



Coffee Research at the United States Department of Agriculture

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Beltsville, Maryland



COFFEE RESEARCH AT THE UNITED STATES DEPARTMENT OF AGRICULTURE
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USDA

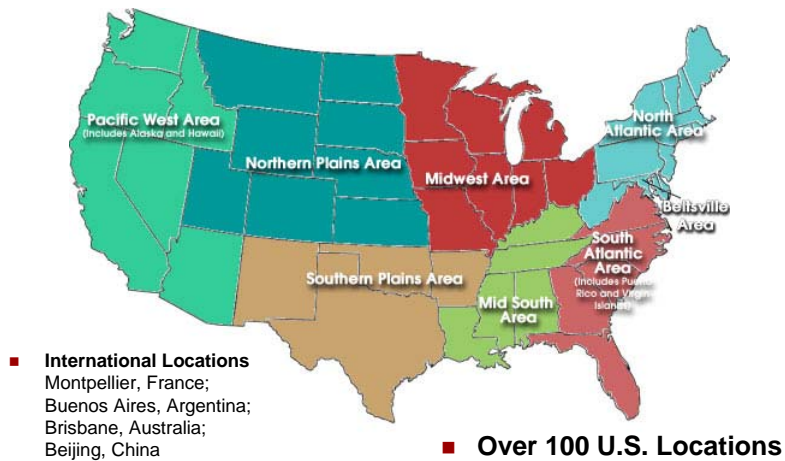
- Established by Abraham Lincoln in 1862.
- About 85,000 employees.

Agricultural Research Service

- Principal in-house research agency of the U.S. Department of Agriculture.
- Workforce: 8,000 total employees
2,100 research scientists
- About 1,200 research projects.
- Over 100 locations.
- Annual budget (FY07): 1.1 billion US\$

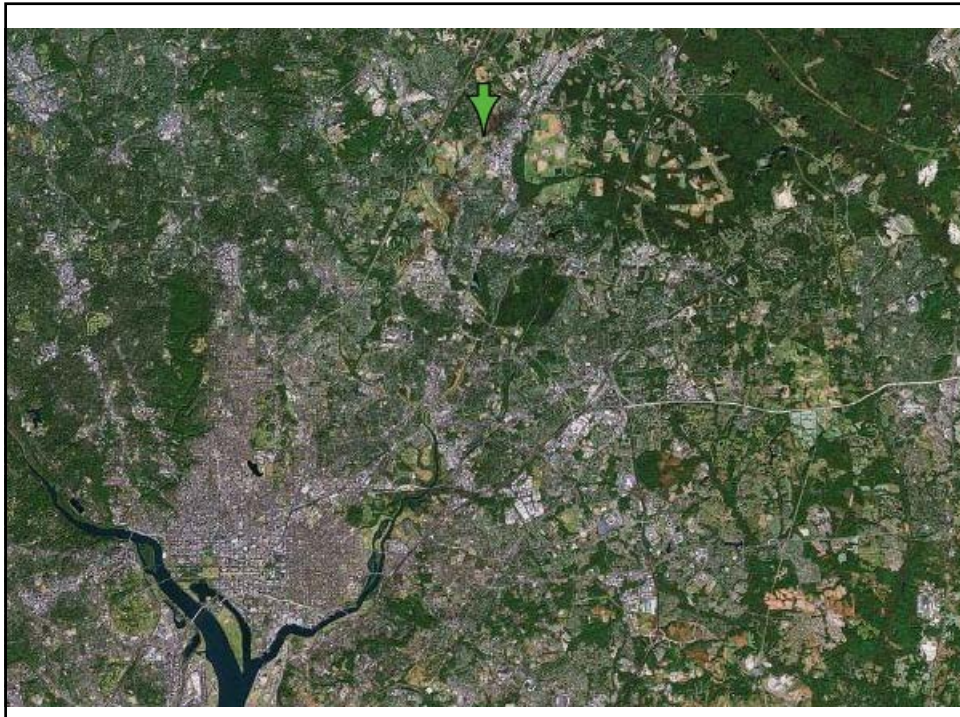
ARS Research Locations

(Divided into 8 Regions)



ARS Research is divided into 4 major National Programs

1. Nutrition, Food Safety/Quality
2. Animal Production and Protection
3. Natural Resources and Sustainable Agricultural Systems
4. Crop Production and Protection



The screenshot shows the homepage of the National Agricultural Library (NAL), part of the United States Department of Agriculture. The header includes the USDA logo and the NAL logo. A navigation menu contains links for Home, About NAL, NAL Catalog, NAL Collections, Information Centers, NAL Services, Help, and Contact Us. The main content area features a search bar, a 'Browse by Audience' section, and a 'Browse by Subject' section. The 'In the News' section highlights 'NAL Publishes New Editions of Agricultural Thesaurus, Glossary (En Español)' and 'Join the conversation! Check out NAL's new blog.' The 'Spotlights' section includes 'National Invasive Species Information Center', 'Jefferson Correspondence Collection', 'Health Resources for World Health Day', and 'Landscaping, Ornamentals and Turf for National Garden Month'. A 'Honeybee Colony Collapse Disorder' section is also present. On the right, there are promotional boxes for 'Rural & Community Development', 'DigiTop', and 'AgNIC Agriculture Network Information Center'. The URL <http://www.nal.usda.gov> is displayed at the bottom right.

The screenshot shows the homepage of the Administrative and Financial Management (AFM) website, part of the United States Department of Agriculture / Agricultural Research Service. The header includes the USDA logo and the AFM logo. A navigation menu contains links for Home, About AFM, AFM Programs/Services, Job Listings, Help, and Contact Us. The main content area features a search bar, a 'Quick Links' section, and a 'Browse By Subject' section. The 'Human Resources' section is highlighted, with a sub-section for 'Postdoctoral Research Associate Positions'. A green button with the text 'Click here to view the ARS Postdoctoral Research Associate Positions' is prominent. The text describes the Agricultural Research Service (ARS) and its role in providing research expertise. A list of bullet points outlines the ARS's goals: 'Ensure high-quality, safe food and other agricultural products', 'Assess the nutritional needs of Americans', 'Sustain a competitive agricultural economy', 'Enhance the natural resource base and the environment, and', and 'Provide economic opportunities for rural citizens, communities, and society as a whole'. On the right, there are sections for 'In This Section', 'Related Links', and 'Spotlight On...'. The URL <http://www.afm.ars.usda.gov/divisions/hrd/hrdhomepage/vacancy/pd962.html> is displayed at the bottom.

ARS Employment Opportunities Postdoctoral Research Associate Positions		
POSITION	LOCATION	ANNOUNCEMENT #
Research Biochemist/ Microbiologist	Beltsville, Maryland	RA-05-056L
Research Biochemist / Neurobiologist	Beltsville, MD	RA-06-048L
Agricultural Engineer	Beltsville, MD	RA-06-062L
Research Plant Pathologist	Ft. Detrick, MD	RA-06-063L
Plant Physiologist/Rangeland Scientist/Ecologist/Agricultural Engineer	Fort Collins, CO	RA-06-067L
Research Plant Molecular Geneticist, GS-440-9 (Research Affiliate)	Geneva, New York	RA-06-072L
Research Molecular Biologist (Virologist)	Athens, Georgia	RA-06-077L
Research Hydrologist/Research Physical Scientist	Maricopa, AZ	RA-06-085L
Research Soil Scientist/Plant Physiologist/ Agronomist	Riverside, CA	RA-06-094H
Research Molecular Biologist (Plants)	Beltsville, MD	RA-07-001H
Interdisciplinary: Agricultural Engineer/Research Meteorologist/Research Soil Scientist	Ames, IA	RA-07-003H

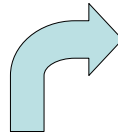
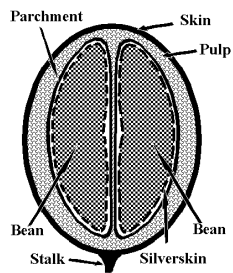
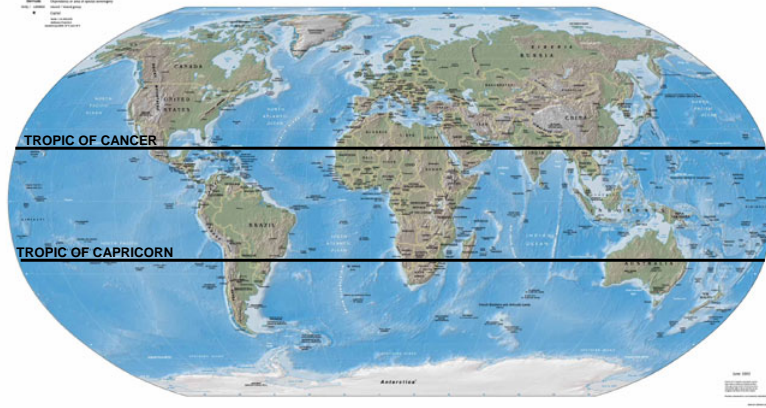
COFFEE BERRY BORER – *Hypothenemus hampei*

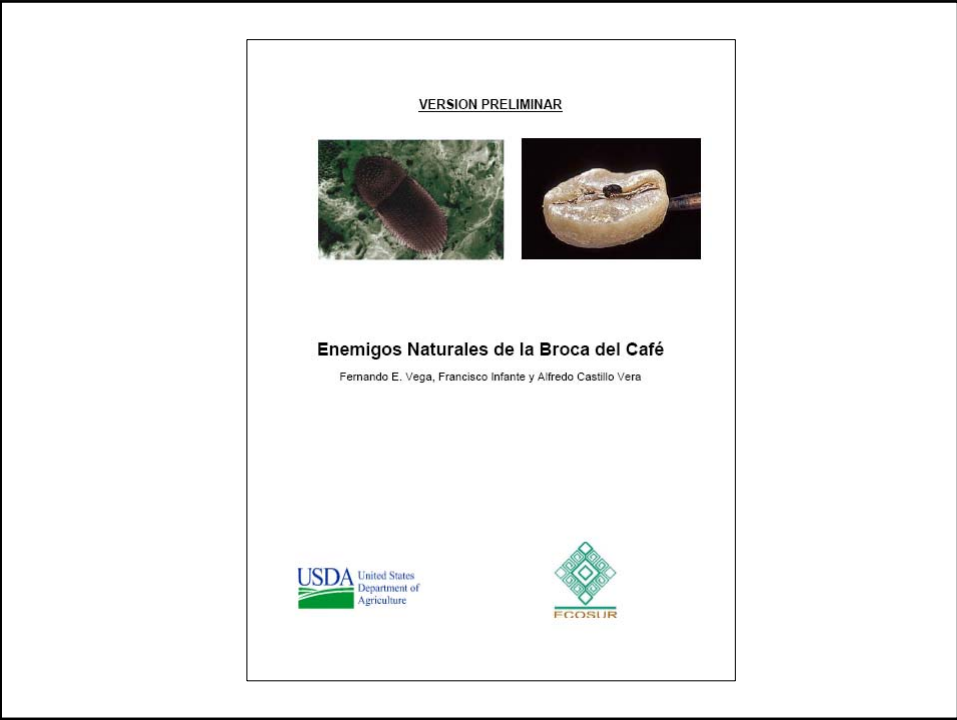
La broca del café



THE TROPICS

Physical Map of the World, June 2002





USDA Agricultural Research Service

Insect Biocontrol Laboratory

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Browse By Subject

- Home
- About Us
- Research
- Products & Services
- People & Places
- Michael B. Blackburn
- Dale B. Gelman (Retired collaborator)
- Matthew H. Greenstone
- Dawn E. Gundersen-Rindal
- Robert L. Harrison
- Susan D. Lawrence
- Dwight E. Lynn (Retired collaborator)
- Phyllis A. W. Martin
- Stephen A. Rehner
- Kevin W. Thorpe (Retired collaborator)
- Donald C. Weber
- Joseph Bischoff -Visiting scientist (external link)
- Zsafia Szendrei (Postdoc)
- Support Staff

Select Publications

Fernando E. Vega's Publications

DOWNLOAD LINK

Vega, F. E. 2008. Insect pathology and fungal endophytes. *Journal of Invertebrate Pathology* in press.

Vega, F. E., Ebert, A., Ming, R. 2008. Coffee germplasm resources, genomics, and breeding, In J. Janick (Ed.), *Plant Breeding Reviews* 30:415-447.

Vega, F. E., Posada, F., Aime, M. C., Peterson, S. W., Rehner, S. A. 2008. Fungal endophytes in green coffee seeds. *Mycosystema* 27:75-84.

Vega, F. E., Posada, F., Aime, M. C., Pava-Ripoll, M., Infante, F., Rehner, S. A. 2008. Entomopathogenic fungal endophytes. *Biological Control* in press.

Vega, F. E., Ochoa, R., Astorga, C., Walter, D. E. 2007. Mites (Arachnida: Acari) inhabiting coffee domatia: a short review and recent findings from Costa Rica. *International Journal of Acarology* 33:291-295.

Benavides, P., Stuart, J. J., Vega, F. E., Romero-Severson, J., Bustillo, A. E., Navarro, L., Constantino, L. M., Acevedo, F. E. 2007. Genetic variability of *Hypothenemus hampei* (Ferrari) in Colombia and development of

<http://www.ars.usda.gov/pandp/docs.htm?docid=13128>



**COFFEE BERRY BORER
INFESTATION**

- UP TO 60% IN COLOMBIA
- 58-75% IN JAMAICA
- 80% IN UGANDA
- 50-80% IN IVORY COAST



**ESTIMATED WORLDWIDE
LOSSES DUE TO THE
COFFEE BERRY BORER**



\$500 MILLION!



***Wolbachia* infection in the coffee berry borer
(Coleoptera: Scolytidae)**

- We isolated *Wolbachia* in coffee berry borers from 11 countries
- *Wolbachia* might be responsible for the 10:1 female to male sex ratio observed in the coffee berry borer

Vega et al., Ann. Entomol. Soc. Am. 95:374-378

Identification of a coffee berry borer-associated yeast: does it break down caffeine?



Pichia burtonii and *Candida fermentati*

Vega et al., Entomo. Exper. Appl. 107:19-24

Metaparasytlenchus hypothenemi, a parasite of the coffee berry borer.

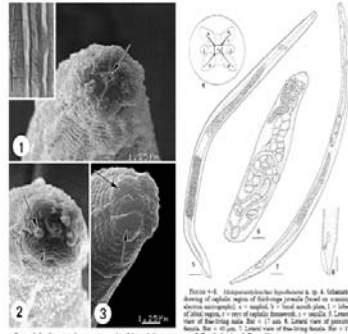
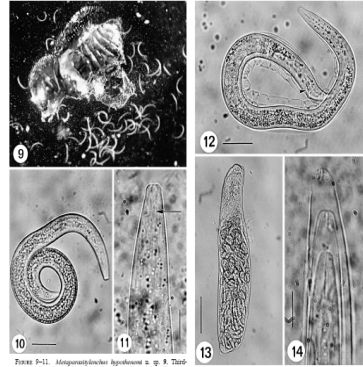


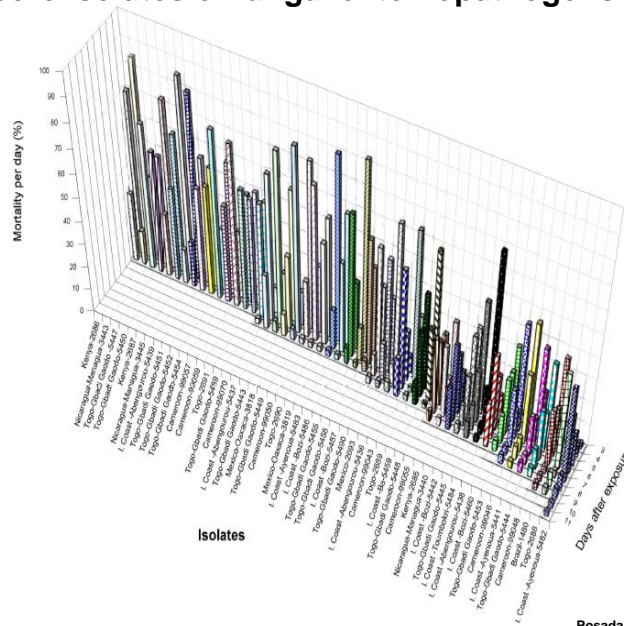
Figure 9-8. Scanning electron micrographs of the anterior region of head-stage juvenile of *Metaparasytlenchus hypothenemi* n. sp. 1. Anterior region showing the mouthparts (arrow) and gonostylus (arrowhead). 2. Anterior region showing the mouthparts (arrow) and gonostylus (arrowhead). 3. Anterior region showing the mouthparts (arrow) and gonostylus (arrowhead). Scale bar = 10 µm. 4. Schematic diagram of the anterior region of head-stage juvenile of *Metaparasytlenchus hypothenemi* n. sp. 1. Head, 2. Body, 3. Tail. Scale bar = 10 µm.



Figures 9-11. *Metaparasytlenchus hypothenemi* n. sp. 9. Third stage juvenile released from the body cavity of an adult coffee berry borer. Scale bar = 10 µm. 10. Third stage juvenile filling gut cells. Scale bar = 10 µm. 11. Anterior end of third stage juvenile showing pharynx (arrow) and head (arrowhead). Scale bar = 10 µm. 12. Head of adult rearing female with third stage juvenile. Scale bar = 10 µm. 13. Head of adult rearing female with third stage juvenile. Scale bar = 10 µm. 14. Head of adult rearing female with third stage juvenile. Scale bar = 10 µm.

Poinar et al., J. Parasitol. 90:1106-1110

A new method to evaluate the biocontrol potential of single spore isolates of fungal entomopathogens



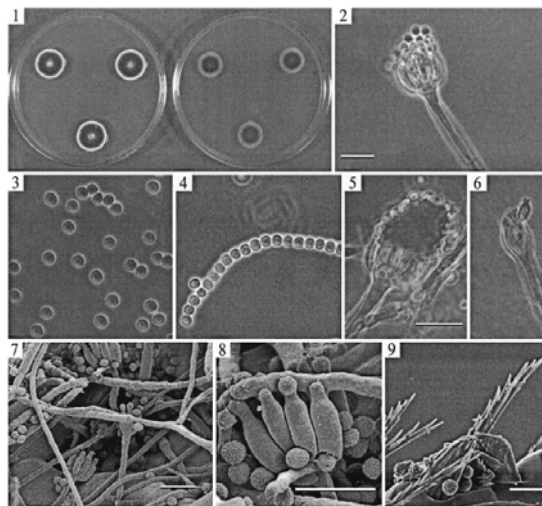
Posada and Vega, J. Insect Sci., 2005

Mycobiota associated with the coffee berry borer in Mexico.

- 40 fungal species in 22 genera
- *Fusarium*, *Penicillium*, *Candida*, *Aspergillus*

Pérez et al., Mycol. Res. 107:879-887

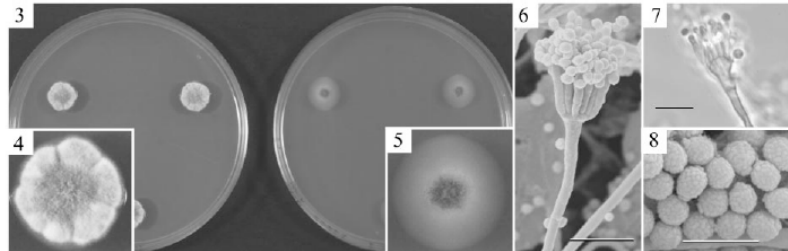
Penicillium brocae, a new species associated with the coffee berry borer in Chiapas, Mexico.



FIGS. 1-9. *Penicillium brocae*. 1. NRRL 31472 grown 7 d at 25°C on CYA (right) whose central white overgrowth, white marginal area and velvety appearance are characteristic, and MEA (left) whose plane velvety growth is typical of several *Penicillium* species. 2. Smooth walled conidiophore with knobbed apex bearing a wheel of phialides. 3. Slightly roughened conidia. 4. Conidia in a long chain. 5. Conidiophores with parallel chains of hydrophobic conidia trapping a large air bubble, the knobby apex is visible. 6. Unusually shaped apical swelling on a conidiophore. This was not common, but seen on a regular basis in some isolates. 7, 8. SEM of *P. brocae* growing on gallery walls of a coffee berry infested by the coffee berry borer. 9. Conidia resembling those of *P. brocae* lodged at the base of setae and asperities of the coffee berry borer. Magnification bars equal 10 µm, use scale in Fig. 2 for Figs. 3, 4, and 6.

Peterson et al., Mycologia 95:141-147

***Penicillium coffeae*, a new endophytic species isolated from a coffee plant.**



FIGS. 3–8. *Penicillium coffeae* NRRL 35363. 3. Colonies grown 7 d on CYA (left) and MEA (right). 4. Close-up view of a CYA grown colony showing sulcation and scalloped margin. 5. Close-up view of an MEA-grown colony showing the small aerial portion of the colony and the larger submerged portion of the colony. 6. SEM of a mature conidiophore showing the smooth stalk and crowded whorl of phialides. 7. Light micrograph (DIC) showing the inflated vesicle typical of conidiophores in this species. 8. SEM showing faintly roughened spherical conidia. Bar in FIGS. 6, 7 = 10 μ m; FIG. 8 = 5 μ m.

Peterson *et al.*, *Mycologia* 97:659-666



***Beauveria bassiana*: an insect pathogenic fungus**



Our goal: To introduce the fungus in the plant as an endophyte.



ENDOPHYTES

Fungi or bacteria inside apparently healthy living plants.

SCIENCE VOL 312 2 JUNE 2006

Metagenomic Analysis of the Human Distal Gut Microbiome

Steven R. Gill,^{1,†} Mihai Pop,^{1,†} Robert T. DeBoy,¹ Paul B. Eckburg,^{2,3,4}
 Peter J. Turnbaugh,⁵ Buck S. Samuel,⁵ Jeffrey I. Gordon,⁵ David A. Relman,^{2,3,4}
 Claire M. Fraser-Liggett,^{1,6} Karen E. Nelson¹

The human intestinal microbiota is composed of 10^{13} to 10^{14} microorganisms whose collective genome ("microbiome") contains at least 100 times as many genes as our own genome. We analyzed ~78 million base pairs of unique DNA sequence and 2062 polymerase chain reaction-amplified 16S ribosomal DNA sequences obtained from the fecal DNAs of two healthy adults. Using metabolic function analyses of identified genes, we compared our human genome with the average content of previously sequenced microbial genomes. Our microbiome has significantly enriched metabolism of glycans, amino acids, and xenobiotics; methanogenesis; and 2-methyl-D-erythritol 4-phosphate pathway-mediated biosynthesis of vitamins and isoprenoids. Thus, humans are superorganisms whose metabolism represents an amalgamation of microbial and human attributes.

of single organisms, recent reports from Venter *et al.* (9) and Baker *et al.* (10) have demonstrated the utility of this approach for studying mixed microbial communities. Variations in the relative abundance of each member of the microbial community and their respective genome sizes determine the final depth of sequence coverage for any organism at a particular level of sequencing. This means that the genome sequences of abundant species will be well represented in a set of random shotgun reads, whereas lower abundance species may be represented by a small number of sequences. In fact, the size and depth of coverage (computed as the ratio between the total length of the reads placed into contigs and the total size of the contigs) of genome assemblies generated from a metagenomics project can provide information on relative species abundance.

A total of 65,059 and 74,462 high-quality sequence reads were generated from random

The human intestinal microbiota contains 10,000,000,000,000 to 100,000,000,000,000 microorganisms which contain at least 100 times as many genes as our genome!

HARVARD GAZETTE ARCHIVES

Discovering who lives in your mouth:

Bacteria give clues to cancer and gum disease

By William J. Cromie
 Gazette Staff

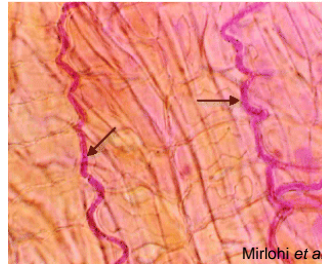


Donna Mager and Sigmund Socransky

"...have found 615 different species of bacteria..."

"In one mouth, the number of bacteria can easily exceed the number of people who live on Earth (more than 6 billion)..."

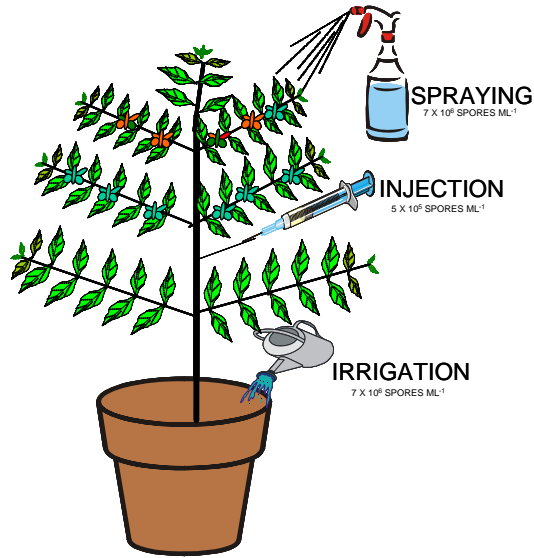
ENDOPHYTES



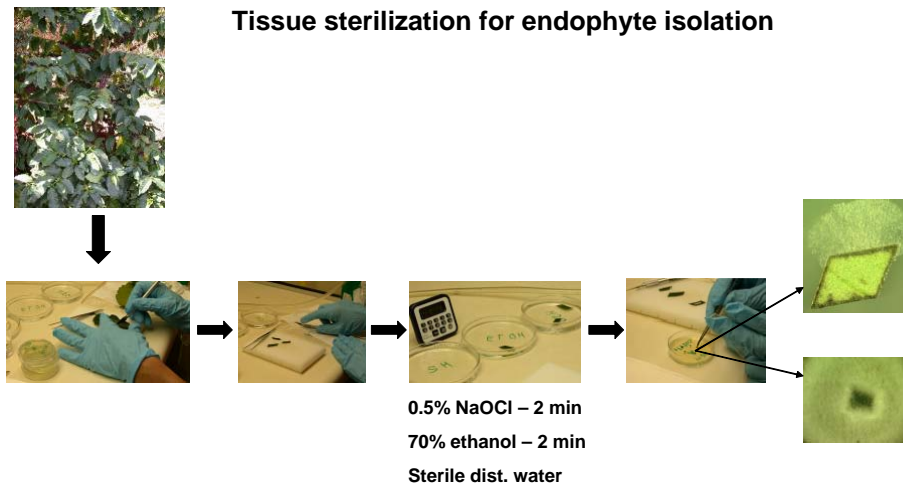
***Beauveria bassiana* endophytic in:**

- Maize
- Potato, cotton
- Tomato
- *Theobroma gileri*
- Opium poppy
- Coffee berries

Beauveria bassiana inoculation methods



Tissue sterilization for endophyte isolation

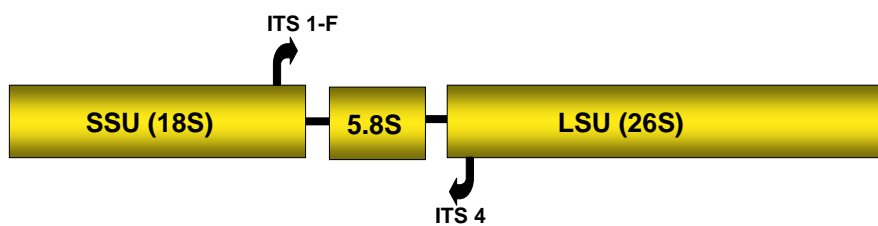


Arnold *et al.*, 2001, *Mycol. Res.* 105:1502-1507

***Beauveria bassiana* recovery:**

MONTHS POST-INOCULATION	% RECOVERY
2	31
4	5.5
6	2.7
8	0

Ribosomal RNA coding gene (rDNA)

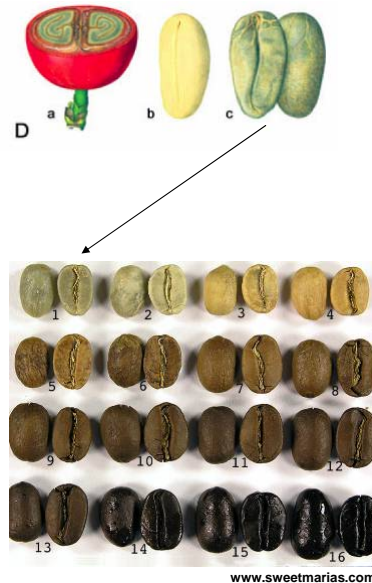


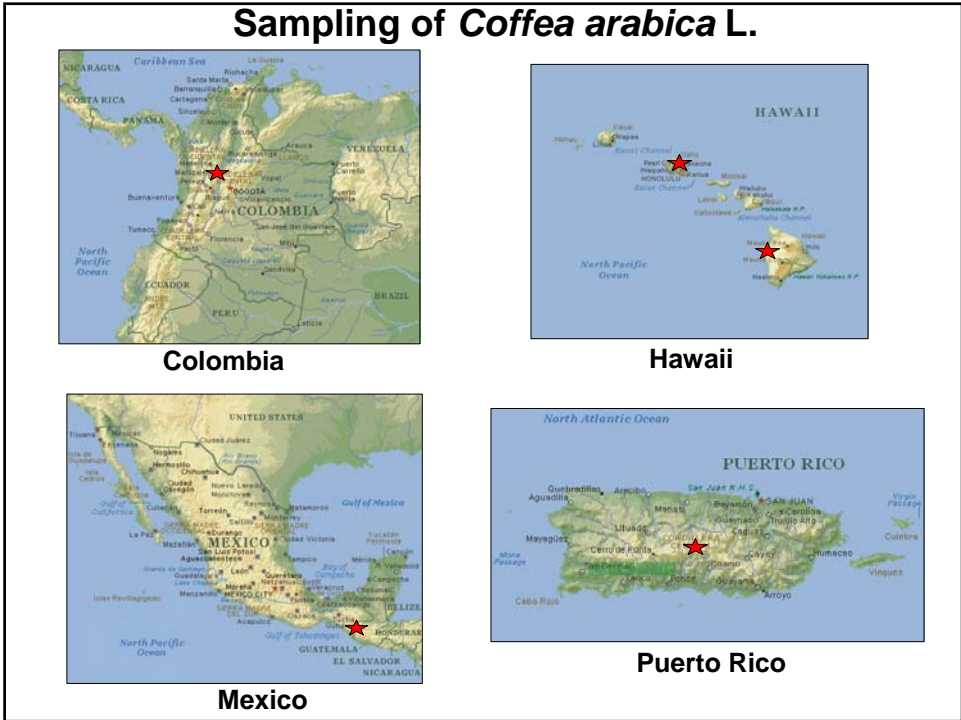
Fungal endophytes in coffee seedlings 2 and 4 months post-inoculation with *Beauveria bassiana*

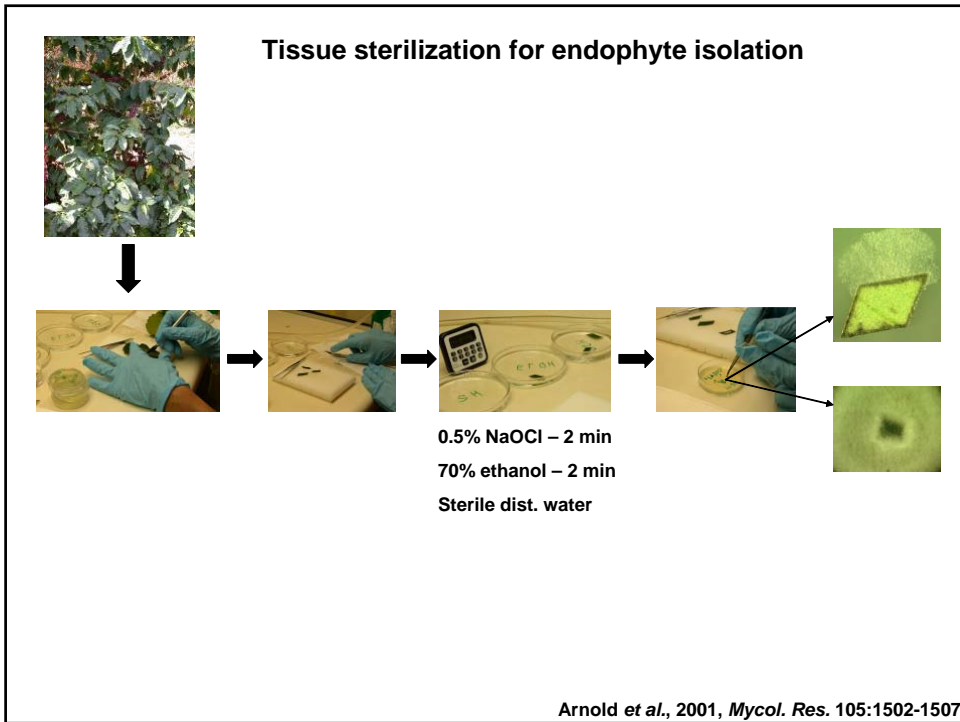
<i>Alternaria</i> sp.	Hypocreales sp.
Arthopyrenaceae	<i>Macrophomina</i> sp.
<i>Aspergillus tamari</i>	<i>Paecilomyces</i> sp.
<i>Aspergillus westerdijkiae</i>	<i>Penicillium citrinum</i>
<i>Beauveria bassiana</i>	<i>Penicillium brevicompactum</i>
Bionectriaceae	<i>Penicillium cecidicola</i>
<i>Chaetomium</i> sp.	<i>Penicillium glabrum</i>
<i>Cladosporium</i> cf. <i>sphaerospermum</i>	<i>Penicillium janthinellum</i>
Clavicipitaceae	<i>Penicillium</i> sp. near <i>daleae</i>
<i>Colletotrichum gloeosporoides</i> complex	<i>Penicillium steckii</i>
<i>Cylindrocarpon</i> sp.	<i>Penicillium toxicarium</i>
Exobasidiomycetidae	Phyllachoraceae
<i>Exophiala</i> sp.	<i>Plectosphaerella</i> sp.
<i>Fusarium</i> cf. <i>oxysporum</i> f. sp. <i>vasinfectum</i>	Pleosporales sp.
<i>Fusarium oxysporum</i> complex (1)	<i>Pseudallescheria</i> cf. <i>boydii</i>
<i>Fusarium oxysporum</i> complex (2)	<i>Rhizopycnis</i> sp.
<i>Fusarium</i> sp. (1)	<i>Trichoderma</i> sp.
<i>Fusarium</i> sp. (2)	<i>Trichoderma hamatum</i>
<i>Fusarium</i> sp. (Lateritium clade 1)	<i>Trichoderma harzianum</i>

Fungal endophytes in green coffee seeds

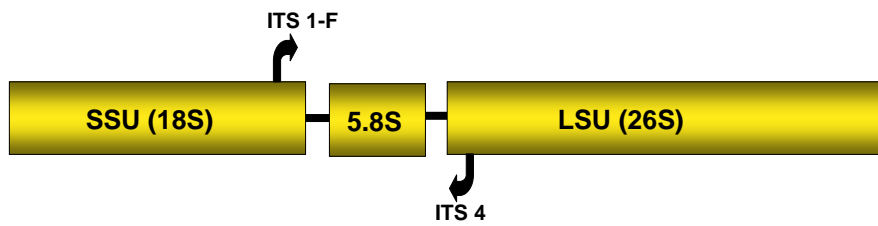
Fungal id	Country
<i>Acremonium</i> sp.	Puerto Rico
<i>Aspergillus sumatrense</i>	Puerto Rico
<i>Aspergillus fumigatus</i>	India
<i>Aspergillus fumigatus</i>	Vietnam
<i>Aspergillus niger</i>	Vietnam
<i>Aspergillus pseudodeflectus</i>	Papua New Guinea
<i>Aspergillus pseudodeflectus</i>	Vietnam
<i>Aspergillus tubingiensis</i>	Colombia
<i>Aspergillus tubingiensis</i>	Kenya
Clavicipitaceae sp. 1	Puerto Rico
Clavicipitaceae sp. 2	Puerto Rico
<i>Aspergillus (Eurotium) ruber</i>	India
<i>Fusarium solani</i> complex	Vietnam
<i>Gibberella</i> sp.	Colombia
<i>Penicillium</i> sp., subgenus <i>Biverticillium</i>	India
<i>Penicillium crustosum</i>	Guatemala
<i>Penicillium olsonii</i>	Colombia





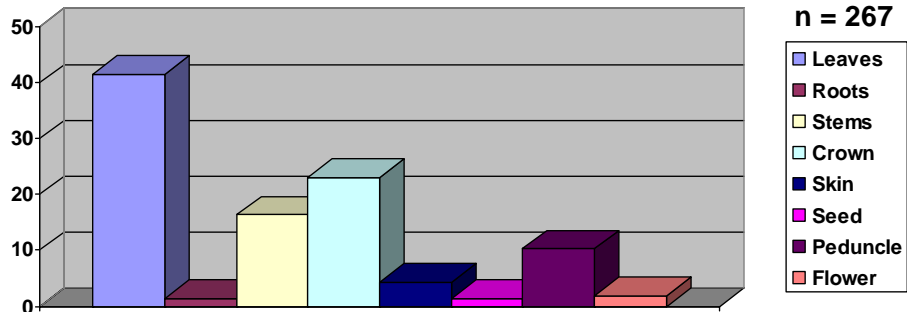


Ribosomal RNA coding gene (rDNA)



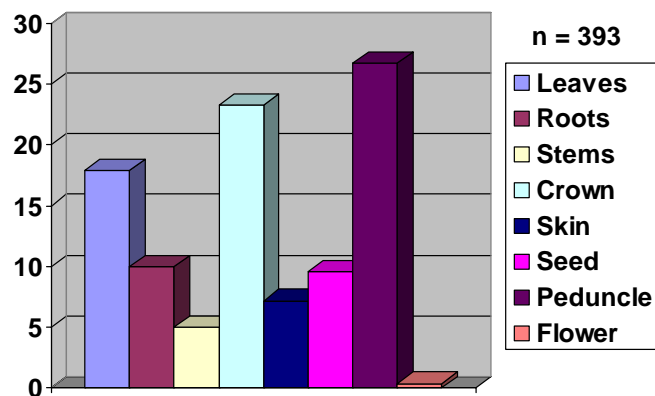
	Endophytes recovered	ITS genotypes
Colombia	267	113
Hawaii	393	126
Mexico	109	32
Puerto Rico	74	40
Total	843	257

Colombia



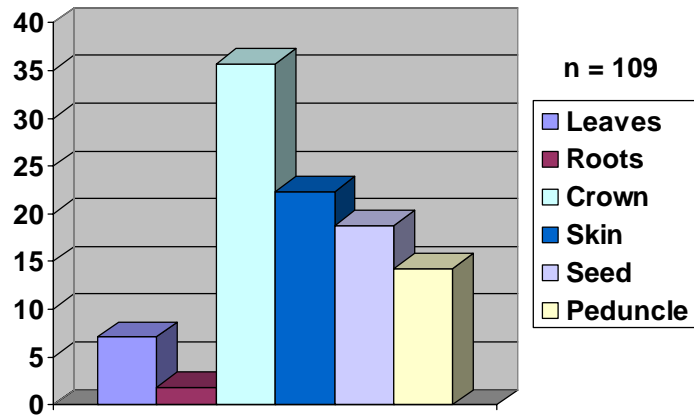
- 113 genotypes
- Dominant genus: *Colletotrichum* (106 isolates, 25 genotypes)
- Dominant genotype: *Colletotrichum* sp. 2 (25 isolates)
- *Beauveria bassiana*, *Cladosporium* sp., *Clonostachys* sp.

Hawaii



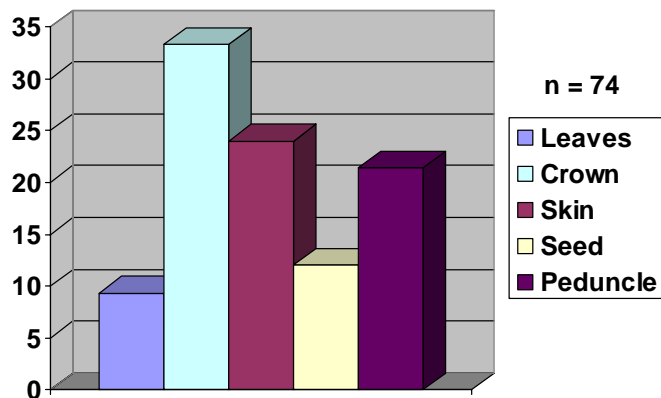
- 126 genotypes
- Dominant genus: *Colletotrichum* (121 isolates, 20 genotypes)
- Dominant genotype: *Penicillium olsonii* (32 isolates)
- *Acremonium* sp., *Beauveria* sp., *Cladosporium* sp., *Paecilomyces* sp.

Mexico

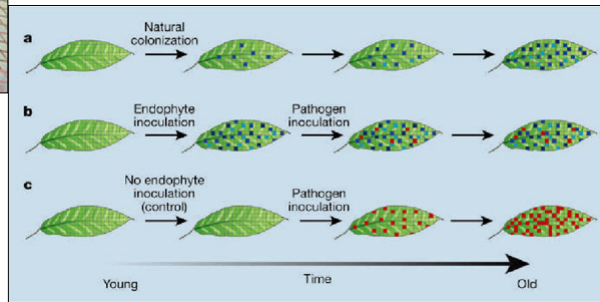


- 32 genotypes
- Dominant genus: *Fusarium* (68 isolates, 8 genotypes)
- Dominant genotype: *Fusarium* sp. 16 (48 isolates)
- *Paecilomyces* sp.

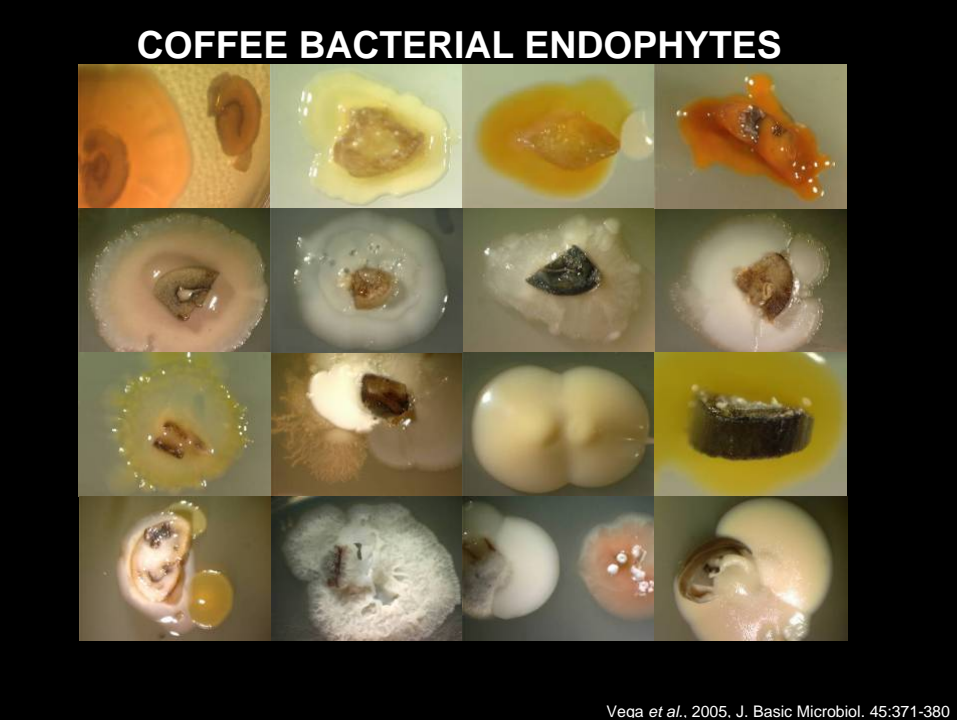
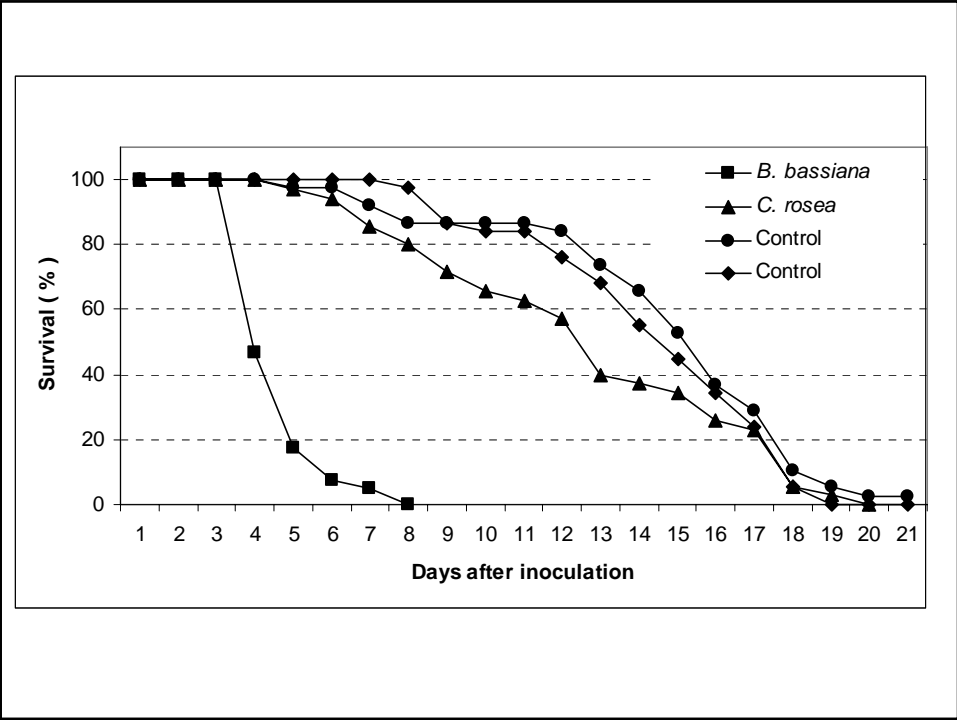
Puerto Rico



- 40 genotypes
- Dominant genus: *Fusarium* (24 isolates, 8 genotypes)
- Dominant genotype: *Fusarium* sp. 2 & sp. 18 (8 isolates @)
- *Cladosporium* sp., *Paecilomyces* sp.



Fungal endophyte	Coffee tissue	Collection site
<i>Acremonium alternatum</i>	Skin (berry)	Colombia
<i>Acremonium</i> sp.	Root	Hawaii
<i>Beauveria bassiana</i>	Seed	Colombia
<i>Beauveria bassiana</i>	Skin (berry)	Colombia
<i>Beauveria bassiana</i>	Peduncle	Colombia
<i>Beauveria bassiana</i>	Crown	Colombia
<i>Cladosporium</i> cf. <i>cladosporioides</i>	Leaves	Puerto Rico
<i>Cladosporium</i> cf. <i>cladosporioides</i>	Leaves	Hawaii
<i>Cladosporium</i> cf. <i>sphaerospermum</i>	Leaves	Maryland
<i>Cladosporium</i> sp. 1	Peduncle	Hawaii
<i>Cladosporium</i> sp. 2	Seeds	Hawaii
<i>Cladosporium</i> sp. 3	Leaves	Colombia
<i>Cladosporium</i> sp. 4	Skin (berry)	Colombia
<i>Cladosporium</i> sp. 4	Crown	Colombia
<i>Clonostachys rosea</i>	Leaves	Colombia
<i>Paecilomyces</i> cf. <i>fumosoroseus</i>	Crown	Puerto Rico
<i>Paecilomyces</i> cf. <i>javanicus</i>	Peduncle	Colombia
<i>Paecilomyces</i> sp. 1 (near <i>C. inflatus</i>)	Skin (berry)	Mexico
<i>Paecilomyces</i> sp. 2 (near <i>C. lilacinus</i>)	Seedling - root	Hawaii



Coffee Bacterial Endophytes

Bacillus cereus

Bacillus megaterium

Bacillus subtilis

Bacillus megaterium

Burkholderia cepacia

Burkholderia gladioli

Burkholderia glathei

Burkholderia pyrrocina

Cedecea davisae

Chromobacterium sp.

Clavibacter michiganense insidiosum

Curtobacterium flaccumfaciens

Enterobacter asburiae

Enterobacter cancerogenus

Enterobacter gergoviae

Escherichia vulneris

Gordona sp.

Klebsiella planticola

Klebsiella pneumoniae

Klebsiella trevisanii

Kocuria kristinae

Methylobacterium radiotolerans

Micrococcus sp.

Pantoea agglomerans

Pseudomonas chloroaphis

Pseudomonas putida

Rhodococcus equi

Salmonella typhimurium

Serratia liquefaciens

Stenotrophomonas maltophila

Variovorax paradoxus

Xanthomonas sp.

Vega *et al.*, 2005. J. Basic Microbiol. 45:371-380





**Jack Armstrong, USDA, ARS
Hilo, Hawaii**

- **Ozone fumigation for coffee imports.**



- **The FAS coffee production numbers in the Tropical Products circular. Utilizes the in-depth analysis from 14 overseas offices.**
- **Tony Halstead has replaced Debra Pumphrey.**


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About a fourth of total farm cash receipts come from exports. Show Factoids



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Highlights

USDA and CFIA Revise Guidelines for the Movement of Potatoes Between the United States and Canada (05/05/08)

Schafer Recognizes Work Of USDA Advisors Who Served In Afghanistan And Iraq (05/02/08)

- Rebuilding Agriculture and Food Security in Afghanistan
- Rebuilding Agriculture and Food Security in Iraq

President Asks Congress For An Additional \$770 Million For Food Aid (05/01/08)

- Fact Sheet: Leading the Fight Against Hunger

Statement of Joseph Glauber, USDA Chief Economist Before the Joint Economic Committee, U.S. Congress on World Food Prices (05/01/08; .pdf)

- Several Factors Behind Increasing Food Prices (USDA Radio News; 05/01/08 - [real](#), [mp3](#), [wave](#))
- Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices (Economic Research Service; 05/01/08)


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Commodities and Products

- Biofuels
- Organic Foods
- Coffee
- Planting Seeds
- Cotton
- Processed Products
- Dairy
- Sugar
- Fish and Seafood
- Tobacco
- Fruits and Vegetables
- Tree Nuts
- Grains
- Tropical Products
- Meat, Livestock, Poultry, and Eggs
- Wine
- Oilseeds
- Wood Products


Contact Information: International Agricultural Trade Commodity Experts


Contact Information: Market Development Experts

Agricultural Trade Data and Tools

- U.S. Trade Reports provides a more comprehensive commodity-by-commodity breakdown of exports and imports over a two- or five-year period.
- Export Sales Database

<http://www.fas.usda.gov/commodities.asp>


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Since 1984, using the Cochran Program, FAS has provided agricultural training to more than 8,400 participants from over 85 countries. [Show Factoids](#)

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Tropical Products Analysis

- **Commodity and Country Analysis**
 - Tropical Products: World Markets and Trade
- **Data**
 - United States:
 - Historical Data From the U.S. Trade Internet System (1989–Present)
 - Production, Supply and Demand (World Agricultural Outlook Board)
 - Global:
 - Production, Supply and Distribution: *PSOnline*
- **Links**
 - Maximum Residue Limits Databases
 - International Coffee Organization
 - National Agricultural Statistical Service - Puerto Rico - A History of Coffee
- **FAS Market Specific Reports**
 - FAS Attache Reports database
 - Exporter Guides – Overview of the country, economy and market.
 - Retail Guides – Overview including products with market potential, channels of distribution.
 - Sector Guides – HRI, etc.
 - Food and Agricultural Import Regulations (FAIRS) – Overview publication.
 - Commodity Reports
- **Contacts:**

Commodity/Contact	Area of Expertise	Phone	E-mail
Tropical Products			
Tim Roche	Spices, essential oils analysis	202-690-0292	Tim.Roche@usda.gov
Shonda McLeod	Tropical fruits analysis	202-720-6086	LaShonda.McLeod@usda.gov
Tony Halstead	Coffee, Dried fruit analysis	202-720-1001	Tony.Halstead@usda.gov

<http://www.fas.usda.gov/htp/tropical.asp>


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Tropical Products: World Markets and Trade Circular Archives

2008	▶ December 2008	▶ September 2008	▶ June 2008	▶ March 2008 (.pdf)
2007	▶ December 2007 (.pdf)	▶ September 2007 (.pdf)	▶ June 2007 (.pdf)	▶ March 2007 (.pdf)
2006	▶ December 2006 (.pdf)	▶ September 2006	▶ June 2006	▶ March 2006
2005	▶ December 2005	▶ September 2005	▶ June 2005	▶ March 2005
2004	▶ December 2004	▶ September 2004	▶ June 2004	▶ March 2004
2003	▶ December 2003	▶ September 2003	▶ June 2003	▶ March 2003
2002	▶ December 2002	▶ September 2002	▶ June 2002	▶ March 2002
2001	▶ December 2001	▶ September 2001	▶ June 2001	▶ March 2001
2000	▶ December 2000	▶ October 2000	▶ June 2000	▶ March 2000
1999	▶ December 1999	▶ October 1999	▶ June 1999	▶ March 1999
1998	▶ December 1998	▶ October 1998	▶ June 1998	▶ March 1998
1997	▶ December 1997	▶ October 1997	▶ June 1997	

http://www.fas.usda.gov/tropical_arc.asp



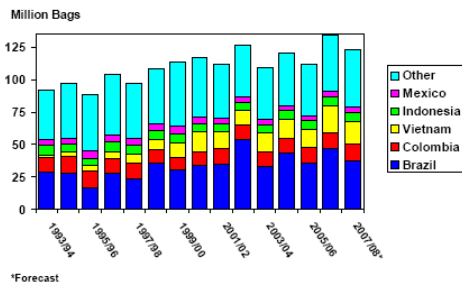
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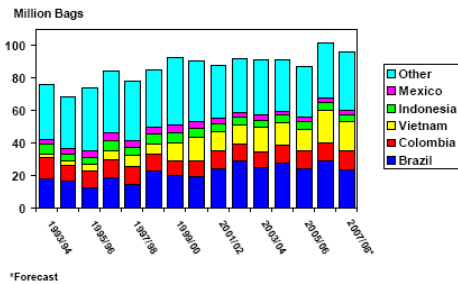
Circular Series
FTROP 4-07
December 2007

Tropical Products: World Markets and Trade

**World Coffee Production in 2007/08 Down
11.4 Million Bags From Previous Year**



**World Coffee Exports in 2007/08 Down
From 2006/07 Due to Drop in Supplies**



U.S. Department of Agriculture
Foreign Agricultural Service
Office of Capacity Building and Development
Trade and Scientific Exchanges

The Cochran Fellowship Program

The Cochran Fellowship Program (CFP) is administered by the U.S. Department of Agriculture's Foreign Agricultural Service (FAS). It provides U.S.-based agricultural training opportunities for senior and mid-level specialists and administrators from public and private sectors who are concerned with agricultural trade, agribusiness development, management, policy, and marketing.

Over 20 years ago, U.S. Senator Thad Cochran of Mississippi envisioned providing training and support to help developing nations improve their agricultural systems and strengthen and enhance trade links with the United States.



Since its inception in 1984, the program has provided U.S.-based training for over 12,200 international participants from 103 countries worldwide.



Eligibility Criteria

To be eligible, a country may be classified as middle-income, an emerging democracy, or an emerging market. In any case, the country's principal agricultural exports must not compete significantly with U.S. agricultural commodities and products in international trade.

Training Focus


The program offers short-term training opportunities, most ranging from two to four weeks, depending on the objectives of the program. Participants meet with professionals in their fields, participate in field observations and industry visits, experience on-the-job training, and attend university courses and seminars. However, no training will be approved that directly enhances a country's ability to export goods in competition with the United States.

<http://www.fas.usda.gov/icd/cochran/cochran.asp>

NORMAN E. BORLAUG INTERNATIONAL AGRICULTURAL SCIENCE AND TECHNOLOGY FELLOWS PROGRAM

Home	About Norman Borlaug	Borlaug Program Description	Geographic Coverage
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The Norman E. Borlaug International Agricultural Science and Technology Fellows Program helps developing countries strengthen sustainable agricultural practices by providing short-term scientific training and collaborative research opportunities to visiting researchers, policymakers and university faculty while they work with a mentor. The program targets developing countries and places participants at land-grant universities and 1890's colleges, government agencies, international research centers and other nonprofit institutions and private companies.

The Borlaug Fellowship Program was launched in March 2004 in honor of Dr. Norman E. Borlaug, who has often been hailed as the father of the Green Revolution. In 2007, Dr. Borlaug received the Congressional Gold Medal, the highest civilian award, for his lifetime contributions to improving international agriculture and global food security.

Dr. Borlaug won the Nobel Peace Prize in 1970 for his success in developing high-yielding wheat varieties and reversing severe food shortages that haunted India and Pakistan in the 1960's. Credited with saving millions of lives, his work virtually eliminated recurring famines in South Asia and helped global food production outpace population growth.

Although open to participants worldwide, the program focuses on African, South Central American, Central European, and Asian nations. The program is administered by USDA's Foreign Agricultural Service in cooperation with the U.S. Agency for International Development, the U.S. Department of State, and the U.S. Trade and Development Agency.

<http://www.fas.usda.gov/icd/borlaug/borlaug.htm>

SUMMARY

- **Increase awareness of the enormous breadth of scientific expertise at ARS that might be used to solve other problems of interest to the coffee industry.**
- **ARS is an important player in agricultural research.**
- **ARS has a strong coffee berry borer research program.**
- **International collaborative research has always been an important component in our research programs.**
- **There are opportunities for short term visits to ARS laboratories: Cochran Fellowship and Borlaug Fellows Program.**

