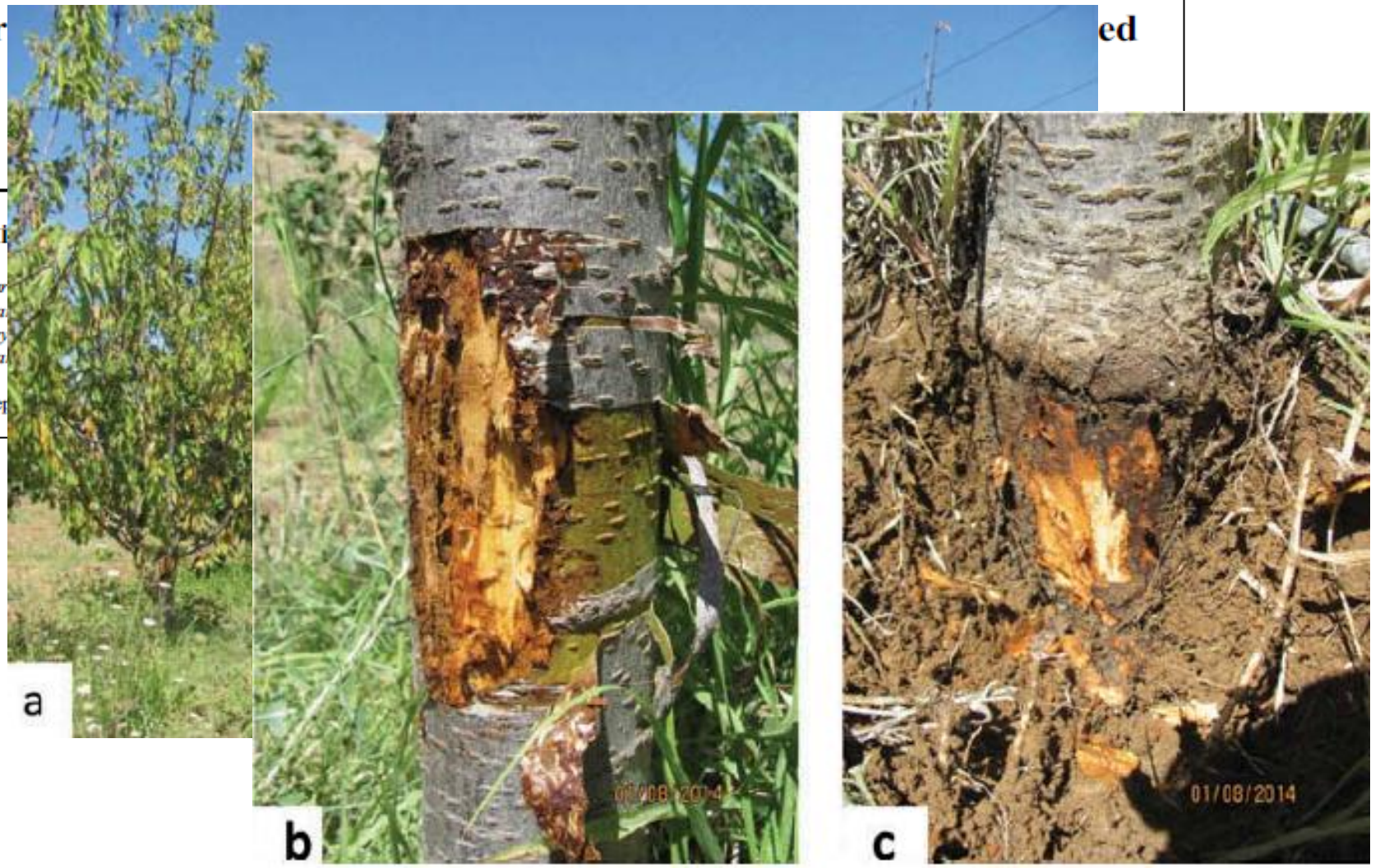
[1]Diyar
[2]Depa
Turkey
[3]Depa

(Accep



Plant Pathology (2007) **56**, 728 Doi: 10.1111/j.1365-3059.2007.01588.x

First report of *Phytophthora palmivora* on olive trees in Argentina

G. Lucer
[a]Universida bo, Italy

SAGARPA
SECRETARÍA DE AGRICULTURA, GANADERÍA, DESARROLLO RURAL, PESCA Y ALIMENTACIÓN

SERVICIO NACIONAL DE SANIDAD, INOCUIDAD Y CALIDAD AGROALIMENTARIA

SENASICA
SERVICIO NACIONAL DE SANIDAD, INOCUIDAD Y CALIDAD AGROALIMENTARIA

Dirección General de Sanidad Vegetal

PUDRICIÓN DEL COGOLLO

Phytophthora palmivora (E.J.Butler) E.J.Butler

Ficha Técnica No. 51

DISEASE NOTES

OPEN

First Report of *Phytophthora palmivora* Causing Bud Rot on Palmito (*Bactris gasipaes*) in Ecuador

M. E. Ordoñez, D. A. Jácome, C. B. Keil, R. J. Montúfar, and T. A. Evans

Affiliations

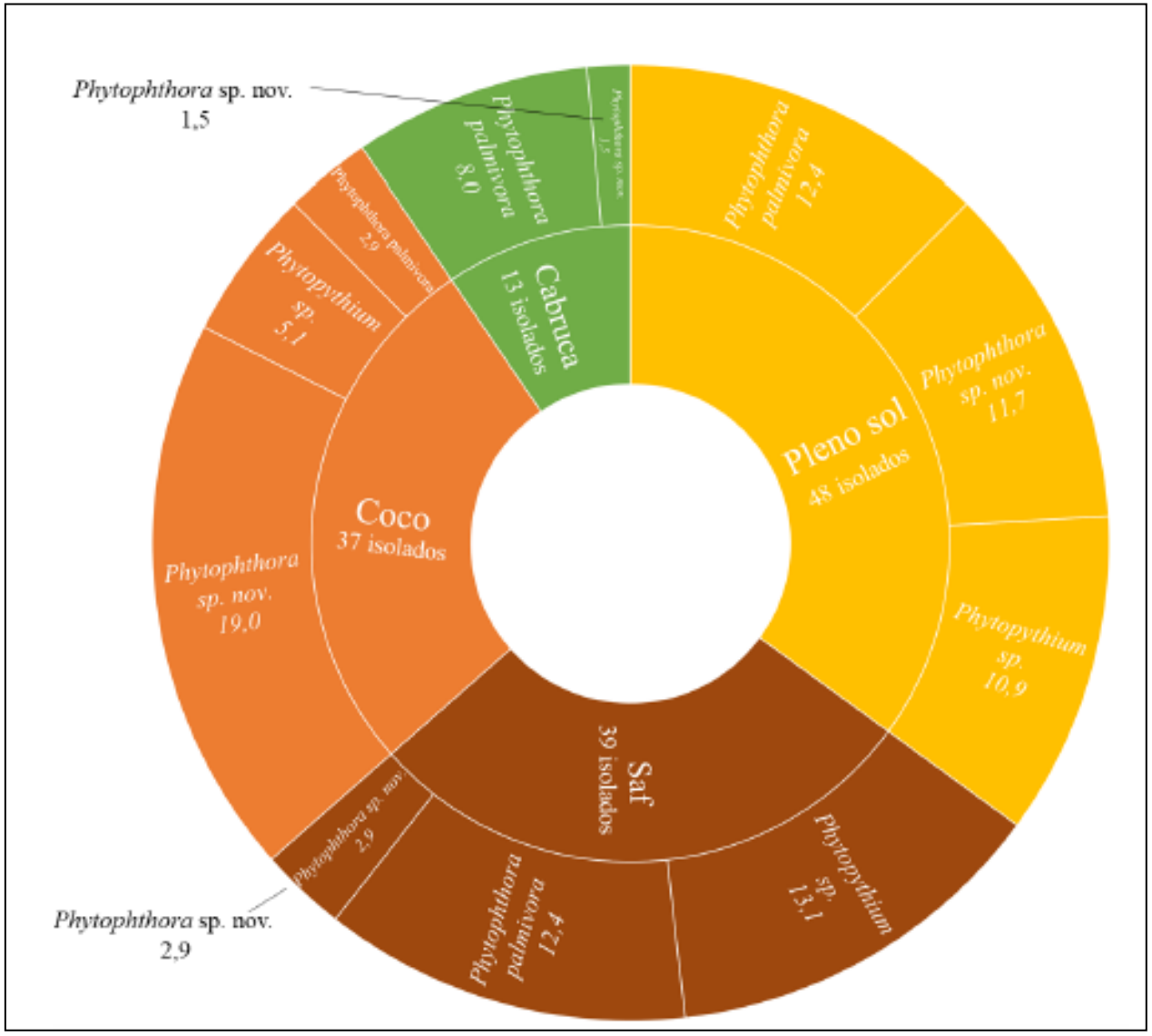
Published Online: 23 Mar 2016 |
https://doi.org/10.1094/PDIS-11-15-1354-PDN

- Santo Domingo de los Tsáchilas
- Plantas con pudrición
- ITS4/ITS6
- 25 plántulas de 3 meses inoculadas con 0,50 mL
- 30000 zoósporos/mL
- 7días síntomas

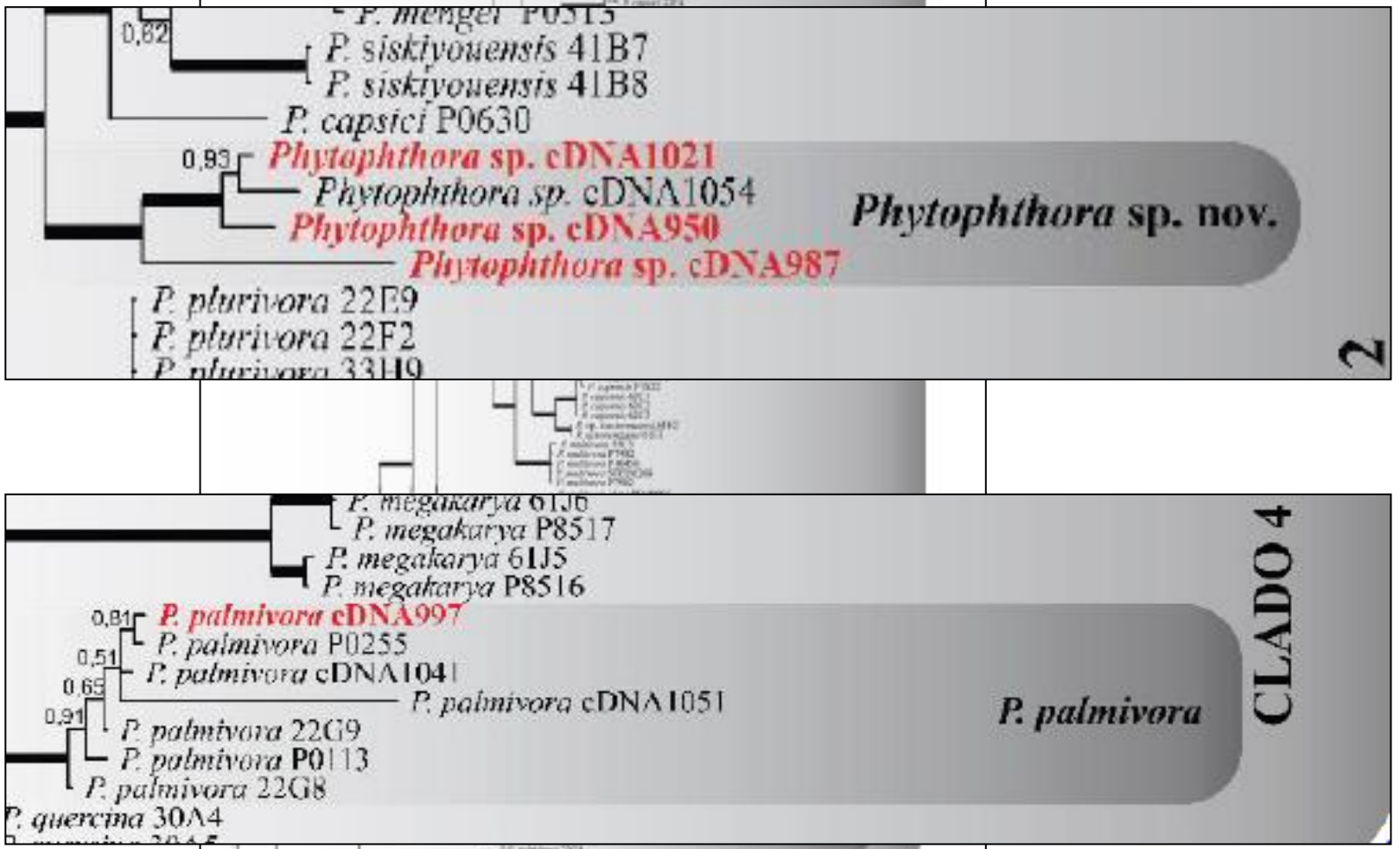
UNB/ESPAM MFL

- *Phytopthora* spp en diferentes sistemas de cultivo
- Aislamientos de frutos enfermos
- Sur del Estado de Bahía
- Amplificación de B-TUB, COXII, EF1α, ITS e HSP90)
- Pruebas de patogenicidad y agresividad en varios clones

Phytophthora en cacao



Decloquement 2018



Decloquement 2018

Ecuador


Océano Pacífico
Colombia
Esmeraldas
Carchi
Imbabura
Sucumbíos
Santo Domingo de los Tsáchilas
Pichincha
Manabí
Napo
Orellana
Cotopaxi
Tungurahua
Los Ríos
Bolívar
Pastaza
Santa Elena
Guayas
Chimborazo
Cañar
Morona Santiago
Azuay
El Oro
Loja
Zamora Chinchipe
Perú
Galápagos
Océano Pacífico


Wizard® SV Genomic DNA
Purification System
Wizard® SV
Wash Solution
Promega

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ESCUELA SUPERIOR POLITÉCNICA AGROPECUARIA DE MANABÍ MANUEL FÉLIX LÓPEZ

MUCHAS GRACIAS

LA GRATITUD ES EL SENTIMIENTO QUE MÁS HUMILDAD CONCENTRA Y MÁS AMOR EXPANDE

miguelvelzam@gmail.com / smvelez@espam.edu.ec
0996678642

Contrato Marco MAE–DNB–CM–2018–0095