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Supporting Agriculture in North America

Guided by Science, Improved Technologies and Science-based Policies

Agriculture and Agri-Food Canada

inifap
nstituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias

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PLANT HEALTH TASK FORCE & FOCUS

PLANT HEALTH

PLANT HEALTH

- Promote joint research projects
- Capacity building and linking specialists and projects for proactive research on invasive pests and diseases
- Promote knowledge sharing on pests/diseases of tri-lateral interest through several means
- Carry out outreach activities with other countries and regions in LAC

Dr. José Isabel López-Arroyo

- Instituto Nacional de Invesgitacionces Forestales Agricola y Pecuarias (INIFAP)

Dr. Della Johnston (Chair)

- Agriculture & Agri-Food Canada (AAFC)

Dr. Tim Widmer

- United States Department of Agriculture – Agricultural Research Service (USDA-ARS)

Dr. Audia Barnett

- Executive Secretary, PROCINORTE, IICA

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PLANT HEALTH TASK FORCE

- Plant Health Task Force (PHTF) was formed in 2011
  - Harmonize protocols and share knowledge for insect identification
- 1st meeting and workshop in Vineland, NJ., 2013
  - focused on Brown Marmorated Stink Bug (BMSB) and parasitoids
- 2014 Workshop in Washington, DC
  - DNA barcoding of insects; tour of USDA-ARS insect collections at the Smithsonian
- 2015 Workshop in Monticello, Mexico
  - Molecular Insect Taxonomy
- 2016 Workshop in Ottawa, ON, Canada
  - Pests & Diseases of Solanaceans in North America: Trilateral approaches for their management
- 2017 Workshop in Beltsville, MD
  - Working Beyond Boundaries to Secure Plant Health and Productivity

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PLANT HEALTH TASK FORCE WORKSHOP 2018

Mérida, Mexico

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Workshop activities

- Over 80 attendees from Mexico, Canada, USA
  - Including ~20 students from local Mexican universities
  - Networking opportunities and collaborations

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- Subject: Vector-borne viruses affecting crops in North America
  - 17 total presentations

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Evolution and Current Status of Whitefly-Transmitted Virus Diseases in Mexico

Sergio R. Sánchez-Peña, Ph.D.
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Universidad Autónoma Agraria Antonio Narro
Saltillo, México
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Universidad Autónoma Agraria Antonio Narro

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CONACYT

U. Georgia

"Silverleaf" of cucurbits
("Hoja Plateada" de cucurbitáceas)
-**Toxin**

U. Cal.

"Sticky cotton" = honeydew and sooty mold
Algodón pegajoso causado por
mielecilla y fumagina

U. Georgia

virus del rizado amarillo del tomate
o "virus de la cuchara" TYLCV

Irregular ripening of tomato –
Madurez Irregular del tomate,
"tomate payaso"
– **Toxin**

VIRUS TRANSMISSION
– Geminivirus (Begomovirus)
Tomato-Pepper-Bean

Agriculture and Agri-Food Canada

Trilateral Workshop

Vector-borne Viruses Affecting Crops in North America

Populations of begomovirus insect vectors and tomato spotted wilt virus in *Capsicum annum* in the Mexican Altiplano

Dr- Jaime MENA COVARRUBIAS (INIFAP Zacatecas)

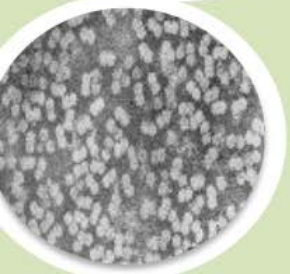
Zacatecas Highlands (Low % Infections)

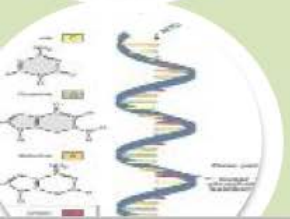
Zacatecas Semi Tropical área
(Jalpa, Huanusco, Tabasco)
High % Infections every year

Durango Highlands
High % Infections 2014, 2016, 2018

TECNOLÓGICO NACIONAL DE MÉXICO

TECNOLÓGICO NACIONAL DE MÉXICO
INSTITUTO TECNOLÓGICO SUPERIOR DE ESCÁRCEGA





Bacillus spp. incrementan la expresión de genes de defensa y mecanismos fisiológicos durante la infección del virus mosaico dorado del chile en *Capsicum chinense* Jacq.

Blancka Yesenia Samaniego-Gámez, Jose M. Tun-Suárez, Oscar Moreno-Valenzuela, Arturo Reyes-Ramírez, Luis Latournerie-Moreno, Lourdes Cervantes-Díaz, René Garruña-Hernández

Mérida, Yucatán, 26 de Septiembre de 2018

Severidad en *Capsicum chinense* inoculado con *Bacillus* spp. e infectado con PepGMV

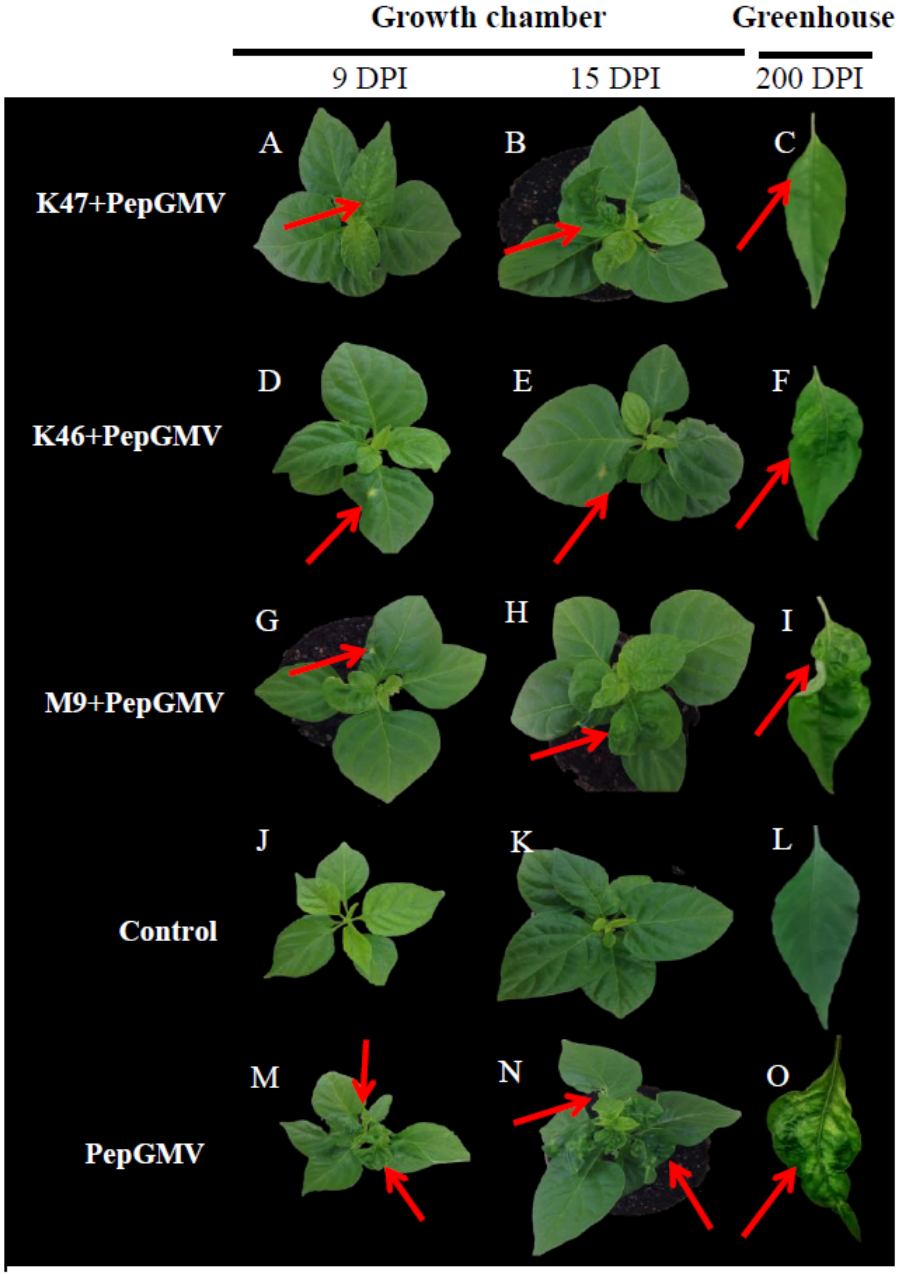


Figura 1. Efecto de la inoculación con *Bacillus* spp. sobre la severidad de síntomas en *Capsicum chinense* Jacq. infectado con PepGMV.

Tabla 1. Infectividad, detección viral y severidad de síntomas en plantas de *Capsicum chinense* Jacq. inoculadas con cepas de *Bacillus* (M9, K46 y K47), e infectadas con PepGMV.

Inóculo	Detección por PCR[a]	Plantas infectadas[b]	Severidad de síntomas§	
			9 DDI	15 DDI
K47	+	30/30	0.2 b	1.2 b
K46	+	30/30	0.6 ab	1.1 b
M9	+	30/30	0.2 b	1.1 b
Control	-	0/0	0.0 b	0.0 c
PepGMV	+	30/30	1 a	2.5 a

a Detección en hojas.
b Número de plantas infectadas/número de plantas bombardeadas.
§ Severidad de síntomas en base a escala.
* Letras diferentes indican diferencias significativas ($P \leq 0.05$)

(Carrillo *et al.* 2007; Choi *et al.* 2014; Musser *et al.* 2014; Elbeshehy *et al.* 2015)

***Bacillus* spp. promueve la Resistencia Sistémica Inducida en *C. chinense* Jacq. y disminuye la severidad de síntomas ocasionados por PepGMV.**

STRAWBERRY VIRUS INCIDENCE AND MANAGEMENT OF STRAWBERRY APHID IN ONTARIO, CANADA

JUSTIN RENKEMA

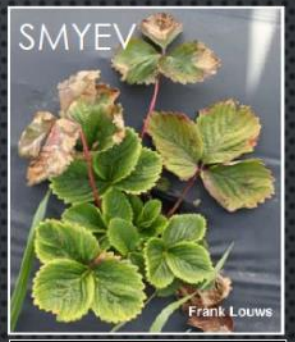
Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Canada

TRANSMITTED STRAWBERRY VIRUSES

- Aphids
  - *Strawberry crinkle virus* (SCV)
  - *Strawberry mild yellow edge virus* (SMYEV)
  - *Strawberry poleovirus-1* (SPV-1)
  - *Strawberry mottle virus* (SMoV)
  - *Strawberry vein banding virus* (SVBV)
- Whiteflies
  - *Strawberry pallidosis associated virus* (SPaV)
  - *Beet pseudo-yellow virus* (BPYV)
  - *Strawberry leaf curl virus* (StLCV)
- Thrips via pollen *Strawberry necrotic shock virus* (SNSV)

Semi-persistent Persistent



Bemisia tabaci Cryptic Species Composition Impacts Efficacy of Integrated Pest Management Programs

poinsettia_flower_1024.jpg

Cindy McKenzie, USDA, ARS
Lance Osborne, University of Florida
Vivek Kumar, University of Florida
Ron Oetting, University of Georgia
Cristi Palmer, IR4

USDA ARS

The IR-4 Project

UNIVERSITY OF FLORIDA
EXTENSION
Institute of Food and Agricultural Sciences

THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

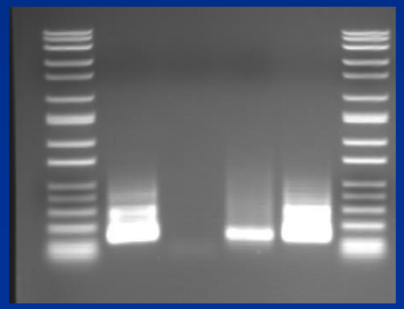
American Floral Endowment
Funding Industry Solutions Through Research and Education

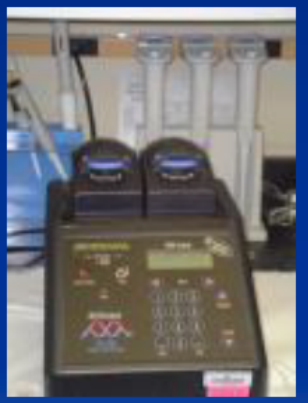
SAF
Society of American Florists
Your Growth is Our Business

Distinguishing Biotypes of *B. tabaci*

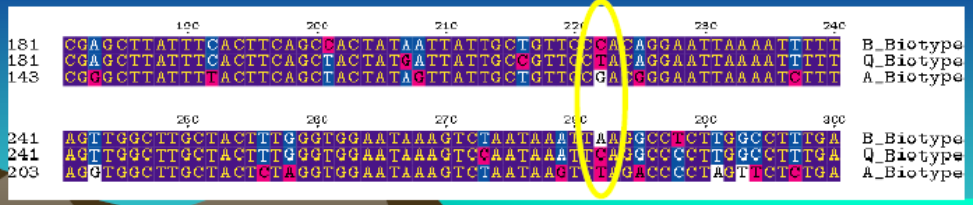
- Biological Characteristics
  - Host range, biotic potential
  - Ability to induce plant disorders
  - Insecticide Resistance

NO Morphological characteristics





- Genetic differences
  - Electrophoresis
  - PCR/Gene Sequencing
  - Diagnostic Microsatellites



Emerging and evasive tuber necrotic viruses affecting potato health and international trade

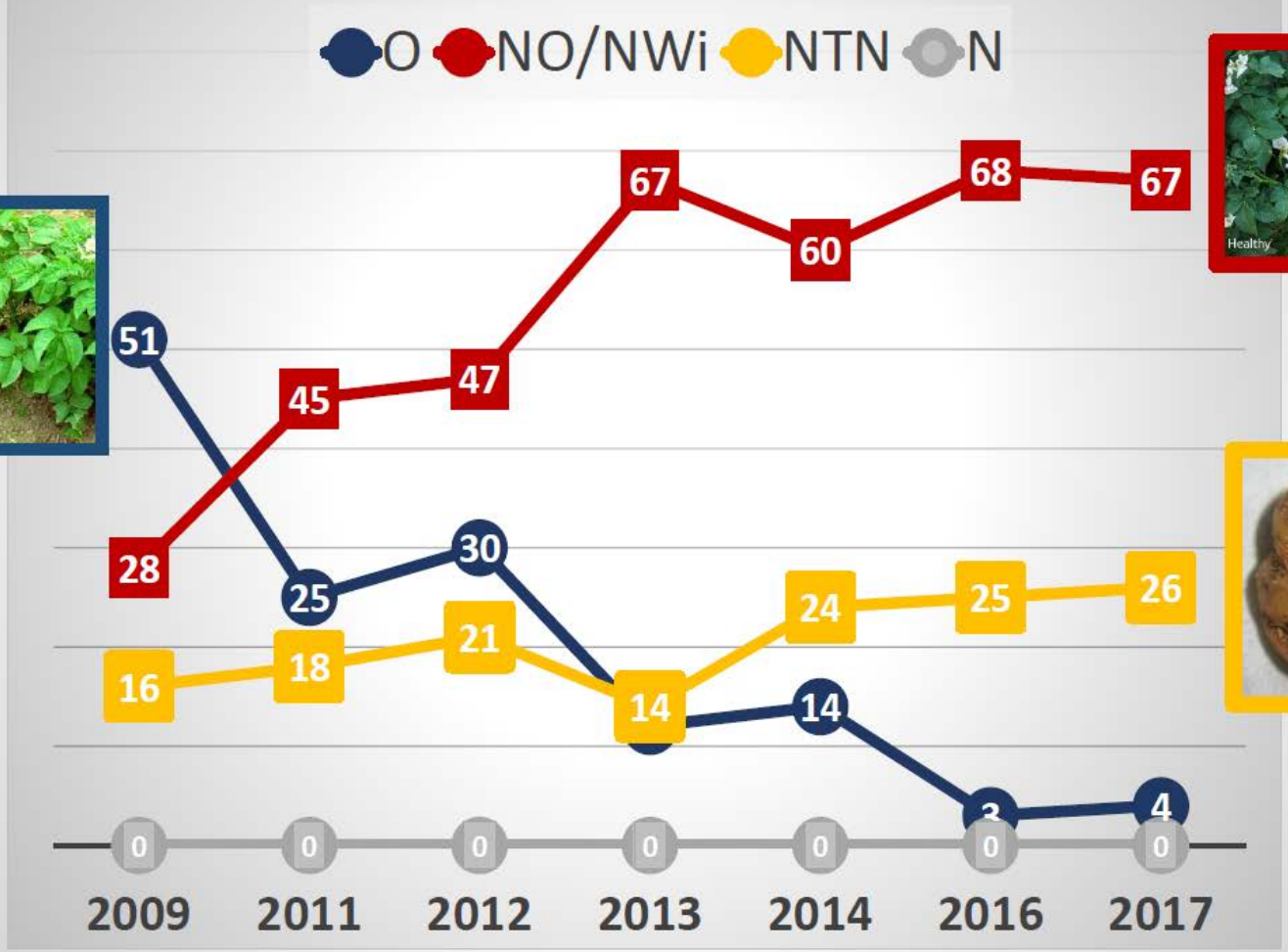
Stewart Gray
USDA, ARS – Cornell University

Potato virus Y

Potato mop top virus

Tobacco rattle virus

Change in the Prevalence of PVY Strains



Samples collected from the PHT of major seed production states, over 8000 samples tested

Workshop activities

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- Field trip to Comité Estatal de Sanidad Vegetal de Yucatán (Yucatán State Plant Health Committee) Laboratory

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PLANT HEALTH TASK FORCE

- **Relevance**
  - Insect pests, plant pathogens and associated toxins with potential to become invasive are a primary concern for each of the 3 countries
- **Effectiveness**
  - Researchers in each of the 3 countries provide expertise in identification of native and invasive pests, plant pathogens and associated toxins
- **Impact**
  - Researchers collaborate and share information on native biological control agents (predators, parasitoids and entomopathogens) for control of invasive pests to other member countries

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Plant Health Task Force Workplan and Budget Request 2019

- INIFAP National Project Lead for Plant Health will host a 2 ½ day workshop in Canada (location TBD) in fall 2019
- Workshop will focus on:
  - Priority issues from previous meetings but with a systems approach to plant health.

PLANT HEALTH TASK FORCE WORKPLAN AND BUDGET REQUEST 2019

- **Outcomes**
  - Knowledge transfer leading to harmonization of taxonomic methods in Canada, Mexico and U.S.A.
  - Tri-lateral collaboration and coordination of research in the area of insect pests and insect vectored diseases
  - Developing and enhancing networks of entomologists, pathologists and chemists in the three countries
- **Budget requested - $15,000**
  - To support travel of 4-5 scientists to workshop
  - Deliver Workshop
  - Sponsor participation at NAPPO 2019 (TBD, Canada)
  - Sponsor participation at Entomology Society meeting 2019 (TBD)

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THANK YOU!!

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