



## REVIEW OF EXPERTS ASSOCIATED WITH THE TPDP WORK PROGRAMME

(Prepared by IPPC Secretariat)

### BACKGROUND

During the 2014 July meeting<sup>1</sup> of the Technical Panel on Diagnostic Protocols (TPDP), each discipline lead provided updates on their diagnostic protocol (DP) DP drafting groups highlighting that some authors had not been in contact with them. It was agreed that the discipline leads would try to establish contact with these authors by the beginning of August 2014 and follow up on this with the Secretariat if they encountered difficulties. Regarding unresponsive authors, it was suggested that the Secretariat request their feedback whether they continue to be committed to the appointment. It was also agreed that the authors who are not interested in participating in the process any longer should formally resign from the appointment.

A list with the DP drafting groups contact information is available at <https://www.ippc.int/publications/ippc-diagnostic-protocols-dps-drafting-groups-including-contact-details-current-authors>.

The draft DPs and authors in which was identified the necessity to follow-up by the discipline leads and IPPC Secretariat were:

- *Striga* spp. (2008-009): To follow-up with the entire DP drafting group (4 authors).
- Begomoviruses transmitted by *Bemisia tabaci* (2006-023): To follow-up with the entire DP drafting group (4 members).
- *Xylella fastidiosa* (2004-024): To follow-up with Ms. Marta Isabel Francis MASTALLI (USA).
- *Phytophthora ramorum* (2004-013). New assigned lead author Ms Tricia GILTRAP (USA) and try contact Ms Mary PALM (co-author, USA).
- *Bactrocera dorsalis* complex (2006-026). New assigned co-author Mr Luc LEBLANC (Canada, working for University of Hawaii).

Also, two DP drafting groups, which recently had been a call for authors, received low or no nominations, the TPDP members were encouraged to identify potential experts by 15 September 2014 and send the suggested experts to the respective discipline leads. The DP drafting groups were:

- *Conotrachelus nenuphar* (2013-002)
- *Anoplophora* spp. (2004-020)

It is noted that in its 2014 July meeting, the TPDP asked the Secretariat to open a call for authors for *Puccinia psidi* (2006-018) and it was identified that a possible call for authors will be made for *Striga* spp. (2008-009) and *Xylella fastidiosa* (2004-024). The IPPC Secretariat decided that a prior confirmation from the authors would be needed before releasing a call.

### New authors assigned from last call for authors

All new assigned authors from last call for authors and selection of experts during the 2014 July TPDP meeting, the Secretariat informs that all of them were contacted and general instructions were sent. The draft DPs and authors were:

- *Liberibacter solanacearum* (2013-001): Mr Joseph MUNYANEZA (USA)
- *Anguina* spp. (2013-003): Ms Andrea SKANTAR (USA – lead author), Mr Thomas PRIOR (UK, co-author) and Mr Colin Craig FLEMING (UK, co-author)

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<sup>1</sup> 2014 July TPDP meeting report: <https://www.ippc.int/publications/2014-july-tpdp-meeting-report-paris-france>

- *Fusarium moniliformis* / *moniforme* syn. *F. circinatum* (2006-021): Ms Mónica Berbegal MARTÍNEZ (Spain, co-author), Mr James Wanjohi MUTHOMI (Kenya, co-author) and Mr Renaud IOOS (France, co-author). Ms Ana Maria PEREZ (UK, lead author)

## SUMMARY AFTER TRYING CONTACT

Below in Table 1 is a summary on the outcomes that the discipline lead and the IPPC Secretariat tried to establish contact for each DP drafting group and authors. The table below does not include the new assigned authors from the last call for authors mentioned in section above.

**Table 1.** Outcomes and notes from trying contact with authors from DP drafting groups since July 2014.

Draft DP	Group role	Name	Country	Notes
<b><i>Striga</i> spp. (2008-009)</b>	Co-author	Mr Abdel Gabar EITayeb BABIKER ELHAJ	Sudan	No contact established with the authors or IPPC Contact Point.
	Co-author	Mr Segun Toyosi Olaiwola LAGOKE	Nigeria	No contact established with the authors or IPPC Contact Point.
	Co-author	Mr Larry FOWLER	USA	Mr Fowler retired but new nomination from USA: Mr Lytton John MUSSELMAN (See <a href="#">Annex 1</a> ).
	Co-author	Ms Teresa Lilian CORTÉS MOMBERG	Chile	Contact established and she is willing to continue, however not as lead-author.
<b>Begomoviruses transmitted by <i>Bemisia tabaci</i> (2006-023)</b>	Lead author	Mr Stephan WINTER	Germany	Contact established and he is willing to continue as lead author.
	Co-author	Ms. Pissawan CHIEMSOMBAT	Thailand	(The lead author was going to establish contact – discipline lead to follow-up).
	Co-author	Ms Clarissa MAROON-LANGO	United States of America	(The lead author was going to establish contact – discipline lead to follow-up).
	Co-author	Ms Marcia ROYE	Jamaica	(The lead author was going to establish contact – discipline lead to follow-up).
<b><i>Xylella fastidiosa</i> (2004-024)</b>	Lead author	Ms Marta Isabel Francis MASTALLI	USA	Ms MASTALLI retired but new nomination from USA: Mr Wenbin Li (See <a href="#">Annex 2</a> ).
<b><i>Phytophthora ramorum</i> (2004-013)</b>	Lead author	Ms Tricia GILTRAP	UK	New assigned lead author Ms GILTRAP (UK) contacted and invitation accepted.
	Co-author	Ms Mary PALM	USA	Ms PALM unable to continue. New nomination from USA: Ms Gloria Abad (See <a href="#">Annex 3</a> ).
<b><i>Bactrocera dorsalis</i> complex (2006-026)</b>	Co-author	Mr Luc LEBLANC	Canada / USA	New assigned co-author Mr Luc LEBLANC (CAN/USA) contacted.
<b><i>Fusarium moniliformis</i> / <i>moniforme</i> syn. <i>F. circinatum</i> (2006-021)</b>	Lead-author	Ms Ana Maria PEREZ	UK	New assigned lead author Ms PEREZ (UK) contacted and invitation accepted.

## Selection of DP authors

Besides the new nominations for author's replacement of the DP drafting groups mentioned above (*Striga* spp. (2008-009), *Xylella fastidiosa* (2004-024) and *Phytophthora ramorum* (2004-013)) the

DP drafting group for Begomoviruses transmitted by *Bemisia tabaci* (2006-023) had received two new nominations of authors to be part of the DP drafting group: Mr Francisco Murilo ZERBINI (Brazil - See [Annex 4](#)) and Ms Fernanda Rausch FERNANDES (Brazil - See [Annex 5](#)).

Below in Table 2 is a summary of new author's nominations for each respective DP drafting groups. Nominee's CVs are annexed to this document.

**Table 2.** Summary compilation of new author's nominations to compose DP drafting groups.

Draft DP	Group role	Name	Country	Notes
<i>Striga</i> spp. (2008-009)	Co-author	Mr Lytton John MUSSELMAN (See <a href="#">Annex 1</a> )	USA	Previous co-author (Mr Fowler, USA) retired.
<i>Xylella fastidiosa</i> (2004-024)	Lead author (?)	Mr Wenbin LI (See <a href="#">Annex 2</a> )	USA	Previous lead author (Ms MASTALLI, USA) retired.
<i>Phytophthora ramorum</i> (2004-013)	Co-author	Ms Zoila Gloria ABAD (See <a href="#">Annex 3</a> )	USA	Previous co-author (Ms PALM, USA) unable to continue).
Begomoviruses transmitted by <i>Bemisia tabaci</i> (2006-023)	Co-author	Mr Francisco Murilo ZERBINI (See <a href="#">Annex 4</a> )	Brazil	New co-author.
	Co-author	Ms Fernanda Rausch FERNANDES (See <a href="#">Annex 5</a> )	Brazil	New co-author.

### New call for authors

Due the recent attempts to try to contact authors directly or via IPPC Contact Point, the TPDP is invited to consider asking the Secretariat to open call for authors for *Striga* spp. (2008-009).

As an outcome from the 2014 July TPDP meeting, the Secretariat will open a call for *Puccinia psidi* (2006-018).

### Recommendations to the TPDP:

The TPDP is invited to:

- (1) *note* the above update from the Secretariat on the contacts made for new authors and *note* the attempts to try establish contact with the DP drafting group for *Striga* spp. (2008-009).
- (2) *note* and *consider* the nominations above and select the DP drafting groups and assign lead authors when appropriate to each subject of the TPDP work programme as follow:
  - *Striga* spp. (2008-009): Mr Lytton John MUSSELMAN (USA)
  - *Xylella fastidiosa* (2004-024): Mr Wenbin LI (USA)
  - *Phytophthora ramorum* (2004-013): Ms Zoila Gloria ABAD (USA)
  - Begomoviruses transmitted by *Bemisia tabaci* (2006-023): Mr Francisco Murilo ZERBINI (Brazil) and Ms Fernanda Rausch FERNANDES (Brazil)
- (3) *consider* asking the Secretariat to open a call for authors for *Striga* spp. (2008-009) together with a call for *Puccinia psidi* (2006-018).
- (4) *consider* the need to hand-pick some experts to be part of DP drafting groups for *Conotrachelus nenuphar* (2013-002) and *Anoplophora* spp. (2004-020) and *consider* asking the discipline lead to get the CVs for those experts suggested for the next virtual meeting.

## CURRENT POSITION AND MAILING ADDRESS

### Lytton John Musselman

Mary Payne Hogan Professor of Botany  
 Department of Biological Sciences  
 304 Mills Godwin Building  
 Old Dominion University  
 5115 Hampton Boulevard  
 Norfolk, Virginia 23529-0266 USA

## TELECOMMUNICATION

Phone: 757-683-3597 (office), 757-771-6156 (cell)

Fax: 757-683-5283

Email: [lmusselm@odu.edu](mailto:lmusselm@odu.edu)

Web sites: <http://www.odu.edu/~lmusselm/> and <http://ww2.odu.edu/~lmusselm/plant/index.php>

## POSITIONS

- Visiting Professor, University of Brunei Darassalam, June 2014-
- Visiting Professor, American University of Iraq-Sulaimani, May 2012, May 2013
- Visiting Professor, University of Virginia Mountain Lake Biological Station, June-July 2012; Visiting Assistant Professor, summers 1975, 1977, 1979.
- Botanist, A Prairie Home Companion cruise Baltic Capitals, 8-23 August 2014,
- Barcelona-Venice, 18-29 August 2013, 18-29 August 2012, 8-17 July 2011. See: <http://prairiehome.publicradio.org/features/cruise/2013/guests.shtml>
- Visiting Professor, Cranberry Lake Biological Station, State University of New York, College of Environmental Science and Forestry, July-August 2014, July-August 2013, July-August 2012, July-August 2011, August 2010; July-August 2009. <http://www.esf.edu/clbs/>
- Chair, Department of Biological Sciences. July 2002-July 2008, See: [http://sci.odu.edu/biology/contents/State\\_of\\_Department07\\_08.shtml](http://sci.odu.edu/biology/contents/State_of_Department07_08.shtml)
- Visiting Professor of Biology, and Post Herbarium, American University of Beirut, Beirut, Lebanon February-June 2002.. <http://www.aub.edu.lb/>
- Visiting Professor, Aleppo University, Aleppo, Syria. May-August 2000.
- Visiting Professor, Royal Society for the Conservation of Nature, Jordan. July 2000.
- Appointed Mary Payne Hogan Distinguished Professor of Botany. April 1999-present.
- Senior Fulbright Lecturer and Researcher, Department of Life Sciences, University of Jordan, Amman. August 1997-July 1998.
- Visiting Professor, Au Sable Institute of Environmental Studies, Mancelona, Michigan. <http://www.ausable.org/au.main.cfm> May 1997, May 1999, May 2001, May 2005, May 2008.
- Program Coordinator, MS with wetland concentration. August 1996-present.
- Founder, and Manager, Blackwater Ecologic Preserve. <http://www.odu.edu/~lmusselm/blackwater/> June 1984-August 1994, August 1996-present.
- Designated Eminent Scholar, Old Dominion University. April 1993-present.
- Senior Fulbright Lecturer and Researcher, Departments of Biological Sciences and Agriculture, An Najah University, Nablus, West Bank December 1986-July 1987.
- Professor of Biological Sciences, Old Dominion University. August 1985-present.
- Senior Fulbright researcher, Department of Agricultural Botany, Faculty of Agriculture, University of Khartoum, Khartoum, Sudan July 1982-January 1984.
- Associate Professor of Biological Sciences. August 1978-1985.
  
- Director, Old Dominion University Herbarium. August 1973-present.
- Assistant Professor of Biological Sciences. August 1973-1978.

## EDUCATION

- B. A. Beloit College, 1965; biology
- M. S. University of Wisconsin-Milwaukee, 1968; botany
- Ph. D. University of North Carolina-Chapel Hill, 1974; botany. Dissertation title: Structure and development of the haustorium of parasitic Scrophulariaceae. Supervisor: William C. Dickison (Deceased).

## HONORS AND AWARDS

- Fulbright Specialist Award, 2014-2015
- Provost's Award for Leadership in International Education, Old Dominion University. May 2004.
- Fellow, The International Parasitic Plant Society, Nantes, France June 2001
- Partnership Award, Virginia Chapter, The Nature Conservancy, 1999 (Awarded to Blackwater Ecologic Preserve Management Committee)
- Inducted into Phi Kappa Phi, 1988.
- Fulbright awards, 1982-84; 1986-87; 1997-98. In addition, three scholars (one each from Nigeria, Sri Lanka, and Bahrain) were awarded Fulbright scholarships to study with me
- Faculty Research Award, Old Dominion University, 1986.
- Elected Fellow of the Linnean Society of London, 1972.

## CURRENT TEACHING

**Field Botany. BIOL 221.** Catalog description Lecture 2 hours; laboratory 4 hours; 4 credits. Prerequisites: BIOL 115N-116N. Identification, ecology, and use of native plants. Most classes are field trips.

Biology 221 is designed to give students a one semester experience in the field. In order to provide a clearer focus in the field, I currently limit the organisms we study to trees, ferns, mushrooms, and peat mosses. My goal is to train students in the science of careful observation as well as to introduce them to the joy of becoming acquainted with the diversity of plant life that surrounds us.

**Field Ethnobotany. BIOL 334.** Research techniques in ethnobotany based on the study and utilization of local plants and mushrooms for food, fiber, cordage, medicine, dyes, and other uses. This course is intended to be the laboratory component of BIOL 332, Ethnobotany. Prerequisites: BIOL 308 or permission of the instructor. A field oriented course.

**Mushrooms. BIOL 474/574.** Lecture 2 hours; laboratory 6 hours; 4 credits. Prerequisite: BIOL 308. The identification, classification, ecology, culture, and uses of mushrooms and other fleshy fungi. A field oriented course.

**Dendrology. BIOL 438/538.** Lecture 2 hours; laboratory 5 hours; 4 credits. Prerequisite: BIOL 308 or equivalent. The study of trees and shrubs, their identification, ecology, structure, anatomy, lore and uses. A field oriented course.

**Wetland Plants. BIOL 419/519.** Lecture 2 hours; laboratory 6 hours. 5 credits. Prerequisites: BIOL 290 and 308. A field-oriented course dealing with the identification of plants used to delineate wetlands. Lectures cover the systematics and structure of delineating plants. Lab and field sessions stress skills in recognition of growing and dormant plants, environmentally induced variability, ecology, and distribution.

Wetlands are of critical concern in the Norfolk area so I designed this course as a survey of the plants used to delineate wetlands based on the current federal regulatory manuals. A great deal of time is spent in the field with repeated recognition tests to develop confidence in plant determination.

## OTHER COURSES

In addition to various topics courses, I have also taught the following:

Adirondack Flora  
 Ecological Sciences Seminar: Mycoheterotrophs  
 Ecological Sciences Seminar: Aquatic Plants  
 Ecological Sciences Seminar: Deep Ecology: Faith and Environmental Concern  
 Ecological Sciences Seminar: Ethnobotany  
 Ecological Sciences Seminar: Orchid Biology  
 Ecological Sciences Seminar: Parasitic Plants  
 Ecological Sciences Seminar: Pteridophyte Ecology  
 Ecological Sciences Seminar: Grass phylogeny  
 Ecological Sciences Seminar: Current research in fleshy fungi  
 Ecological Sciences Seminar: Longleaf Pine Ecosystem  
 Ecological Sciences Seminar: Mycoheterotrophs  
 Ethnobotany: Plants of the Bible  
 Floral Biology  
 Floristics of the Southeastern United States  
 Graduate Seminar  
 Lower Vascular Plants  
 Non Vascular Plants  
 Parasitic Plants  
 Plant Anatomy  
 Plant Ecology  
 Practice of Science  
 Undergraduate Seminar  
 Woody Plants

**Fall 2013-Spring 2014.** Because of the sudden death of Timothy Motley, I taught his courses instead of my own.

## GRADUATE STUDENTS

### CURRENT DOCTORAL STUDENTS

Nicholas Flanders  
 Peter Schafran  
 Sushil Paudyal

### DOCTORAL STUDENTS GRADUATED

Bolin, Jay F, PhD awarded December 2009. Ecology and molecular systematics of *Hydnora* (Hydnoraceae) in southern Africa.

Khalid Al-Arid, PhD awarded December 2008. Dissertation title: Microspore Wall Morphogenesis and Orbicule Ultrastructure of *Isoetes*.

Emmanuel Izaka Aigbokhan, PhD awarded May 1998. Dissertation title: Studies on the Biology of *Striga aspera* (Scrophulariaceae) in Nigeria. (Co-director with Dana Berner, International Institute of Tropical Agriculture).

Kamal-eldin Ibrahim Mohamed, PhD awarded May 1994. Dissertation title: Biosystematics and Diversification in the Genus *Striga* (Scrophulariaceae) in Africa.

### CURRENT MASTER'S STUDENTS

David Cutherell  
 Timothy Hammer  
 Sage Joyce

Hunter Shanks

## MASTER'S STUDENTS GRADUATED

I estimate twenty since arriving at the university.

## SERVICE

### UNIVERSITY SERVICE

#### Old Dominion University Herbarium

The herbarium is a museum of dried specimens documenting the flora of the region as well as being a repository for voucher specimens of faculty and student research. We currently have an estimated 30,000 specimens. Dr Rebecca Bray handles the herbarium on a day-to-day basis including requests for the loan of materials, preparing specimens for deposit, and answer inquiries.

#### Blackwater Ecologic Preserve

In response to awareness of the use of this property for teaching and research, Union Camp Corporation (now International Paper) gave 319 acres near Zuni, Virginia to Old Dominion University in 1984. I established this preserve as the Blackwater Ecologic Preserve. It is of immeasurable ecological value as the northernmost stand of longleaf pine and associated rare communities. Because of our efforts as well as other concerns, the Commonwealth purchased 400 acres of contiguous property. The last purchase by the state expanded the holding to over 1,000 acres. Together, these two tracts are being managed and restored as the Zuni Pine Barrens. I am currently the manager of the preserve responsible for the development and execution of management and monitoring plans, coordination with state and private partners, and overseeing the general use of the property.

#### Master of Science in Biology with Wetland Concentration.

Prompted by local wetland professionals, I suggested the establishment of a distinct emphasis in a non-thesis master's degree for wetland biology and have served as the program director since its inception in 1996. This involves mainly answering queries, advising students, and promoting the program.

#### Current University Organizations and Committees

Faculty Advisor, InterVarsity Christian Fellowship

Faculty Advisor, Global Student Friendship

Faculty Advisor, Botanical Society of America

Faculty Senate 2011-2014

Chair, Faculty Senate Committee F (Tenure) 2012-present

College of Sciences Promotion and Tenure Committee 2011-present (Chair, 2012-2014)

Eminent Scholars Committee 2013-present

University Promotion and Tenure Committee 2012-2014

Institutional Advancement Committee 2013-present

### PROFESSIONAL SERVICE

#### GRANT PROPOSAL REVIEWS

National Science Foundation

#### JOURNAL MANUSCRIPT REVIEWS (Year 2013-2014 Only)

Annals of Botany

Molecular Phylogenetics and Evolution

Phytotaxa

South African Journal of Botany  
Systematic Botany  
Weed Research

PUBLISHER'S REVIEWS  
Johns Hopkins University Press

EDITORSHIP  
Castanea 1999-2002  
Haustorium, Parasitic Plants Newsletter Founding editor, 1976-present

#### MEMBERSHIP IN PROFESSIONAL AND HONOR SOCIETIES

American Association for the Advancement of Science  
American Fern Society  
American Scientific Affiliation  
Association of Southeastern Biologists  
Botanical Society of America  
Nature Iraq  
Society of Economic Botany  
Southern Appalachian Botanical Society (President 2010-2012)  
Virginia Native Plant Society

REGIONAL, NATIONAL, AND INTERNATIONAL BOTANICAL SERVICE (2013, 2014 only)

Member, National Technical Committee on Wetland Vegetation

#### MISCELLANEOUS PROFESSIONAL SERVICE

Identifier of numerous taxa of vascular plants for local, state and national agencies  
Workshop and symposium organizer and editor for international parasitic plant meetings

#### COMMUNITY INTERACTION

Assist with innumerable science fair and school projects  
Frequent speaker at local and regional conservation and plant meetings

### **RESEARCH INTERESTS**

1. Taxonomy, ecology, and evolution of parasitic weeds, especially *Striga* in the African Sahel and *Orobanchae* and *Cuscuta* in the Middle East.
2. Systematics and ecology of quillworts (*Isoetes*, Pteridophyta) in the southern United States, western Asia (with particular emphasis on Turkey, Syria, and Lebanon), and southern Africa.
3. Plants of the Bible and Qur'an.
4. Ecology and systematics of the Hydnoraceae.
5. Floristics of Iraq, Jordan, Lebanon, and Syria.
6. Ethnobotany, especially of edible North American plants.
7. Longleaf pine ecology.



**CURRENT BOOK CONTRACTS**

Plants of the Adirondacks (with Donald J Leopold) Johns Hopkins University Press.

**CURRENT GRANT SUPPORT**

None

**CURRENT ENDOWMENT SUPPORT**

Mary Payne Hogan Fund

**GRANTS PENDING/SUBMITTED**

None

**RECENT INVITED LECTURES AND PRESENTATIONS (Past two years only)**

Musselman, L. J. Environmental Ethics and the Bible. Islamic Perspectives on Ecosystem Management. Qu'ranic Garden, Qatar Foundation, Doha, Qatar, 22 April 2014.

Musselman, L. J. Holy Botany; Plants of the Bible. Brandeis University, Kraft Hiatt Lecture, 8 October 2013. The Department of Near Eastern and Judaic Studies

Schafran, P., S. Ahmad, A. Askeri, and L. J. Musselman. The ethnobotany of *Pistacia eurycarpa* in Iraqi-Kurdistan. Eighth Plant Life of Southwest Asia Symposium, Royal Botanic Garden, Edinburgh, Scotland. July 2013.

Wiggins, H. J. and L. J. Musselman. Edible Wild Plants. Irvine Nature Center, Garrison, Maryland. July 2013.

Musselman, L. J. Chesapeake Bay Plants. Adkins Arboretum, Ridgely, Maryland. July 2013.

**PRESENTATIONS AT SCIENTIFIC MEETINGS TOO NUMEROUS TO LIST (2014 ONLY)**

Matthews, R. A. Musselman, L. J., Taylor, W. C. and P. W. Schafran. *Isoetes snowii*, a New Diploid Quillwort from the Southeastern United States. Association of Southeastern Biologists, Spartanburg, South Carolina April 2014.

Musselman, L. J., R. D. Bray, P. W. Schafran, and W. C. Taylor. Misconceptions about Quillworts. Association of Southeastern Biologists, Spartanburg, South Carolina April 2014.

Schafran, P. W., J. Keenan, M. Jones, and L. J. Musselman. In Vitro Seed Germination and Development of *Calopogon pallidus* (Orchidaceae) from Virginia. Association of Southeastern Biologists, Spartanburg, South Carolina April 2014. (Poster)

Schafran, P. W., J. Keenan, M. Jones, J. F. Bolin, and L. Musselman. Germination and Development of Hazel Dodder, *Cuscuta coryli*. Association of Southeastern Biologists, Spartanburg, South Carolina April 2014.

Schafran, P. W., R. D. Bray, W. C. Taylor, and L. J. Musselman Systematics of the Genus Isoetes (Isoetaceae, Lycopphyta). Association of Southeastern Biologists, Spartanburg, South Carolina April 2014.

## COUNTRIES VISITED FOR SCIENTIFIC COLLABORATION

Argentina, Bahrain, Botswana, Bulgaria, Brunei, Burkina Faso, Cameroon, Cyprus, Ethiopia, Gambia, Guinea-Bissau, Guinea-Conakry, Greece, Iraq, Israel, Jordan, Kenya, Lebanon, Malaysia, Mali, Morocco, Namibia, Nepal, New Caledonia, Nigeria, Qatar, Russia, St Lucia, St Vincent, Senegal, Somalia, South Africa, Sri Lanka, Sudan, Syria, Turkey, United Arab Emirates, West Bank, Western Europe (most countries), Zimbabwe

## PUBLICATIONS (Most recent listed first)

### Books

Musselman, L. J. and H. J. Wiggins. 2013. The Quick Guide to Wild Edible Plants Easy to Pick, Easy to Prepare. Johns Hopkins University Press. ISBN: 9781421408712. 144 pages. 116 color illus.

Musselman, L. J. and D. A. Knepper. 2012. Plants of Chesapeake Bay—An Illustrated Guide. Johns Hopkins University Press. ISBN-10: 1421404982, ISBN-13: 978-1421404981. 232 pages. 200 color illus.

Musselman, L. J. 2011. Dictionary of Bible Plants. Cambridge University Press. Hardback ISBN: 9780521110990. 220 pages. 118 b/w illus. 77 color illus.

Musselman, L. J. 2007. Figs and Dates, Laurel and Myrrh: Plants of the Bible and the Quran. With introduction by Garrison Keillor. Timber Press. Hardback ISBN-10 0881928550. 336 pages. 243 color photos. Reviews at:  
<http://www.timberpress.com/books/isbn.cfm/9780881928556>

Musselman, L. J. 2000. Jordan in Bloom. Wildflowers of the Holy Land. Original watercolors by Dasha Fomicheva, artist to the Royal Hashemite Court. Under the Patronage of HM Rania Al Abdullah, Queen of Jordan. Jordan River Foundation; Amman, Jordan. 112 pages.

Musselman, L. J. and H. P. Medema. 1993. Van U is ook de Aarde. De zwijgende maar machtige boodschap von planten in het heiligdom. [Yours (is) also the Earth. The silent yet powerful language of plants in the sanctuary.] Uitgeverij H. Medema: Vaassen, Netherlands. 48 pages. Illustrated. (In Dutch).

Musselman, L. J. and H. P. Medema. 1993. Laat de Aarde het u Vertellen. De zwijgende maar machtige boodschap von planten in het land van de Bijbel. [The Earth Shall Teach You: The silent yet powerful language of plants in the land of the Bible]. Uitgeverij H. Medema: Vaassen, Netherlands. 64 pages. Illustrated. (In Dutch). (First printing of 14, 000 in February; reprinted September 1993).

### Edited Volumes/Proceedings of Symposia and Workshops

Joel, D. M., J. Gressel, and L. J. Musselman, Editors. 2013. Parasitic Orobanchaceae Parasitic mechanisms and control strategies. Berlin: Springer-Verlag. 513 pages ISBN 978-3-462-38145-4, DOI 10.1007/978-3-642-38146-1.

Krupp, F., Musselman, L. J. Kotb, M., Weidig, I., editors. 2009. Environment, Biodiversity and Conservation in the Middle East. Proceedings of the First Middle Eastern Biodiversity Congress,

Aqaba, Jordan, 20–23 October 2008. Biorisk 3 (Special Issue). ISSN 1313-2652 (online), ISSN 1313-2644 (print). Pensoft Publishers, Sofia-Moscow, 165 × 240, full-color. In English. 226 pp. <http://pensoftonline.net/biorisk/index.php/journal>

Fer, A. P. Thalouarn, D. M. Joel, L. J. Musselman, C. Parker and J. A. C. Verkleij, Editors 2001. Proceedings of the 7<sup>th</sup> International Parasitic Weed Symposium. Faculté des Sciences, University of Nantes, Nantes, France. 312 pages +xii.

Wegmann, K., L. J. Musselman and D. M. Joel, editors. 1998. Current Problems of Orobanche Researches. 452 pages. General Toshevo, Bulgaria: Institute for Wheat and Sunflower "Dobroudja".

Wegmann, K. and L. J. Musselman, editors. 1991. Progress in Orobanche Research. Tübingen, Germany: Eberhard-Karls University. 362 pages + x.

Ransom, J. K., L. J. Musselman, A. D. Worsham and C. Parker, editors. 1991. Proceedings of the 5th International Symposium of Parasitic Weeds. 550 pp +ix. Nairobi: The International Maize and Wheat Improvement Center (CIMMYT).

Musselman, L. J., editor. 1987. Parasitic Weeds in Agriculture. Volume I. Striga. Boca Raton, Florida: CRC Press. 317 pp +viii

Parker, C., L. J. Musselman, R. M. Polhill, and A. K. Wilson. 1984. Proceedings of the Third International Symposium on Parasitic Weeds. Aleppo, Syria: International Center for Agricultural Research in the Dry Areas. 256 pp +viii.

Musselman, L. J. and J. J. Riley, editors. 1984. Striga in Sudan. Khartoum, Sudan: German Technical Aid (GTZ). 29 pp.

Ayensu, E. S., H. Doggett, R. D. Keynes, J. Marton-LeFevre, L. J. Musselman, C. Parker, and A. Pickering, editors. 1984. Striga Biology and Control. Paris: International Council of Scientific Unions Press. 216 pp +viii.

Ramaiah, K. V., M. J. Vasudeva Rao, C. Parker, and L. J. Musselman. 1983. Striga Biology and Control. Hyderabad, India: International Crops Research Institute for the Semiarid Tropics. 34 pp.

Musselman, L. J., A. D. Worsham, and R. E. Eplee, editors. 1979. Proceedings of the Second International Symposium on Parasitic Weeds. Raleigh: North Carolina State University. 296 pp +x. Supplement 53 pp.

### Reviews and Monographs

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## Education

- Ph.D. Plant Pathology, Sao Paulo State University, Sao Paulo, Brazil, 1997.
- M.S. Plant Biochemistry and Genetics, Huazhong Agricultural University, Wuhan, China, 1986.
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## Employment

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#### Lead Scientist of the following CPHST projects:

1. Development of real-time PCR for detection of Citrus Huanglongbing
2. Sampling methods for detection of citrus huanglongbing
3. Development real-time PCR for detection of citrus variegated chlorosis strains of *Xylella fastidiosa*
4. Development of methods for early detection of *Ralstonia solanacearum*

#### Primary Investigator of the CPHST project

5. Study of exotic plant pathogens

#### Investigator of the CPHST projects

6. Development of proficiency testing reagents and administrating proficiency testing program
7. DNA chip for rapid detection of regulated plant pathogens
8. Validation of PCR detection method and development of real-time PCR for detection of potato cyst nematode

#### Advisor of the CPHST project

9. Development of group-specific nucleic acid based diagnostic assays for improved detection of viruses in plant germplasm

#### Collaborator

10. USDA-ARS project: Complete genome sequence of citrus huanglongbing bacterium, 'Candidatus Liberibacter asiaticus' obtained through metagenomics
11. USDA-ARS/APHIS project: Detection of 'Candidatus Liberibacter asiaticus' in citrus fruit seeds and seed transmission of citrus huanglongbing
12. University of Florida project: Detection of citrus huanglongbing bacterium, 'Candidatus Liberibacter asiaticus' in vector Asian citrus psyllids (*Diaphorina citri*)

#### Expert

1. USDA-ARS Technical Working Group: Recovery plan for citrus variegated chlorosis caused by *Xylella fastidiosa* (CVC strain) May to October 2008, Washington, DC.
2. USDA-APHIS Technical Working Group: Commercial production and movement of citrus nursery stock from Florida to non-citrus producing States – Findings and Recommendations, Sep.18-20, 2007, Gainesville, FL.

#### Moderator

1. Technical Session – Disease Detection, 2007 Joint Meeting of the American Phytopathological Society and Society of Nematologists, July 28, 2007.

### **Research Plant Pathologist (April 2001–November 2004)** **USDA-ARS Fruit Laboratory, Beltsville, MD**

Primary Investigator

1. USDA-ARS/APHIS project: Historic diversity and rapid detection of *Xanthomonas axonopodis* pv. *citri* in citrus herbarium specimens
2. USDA-ARS/Brazil/Costa Rico project: Genetic diversity of *Xylella fastidiosa* strains of grapevine, citrus and coffee plants from USA, Costa Rico and Brazil
3. USDA/Brazil project: Interaction between *Xylella fastidiosa* and plant endophytic bacteria in citrus, grapevine, and other model host plants
4. USDA-ARS project: GFP-labeled mutagenesis of *Xylella fastidiosa* citrus and grapevine strains through tri-parental transformation
5. USDA-ARS/California Department of Food and Agriculture project: Development of hybridization probe real-time PCR for detection and identification of *Xylella fastidiosa* citrus and grapevine strains
6. USDA-ARS project: Development molecular methods for diagnosis of citrus huanglongbing

**Research Scientist / Plant Pathologist (January 2007–September 2001)****Fundecitrus, São Paulo, Brazil**Coordinator

1. Brazil Functional genomics of *Xylella fastidiosa* project: Development of experimental systems for *Xylella fastidiosa* pathogenicity tests of citrus variegated chlorosis and coffee leaf scorch
2. Brazil/São Paulo project: Field selection of citrus species and cultivars for resistance to citrus variegated chlorosis
3. Brazil/São Paulo project: Evaluation of citrus germplasms for resistance to citrus variegated chlorosis

Principal Investigator

4. Brazil/USDA-ARS project: Pathogenicity of *Xylella fastidiosa* citrus and coffee strains in grapevines
5. Brazil/USDA-ARS project: Seed transmission of *Xylella fastidiosa* strains causing citrus variegated chlorosis
6. Brazil/USDA-ARS project: Pathogenicity of *Xylella fastidiosa* citrus strains in coffee plants
7. Brazil/France Project: Pathogenicity of the triply cloned strain of *Xylella fastidiosa* CVC strain used in the genome project of the first plant pathogenic bacterium in the world

Primary Investigator

8. Brazil/São Paulo project: Development of rapid methods for detection of *Xylella fastidiosa* in citrus and coffee plants and vector sharpshooters
9. Brazil/São Paulo project: Study on techniques for control of citrus variegated chlorosis
10. Brazil/São Paulo project: Survey, detection and management of citrus canker
11. Brazil/France project: Survey and detection method development for citrus huanglongbing, citrus sudden death and other citrus diseases

**Guest Professor (September 1999–August 2000)****University Camilo Castelo Branco, Fernandópolis, São Paulo, Brazil**Principal Teacher

- Undergraduate course: Plant Pathology
- Graduate course: Citrus Disease

**Visiting Research Scientist (March 1994 – September 1997)****Bebedouro Citrus Experiment Station, São Paulo State University, São Paulo,**

**Brazil**Primary Investigator

1. Brazil/São Paulo project: Development of rapid methods for pathogenicity tests of *Xylella fastidiosa* strains causing citrus variegated chlorosis
2. Brazil/São Paulo project: Development of practical methods for evaluation of citrus species and cultivars for resistance to citrus variegated chlorosis
3. Brazil/São Paulo project: Selection of citrus commercial varieties and/or cultivars for resistance to citrus variegated chlorosis
4. Brazil/São Paulo project: Evaluation of citrus rootstocks for resistance to citrus variegated chlorosis
5. Brazil/São Paulo projects: Transmission, epidemiology, and varietal resistance to citrus blight, citrus leprosis and citrus canker

**Associate Professor (January 1992 – September 1997)**

**Horticulture Institute, Hunan Academy of Agricultural Sciences, Changsha, Hunan, China**

Principal Investigator / Assistant Institute Director

1. China national project: Investigation, collection and classification wild and semi-wild citrus germplasms for resistance breeding to citrus pests and diseases
2. China/US UC Riverside project: Study on genetic resistance of citrus germplasms by isozyme analysis

**Assistant Professor (June 1986 – December 1991)**

**Horticulture Institute, Hunan Academy of Agricultural Sciences, Changsha, Hunan, China**

Primary /Principal Investigator

1. China/Italy project: Resistance evaluation of citrus germplasms to citrus *Phytophthora* sp., citrus huanglongbing, citrus tatter leaf, citrus nematode, cold in winter and hot during flowering season in summer
2. China/Spain project: Development of nucleic acid-based and serological methods for detection of citrus viruses and viroids

**Training Taken**Professional Training

- Certified Bioinformatics Specialist, the National Bioinformatics Institute, CA 90040, 2002.
- Visiting Scientist on molecular characterization of plant bacterial strains, Laboratoire de Biologie Cellulaire et Moléculaire, Institut National De La Recherche Agronomique, Bordeaux, France, September to November 1998.
- Visiting Scientist on Plant embryo culture and protoplasm fusion for triploid breeding and RFLP for progeny identification, Istituto Sperimentale per l'Agricoltura, Acireale, Sicily, Italy, March to July 1992.
- Visiting Scientist on biological and molecular diagnostic methods for bacterial, viral or virus-like diseases and shoot-tip-grafting techniques for disease-free propagation, Instituto Valenciano de Investigaciones Agrarias, Valencia, Spain, June to September 1990.

CPHST-NPGBL Quality Awareness

- 2010 CPHST-NPGBL quality awareness, R. Devries
- 2009 CPHST-NPGBL quality awareness, K. Burch
- 2007 CPHST-NPGBL quality awareness, K. Burch & R. Devries

**Training Provided at NPGBL**

Detection and quantification of *Candidatus Liberibacter* species associated with citrus huanglongbing by conventional and real-time PCR.

- Apr. 27 to 29, 2010  
  
Dr. Cynthia Levaesque – CA Citrus Research Board  
Dr. Brian Brady – CA Citrus Research Board  
Monica Negrete – CDFA  
Abel Unzueta – CDFA  
Ingrid Asmundsson – MDL  
Paricia – MDL  
Ping Yang – NPGBL
  
- Nov. 30 to Dec. 3, 2009  
  
Veronica Majil - Belize  
Mario E. Parada – Salvador  
Nelson Garcia – Guatemala  
Claudia M. B. Trejo – Honduras  
Emiliano Loeza – Mexico  
Isolina R. Ramos – Nicaragua  
Amed Arcia – Panama  
Andrea Feliz – Dominica Republic
  
- Aug. 24-27, 2009  
  
Rebeca Araya Montero  
Laboratorio de Dignostic Fitosanitario  
Servicio Fitosanitario del Estado  
Alajuela, Costa Rica
  
- Feb. 2-5, 2009  
  
Elizabeth Schrum, Kansas State University  
Allen Danson, USDA-APHIS-PPQ  
Sheila McBride, Texas A&M University  
Franscisco Assis, Agdia
  
- Jan. 2-5, 2009  
  
USDA-APHIS-PPQ-CPHST-NPGBL scientists, Beltsville, MD  
Gang Wei  
Kate Rappaport
  
- Dec. 8-11, 2008  
  
Raghuwinder Singh, Louisiana State University  
Debra Carey, Auburn University  
Gocirie Finuller, Auburn University  
Jennifer Haynes, CDFA  
Patrick Woods, CDFA  
Erin Lovig, CDFA
  
- Sept. 8-12, 2008  
  
Gloria Abad, PPQ-NIS-MDL, Beltsville, MD  
John Rascoe, PPQ-NIS-MDL, Beltsville, MD  
Virginia Boulais, PPQ-NIS-MDL, Beltsville, MD
  
- Jun. 23-27, 2008.

Dan Opgnorth, CDFA  
 Y.P. Zhang, CDFA  
 Wendy (Kaneshiro) Sueo, University of Hawaii  
 Asoka de Silva University of Hawaii  
 Madhura Kunta, Texas A&M University  
 Caesar Medelez, Texas A&M University

- Feb. 12-15, 2008.

George wall, Guam, WPDN  
 Grace O'Keefe, PPA-ER, PA  
 Aaron Palmateer, University of Florida, SPDN

- Nov. 7-9, 2007.

Rajya Sukla, PPQ-NIS-MDL, Beltsville, MD  
 Brain Olsson, PPQ-NIS-MDL, Beltsville, MD

- Oct. 29- Nov.2, 2007.

Ron Ykema, Arizona Department of Agriculture

- Sept. 24-28, 2007.

Madhura Kunta, Texas A&M University

- Aug. 13-21, 2007.

Pedro L. Robes Gacia, Mexico Dept. of Agriculture, Mexico  
 Camilo H. Juarez, Mexico Dept. of Agriculture, Mexico  
 Agustin R. Landey, USDA-APHIS, Mexico Dept. of Agriculture, Mexico.

- Nov. 8-10, 2006.

USDA-APHIS-PPQ-CPHST-NPGBL scientists:  
 Zhaowei Li  
 Sarika Negi  
 Deric Picton

- Jun.15-18, 2006.

USDA-APHIS-PPQ-CPHST-NPGBL scientists:  
 Vessela Mavrodieva  
 Elizabeth Twieg  
 Kristina Owens

- April. 24-28, 2006.

USDA-CSREES National plant Diagnostics Network (NPDN) diagnosticians  
 from

Karen L. Snover-Clift, Cornell University, Ithaca NY  
 Samantha Thomas, CDFA, Sacramento, CA  
 Tamla Blunt, CDFA, Sacramento, CA  
 Richard Cullen, University of Florida  
 Anne Vitroeli, University of Florida  
 Jan Byrne, Michigan State University, East Lansing, MI  
 Joy Pierzynski, Kansas State University, Manhattan, KS  
 Ron Ykema, Arizona Department of Agriculture



- Oct. 15-18, 2005.

Lisa Ferguson, USDA-APHIS-PPQ-PERAL, Raleigh, NC

- Sept. 12-15, 2005.

Lisa Jackson, USDA-APHIS-PPQ-PERAL, Raleigh, NC  
Andrea Lemay, USDA-APHIS-PPQ-PERAL, Raleigh, NC

### **Training Provided in Foreign Countries**

- Nov. 2-8, 2008, Detection and quantification of *Candidatus Liberibacter* species associated with citrus huanglongbing by conventional and real-time PCR, Queretaro, Mexico.

Barbara H. Macias, CNRF, Mexico City  
Barbara H. Macias, CNRF, Mexico City  
Grisel N. Fernadex, CNRF, Mexico City  
Mario E. Mendoza, CNRF, Mexico City  
Susana A. Mendoza, CNRF, Mexico City  
Eduardo R. G. Manirez, INIFAP, MX  
Isidra H. Almeyda, INIFAP, MX  
Reyna R. L. Safarar, INIFAP, MX  
Ana L. S. Sanches, USDA-APHIS, Mexico City  
Iobana Alanis Mtz, CNRF/ENECOSA, Queretaro, MX  
Adrian D. Istas, CNRF/ENECOSA, Queretaro, MX  
Jaime Sanchez Hdz, CESVQ/ ENECOSA, Queretaro, MX  
Reyna R. Martinez, Colegio de Postgraduados. MX

### **Publications**

- Li, W et al. 2013. Development of systematic validation of qPCR for rapid and reliable differentiation of *Xylella fastidiosa* strains causing citrus variegated chlorosis. *J. Microbiol. Methods* 92:79-89
- Zhou L, Powell CA, Hoffman MT, Li W, Fan G., Liu B, Lin H, Duan Y. 2011. Diversity and plasticity of the intracellular plant pathogen and insect symbiont "*Candidatus Liberibacter asiaticus*" as revealed by hypervariable prophage genes with intragenic tandem repeats. *Appl. Environ. Microbiol.* 6663-6673.
- Zhou L, Powell, CA, Hoffman M, Li W, Fan GC, Liu B, Duan Y. 2011. Evolving diversity of *Candidatus Liberibacter asiaticus* revealed by comparative analysis of two intragenic tandem repeat genes. *Proc 2nd Int Research Conf on Huanglongbing: IRCHLB 2011 program page 2*, Orlando, FL.
- Nakhla MK, Li W, Wei G, Levy L. 2011. Development and validation of citrus leprosis virus-C (CiLV-C) molecular detection and identification methods for use in regulatory diagnostic assays. *Plant Dis.* S125.
- Kunta, M., Li, W., da Graca, J., Levy, L. 2011. Search for *Candidatus Liberibacter* spp. in citrus and orange jasmine plants and psyllids in Texas by field surveys and multi-loci PCR assays. *Plant Dis.* S95.
- Li W, Abad JA, Wen A, Gudmestad NC, Price JA, Rush CM. 2010. Detection of '*Candidatus Liberibacter solanacearum*' in potato. Chapter 39 in *APS Manual on Detection of Plant Pathogenic bacteria in Seed and Plant Material*.
- Nakhla MK, Owens K, Li W, Wei G, Skantar AM, Levy L. 2010. Multiplex real-time PCR assays for identification of the potato cyst and tobacco cyst nematodes. *Plant Dis* 94:959-965.
- Li W, Abad JA, French-Monar RD, Rascoe J, Wen A, Gudmestad NC, Secor GA, Lee I.-M, Duan Y, Levy L (2009) Multiplex real-time PCR for detection, identification and quantification of '*Candidatus Liberibacter solanacearum*' in potato plants with zebra chip. *J Microbiol Methods* 78: 59-65.
- Li W, Levy L, and Hartung JS (2009) Quantitative distribution of '*Candidatus Liberibacter asiaticus*' in citrus plants with citrus huanglongbing. *Phytopathology* 99: 139-144.
- Li W and Levy L (2009) An invited talk - Citrus huanglongbing diagnosis based on

- molecular detection of associated *Liberibacter* species. Proc. Int. Workshop on Citrus Quarantine Pests, p. xx, Villahermosa, Tabasco, Mexico.
- Duan Y, Zhou L, Hall DG, Li W, Doddapaneni H, Lin H, Liu L, Gariel DW, Vahling CM, Williams K, Dickerman A, and Gottwald T (2009) Complete genome sequence of citrus huanglongbing bacterium, 'Candidatus *Liberibacter asiaticus*' obtained through metagenomics. *Mol Plant-Microbe Interact* 22:1011-1020.
  - Wang N, Li W, Irey M, Albrigo G, Bo K, Kim J-S (2009) Citrus huanglongbing – an invited mini-review. *Tree and Forestry Science and Biotechnology*, pp. 66-72, Global Science Books.
  - Wen A, Mallik I, Alvarado VY, Pasche JS, Wang X, Li W, Levy L, Lin H, Scholthof HB, Mirkov TE, Rush CM, and Gudmestad NC (2009) Detection, distribution and genetic variations of 'Candidatus *Liberibacter sp*' associated with zebra complex of potato in North America. *Plant Dis* 93:1102-1115
  - Li W, Li D, Twieg E, Hartung JS, and Levy L (2008) Optimized quantification of unculturable 'Candidatus *Liberibacter sp.*' in host plants by real-time PCR. *Plant Dis* 92: 854-861.
  - Li W, Abad JA, and Levy L (2008) 'Candidatus *Liberibacter solanacearum*' associated with zebra chip of potato is not associated with citrus huanglongbing and is absent in Asian citrus psyllids. *Proc Int Research Conf on Huanglongbing*: 168, Orlando, FL.
  - Li W, Duan Y, Brlansky RH, Twieg E, and Levy L (2008) Incidence and population of 'Candidatus *Liberibacter asiaticus*' in Asian citrus psyllids (*Diaphorina citri*) on citrus plants affected by huanglongbing in Florida. *Proc Int Research Conf on Huanglongbing*: 231, Orlando, FL.
  - Nakhla MK, Owens KJ, Li W, Levy L (2008) Development of real-time PCR for the detection of exotic potyviruses infecting imported plant germplasm. *Phytopathology* 98: S11.
  - Nakhla MK, Owens KJ, Li W, Carta L, Skantar A, Levy L (2008) Development of real-time PCR for the detection and identification of potato cyst nematode. *Phytopathology* 98: S11.
  - Li W, Song Q, Brlansky RH, and Hartung JS (2007) Genetic diversity of citrus bacterial canker pathogens preserved in herbarium specimens. *Proc Natl Acad Sci USA* 104: 18427-18432.
  - Li W, Hartung JS, Levy L (2007) Evaluation of DNA amplification methods for improved detection of *Candidatus Liberibacter* species associated with citrus huanglongbing. *Plant Dis* 91: 51-58.
  - Montero-Astua M, Hartung JS, Aguilar E, Chacon C, Li W, Albertazzi FJ, and Rivera C (2007) Genetic diversity of *Xylella fastidiosa* from Costa Rica, São Paulo, Brazil and United States of America. *Phytopathology* 97: 1338-1347.
  - Lacava PT, Araújo WL, Azevedo JL, Li W, and Hartung JS (2007) The endophyte *Curtobacterium flaccumfaciens* reduces symptoms caused by *Xylella fastidiosa* in periwinkle, *Catharanthus roseus* (L.). *J Microbiol* 45(5): 388-393.
  - Li W, Hartung JS, and Levy L (2006). Quantitative Real-time PCR for detection and identification of *Candidatus Liberibacter* species associated with citrus Huanglongbing. *J Microbiol Methods* 66: 104-115.
  - Li W, Hartung J S, Levy L (2006) Comparison of DNA amplification methods for improved detection of *Candidatus Liberibacter* species associated with citrus huanglongbing. *Phytopathology* 96: S67.
  - Bulluck R, Shiel P, Berger P, Kaplan D, Parra G, Li W, Levy L, Keller J, Ruddy M, Sharma N, Dennis M, Stack J, Pierzynski J, O'Moara J, Webb C, Finley L, Lamour K, McKerny J, Palm M (2006) A comparative analysis of detection techniques used in US regulatory programs to determine presence of *Phytophthora ramorum* in *Camellia japonica* 'Nuccio's Gem' in an infected nursery in Southern California. *Plant Management Network, Plant Health Progress*, doi: 10/1094/PHP-2006-1016-01-RS.
  - Chacon C, Montero-Astua M, Hartung JS, Li W, Garita L, Rivera C (2006) Isolation, description, and identification of bacteria associated with diseased coffee and avocado from Costa Rica. *Phytopathology* 96: S162.
  - Lacava PT, Li W, Araujo WL, Azevedo JL, Hartung JS (2006) Rapid, specific and quantitative assays for the detection of the endophytic bacterium *Methylobacterium mesophilicum* in plants. *J Microbiol Methods* 65: 535-541.

- Montero-Astua M, Hartung JS, Li W, Aguilar E, Chacon C, Rivera C (2006) Variability in colony morphology of *Xylella fastidiosa* isolates from Costa Rica and North America. *Phytopathology* 96: S164.
- Montero-Astua M, Aguilar E, Chacon C, Garita-Cambronero J, Garita L, Villalobos W, Moreira L, Li W, Godoy C, Hartung JS, Rivera C (2006) Characterization of *Xylella fastidiosa* and epidemiology of the plant diseases caused by the bacterium in Costa Rica. *Phytopathology* 96: S81.
- Li W, Bransky RH, Hartung JS (2005) Amplification of DNA of *Xanthomonas axonopodis* pv. *citri* from historic citrus canker herbarium samples. *J Microbiol Methods* 65: 237-246.
- Li W, Song Q, Bransky R.H, and Hartung JS (2005) Genetic diversity and worldwide proliferation of citrus bacterial canker pathogens identified in historic specimens. Proc. 2nd Inter. Citrus Canker and Huanglongbing Research Workshop: 39, Orlando, FL.
- Li W, Teixeira DC, Hartung JS, and Levy L (2005) Development of multiplex real-time PCR for detection and identification of *Candidatus Liberibacter* species associated with citrus Huanglongbing. Proc. 2nd Inter. Citrus Canker and Huanglongbing Research Workshop: 58, Orlando, FL.
- Li W, Song Q, Bransky RH, Hartung JS (2005) Genetic diversity and worldwide proliferation of citrus bacterial canker pathogen identified in herbarium specimens. BARC Poster Day 2005, Abstract, USDA-ARS, Beltsville, MD.
- Bulluck R, Parra G, Shiel P, Berger P, Kaplan D, Li W, Zeller K, Levy L, Keller J, Reddy M, Sharma N, Dennis M, Stack J, Pierzynski J, O'Mara J, Webb C, McKemy J (2005) Detection of *Phytophthora ramorum* in camellia leaves by isolation, ELISA, nested and real-time PCR. *Phytopathology* 95(6): S15.
- Chacon C, Montero-Astua M, Hartung JS, Li W, Garita L, Rivera C (2005) Isolation, description, and identification of bacteria associated with diseased coffee (*Coffea arabica*) and avocado (*Persea americana*) plants from Costa Rica. APS Caribbean Annual Meeting, Costa Rica.
- Hartung JS, Li W, and Levy L (2005) Comparison of methods for the detection of '*Candidatus Liberibacter asiaticus*' in plant samples. Proc. 2nd Inter. Citrus Canker and Huanglongbing Research Workshop: 57, Orlando, FL.
- Lopes SA, Teixeira DC, Fernandes NG, Ayres AJ, Torres SCZ, Barbosa JC, Li W (2005) An experimental inoculation system to study citrus-*Xylella fastidiosa* interactions. *Plant Dis* 89: 250-254.
- Montero-Astua M, Hartung JS, Li W, Aguilar E, Chacon C, Rivera C (2005) Variability in colony morphology of *Xylella fastidiosa* isolates from Costa Rica and North America. APS Caribbean Annual Meeting, Costa Rica.
- Li W, Qin X, Hartung JS (2004) Green fluorescent protein-labeled mutants for the study of *Xylella fastidiosa* /plant interactions. BARC Poster Day 2004, Abstract, USDA-ARS, Beltsville, MD.
- Li W, Hartung JS (2004) Green fluorescent protein-labeled strains of *Xylella fastidiosa* colonize in citrus, grapevines and periwinkle. *Phytopathology* 94(6): S60.
- Lacava PT, Li W, Hartung JS (2004) PCR assay for *Methylobacterium mesophilicum* in sweet orange in sweet orange trees infected with *Xylella fastidiosa*. *Phytopathology* 94(6): S56.
- Teixeira DC, Rocha SRP, Santos MA, Mariano AG, Li W, Monteiro PB (2004) A suitable *Xylella fastidiosa* CVC strain for post-genome studies. *Curr Microbiol* 49(6): 396-399.
- Li W, Pria Jr WD, Lacava PM, Qin X, Hartung, JS (2003) Presence of *Xylella fastidiosa* in sweet orange fruit and seeds and its transmission to seedlings. *Phytopathology* 93: 953-958.
- Li W, Hartung JS (2003) Labeled and defined mutants of *Xylella fastidiosa* by tri-parental mating. *Phytopathology* 93 (6): S51.
- Li W, Qin X, Hartung JS (2003) Rapid identification of insertion sites of green fluorescent protein labeled mutants of *Xylella fastidiosa*. 103rd general meeting of American Society for Microbiology, Washington, D.C.
- Li W, Pria Jr WD, Hartung JS (2003) Colonization of citrus fruit tissues by *Xylella fastidiosa* and transmission through seed to seedlings. BARC Poster Day 2003, Abstract: 52, USDA-ARS, Beltsville, MD.

- Li W, Pria Jr WD, Lacava PM, and Hartung JS (2003) Transmission of *Xylella fastidiosa* to sweet orange seedlings by contaminated seeds. Int. Congress of Plant Pathology, Canterbury, NE.
- Hartung JS, Li W, Teixeira DC, Monteiro PB (2003) Host range, plant symptoms and population structure of *Xylella fastidiosa*. Int. Congress of Plant Pathology, Canterbury, NE.
- Huang, Q, Li, W., Hartung, JS (2003) Association of *Xylella fastidiosa* with Japanese beech leaf scorch. Can J Plant Pathol 25: 401-405.
- Li W, Zhou C, Pria Jr WD, Teixeira DC, Miranda VS, Peireira EO, Ayres AJ, He C, Costa PI (2002) Citrus and coffee strains of *Xylella fastidiosa* induce Pierce's Disease in grapevines. Plant Dis 86 (11): 1206-1210.
- Li W, Teixeira DC, Rocha SRP, Pereira EO, Pria Jr WD, Palma RR (2002) Caracterizacao de *Xylella fastidiosa* de citruos reisolada de videira. XXXV Brazilian Congress of Phytopathology, Recife, Brazil.
- Li W, Zhou C, Hartung JS (2002) Citrus and coffee strains of *Xylella fastidiosa* induce Pierce's disease in grapevines. BARC Poster Day 2002, Abstract: 58, USDA-ARS, Beltsville, MD.
- Teixeira DC, Li W, Rocha SR, Pereira EO, Palma RR, Santos MA (2002) Manutencao da patogenicidade de *Xylella fastidiosa* em citros apos passagem por plantas de *Catharantus roseus*. XXXV Brazilian Congress of Phytopathology, Recife, Brazil.
- Pria Jr WD, Lacava PM, Li W, Miranda VS, Costa PI, Farias PRS, Hartung JS, Pereira EO, Francischini FJB (2002) Efeito da *Xylella fastidiosa* em frutos e sementes de laranja doce (*Citrus sinensis* (L.) Osb.) afetados pela CVC. LARANJA 23(1): 183-202.
- Li W, Pria Jr WD, Teixeira DC, Miranda VS, Ayres AJ, Franco CF, Costa MG, He C, Costa PI, and Hartung JS (2001) Coffee Leaf Scorch caused by a strain of *Xylella fastidiosa* from citrus. Plant Dis 85(5): 501-505.
- Li W, Pria Jr WD, Teixeira DC, Miranda VS, Costa MG, Franco CF, and Costa PI (2001) Inhibition for PCR reaction and its sensibility to detect *Xylella fastidiosa* in various coffee cultivars. Summa Phytopathologica 27(1): 108, Piracicaba, SP. Brazil.
- He C, Costa PI, Brunetti II, and Li W (2001) Comparison of isoenzymic profiles and activities of peroxidases in xylem saps from sweet orange and coffee plants affected by *Xylella fastidiosa*. Summa Phytopathologica 27(1): 108-109, Piracicaba, SP. Brazil.
- Teixeira DC, Li W, Pria Jr WD, Miranda VS, He C, Costa PI (2001) *Xylella fastidiosa* from citrus multiplies in coffee plants after passing through *Catharantus roseus*. Summa Phytopathologica 27(1): 108, Piracicaba, SP. Brazil.
- Li W, He C, Ayres AJ, and Donadio LC (2000) Susceptibility of tangerines to citrus variegated chlorosis (CVC) disease. Acta Horticulturae 535:253-257.
- Li W, Pria Jr WD, Teixeira DC, Costa MG, Miranda VS, He C, Costa PI, Hartung JS (2000) Pathogenicity of *Xylella fastidiosa* of Citrus Variegated Chlorosis in coffee plants. ISC Congress 2000, Program and Abstracts: 147, Orlando, FL.
- Li W, Pria Jr WD, Mendes MS, Coutinho A, Donadio LC, Sempionato OR (2000) Field selection and evaluation of sweet oranges for resistance to Citrus Variegated Chlorosis. ISC Congress 2000, Program and Abstracts: 145, Orlando, FL.
- Li W, He C, Pria Jr WD, Teixeira DC, Miranda VS, Costa PI, Ayres AJ (2000) *Xylella fastidiosa* in Rangpur lime roots grafted with sweet oranges in the field. Summa Phytopathologica 26(1): 128, Campinas, SP. Brazil.
- Franco CF, Pria Jr WD, Costa MG, and Li W (2000) Detection of *Xylella fastidiosa* of Citrus Variegated Chlorosis in sweet orange fruits by polymerase chain reaction. ISC Congress 2000, Program and Abstracts: 150, Orlando, FL.
- He C, Li W, Ayres AJ, Hartung JS, Miranda VS, and Teixeira DC (2000) Distribution of *Xylella fastidiosa* in citrus rootstocks and transmission of citrus variegated chlorosis between sweet orange plants through natural root-grafts. Plant Dis 84: 622- 626.
- Pria Jr WD, Li W, Teixeira DC, Miranda VS, Franco CF, and Palma RR (2000) Bacterium *Xylella fastidiosa* in sweet orange seeds and its translocation from seeds to seedlings. ISC Congress 2000, Program and Abstracts: 150, Orlando, FL.
- Pria Jr WD, Li W, Teixeira DC, Miranda VS, Silva MRR, Ayres AJ (2000) Citrus variegated chlorosis decreases seed size and germination of sweet oranges. Summa Phytopathologica 26(1): 128, Campinas, SP. Brazil.
- Li W, Zreik L, Fernandes NG, Miranda VS, Teixeira DC, Garnier M, Bové JM (1999) A

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  - He C, Lemos EMG and Li W (1998) Fast evaluation method for citrus variety resistance to citrus variegated chlorosis. XIV Conference of IOCV, Program & Abstracts: 158, Campinas, SP, Brazil.
  - He C, Lemos EGM, Li W, Donadio LC, and Sempionato OR (1998) Comparison of resistance or tolerance of sweet oranges to citrus variegated chlorosis. XV Congresso Brasileiro de Fruticultura, Resumos: 233, Poços de Caldas, MG, Brazil.
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  - Li W, Donadio LC and He C (1997) Influence of twenty citrus rootstocks on severity of citrus variegated chlorosis in Hamlin sweet orange trees. I Simpósio Brasileiro de Melhoramento de Frutíferas: 113-114, Jaboticabal, SP, Brazil.
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  - Li W, Donadio LC, Beretta MJG, Rossetti V, Sempionato OR (1996) Practical methods

- for resistance evaluation of citrus varieties to citrus variegated chlorosis. Proc Int Soc Citriculture I: 276-279, South Africa.
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  - Mourao Filho FAA, Coutinho A, Bonadio C, Mendes BMJ, Li, W (1996) Melhoramento dos citros para resistência à Clorose Variegada dos Citros. In: Donadio, LC & Moreira, CS eds. Clorose Variegada dos Citros, v.1, p.54-74, FUNEP, UNESP, Jaboticabal, SP, Brazil
  - Rossetti V, Li W, Miranda VS, Carvalho MLV and Harakava R (1996) Citrus plant resistance to citrus variegated chlorosis (CVC). Fitopatol Bras 2: S354, Jaboticabal, SP, Brazil.
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  - Zhang YN, Liu GF, Li W (1994) Natural hybrids between trifoliata orange (Poncirus trifoliata) and ichang papeda (Citrus ichangensis). Hunan Agricultural Sciences 126(1): 8-11.
  - Li W, Liu GF, Zhang YN (1993) A study on the origins and evolution of mandarins in China by isozyme analysis. Hunan Agricultural Sciences 125(3): 3-6.
  - Li W, He SW, Liu GF (1993) Origin and classification of mandarins and tangerines in China. Proc Chinese Soc Plant Genetics: 268-231, Wuhan, China.
  - Li W, Liu GF, He SW (1992) Leaf isozymes of mandarins. Proc Int Soc Citriculture I: 217-220, Acireale, Italy.
  - Li W (1992) Origin and development of mandarins in China before the Song Dynasty (A.D. 960-1279). Proc Int Soc Citriculture I: 61-66, Acireale, Italy.
  - Zhang GF, Li W, Liu YN, He SW (1992) A study on pollen morphology of wild mandarins. Acta Horticulturae Sinica 19(3): 203-208.
  - Peng XS, Li W. (1991) Comparison of fruit quality of various clones of 'Ponkan' selected in Western Hunan Province. Proc Hort Soc Hunan Province: 204-208, Changsha, China.
  - Li W, Zhang YN, Liu GF, He SW (1990) Morphological and isozymic analysis of open-pollinated wild citrus rootstock seedlings. Proc Int Citrus Symposium: 253-259, Guangzhou, China.
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  - Liu GF, He SW, Li W (1990) Two new species of citrus in China. Acta Botanica Yunannica 12(3): 287-289.
  - Li W, Zhang YN, Liu GF, He SW (1989) Comparative study of peroxidase of dwarf and semi-dwarf rootstocks of citrus. Acta Horticulturae Sinica 16(1): 262-266.
  - Li W, Zhang YN, Liu GF, He SW (1989) Peroxidase isozymes and their activities in dwarf and semi-dwarf citrus rootstocks. Proc Chinese Soc Plant Physiol: 288-291,

Shanghai, China.

- Li W, He SW, Liu GF (1988) Isozyme analysis of citrus in Hunan. Proc Int Symposium on Hort Germplasms I: 252-257, Beijing, China.
- He SW, Liu GF, Li W (1988) Wild mandarins in China. Proc Int Soc Citriculture I: 113-121, Israel.
- Li W, Deng ZN, Xiang DM (1987) Plant morphological and genetic studies on the progenies of open-pollinated Satsuma mandarins. Proc Chinese Soc Hort: 342-243, Changsha, China.
- Li W, He SW, Liu GF (1987) A study on citrus in Hunan Province by analysis of leaf peroxidase. Acta Horticulturae Sinica 14(3): 151-160.

**Proficiency  
Approvals**

- June 2009, 'Candidatus Liberibacter sp.', approved to perform APHIS PPQ validated diagnostic tests for this pathogen at the USDA-APHIS-PPQ-CPHST National Plant Germplasm and Biotechnology Laboratory in Beltsville, MD as a USDA certified lab.
- June 2007, 'Candidatus Liberibacter sp.', approved to perform APHIS PPQ validated diagnostic tests for this pathogen at the USDA-APHIS-PPQ-CPHST National Plant Germplasm and Biotechnology Laboratory in Beltsville, MD as a USDA certified lab.

**Invited Talks**

- Genomewide search for candidate genes for detection and identification of 'Candidatus' Liberibacter species. Citrus Huanglongbing and Potato Zebra Chip Joint Conference, McAllen, TX, November 2009.
- Citrus huanglongbing diagnosis based on molecular detection of associated Liberibacter species. The International Workshop on Citrus Quarantine Pests, Tabasco, Mexico, 2008.

**Professional  
Memberships**

- APS
- International Society of Citriculture
- International Organization of Citrus Virologists

**ZOILA GLORIA ABAD, Ph.D.**

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**EDUCATION**

Ph.D. Plant Pathology	North Carolina State University	1993
M.Sc. Plant Pathology	National Agrarian University La Molina,	Lima-Peru
	1984	
Eng. Agronomist	National University at Central Peru. Huancayo-Peru	1972

**EMPLOYMENT HISTORY**

**Senior Lead Scientist, Oomycetes Program Leader,** USDA/APHIS/PPQ/CPHST - Beltsville Laboratory, 11.2011 – present.

**Plant Pathologist,** USDA/APHIS/PPQ/PHP/PSPI/Offshore Pest Information Program, and Permits Program. 1.2011 – 10.2011.

**Senior Lead Scientist,** USDA/APHIS/PPQ/PHP/PSPI/NIS Molecular Diagnostics Laboratory, 9.2006 – 12.2010. Acting Lab. Director 60% of time during the year 2010.

**Director,** Plant Pathogen Identification Laboratory (PPIL), Department of Plant Pathology. North Carolina State University (NCSU). 2001- 8.2006.

**Research Associate,** Department of Plant Pathology (NCSU). 1997-2000.

**Postdoctoral Research Associate,** Department of Plant Pathology (NCSU). 1993-1997.

**Mycologist,** Plant Disease and Insect Clinic, Dept. of Plant Pathology, NCSU. 1987-1990.

**Mycologist,** Dept. of Horticulture, NCSU (part time). 1987-1990.

**Mycologist,** Center of Mushroom Production, “La Encantada” Lima-Peru. 1983-1985.

**Assistant Professor,** Dept. of Plant Pathology, National Agrarian University, La Molina, Lima-Peru. 1981-1982.

**Mycologist.** International Potato Center, Pathology Dept. Lima-Peru. 1977-1978.

**PROFESSIONAL SOCIETY MEMBERSHIPS:** American Phytopathological Society (APS). APS Caribbean Division. American Society for Microbiology. International Society of Plant Pathology. Latin American Phytopathological Society. Mycological Society of America.

**AD-HOC EDITOR:** Botanical Bulletin of Academia Sinica, Mycologia, Mycological Research, Peanut Science, Plant Disease, Plant Pathology, Plant Management Network International, Spanish Journal of Agricultural Research. Project Evaluator of the National Agency for Scientific and Technological Promotion (ANPCYT) Argentina.

**RELEVANT AWARDS:**

**Outstanding Scientist Working at the United States of America.** Mexican Academy of Sciences and the Science Foundation Mexico-USA. Grant to participate as Instructor at the First International Workshop on Identification of Fungus and Straminipiles transmitted by seeds. Texcoco-Mexico. August 26-30, 2002.



**RELEVANT WORK EXPERIENCE**

- **Present Work: Dr. Z. Gloria Abad is a lead scientist at the USDA-APHIS-PPQ Center for Plant Health Science and Technology (CPHST) Laboratory** in Beltsville, MD, and adjunct assistant professor at Pennsylvania State University, Department of Plant Pathology. Her research focuses primarily on the molecular diagnostics of Oomycetes of concern for the USA. Present projects include the development, evaluation and validation of molecular assays for the detection of *P. ramorum*, *P. kernoviae*, *P. austrocedri*, *P. tentaculata*, *P. quercina*, *P. syringae* and *P. alni* subsp. *alni* and *P. alni* subsp. *multiformis* and the development, evaluation and validation of molecular tools for the detection of “Graminicolous Downy Mildews” of concern including species of *Peronosclerospora* and *Sclerophthora*.
- Dr. Abad has worked actively on the taxonomy of Oomycetes including *Phytophthora*, *Pythium*, and *Phytopythium*, she has described *Phytophthora bisheria*, *P. glovera*, *P. morindae*, *P. niederhauserii*, *Pythium plurisporium*, the new genus *Phytopythium* Abad et al (Bala et al 2010).
- Dr. Abad is working with international collaborators for the implementation of the “Online Identification Tools for *Phytophthora*: Lucid Key, Tabular Key and Sequencing analysis.” The CPHST-Identification Technology Program in Colorado (CPHST-CO) is advising the implementation of the resource. The CPHST-CO has advised the implementation of numerous online resources for identification of insects, plants, mollusks and others that are operating successfully at international level. The “Online Identification Tools to *Phytophthora*” in progress by Dr. Abad and collaborators is the first online resource implemented for plant pathogens.
- Dr. Abad is the founder and chair of the “International Workshops for Oomycetes: *Phytophthora*, *Pythium*, *Phytopythium* and related genera,” with five of these events presented since the year 2004.
- Dr. Abad has also organized and chaired the “1<sup>st</sup> and 2<sup>nd</sup> International Web Symposia for Oomycetes. one presented at MD-USA in association with the 4<sup>th</sup> International Workshop for Oomycetes 2012, and the other in Lambayeque – Peru in association with the 1<sup>st</sup> Latina American Workshop for Oomycetes in September 2013.
- Dr. Abad also organized the symposium “Status and Challenges in Identification and Diagnosis of Graminicolous Downy Mildews” at the joint APS/MSA meeting in 2013 (Austin TX, August 10-14).
- Dr. Abad has been involved as chair, organizer, instructor, or invited speaker in a number of national and international symposia and workshops on Oomycetes presented in the American Phytopathological Society meetings.

**Senior-Lead Scientist at the former USDA-APHIS-PPQ - Molecular Diagnostics Laboratory (USDA-MDL) Beltsville – Maryland. September 2006- December 2010.**

- Contributing for the establishment of the MDL by providing information on the material, equipment, molecular software, protocols and her expertise on morphological and molecular identification including sequencing and phylogenetic analysis of fungi and straminipiles.
- Providing support in fast and accurate identification of plant pathogens (morphological and molecular sequencing analysis) to some USDA agencies, and to international collaborators involved in diagnostics of quarantine pests.
- Participated in training for the molecular diagnostics of high risk plant pathogens targeted quarantine pests including Sudden Oak Death (SOD), Soybean Rust (SBR), Potato Cyst Nematode (PCN), Citrus Canker, Citrus Greening Disease (HLB), and Leaf Miners (*Lyriomiza langei* and *L. huidobrensis*). These molecular tests included Conventional (Nested, Multiplex, Restriction Fragment Length Polymorphism) and Real Time PCR.

- Representing the MDL in presentations, and cooperation opportunities (i.e. MDL demonstrations open house April, 12 2007).

### **Director and Founder of the Plant Pathogen Identification Laboratory (PPIL) – North Carolina State University, Raleigh, NC. January 2001 to September 2006**

- Working as Director and Founder of the PPIL at NCSU. The PPIL was a service center for the identification of plant pathogens to species levels that was established on 2001 and operated in a containment laboratory. It hold 10,000 national and 3,000 international USDA/ APHIS/PPQ permits and used innovative morphological and state-of-the-art molecular methods for the rapid identification of plant pathogens. The PPIL offered services to researches, consultants, corporations, and others; locally, nationally and internationally and was closed on September 15 2006 due to the new position of Gloria Abad at the USDA/APHIS/MDL.
- From 2001 to 2006 more than 4000 samples of fungi, straminipiles and bacteria were submitted for identification. Samples came from 18 USA states and from Australia, Belgium, Bolivia, Brazil, Canada, Colombia, Ecuador, France, Mexico, Netherlands, Puerto Rico, and Switzerland. *Pythium*, *Fusarium*, *Phytophthora*, and *Rhizoctonia* were the most common pathogens identified.
- PPIL was also the certified USDA/APHIS/PPQ lab. to evaluate samples for Blue Mold collected on tobacco fields and from exportation from the USA to China. Samples were collected in selected fields of participating states in the China-USA protocol including IN, KY, NC, OH, SC, TN, VA and WV.
- Gloria Abad at the PPIL pioneered the integration of morphological and molecular tools for fast identification of *Phytophthora*, *Pythium* and *Pythiogeton*. Eight *Phytophthora* spp. nov., two *Pythium* spp. nov. and two *Pythiogeton* spp. nov., two *Stomiopeltis* spp. nov., a new type of *Rhizoctonia solani* AG 2.2 V were discovered at the PPIL. She designed innovative Morphological/Molecular Keys for the identification of *Phytophthora* and *Pythium* species and morphological pictorial keys for *Colletotrichum*, *Fusarium* and *Alternaria*.
- Organized of the 1st and 2nd International *Phytophthora* and *Pythium* workshops (July 2004 and May 2006) with the participation of 10 Instructors and close to 100 participants from Argentina, Brazil, Canada, Colombia, Ecuador, France, Guam, Guatemala, Italy, Japan, Mexico, Peru, Poland, Spain, Scotland, UK and the USA.
- Organized two mini-symposiums for establishing “A Survey of Oomycetes in the Americas and beyond” (July 2004, and May 2006).
- Organized (with Kelly Ivors, NCSU) and Invited Speaker (with other 5) of the Symposium Evolution in the Current Taxonomy of the Straminipiles *Phytophthora*, *Pythium* and Beyond for the Joint Annual Meeting of the APS/MSA/CPS in Quebec City, 29 July - 2 August 2006
- Participated as instructor of workshops in Latin America for identification of fungi and straminipiles in Mexico (2002), Peru (2004), and Argentina (2005, 2006). These events provided training in morpho/molecular identification of fungi and straminipiles with emphasis in *Phytophthora* and *Pythium*. Close to 100 scientists from Argentina, Bolivia, Chile, Colombia, Cuba, Ecuador, Mexico, Peru, Spain, and Uruguay participated at these events.

### **PUBLICATIONS**

- Abad Z.G., Abad J.A., Cacciola S.O., Pane A., Faedda R., Moralejo E., Pérez-Sierra A., Abad-Campos P., Alvarez-Bernaola L.A., Bakonyi J., Józsa A., Herrero M.A., Burgess T.I., Cunnington J.H., Smith I.W., Balci Y., Blomquist C., Henricot B., Denton G., Spies C., Mcleod A., Belbahri L., Cooke D., Kageyama K., Uematsu S., Kurbetli I. and Degirmenci K. 2014. *Phytophthora niederhauserii* sp. nov., a

polyphagous species associated with ornamentals, fruit trees and native plants in 13 countries. *Mycologia* 106: 431-447.

- Abad Z.G., Ivors K.L., Gallup C.A., Abad J.A. and Shew H.D. 2011. Morphological and molecular characterization of *Phytophthora glovera* sp. nov. from tobacco in Brazil. *Mycologia* 103: 341-350.

- Abad Z.G., Abad J.A., Coffey M.D., Oudemans P.V., Man in 't Veld W.A., de Gruyter H., Cunnington J., and Louws F.J. 2008. *Phytophthora bisheria* sp. nov., a new species identified in isolates from the Rosaceae raspberry, rose and strawberry in three continents. *Mycologia* 100: 99-110.

- Abad, Z.G. and Abad, J.A. 1997. Another look at the origin of Late Blight of Potatoes, Tomatoes and Pear Melon in the Andes of South America. *Plant Disease* 81: 682-688.

- Abad, Z.G., Shew, H.D., Lucas, L.T. and Grand, L.F. 1995. A new species of *Pythium* producing multiple oospores isolated from bentgrass in North Carolina. *Mycologia* 87: 896-901.

- Bala K., Robideau G.P., Levesque C.A., de Cock A.W.A.M., **Abad Z.G.**, Lodhi A.M., Shahsad S., Ghaffar A., Coffey M.D. 2010. *Phytophythium* Abad, de Cock, Bala, Robideau, Lodhi & Levesque, gen. nov. and *Phytophythium sindhum* Lodhi, Shahzad & Levesque, sp. nov. *Persoonia* 24: 136-137 (Fungal Planet 49).

- de Cock A.W.A.M., Bala K., Rintoul T.L., Robideau G.P., **Abad Z.G.**, Lodhi A.M., Coffey M.D. and Lévesque C.A. 2014. Molecular phylogeny and new combinations for the genus *Phytophythium*. *Persoonia* (In Press).

- Grünwald NJ, 40 authors including **Z.G. Abad**. 2009. Standardizing the nomenclature for clonal lineages of the sudden oak death pathogen, *Phytophthora ramorum*. *Phytopathology* 99: 792-795.

- Martin F.N., **Abad Z.G.**, Balci Y., and Ivors K. 2012. Identification and Detection of *Phytophthora*: Reviewing our Progress, Identifying our Needs. *Plant Disease* 96: 1080-1103 (Future article).

- Nelson S., and **Abad Z.G.** 2010. *Phytophthora morindae*, a new species causing Black Flag on Noni (*Morinda citrifolia* L) in Hawaii. *Mycologia* 102: 122-134.

- Park B., Martin F., Geiser D.M., Kim H.S., Mansfield M.A., Nikolaeva E., Park S.Y., Coffey M.D., Russo J., Kim S.H., Balci Y., **Abad G.**, Burgess T., Grünwald N.J., Cheong K., Choi J., Lee Y.H., and Kang S. 2013. *Phytophthora* database 2.0: update and future direction. *Phytopathology* 103: 1204-1208.

### **SELECTED ABSTRACTS AND PRESENTATIONS:**

- Abad Z.G. 2014. The Taxonomy of *Phytophthora*: What is done and what is needed for the correct identification and diagnostics of species in the Genus. Seventh IUFRO “*Phytophthora* in Forests and Natural Ecosystems”. Esquel, Patagonia Argentina, November 10-15 2014.

- Abad Z.G., Owens K.J., Bienapfl J.C., Green S. and Nakhla M.K. 2014. Molecular Tools for the PCR detection of *Phytophthora austrocedri*. Seventh IUFRO “*Phytophthora* in Forests and Natural Ecosystems”. Esquel, Patagonia Argentina, November 10-15 2014.

- Abad Z.G., Bienapfl J.C., Balci Y. Burgess T., Coffey M., Martin F. and Kang S. 2014. Online ID Tools to *Phytophthora*: Lucid Key, Tabular Key and Sequencing Analysis: Progress and demands for accurate identification & diagnostics. *Phytopathology* xxx (Suppl. xx) :Sxx.x. Abstract 394P APS/CPS 2014.

- Abad Z.G., Bienapfl J.C., Luster D.G., Carter M., Thines M., Telle S., Riley M.J.J., Levesque A., Shivas R.J., Dela Cueva F.M., Crouch J.A., and Nakhla M.K. 2013. Status, challenges and tools for identification and diagnosis of *Peronosclerospora* and *Sclerophthora* of regulatory concern for graminicolous crops. 47S

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- Abad ZG, Balci Y, Coffey MD, and Kang S. 2012. Morphological-Molecular ID Tools of *Phytophthora*: Lucid & Tabular Keys and Sequencing Analysis. Sixth IUFRO “*Phytophthora* in Forests and Natural Ecosystems”. Cordoba, Spain. September 9-14 2012.
  - Abad Z.G. 2010. How to avoid misidentifying your isolates: The value of the Morphological/Phylogenetic Key of *Phytophthora* extypes and neotypes. *Phytopathology* 100: S150.
  - Bienapfl J.C., **Abad Z.G.**, Nakhla M.K. 2014. Development and evaluation of molecular methods for species-specific detection of *Phytophthora tentaculata*. *Phytopathology* xxx (Suppl. xx) :Sxx.x. Abstract 390P APS/CPS 2014.
  - Owens K.J., **Abad Z.G.**, Bienapfl J.C., Green S. and Nakhla M.K. 2014. Development and validation of multiplex real-time PCR and conventional PCR tests for the detection of *Phytophthora austrocedri*. *Phytopathology* xxx (Suppl. xx) :Sxx.x. Abstract 393P APS/CPS 2014.
    - 50 additional papers and abstracts.

Maryland, October 15, 2014

**Francisco Murilo Zerbini**Born June 16<sup>th</sup>, 1966

Dep. de Fitopatologia/BIOAGRO

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E: [zerbini@ufv.br](mailto:zerbini@ufv.br)**Education****Ph.D.:** Plant Pathology, University of California, Davis, CA, USA, 1996**M.Sc.:** Plant Pathology, Universidade Federal de Viçosa (UFV), Viçosa, MG, Brazil, 1991**B.S.:** Agronomy, UFV, 1988**Employment****1996 - 1999:** Assistant Professor, Dep. of Plant Pathology (DFP) and Institute for Agricultural Biotechnology (BIOAGRO) - UFV**1999 - 2014:** Associate Professor, DFP/BIOAGRO - UFV**2001 - 2002:** Visiting Scientist, Dep. of Biological Sciences, University of South Carolina, Columbia, SC, USA**2014 - present:** Professor, DFP/BIOAGRO - UFV

Research Fellow of the Brazilian National Research Council (CNPq), level 1A

**Teaching Responsibilities****As lecturer:**

FIP 320 (Plant Disease Diagnosis): Undergraduate level, 3 units, semestral

**As Coordinator:**

FIP 630 (Plant Virology): Graduate level, 3 units, annual

FIP 704 (Molecular Plant Pathology): Graduate level, 3 units, annual

FIP 730 (Plant Molecular Virology): Graduate level, 3 units, annual

**Summary of scientific output**

Papers in peer-reviewed journals..... 92

Books/Book chapters ..... 25

Graduate students advised ..... 19 M.Sc., 21 D.Sc.

Undergraduate students advised ..... 26

**Selected Publications**

- Ramos-Sobrinho, R., Xavier, C.A.D., Pereira, H.M.B., Lima, G.S.A., Assunção, I.P., Mizubuti, E.S.G., Duffy, S. & ZERBINI, F.M. (2014) Contrasting genetic structure between two begomoviruses infecting the same leguminous hosts. **Journal of General Virology** 95:2540-2552.
- Silva, F.N., Lima, A.T.M., Rocha, C.S., Castillo-Urquiza, G.P., Alves-Junior, M. & ZERBINI, F.M. (2014). Recombination and pseudorecombination driving the evolution of the begomoviruses

- Tomato severe rugose virus* (ToSRV) and *Tomato rugose mosaic virus* (ToRMV): Two recombinant DNA-A components sharing the same DNA-B. **Virology Journal** 11:66.
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#### Additional activities

- Editor-in-Chief, TROPICAL PLANT PATHOLOGY (2012-2017)
- Editor, ARCHIVES OF VIROLOGY (2006-present)
- Associate Editor, PLANT PATHOLOGY (2012-present)
- Review Editor, FRONTIERS IN VIROLOGY (2012-present)
- Member of the Editorial Board, VIROLOGY (2011-2015)
- Member of the *Geminiviridae* (2003-present) and *Potyviridae* (2006-present) Study Groups of the International Committee on the Taxonomy of Viruses (ICTV)
- Member of the Executive Committee and Chair of the *Geminiviridae* Study Group of the ICTV (2014-present)
- Associate Editor, JOURNAL OF GENERAL VIROLOGY (2003-2008)
- Administrative Director of the Brazilian Society for Virology (1999-2002)

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**2005 - 2009**

PhD in Agronomy (Plant Pathology) (CAPES Concept 7).

Federal University of Viçosa, UFV, Brazil.

Title: Biological and molecular characterization of begomoviruses in soybean and Euphorbia heterophylla, and RNA interference-mediated virus resistance in transgenic soybean plants. Year of production: 2009.

Advisor: Francisco Murilo Zerbini Junior.

Co-advisor: Francisco José Lima Aragão.

Financial support: National Council for Scientific and Technological Development, CNPq, Brazil.

**2003 - 2005**

Masters in Plant Pathology (CAPES Concept 5).

University of Brasilia, UnB, Brazil.

Title: Diversity of begomoviruses associated with tomato crop in Central Brazil, Year of Obtaining: 2005.

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Financial support: National Council for Scientific and Technological Development, CNPq, Brazil.

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Graduation in Agronomy.

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**Complete articles published in journals:**

- 1- Albuquerque, Leonardo C.; Aranha, Silvia A.; **Fernandes, Fernanda Rausch**; Inoue-Nagata, Alice K. Further evidence reveals that okra mottle virus arose from a double recombination event. Archives of Virology, v. 158, p. 181-186, 2013.



- 2- Albuquerque, Leonardo C.; Varsani, Arvind; **Fernandes, Fernanda Rausch**; Pinheiro, Bruna ; Martin, Darren P.; Tarso Oliveira Ferreira, Paulo; Lemos, Thaís Oliveira; Inoue-Nagata, Alice K. Further characterization of tomato-infecting begomoviruses in Brazil. Archives of Virology, v. 1, p. 1, 2012.
- 3- **Fernandes, Fernanda Rausch**; Albuquerque, Leonardo C.; Oliveira, Cristiane L.; Cruz, Andréa R. R.; Rocha, Wesley B.; Pereira, Talita G.; Naito, Fernanda Y. B.; Dias, Natália de M.; Nagata, Tatsuya; Faria, Josias C.; Zerbini, Francisco M. ; Aragão, Francisco J.L.; Inoue-Nagata, Alice K. Molecular and biological characterization of a new Brazilian begomovirus, euphorbia yellow mosaic virus (EuYMV), infecting Euphorbia heterophylla plants. Archives of Virology, p. 1, 2011.
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- 5- Fernandes, Fernanda R.; **Fernandes, Fernanda Rausch**; Cruz, A.R.R.; Faria, J.C.; Zerbini, F. M.; Aragão, Francisco J.L. Three distinct begomoviruses associated with soybean in central Brazil. Archives of Virology, p. 1-4, 2009.
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