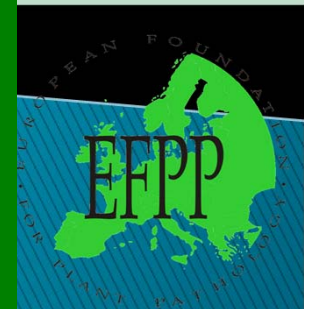


The Center for IPM: Addressing Global, National and Local IPM Priorities

***Frank J. Louws, Karl Suiter, Yulu Xia, Jim
VanKirk and Steve Toth.***

***NSF-Center for IPM
North Carolina State University, Raleigh,
NC, 27606.***

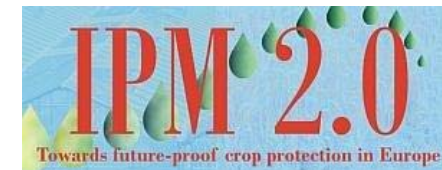
***October 1, 2012
Wageningen NL***



The NSF Center for IPM

NC STATE UNIVERSITY

- ▶ Approved and established in 1991
- ▶ National Science Foundation supported for 10 years
- ▶ Administratively within the NCSU College of Agriculture and Life Sciences





NSF Center for Integrated Pest Management



The NSF Center for IPM

Web Applications:

- ▶ CIPM houses over 50 database applications and dynamic websites for a diverse clientele
- ▶ Federal: EPA, USDA NASS, USAID (IPM CRSP), USDA NIFA, USDA APHIS
- ▶ Non-federal: IAPPS, Entomology Digital Library, [NAICC](#), SCOAR (organic non-profit), IRAC, WWW Virtual Library for Agriculture, grower organizations, etc.
- ▶ Industry contributions to selected projects (e.g., [Pesticide Environmental Stewardship website](#))

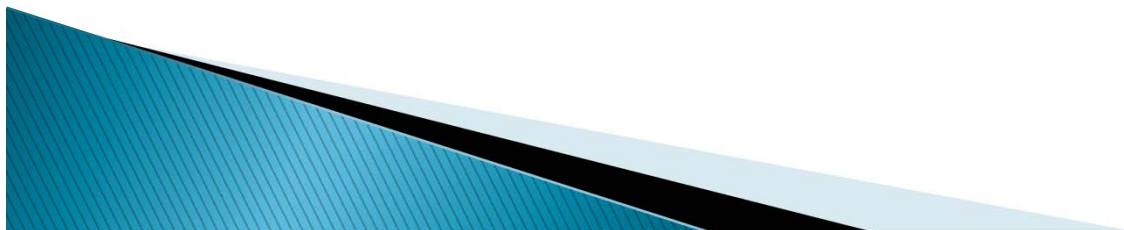
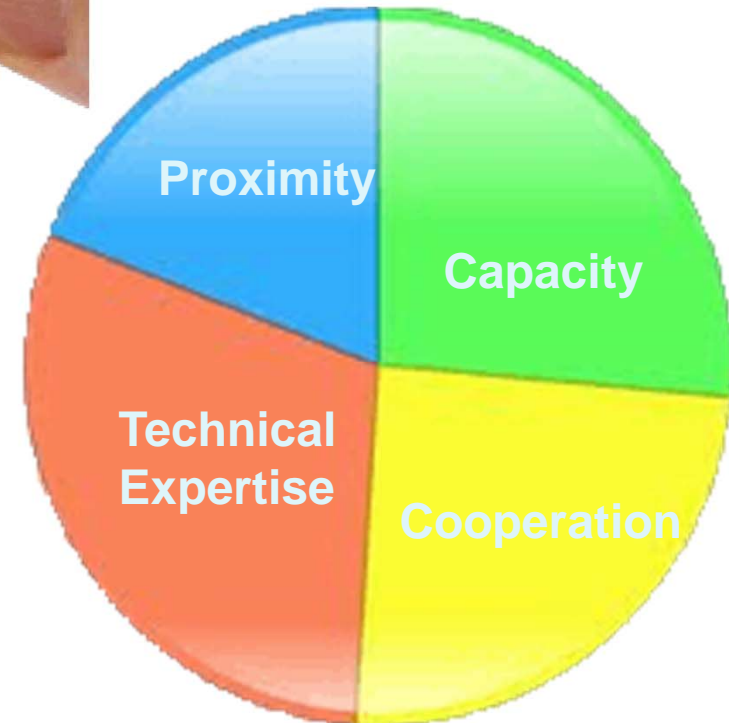


Components for Building a Partnership



Karl Suiter
Associate Director

USDA/PPQ/CPHST



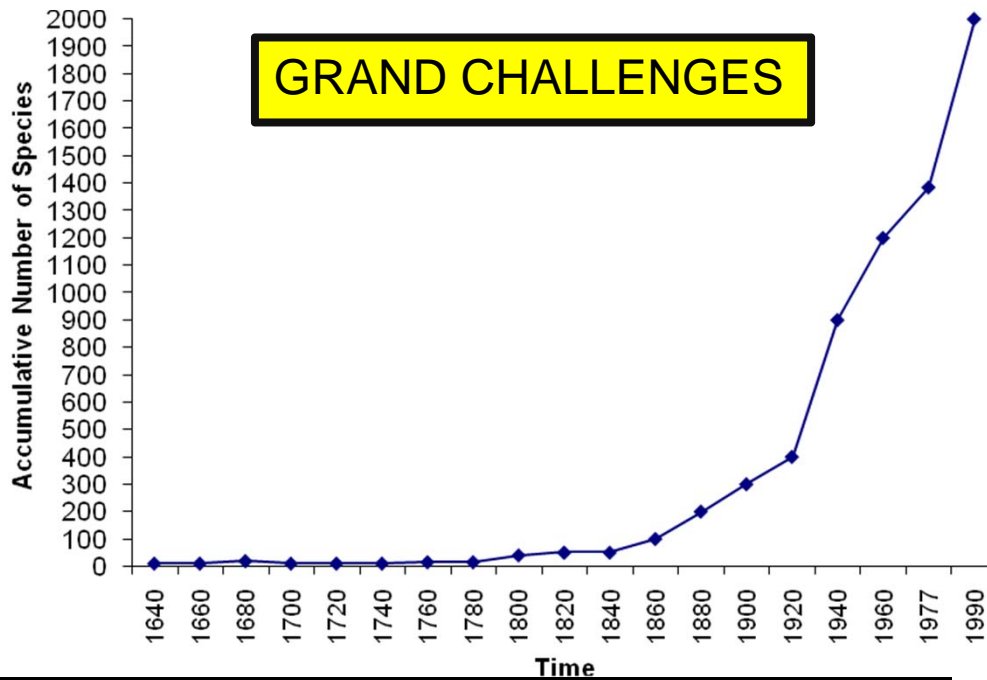


Figure 1. Number of exotic species of insects and mites (left) during the period of 1640-1990 (data source: 1640 – 1977: Sailer; 1990: U.S. Congress)



Phytophthora ramorum

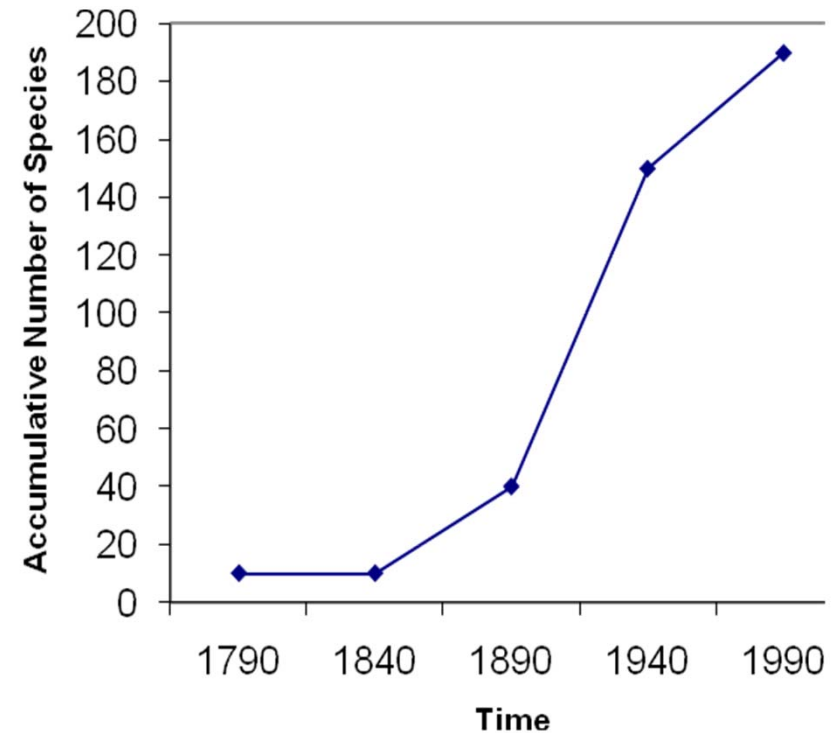


Figure 2. Number of exotic species of plant pathogens based on U.S. Congress



Kadzu



Background

- ▶ Accomplished through a number of cooperative agreements between the USDA/PPQ/CPHST and the NSF Center for Integrated Pest Management

CIPM provides CPHST with IT (Information Technology) and IM (Information Management) expertise not readily available from within the USDA


- ▶ Projects mutually benefit the USDA/CPHST and NCSU



Focus of Offshore Activities



Databases and Applications Supporting USDA/APHIS

- Offshore Pest Information System (OPIS)
 - Global Pest and Disease Database (GPDD)
 - Agricultural Internet Monitoring System (AIMS)
 - New Pest Advisory Group (NPAG)
 - NCSU APHIS Plant Pest Forecasting System (NAPPPFAST)
 - Risk Analysis Biological Information Database (RABID)
 - Biological and Taxonomic Support (BATS)
 - Select Agent Database (SAD)
 - NAPPO Pest Alert System
 - Ad Hoc Support System
 - ISO 9000
 - Distributed Mapping Project
 - CPHIST web site (www.cphst.org)
- 

EPICA: Exotic Pest Information Collection and Analysis

Warning: The following information has not been confirmed with the appropriate national plant protection organization(s). It is provided solely for the purposes of early warning and should be used with caution. Please do not distribute this information indiscriminately.

About EPICA



Wednesday, November 23, 2011 Notification

Tomato leaf curl Nigeria virus (ToLCNGV), a new virus described from Nigeria

Source: Archives of Virology

Source Publication Date: 11/5/11

Category: New Description/Identification

A recent publication describes a new begomovirus, tomato leaf curl Nigeria virus (ToLCNGV), from *Solanum lycopersicum* (tomato) plants in Nigeria exhibiting leaf curling and stunting. Laboratory tests indicated that ToLCNGV also infects *Phaseolus vulgaris* (bean) and *Nicotiana tabacum* (tobacco). ToLCNGV is vectored by whiteflies. Little information is available regarding the distribution of ToLCNGV.

References:

1. Kon, T. and R. L. Gilbertson. 2011. Two genetically related begomoviruses causing tomato leaf curl disease in Togo and Nigeria differ in virulence and host range but do not require a betasatellite for induction of disease symptoms. Archives of Virology DOI: 10.1007/s00705-011-1139-0. Last accessed November 23, 2011, from <http://www.springerlink.com/content/45272p4274358234/fulltext.pdf>.

To access previous EPICA articles, please log into the [Global Pest and Disease Database \(GPDD\)](#).

Treatment and Quality Assurance Commodity Treatment Information System (CTIS)

11/30/2010:

Rwandan charity thanks PPQ. A newly developed heat treatment for plant pathogen bacteria and fungi on dried plant parts was used to mitigate the risks associated with imported handicrafts produced by the Rwanda Basket Company. The charity was thrilled that their crafts were finally allowed entry to the US.

A “Critical function
Database”

CTIS Links

- 429 Fumigation
- 556 Cold Treatment
- IRADS Irradiation
- Niger Seed Database
- Certified Vessels and Containers
- Treatment Manual Index

CTIS Training Sites

What's New in Treatments

05/25/2011:
Are you looking for an old version of the PPQ Treatment Manual? TQAU has started to archive old versions of the Treatment Manual as well as the accompanying letters from the Manuals Unit. Look for the link under Treatment Resources. If you have any questions, give us a call (919) 855 7450.

05/23/2011:
The revised Section 18 list was added to the Treatment Manual. PPQ has added a new crop group, leaves of legume vegetables, to the list. Section 18 crisis



CTIS System Description

The Commodity Treatment Information System is a secure, online web-enabled data system that collects, stores, and creates reports from phytosanitary treatments and provides regulatory information. Currently, the system is composed of six modules, each targeted to a phytosanitary treatment or type of regulatory information. Several more components are in the design phase. The existing modules are:

- 429 Fumigation System ("429"): Tracks fumigations monitored by PPQ.
- 556 Cold Treatment System ("556"): Collects information from in-transit cold treatments and performs automated analysis on treatment data.
- Irradiation Reporting and Accountability Database (IRADS): Tracks irradiation treatment and traceback data and allows officers to issue treatment certificates.
- Niger Seed Database: Collects data from the heat treatment of Niger Seed (*Guizotia abyssinica*), a common bird food.
- Certified Vessels and Containers Database: The source for information on ships and shipping containers certified by the USDA for cold treatment.
- Treatment Manual Index: Provides a convenient way to search PPQ treatments.

GPDD: Global Pest & Disease Database

GPDD Objectives


The Global Pest and Disease Database (GPDD) is an archive of exotic pest information specific to PPQ needs, for uses including: prioritization of pest threats to the U.S.; focus of off-shore mitigation strategies, domestic exotic pest surveys, and domestic port activities; conducting risk assessments.

2300+ pests not known to be in the US, or present with a limited distribution



GPDD: Global Pest & Disease Database

Data Collected

- GPDD Header
 - Taxonomy
 - Scientific Name
 - Reason for Inclusion
 - APHIS Documents
 - Synonyms
 - Hosts
 - Plant Part Affected
 - Distribution
 - Impact
 - Import/Export
 - Pathways
 - Quarantine
 - Monitor
 - Images
 - Biology
 - Control
 - Detection
 - Sources
 - References
- 

GPDD: Global Pest & Disease Database

Log out

Global Pest & Disease Database

Home	Search	Reports	Cooperators
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GPDD Pest ID 89 - Last Full Review June 11, 2009

[Pest Tools](#) ▼ [View Pest Data](#) ▼

Scientific Name
Candidatus Liberibacter asiaticus Jagoueix, Bové, & Garnier 1994


Taxonomic Position
Bacteria : Proteobacteria : Alphaproteobacteria : Rhizobiales : Rhizobiaceae

Preferred Common Name
Huanglongbing

Justification for Inclusion in GPDD

- Agricultural Bioterrorism Protection Act of 2002; Possession, Use and Transfer of Biological Agents and Toxins; Interim Final Rule (7 CFR Part 331, Dec 2002)
- American Phytopathological Society Pest List 2001. From: Madden, L. V. (2001). What are the Nonindigenous Plant Pathogens that Threaten U.S. Crops and Forests? (Table 1. Tentative list of threatening plant pathogens not reported in the US)
- CAPS FY 2005 National Target Pest List
- CAPS FY 2006 National Target Pest List
- CAPS FY 2008 AHP Master Pest List
- CAPS FY 2008 Pests of National Concern
- CAPS FY 2009 Pests of National Concern
- EPICA Notifications. Exotic Pest Information Collection & Analysis, APHIS-PPQ Biosurveillance
- Offshore Pest Information System "A" list (priority agents) - August 2005
- Offshore Pest Information System "A" list (priority targets) - August 2006
- Offshore Pest Information System "A" list (priority targets) - August 2007
- Offshore Pest Information System List 2003

Cooperator's Database(s)



GPDD: Global Pest & Disease Database

Plant Part Affected

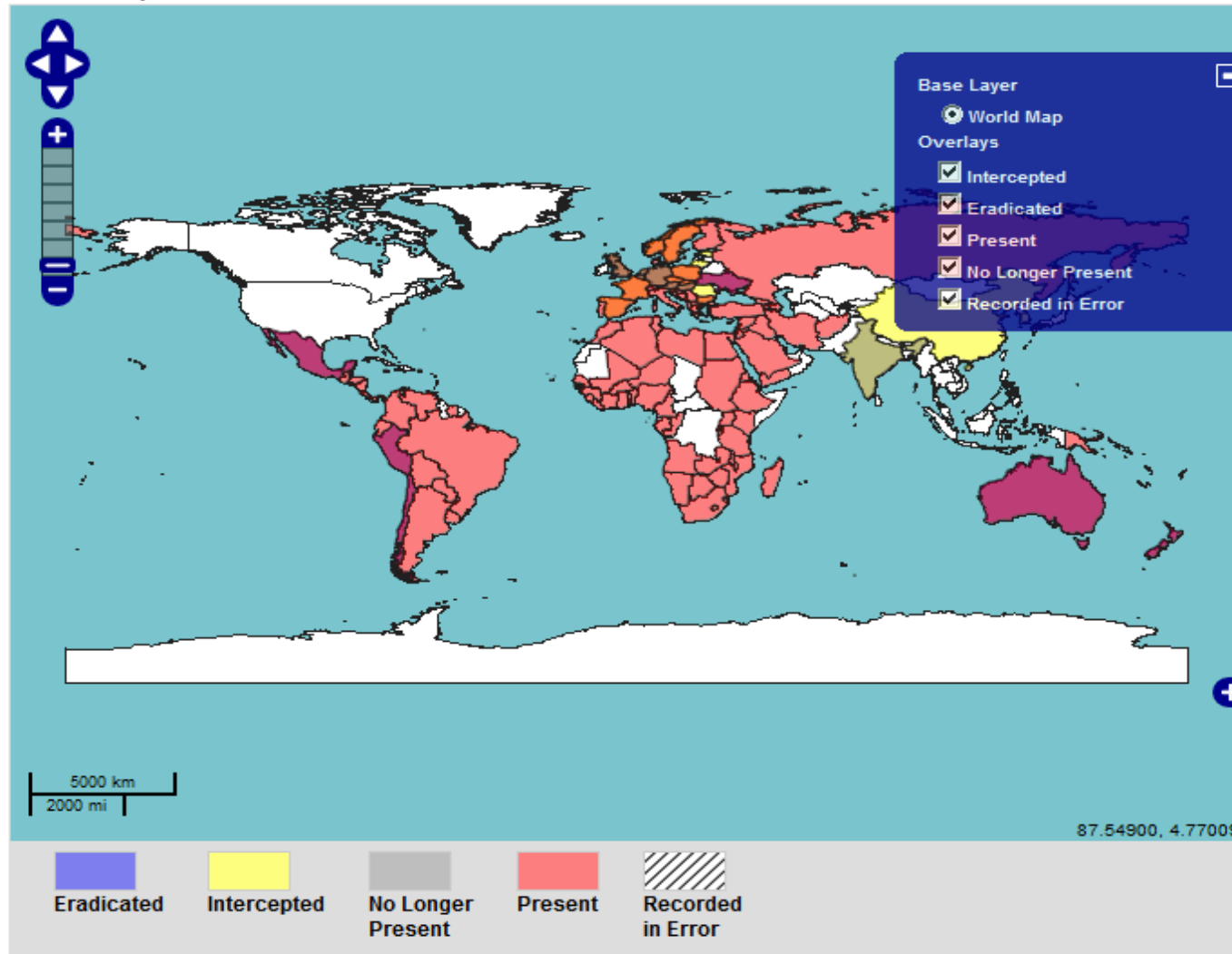
Bark : (45, 52)
Blade : (52)
Branch : (1, 9, 13, 19, 30, 35, 51, 56, 57)
Cambium : (19)
Flower : (45, 50)
Foliage : (19, 43, 50)
Fruit : (1, 7, 9, 13, 19, 30, 35, 36, 43, 45, 49, 50, 51, 52, 56, 57)
Growing Point : (7)
Inflorescence : (51)
Leaf : (1, 7, 9, 13, 19, 30, 35, 36, 40, 43, 45, 50, 51, 52, 56)
Midrib : (45, 52)
Peduncle : (45)
Phloem : (19, 45)
Pod : (7, 51)
Root : (1, 40, 45, 52)
Seed : (1, 9, 13, 19, 50, 51, 56)
Shoot : (1, 9, 43, 49, 50, 57)
Twig : (1, 9, 19, 40, 45, 49, 50, 51, 57)
Whole Plant : (1, 7, 19, 30, 40, 51, 56, 57)

Distribution

Bangladesh : (4, 6, 7, 8, 19, 22, 51)
Belize : (27)
Bhutan : (6, 7, 8, 22, 34). Punakha Valley, Wangdue districts (37)
Brazil : (7, 8, 27, 29, 39, 45, 52). Sao Paulo (10). Registered for the first time in Brazil in 2004 (53). Parana, Sao Paulo, Minas Gerais (11). Discovered in July 2004 (1)
Cambodia : (4, 5, 6, 7, 8, 22, 51)
China : (21, 24, 33, 39, 44). Widespread in Fujian, Guangdong, Guangxi, Hainan. Few occurrences in Hong Kong. Present in Jiangxi. Intercepted in Zhejiang. (8). Widespread in Fujian, Guangdong, Guangxi, Hainan, Taiwan. Present in Jiangxi. Few occurrences in Hong Kong. Absent, intercepted only in Zhejiang. (7). Guangdong, Guangxi (19). Guangdong (43). Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Zhejiang. Widespread in Taiwan. (51). Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Zhejiang. Few occurrences in Xianggang (Hong Kong). (22). Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Zhejiang. Few occurrences in Hong Kong. Widespread in Taiwan. (4, 6). Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Zhejiang (5)
Cuba : (26, 27, 36)
Dominican Republic : (27, 35)

GPDD: Global Pest & Disease Database

Distribution Map



GPDD: Global Pest & Disease Database

Images

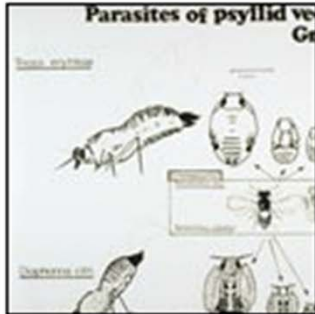


Diagram or Graphic
INRA-Bordeaux Archive
Institut National de la Recherche
Agronomique
www.invasive.org



Symptoms
H.D. Catling
www.invasive.org



Symptoms
J.M. Bové
INRA Centre de Recherches de Bordeaux
www.invasive.org



Symptoms
J.M. Bové
INRA Centre de Recherches de Bordeaux
www.invasive.org

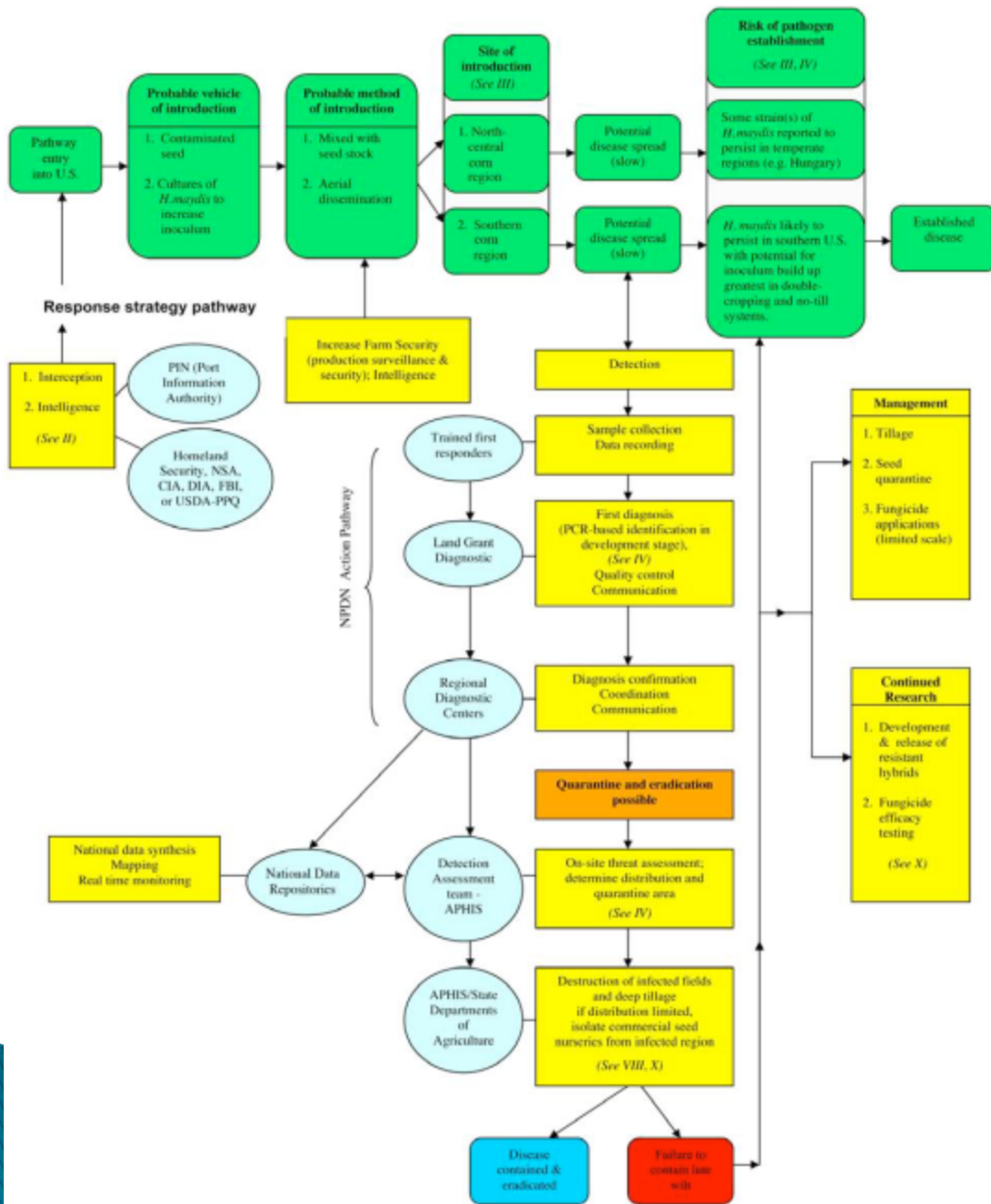


Symptoms
J.M. Bové
INRA Centre de Recherches de Bordeaux
www.invasive.org

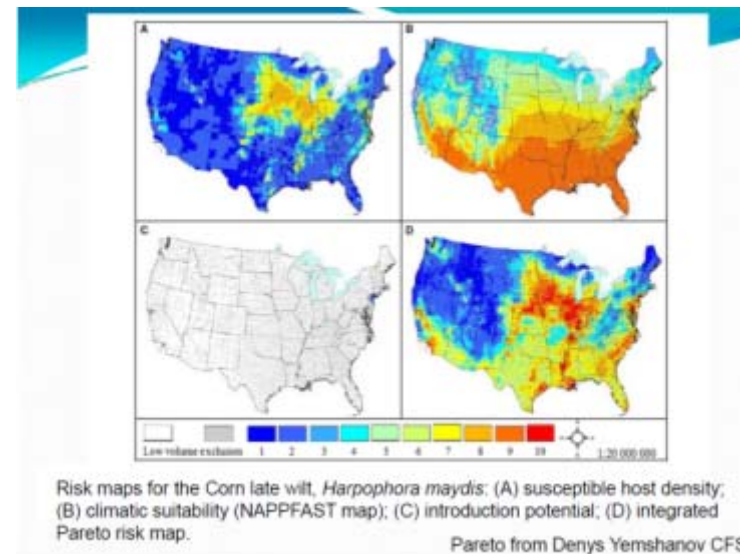
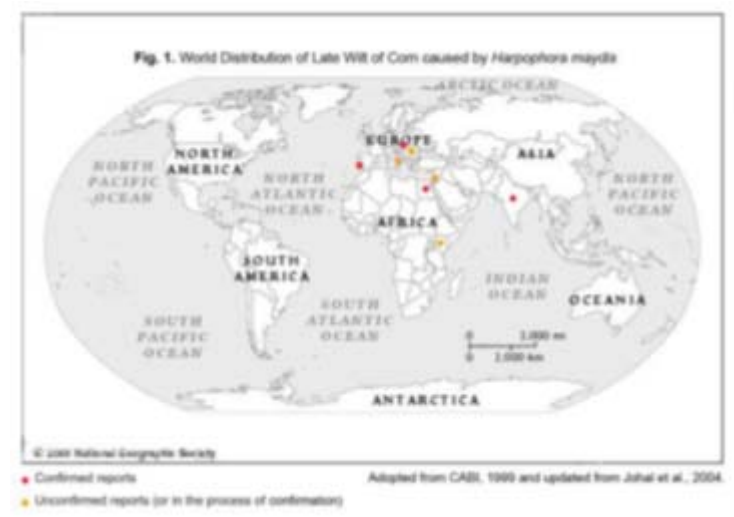
GPDD: Global Pest & Disease Database

-
-    29. USDA-APHIS, EPICA (2009, May 28). **EPICA Pest Notification: Transmission of 'Candidatus Liberibacter asiaticus' by Asian citrus psyllid, Diaphorina citri (Hemiptera: Psyllidae).** United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Exotic Pest Information Collection and Analysis. Retrieved May 29, 2009, from <https://www.gpdd.info/search.cfm?search=epica>
-    30. **Exotic Pest - Citrus Greening.** (2003, October 8). *Exotic Pest Bulletin.* Australian Government, Department of Agriculture, Fisheries & Forestry. Retrieved September 13, 2005, from <http://www.affa.gov.au/content/output.cfm?ObjectID=653A82D8-5CD9-4F77-8A4F2CDE487035D2>
-    31. **Fears in Sandaun Province on fruit.** (2003, May 27). *ProMed mail.* International Society for Infectious Diseases. Retrieved February 4, 2008, from http://apex.oracle.com/pls/otn/f?p=2400:1202:3622226117575434::NO::F2400_P1202_CHECK_DISPLAY,F2400_P1202_PUB_MAIL_ID:X,21723
-    32. **First detection of Citrus Greening, Candidatus Liberibacter asiaticus, in the United States.** (2005, September 6). North American Plant Protection Organization, Phytosanitary Alert System. Retrieved February 4, 2008, from <http://www.pestalert.org/viewArchNewsStory.cfm?nid=353&keyword=Liberibacter%20asiaticus>
Archived news story
-    33. Deng, X., Lou, Z., Feng, Z., Li, H., Chen, J., & Civerolo, E. L. (2008, February). **First Report of "Candidatus Liberibacter asiaticus" from Atalantia buxifolia in Guangdong, China.** *Plant Disease*, 92(2), 314. Retrieved February 6, 2008, from <http://apsjournals.apsnet.org/doi/abs/10.1094/PDIS-92-2-0314C>
-    34. Doe D., Om, N., Dorji, C., Dorji, T., Garnier, M., Jagoueix-Eveillard, S. et al. (2003). **First Report of "Candidatus Liberibacter asiaticus", the Agent of Citrus Huanglongbing (Ex-greening) in Bhutan.** *Plant Disease*, 87(4), 448. Retrieved January 30, 2008, from <http://apsjournals.apsnet.org/doi/abs/10.1094/PDIS.2003.87.4.448A>
-    35. Matos, L., Hilf, M. E., & Camejo, J. (2009, June). **First Report of 'Candidatus Liberibacter asiaticus' Associated with Citrus Huanglongbing in the Dominican Republic.** *Plant Disease*, 93(6), 668. Retrieved May 22, 2009, from <http://apsjournals.apsnet.org/doi/abs/10.1094/PDIS-93-6-0668B>
-    36. Martinez, Y., Llauger, R., Batista, L., Luis, M., Iglesia, A., Collazo, C., et al. (2008, August 19). **First report of Candidatus 'Liberibacter asiaticus' associated with Huanglongbing in Cuba.** *New Disease Reports*, 18. The British Society for Plant Pathology. Retrieved August 28, 2008, from <http://www.bspp.org.uk/ndr/ja>
- 

Figure 11. Pathway and response to the introduction of *H. maydis*, cause of late wilt of corn (after Johal et al., 2004).



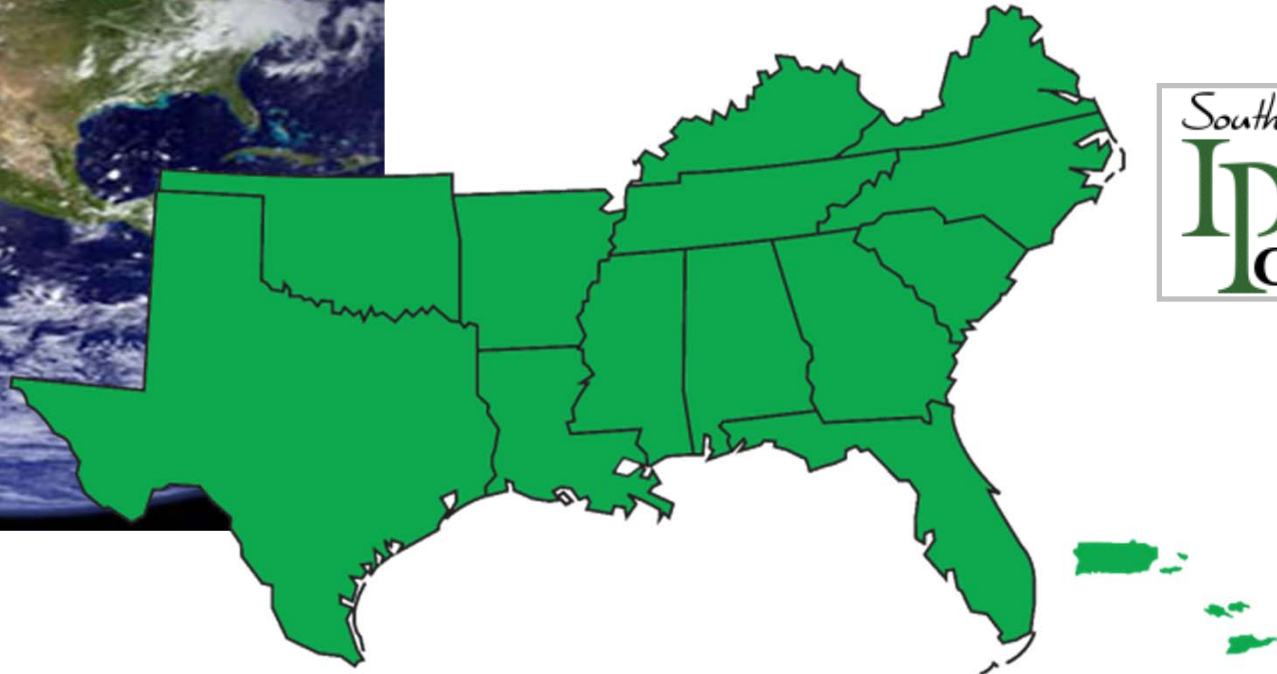
USDA- Office of Pest Management
 APS
 CIPM [National Plant Disease Recovery System \(NPDRS\)](#)



Pareto from Denys Yemshanov CFS



NSF Center for Integrated Pest Management



Southern IPM Center

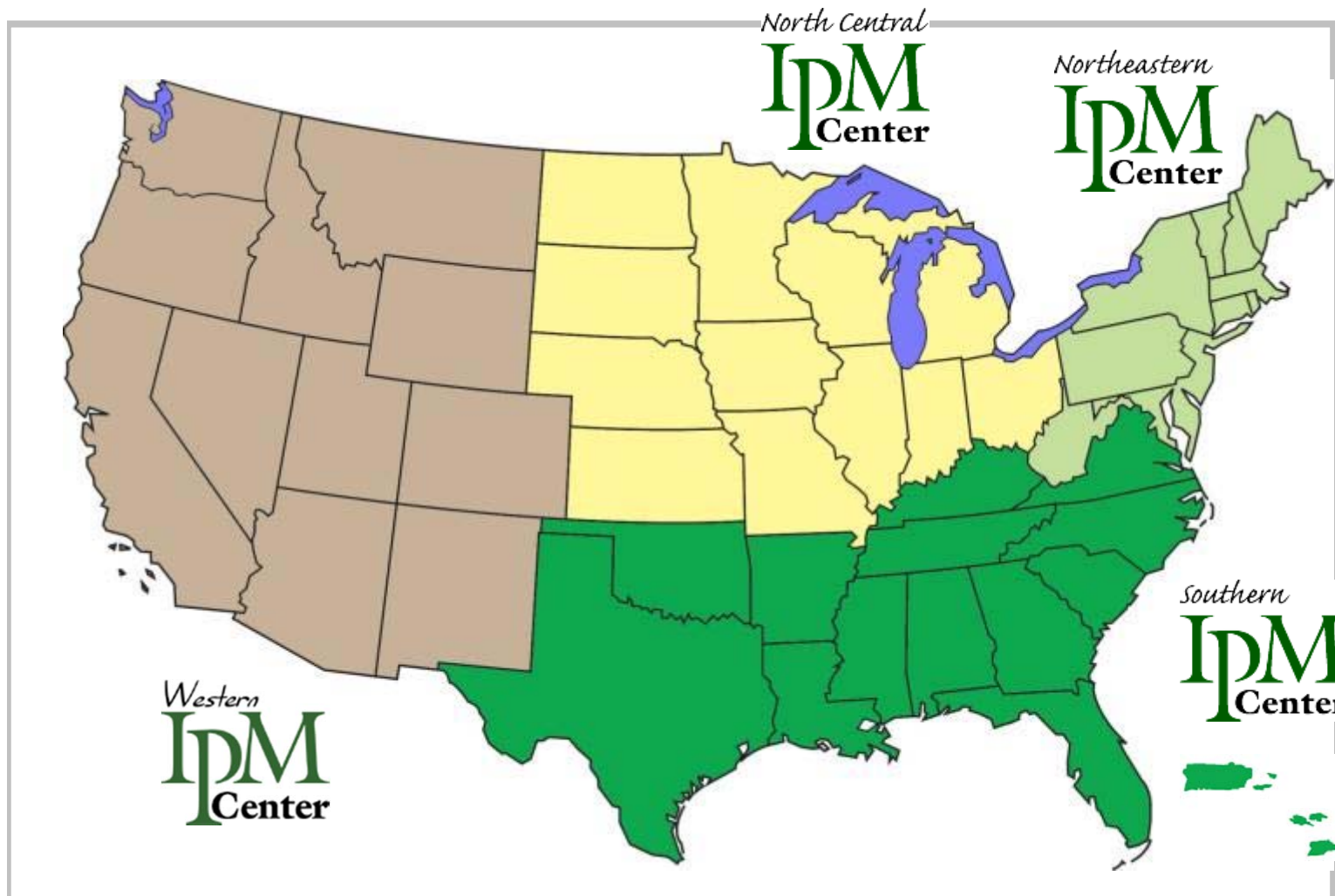


- ▶ One of four regional IPM centers funded by the USDA CSREES
- ▶ Managed at NCSU since October 2003
- ▶ Our mission is to work in partnership with stakeholders from agricultural, urban and rural settings to identify and address regional priorities for research, education and outreach



USDA Regional IPM Centers

<http://www.ipmcenters.org/>



Jim VanKirk
Director SIPM;
Associate
Director
CIPM

Southern Region IPM Center



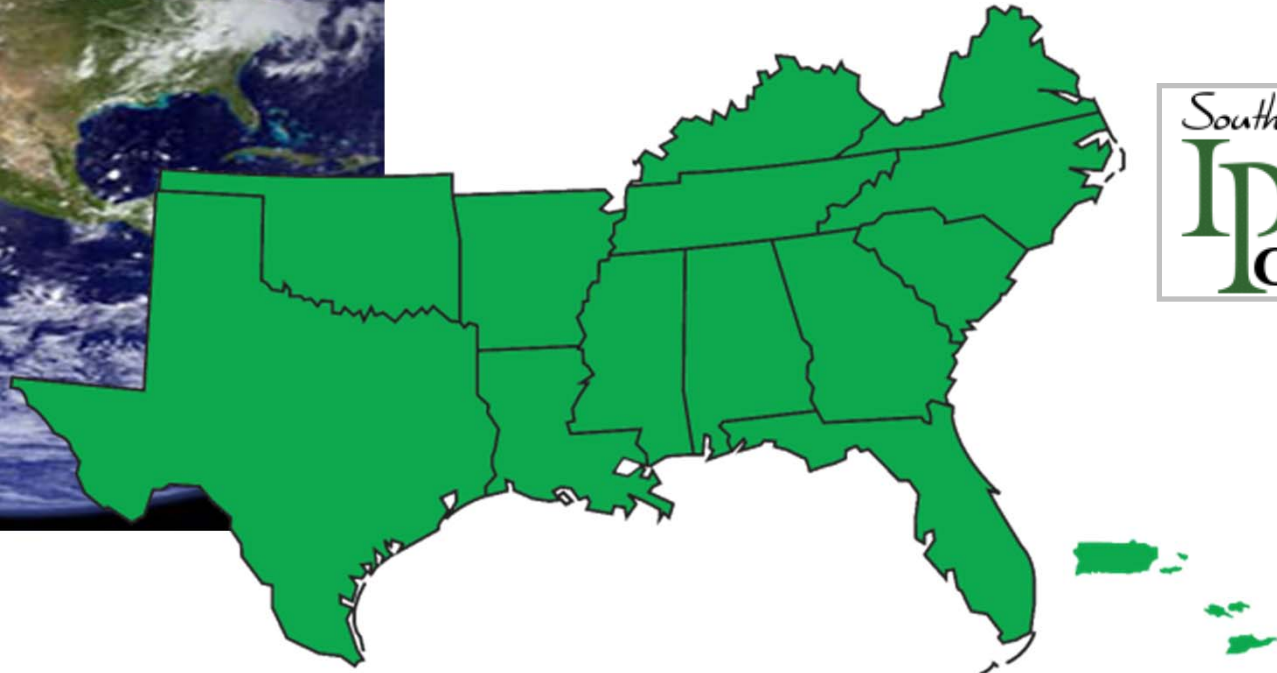
Purpose:

- ▶ Achieve goals of the *National Roadmap for IPM* (improve costs/benefits, reduce health risks and environ. effects)
- ▶ Address FQPA-related data needs
- ▶ Establish regional and national IPM priorities
- ▶ Manage funding programs in the region





NSF Center for Integrated Pest Management



North Carolina Extension IPM Program

- ▶ Multi-discipline program involving NC State and NC A&T faculty, county Extension agents



Steve Toth

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IPM North Carolina

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IPM Resources

[Program Activities](#)

IPM Working Groups

- Children's Environment
- Field Crops
- Fruit and Vegetable Crops
- Ornamental/Nursery Crops
- Poultry and Livestock
- Small Farm and Organic
- Specialty Crops

[Publications](#)

[Success Stories](#)

[Funding Opportunities](#)

[NC Pest News and Alerts](#)

Welcome to the Extension Integrated Pest Management Program

IPM Resources Are Just a Click Away

Timely information on integrated pest management for North Carolina crops/sites and pests is available from the North Carolina Cooperative Extension Service and other sources.

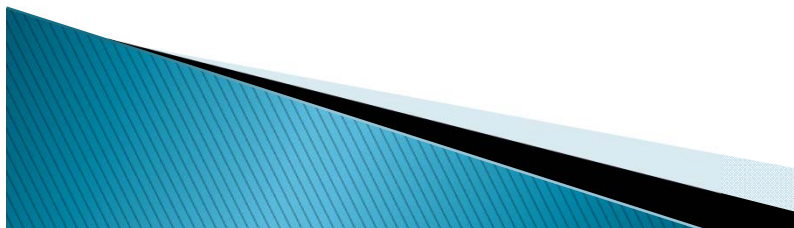
[Go to IPM Resources >](#)

FEATURES: [1](#) [2](#) [3](#) [4](#)

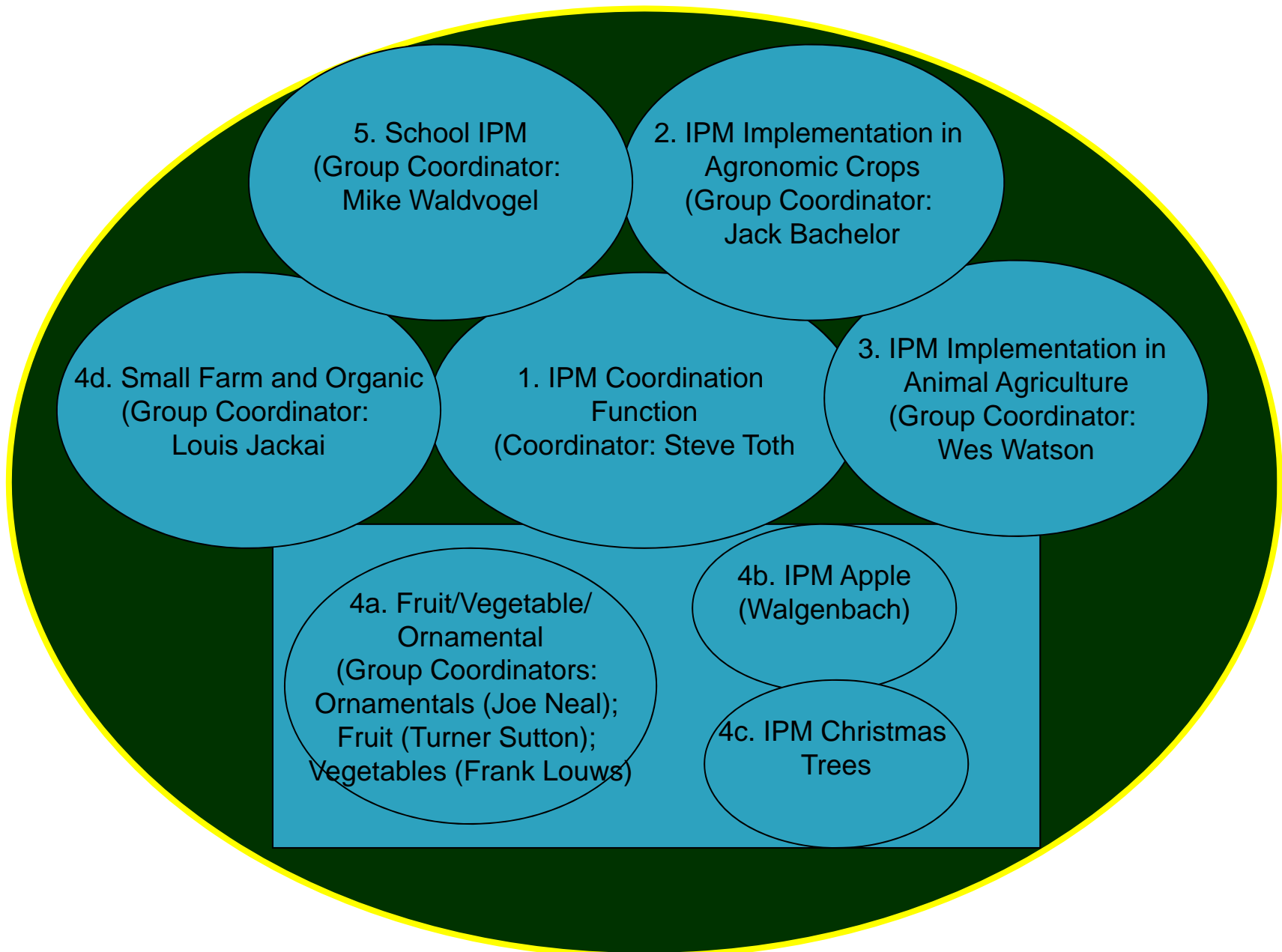
What is IPM?

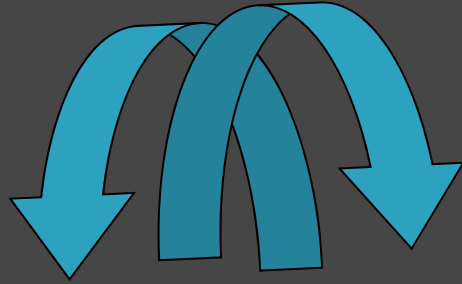
[The National IPM Roadmap](#) | [About the NC Extension IPM Program](#)

The North Carolina Extension IPM Program serves as a focal point for team building, communication and stakeholder participation in integrated pest management (IPM) within the state. Program goals include promoting effective and economical management of pests, reducing risks to human health from pests and pest management practices, and minimizing environmental effects through the adoption of IPM on a variety of crops and settings in North Carolina. These goals are achieved by the timely delivery of IPM technology and research information to stakeholders in all regions of the state.



NCSU IPM PROGRAMMING: COORDINATION, STRENGTH, IMPACT





MB Alternatives research
Development of IPM programs



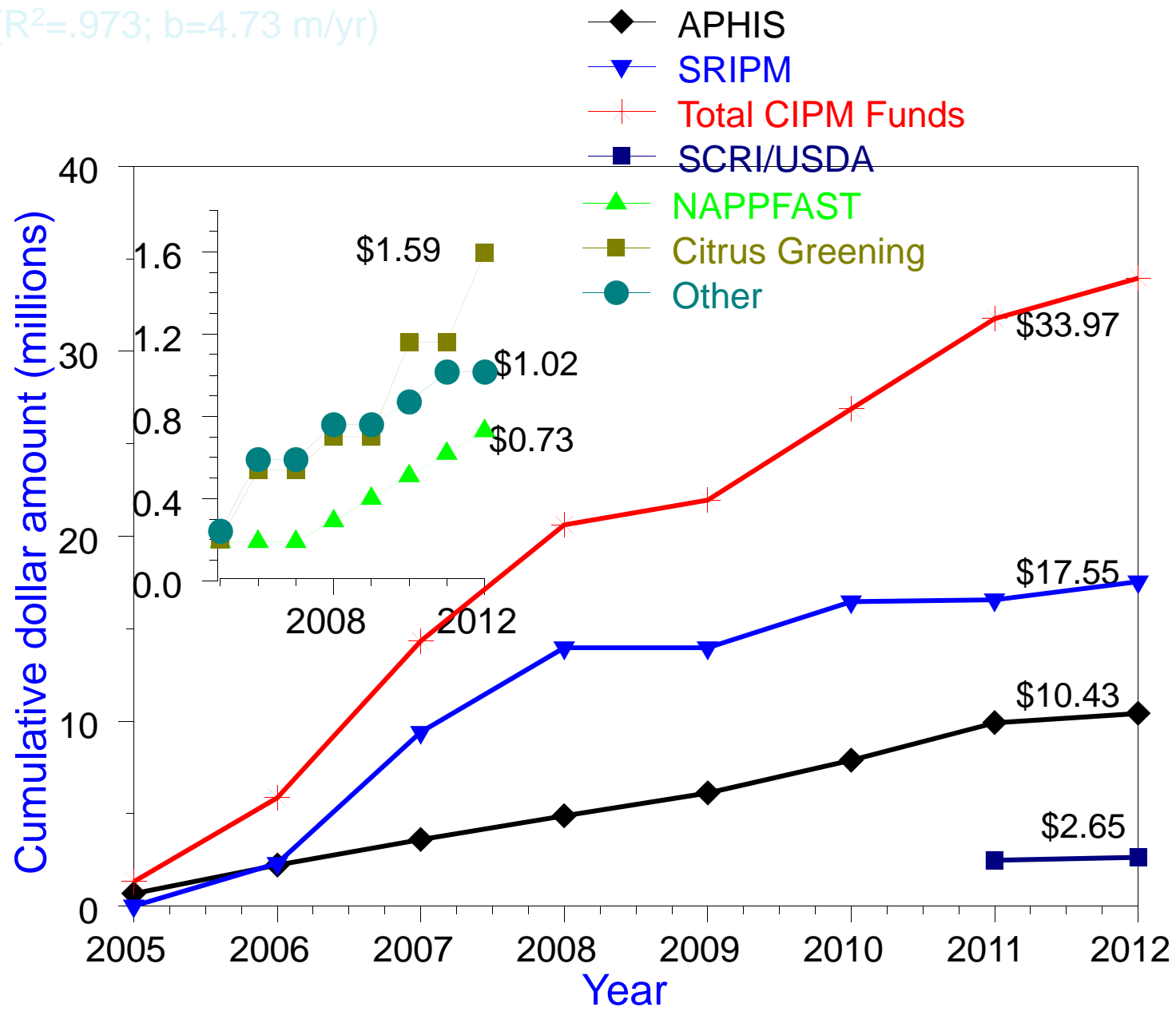
**Generation 4 –
SUSTAINABLE SYSTEMS**

**Generation 3
TACTIC DEVELOPMENT:
microbial ecology and farming
systems research**

**Generation 2 – TACTIC DIVERSIFICATION:
finding non-fumigant tactics and focus on IPM
tactics**

**Generation 1 – TACTIC SUBSTITUTION:
finding non-ozone depleting fumigant alternatives**

($R^2=.973$; $b=4.73$ m/yr)







NSF Center for Integrated Pest Management

