

USP

1901

2001



ESALQ

100 ANOS



Universidade de São Paulo

BRASIL



**LAN- Agroindústria
Alimentos e Nutrição**



LCE- Ciências Exatas



**LEB- Engenharia de
Biossistemas**



LGN- Genética



LSO – Ciência do Solo



LCF- Ciências Florestais



**LEA- Entomologia
e Acarologia**



LPV- Produção Vegetal



LCB- Ciências Biológicas



**LES- Economia
Administração e Sociologia**



**LFN- Fitopatologia e
Nematologia**



LZT- Zootecnia



DEPARTMENT OF PLANT PATHOLOGY & NEMATOTOLOGY

Prof. Dr. Luís Eduardo A.
Camargo
Department Head

Prof. Dr. Jorge A. M. Rezende
Department Vice-Head



Horticulture building

<http://www.lfn.esalq.usp.br/>

<http://www.en.esalq.usp.br/who-we-are/administration/departments-faculty-members/plant-pathology-and-nematology>

DEPARTMENT OF PLANT PATHOLOGY & NEMATOTOLOGY

Faculty: 11

Supporting personal: 12



Horticulture building



FITOPATOLOGIA E NEMATOLOGIA

[HOME](#)[APRESENTAÇÃO](#)[EQUIPE](#)[LABORATÓRIOS](#)[PROJETOS](#)[PRODUÇÃO CIENTÍFICA](#)[SERVIÇOS](#)[ENSINO](#)[CONTATO](#)[WEBMAIL](#)[ENGLISH](#)

UNDERGRADUATE COURSES*

Number	Name
LFN1624	<u>Plant Diseases of Main Crops</u>
LFN1625	<u>Plant Diseases of Fruit Trees and Vegetables</u>
LFN0615	<u>Supervised Internship on Plant Pathology and Nematology I</u>
LFN0635	<u>Supervised Internship on Plant Pathology and Nematology II</u>
LFN0424	<u>Plant Pathology</u>
LFN0321	<u>Microbiology</u>
LFN0125	<u>Environmental Microbiology</u>
LFN0225	<u>General Microbiology</u>
LFN0512	<u>Nematology</u>
LFN0425	<u>Forest Pathology</u>
LFN0325	<u>Principles of Microbiology</u>
LFN0233	<u>Zoology and Environment</u>
LFN0212	<u>General Zoology and Parasitology</u>

*Undergraduate students from Agriculture, Forestry, Biological Sciences, Food Science, Environmental Management.



Escola Superior de Agricultura "Luiz de Queiroz" Universidade de São Paulo

INSTITUCIONAL

GRADUAÇÃO

PÓS-GRADUAÇÃO

PESQUISA

CULTURA E
EXTENSÃO

DEPARTAMENTOS

BIBLIOTECA

ATIVIDADE
INTERNACIONAL

Programa de Pós-Graduação Fitopatologia

English

Este programa destina-se a pesquisadores, profissionais e estudantes de pós-graduação que estejam dispostos a se especializar na área de Fitopatologia. Os alunos são treinados para ensino e pesquisa em áreas como a biologia celular e molecular relacionadas com as interações planta-patógeno, doenças de planta, e caracterização de fitopatógenos.

Cursos oferecidos

Mestrado e Doutorado

Avaliação pela CAPES

Triênio 2010/2011/2012 - conceito "7"

Linhas de pesquisa

- Biologia celular e molecular das interações planta-patógeno
- Controle de doenças de plantas
- Epidemiologia de doenças de plantas
- Fitopatógenos: identificação, variabilidade e mecanismos de patogenicidade
- Resistência de plantas a patógenos



Fitopatologia

Orientadores

Disciplinas

Pós-Doutorado

Legislação

Processo seletivo

Contato



PÓS-GRADUAÇÃO

» Início

» Sobre

» Programas

» Processo seletivo

» Defesas

» Solicitação de documentos

» Diplomas

» Infraestrutura

» Contatos

GRADUATE COURSE ON PLANT PATHOLOGY*

February 2016:

Ph.D. Students – 25
M.Sc. Students - 17

Ph.D. thesis (1970) – 191

Master dissertation (1964) - 310

Grade 7 – Last CAPES (Ministry
of Education) triennial
evaluation

(Maximum grade is 7)

LFT5870	Plant Disease Agents
LEF5720	Plant Pathogenic Bacteria
LFT5780	Plant Pathology Clinic
LFT5880	Plant Disease Control
LFT5860	Chemical Control of Plant Diseases
LEF5840	Epidemiology and Control
LFT5830	Plant Disease Physiology and Biochemistry
LFT5710	General Plant Pathology
LFT5850	Genetics of host-pathogen interactions
LEF5740	Plant Pathology Methods
LFT5785	Transmission Electron Microscopy
LFT5790	Scanning Electron Microscopy
LFT5810	Plant Nematology
LFT5750	Fungal Physiology
LFT5770	Seed Pathology
LFT5827	Special Problems in Plant Diseases
LFT5760	Plant Virology

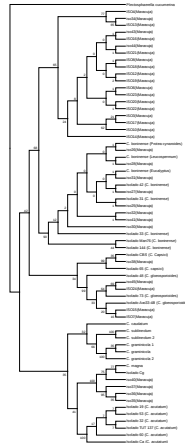


LABORATORY OF MYCOLOGY

Prof. Nelson S. Massola Jr.

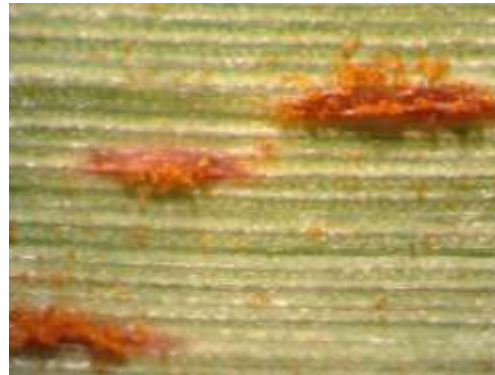
Research on plant pathogenic fungi

Colletotrichum spp. (chiefly)



Characterization
Identification
Variability

Sugarcane rusts



Spores preservation
Varietal reaction

Citrus gummosis



Varietal reaction
Zoospores attraction



LABORATORY OF PLANT VIROLOGY

Prof. Jorge A. M. Rezende

Diagnose of plant virus diseases:

Biological, serological , TEM & molecular assays



Potyvirus particles

Passion fruit woodiness - disease management:

Transgenic plants, cultural practices (roguing),
cross protection.



Mosaic on passionflower

Virus-vector relationship:

Zucchini lethal chlorosis virus – *Frankliniella zucchini*

Begomovirus & Crinivirus – *Bemisia tabaci*



Tomato infected
by crinivirus



LABORATORY OF PHYTOPLASMAS

Prof. Ivan P. Bedendo

- Disease diagnosis in cultivated species



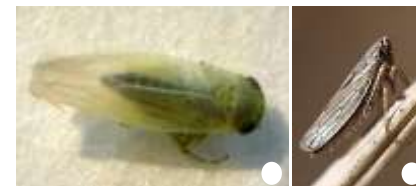
- Molecular detection and identification



Characterization of the genetic diversity



- Identification of potential insect vectors



- Epidemiological analyses





LABORATORY OF NEMATATOLOGY

Prof. Mario M. Inomoto

Cultural practices for disease management:
crop rotation & gramineous cover crops

Seed treatment for disease management

Screening of coffee resistance to *Pratylenchus jaehni*
and *Meloidogyne incognita*



Carrots before crop rotation



Carrots after crop rotation



LABORATORY OF PLANT BACTERIOLOGY

Prof. José Belasque Junior

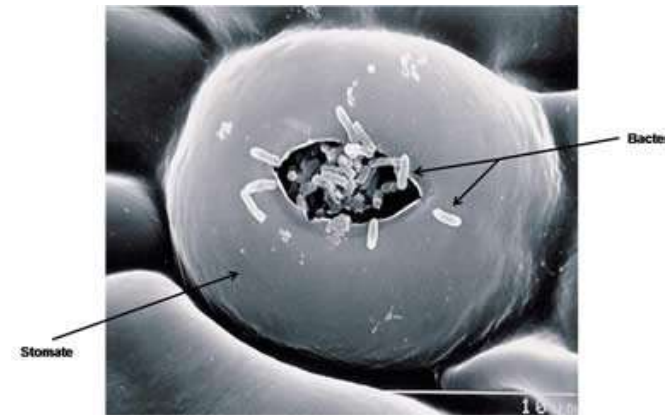
Research on plant pathogenic bacteria



<http://www.fundecitrus.com.br/doencas/cancro/7>

- Epidemiology and control

Citrus canker
HLB citrus



The bacterium *Xanthomonas axonopodis* pv. *citri* exuding from a stomate (pl. stomata) five days after infection on a citrus leaf. A stomate is a pore, mainly found on the underside of a leaf, used for gas exchange.

<http://www.crec.ifas.ufl.edu/extension/canker/pathogen.shtml>



SEED PATHOLOGY

Prof. José O M. Menten & Dr. Maria Heloisa Morais



Detection of seed-borne pathogens: methods, incidence, and transmission

Effects of seed-borne fungi on seed physiology

Chemical seed treatment to control seed-borne and soil-borne pathogens

Seed treatment with *Trichoderma* spp. to control *Sclerotinia sclerotiorum*



Methods to detect
Sclerotinia sclerotiorum



Chemical treatment for
corn seeds



Seed treatment to control
Rhizoctonia solani on soil

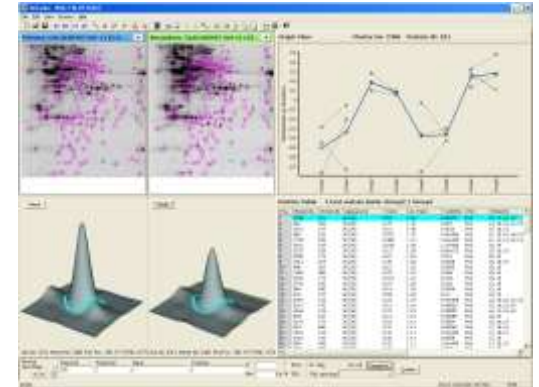


LABORATORY OF MOLECULAR GENETICS

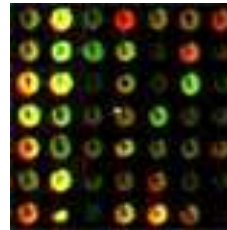
Prof. Luis E. A. Camargo

- Genetics of host-pathogen interactions

- Proteomic and transcriptomic responses of sugarcane plants



- Functional genomics of plant associated bacteria



- Identification of disease resistance genes



- Development of molecular markers applied to breeding



PLANT DISEASE EPIDEMIOLOGY

Prof. Armando Bergamin Filho
Prof. Lilian Amorim



THEORETICAL EPIDEMIOLOGY

Temporal Dynamics of Epidemics

Spatial Distribution of Diseased Plants

APPLIED EPIDEMIOLOGY: disease management

Citrus: HLB, Sudden Death, CVC, Canker, Black Spot

Tomato: Begomovirus, Crinivirus

Fruit Trees: Guava Anthracnose, Peach Brown Rot

Sugarcane: Orange and Brown Rust

Oil Palm: Fatal Yellowing (abiotic)



Citrus Canker:
new eradication
law (1999)



Citrus Sudden Death: epidemiological
similarity with Citrus Tristeza



CENTER FOR ELECTRON MICROSCOPY - RESEARCHES ON PLANT DISEASES

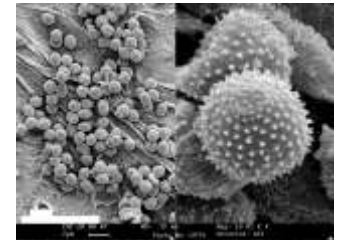
Prof. Francisco A. O. Tanaka & Elliot W. Kitajima



Detection and morphological
characterization of plant pathogens

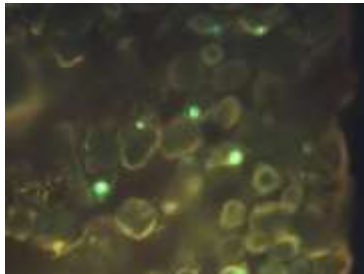


Rhabdo- and potyvirus in lettuce

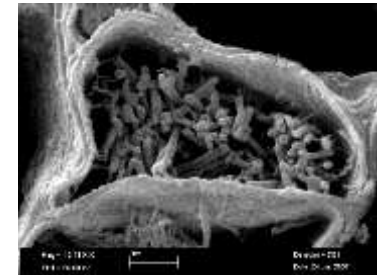


Oxalis rust

Histo- and cytopathology of plant pathogen infection

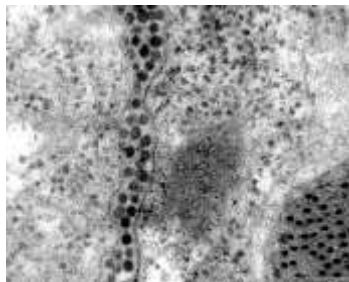


In situ detection of
Citrus leprosis virus by
immunofluorescence

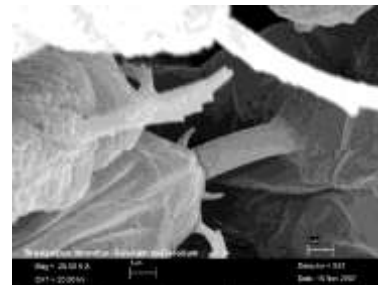


Liberibacter in the phloem vessel

Plant pathogen/vector relationship



Citrus leprosis
virus within the
vector mite
Brevipalpus
phoenicis

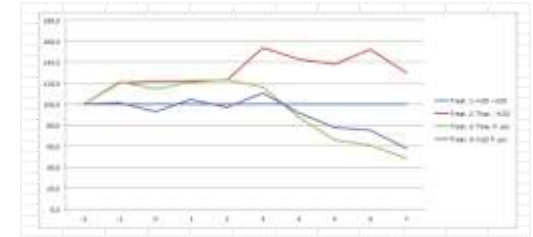


SEM image of
Brevipalpus mite
feeding on citrus
leaf



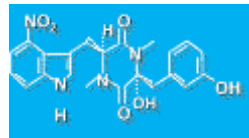
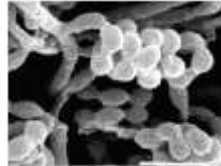
LABORATORY OF PLANT DISEASE PHYSIOLOGY AND BIOCHEMISTRY

Prof. Sérgio F. Pascholati



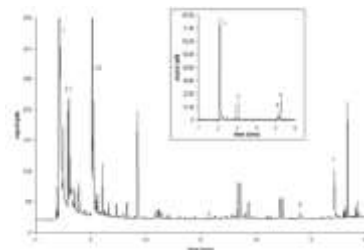
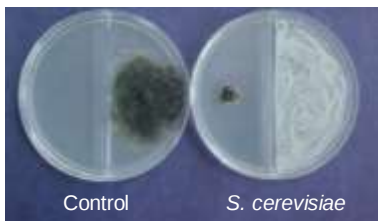
- Physiology and biochemistry of plant-pathogen interactions

- Induced disease resistance



Thaxtomine A

- Biological control of plant pathogens (post-harvest)





PLANT DISEASE DIAGNOSTIC CLINIC

Dra. Liliane de Diana Teixeira



The clinic provides plant disease diagnosis and control recommendations for anyone from home owners to commercial growers. Services include analysis of plant material and soil for bacterial, fungal, viral, and nematode pathogens.

www.lfn.esalq.usp.br/clinica



Thanks !

Obrigado !



lfn@usp.br