

**Yuncong Li**

Professor and Sate Extension Specialist  
Department of Soil and Water Science  
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## 1. BIOGRAPHY

Dr. Yuncong Li is the Professor of Soil Science in the Department of Soil and Water Science at the Tropical Research and Education Center, IFAS, University of Florida in Homestead, FL. He was born and grew up in Shandong, China, and Came to America in 1987. He received his B.S. (1982) in Soil Science and Agricultural Chemistry from the Shandong Agricultural University, China, his M.S. (1990) in Agronomy from the University of Georgia, and his Ph.D. (1993) in Environmental Science from the University of Maryland. He is also an Affiliated Professor at the University of Florida's Center for Tropical Agriculture, Hydrologic Sciences Academic Cluster, School of Natural Resources & Environment, and Water Institute, and Courtesy Professor at the Shandong Agricultural University and Chinese Academy of Tropical Agricultural Sciences. He has received many awards and distinctions including Fellow of both the American Society of Agronomy and the Soil Science Society of America; Food and Agriculture Organization (FAO) Fellow; Wilson Popenoe Award (InterAmerican Society for Tropical Horticulture); Outstanding Paper Award (Florida State Horticultural Society); Jim App Award (University of Florida); Junior Faculty Research Award (Sigma Xi, the international honor society of science and engineering); Senior Faculty Award (Gamma Sigma Delta, the honor society of agriculture); Research Innovation Award (University of Florida); Wachovia Extension Professional Award and Art Hornsby Distinguished Extension Award (Extension Association of Florida); International Educator of the Year (University of Florida, IFAS) and Research Foundation Professor Award (University of Florida). His research and extension program focuses on water and soil quality monitoring, assessment and remediation, management practices to improve nutrient use efficiency, and nutrient cycling in soils/sediments. He has authored or co-authored over 150 research papers, 70 extension articles and 14 book chapters. He recently edited two books, Water Quality Concepts, Sampling, and Analyses and Handbook of Soil Sciences. He serves as an associate editor for two journals, Critical Reviews in Environmental Science and Technology and Communications in Soil Science and Plant Analysis. Additionally, He has chaired or co-chaired 24 PhD and MS students, served as a committee member for 24 other graduate students, and supervised 15 postdoctoral fellows and many international visiting scientists.

## 2. BRIEF DESCRIPTION OF JOB DUTIES

The responsibilities for the position are to develop management practices that improve nutrient use efficiency, plant nutrition and water quality; to conduct research on nutrient cycling in calcareous soils in South Florida's agricultural and natural ecosystems; and to conduct research on water quality monitoring, assessment and remediation. The specific duties of this position include: a) develop fertilizer management practices to improve fertilizer use efficiency and to minimize groundwater pollution; b) evaluate nutrient cycling in agricultural and natural ecosystems in south Florida; c) organize field demonstrations and workshops to transfer information and technologies to growers and other users; d) contribute to state extension program teams; e) publish research results in refereed and in non-refereed journals; f) develop publications and other means of communication with clientele groups and the general public; g) represent the University of Florida at state, national and international scientific meetings and provide service to the profession of soil and water sciences by participating in appropriate professional society affairs; and h) acquire resources to conduct research and extension programs.

### 3. AREAS OF SPECIALIZATION

Environmental soil chemistry; Plant nutrition, Water quality; Ecosystem restoration.

### 4. ASSIGNED ACTIVITY SINCE LAST PROMOTION

|              | 2011-12     | 2010-11     | 2009-10     | 2008-09     | 2007-08     |
|--------------|-------------|-------------|-------------|-------------|-------------|
| Teaching     | 0%          | 0%          | 5%          | 5%          | 5%          |
| Research     | 70%         | 70%         | 65%         | 65%         | 65%         |
| Service      | 0%          | 0%          | 0%          | 0%          | 0%          |
| Extension    | 30%         | 30%         | 30%         | 30%         | 30%         |
| <b>TOTAL</b> | <b>100%</b> | <b>100%</b> | <b>100%</b> | <b>100%</b> | <b>100%</b> |

### 5. EDUCATIONAL BACKGROUND

|                                  |                                |       |      |
|----------------------------------|--------------------------------|-------|------|
| University of Maryland           | Environmental Science          | Ph.D. | 1993 |
| University of Georgia            | Soil Chemistry                 | M.S.  | 1990 |
| Shandong Agricultural University | Soil Science and Agrochemistry | B.S.  | 1982 |

### 6. EMPLOYMENT

**Professor**, 2008- present; **Associate Professor**, 2003 – 2007; **Assistant Professor**, 1997 - 2002, University of Florida, IFAS, Soil and Water Science Department, Tropical Research and Education Center, Homestead, FL.

**Affiliate Faculty**: 2000-present, School of Natural Resources and Environment, University of Florida

**Affiliate Faculty**: 2005-present, Water Institute, University of Florida

**Affiliate faculty**: 2007 to present, the Center for Tropical Agriculture, University of Florida

**Affiliate Faculty**: 2009-present, Hydrologic Sciences Academic Cluster, University of Florida

**Courtesy Professor**: 1999-present, Shandong Agricultural University, Shandong, China.

**Courtesy Professor**: 2010-present, Tropical Crops Genetic Resources Institute of Chinese Academy of Tropical Agricultural Sciences, Hainan, China

**Post-doctoral Research Associate**, 1994-1996, University of Florida, IFAS, Indian River Research and Education Center, Fort Pierce, FL.

**Visiting Lecturer, Research and Teaching Assistant**: 1990 - 1993, University of Maryland.

**Research and teaching Assistant**: 1988 - 1990, University of Georgia.

**Food Agricultural Organization (FAO) Fellow**: 1987 - 1988, Soil Testing and Plant Analysis Laboratory, University of Georgia

**Assistant Agronomist**: 1982 - 1987, Cotton Research Center, Shandong Academy of Agricultural Sciences, China.

## **7. YEAR OF TENURE OR PERMANENT STATUS**

2003

## **8. TEACHING, ADVISING AND OTHER INSTRUCTIONAL ACCOMPLISHMENTS**

### **8.1. Teaching philosophy**

As an off-campus faculty stationed at the Tropical Research and Education Center in Homestead, I have a 70% research, 30% extension, and no teaching assignment. However, I am actively involved in advising and mentoring undergraduate interns, graduate students, postdoctoral research associates, and early career scientists. I have graduated 4 doctoral students and 9 master students as a chair and co-chair and 17 as a committee member, and am currently serve as the chair of 6 graduate students (5 PhD and 1 MS) and a member in 6 doctoral committees. I regard my teaching and mentoring activity with great privilege and important responsibility. It affords me the opportunity to work with very bright and talented young people who will hold important positions in future years, and allows me to introduce these future scientists to subject matter that I feel is critically essential to improving living standards and environmental quality. I also have a great deal of empathy for graduate students when I remember my hard struggle to acquire an education and to make my way in the scientific community. I was fortunate to have professors who helped me over many rough patches. Likewise, I try to be helpful to students as they cope with the various difficult challenges and circumstances they encounter.

I like to present “Ingredients for a Good Advisor” to students, which is a summary of my mentoring philosophy. This topic is a segment from one of my lectures for an online course entitled “Communication of Academia- Guide for Graduate Students” that will be offered to graduate students next semester. I believe that a good advisor should: 1) establish a relationship of respect, trust and honesty with each student and discuss research ethic as early as possible. I believe science is about discovery and moving forward on the basis of truth, and there is no room for dishonesty and fearfulness in a high performance laboratory. 2) always be available to graduate students. I maintain an open-door policy. Students feel free to approach me in the laboratory, field or in my office. I often took graduate students with me when I was asked by growers or extension agents for farm visits to deal with specific problems. Field trips provide many opportunities to explain concepts in a new way or review key terms and advance the learning process. 3) encourage students to write refereed research papers starting in their first semester. The road to success in the world of academia is writing and publishing high quality papers. All of my doctoral students have to submit at least three manuscripts to journals before the graduation. I also strive to reward students for their achievements and help obtain recognition for outstanding contributions. 4) be a role model and set a good example for students. 5) be enthusiastic and have up-to-date knowledge of research field. It is important to challenge graduate students with new ideas and require them to read new materials. 6) take students to professional conferences and introduce them to colleagues. Professional networking is crucial to the success of a student’s career. I use any opportunity to introduce my student to other scientists. 7) mentor graduate students throughout their academic career.

In summary, I like to be a professor who very nice, but disciplined with students, pays students well, purchases everything needed for research, meets students regularly, invites students for lunches or dinners, helps student for finding research topics, encourage students to

write papers from day one, reviews their papers promptly, gives students proper credits for their work, takes students to conferences, introduces students to other scientists at conferences and other opportunities, write them a good letter of recommendation, and offers advice and helps for career decision.

### Mentoring style

I divide the styles of mentoring into three categories. First is a “hand-on” approach. A professor with a “hand-on” style works very closely with students for every step of their research. They spend many hours with students, provide detail instructions, and personally teach students specific skills. The second style of mentoring is a “hand-off” approach. A professor with a “hand-off” style allows their students to explore everything by themselves. They will give general direction for potential research topics, but students have to find out exactly the hypothesis, objective, and methodology by themselves. Some students may feel lost during the early stages of their programs, but many enjoy the challenge of independence. This approach is similar to an old Chinese proverb, “Teachers open the door. You enter by yourself.” The third category of the mentoring is a style between “hand-off” and “hand-on”. I consider myself as a professor with a “hand-off” style. A critical part of my mentoring style is to require students to be very familiar with the research topic before beginning their research by searching many references and continuing to read papers throughout their program. I also tell the following story about a young PhD student at the University of Oxford to each of my students.

A half century ago, a young fellow came to Oxford from South Africa to study soil chemistry. He was summoned to the professor’s office a day after he arrived in Oxford. When the young fellow came into the office, the professor was doing a calculation with a slide rule (there were no computers at that time). The professor paused from his calculation for a moment, stared at the student and asked “What would you like to study?” The young fellow said he would like to study soil colloids, which is a branch of soil chemistry. The professor replied “Go to library and read Gerry’s papers!” The young man went to the library looking for Gerry’s publications. It took him the whole afternoon in the library and could not find any of Gerry’s papers. He thought that he had to ask the professor exactly who Gerry was. But early the next morning, he went to the professor’s office to find that the professor had just left for Turkey on a three-month consulting trip. There was no email or even phone number to connect to the professor’s host institution. It would take over a month to get the professor’s response using regular mail. I can imagine the young man’s dilemma and frustration; he probably said to himself “Shit! What should I do?” He had no choice, but to go back to the library. He found a chair in the chemistry section and started reading books and journals. Three months later the professor returned from his travel and summoned the student to his office again. He asked the student “Did you read Gerry’s papers?” The young man replied “I could not find Gerry in any author index.” The professor stared at the student unhappily and said slowly “The man’s name is Gerhardus (Gerry) Bolt!” Not only had he failed to give the correct surname but had also used his nickname. No wonder the lack of success on the part of the graduate student. The young man replied “Oh! Yes Sir! I found his papers and read them all. I also read books and journals in the soil chemistry section from A to Z.” At that time, it was still possible to read the entire literature on soil chemistry. After that, the young man became one of the professor’s favorite students. Unfortunately, the professor, Dr. R.K. Schofield, a pioneer in soil chemistry and soil physics, died a year later leaving the student without a guiding light. Nevertheless, the young graduate student completed his research under his own guidance and graduated within three years becoming one of the most productive and influential soil

scientists in the last 50 years. His name is Dr. Malcolm E. Sumner, the Regents' Professor of Environmental Soil Science Emeritus, and my major professor at the University of Georgia. He has published over 300 refereed journal papers as well as over 40 book chapters and is the editor of eight books.

## 8.2. Instructional Activities

| Course              | Title   | Date  | Format    | Role                   |
|---------------------|---|---|-----------|------------------------|
| ABE6933/<br>SWS6932 | Communicating in Academia                         | Spring 2013   | Web       | Instructor<br>(40%)    |
| SWS 3022L           | Soils in the Environment                          | Fall 2001, 2004<br>Spring 2005                                    | Lab       | Instructor<br>(100%)   |
| SWS 4905            | Individual Work                                   | Summer, 2012  | Lab       | Instructor<br>(100%)   |
| HOS 5555            | Tropical Fruit Production and Research in Florida | Summer 1998, 2000,<br>2002, 2004, 2006,<br>2008, 2010, 2012       | Lecture   | Guest lecturer<br>(5%) |
| SWS 6905            | Special problems                                  | 2003-2011<br>(2011sp:2credits; fl: 4<br>credits)                  | Lab       | Adviser<br>(100%)      |
| SWS 6910            | Supervised Research                               | 2011 fall:2 credits   | Lab       | Adviser<br>(100%)      |
| SWS 6940            | Supervised teaching                               | Spring 2010   | Lab       | Adviser<br>(100%)      |
| SWS 6971            | Research for Master's Thesis                      | 2003-2011<br>(2011sp: 8credits,<br>2012sp:3)                      | Lab       | Adviser<br>(100%)      |
| SWS 7665            |   |   |           |                        |
| SWS 7979            | Advanced research                                 | 2003-2011<br>(2011sp:12 credits;<br>fa:10 credits;<br>2012sp:16)  | Lab       | Adviser<br>(100%)      |
| SWS 7980            | Research for Doctoral Dissertation                | 2003-2011<br>(2011sp: 11 credits;<br>fa:15 credits;<br>2012sp:18) | Lab       | Adviser<br>(100%)      |
| Short course        | Water Quality Concepts, Sampling and Analysis     | 2008, 2011  | Field/lab | Instructor<br>(50%)    |
| AGR 4932            | Crop Ecology                                      | Oct 2009  | Field     | Guest lecture<br>(1%)  |

## 8.3. Academic advisement

Postdoctoral Associates/Visiting Professors:

Dr. Yuechao Yang, Postdoctoral Research Associate, Ph.D in Soil Science, Shandong Agricultural University, China, 07/11 - .

Dr. Xiaohui Fan, Postdoctoral Research Associate, Ph.D in Soil Science, Chinese Academy of Science, China, 04/06-01/11. Currently he is a senior biologist at TREC, UF.

Dr. Guodong Liu, Postdoctoral Research Associate, Ph.D in Soil Science, Chinese Academy of Agricultural Sciences, China, 06/04-02/11. He current is an assistant professor of horticulture, University of Florida.

Dr. Qingren Wang, Postdoctoral Research Associate (10/01-09/08) and research scientist (10/08-present), Ph.D in Soil Science, Chinese Academy of Agricultural Sciences, China

Dr. Yun Qian, Postdoctoral Research Associate, Ph.D in Environmental Science, Nankai University, China, 01/05-12/08. Currently she is a research associate II, Oak Ridge National Laboratory.

Dr. Aaron Palmateer, Postdoctoral Research Associate, Ph.D. in Plant Pathology, Auburn University, 6/03-12/03. Currently he is an Assistant Professor, TREC, University of Florida.

Dr. Melanie Szulczewski, Postdoctoral Research Associate, Ph.D in Soil Chemistry, University of Wisconsin, 11/01-8/2002. She currently is an Assistant Professor, George Mason University.

Dr. Min Zhang, Postdoctoral Research Associate, Ph.D in Soil Science, Chinese Academy of Science, 5/00-8/02. Currently he is a Department Chair and Distinguished Professor of Soil Science and, Shandong Agricultural University, China.

Dr. Gladis Zinati, Postdoctoral Research Associate, Ph.D. in Soil Fertility, from Michigan State University, 2/98-9/01. Currently she is an Assistant professor, Dept. of Plant Biology and Pathology, Rutgers University, New Brunswick, NJ

Dr. Qibing Wang, Postdoctoral Research Associate, Ph.D. in Plant Ecology, Chinese Academy of Sciences, 2/00- 6/01 and 1/08-5/08. He is currently a professor, Research Center of Plant Ecology, Institute of Botany, Chinese Academy of Sciences

Dr. Meifang Zhou, Postdoctoral Research Associate, Ph.D. in Environmental Soil Chemistry, University of Florida, 4/99-1/00. He currently is a Senior Chemist, South Florida Water management District, West Palm Beach, FL.

Dr. Jianqiang Zhao, Postdoctoral Research Associate, Ph.D. in Soil Science from University of New Hampshire, 4/98-4/00. Currently he is a Senior Chemist and Laboratory Manager at the Department of Agriculture and Consumer Service, Tallahassee, FL.

Dr. Renuka Rao, Senior Chemist/Postdoctoral Research Associate, Ph.D. in Soil Science, Texas A&M University, 12/97- 8/03. Currently she is a Director of Soil Testing Laboratory, Iowa State University.

Dr. Shaoxiong Huang, Chemist/ Postdoctoral Research Associate, Ph.D. in Analytical Chemistry, University of Arkansas, 2/97-11/97. He is working as a Senior Research Chemist, Mallinckrodt/Tyco Healthcare Inc., St. Louis, MO.

### **Visiting Scientists:**

Dr. Simone Costa Mello, Professora Doutora da Universidade do Estado de São Paulo, Escola Superior de Agricultura Luiz de Queiroz – ESALQ, Departamento de Produção Vegetal, Avenida Pádua Dias, 11 Caixa Postal: 09; CEP: 13418-900. December 31, 2011 -

Jianzhu Wang, Visiting professor, Three Gorges University, Dec 2011-present

Karen Zheng, Visiting graduate student, Nankei Unviersity, May 2011-Aug 2012

Leonila M. Tolentino, University of Southern Mindanao, Kabacan, Cotabato, Philliphins, January-May 2011.

Moses Ogunlade, Cocoa Research Institute of Nigeria, Soil And Plant Nutrition Section, Km 14, Ijebu-Ode-Ibadan Road, Ide-Ayunre, Idaban, Nigeria, [mosesogunlade2@yahoo.com](mailto:mosesogunlade2@yahoo.com). April-June, 2011.

Adriano Stephan Nascente, Scientist Researcher, M.Sc. Agriculturre, National Rice and Beans Research Center, Cx.Postal 17975350-000 - Sto.Antônio de Goiás, GO, Brazil, Fone (62)3533-2121, Fax (62)3533-2100. Oct 2010-December, 2012.

Dong Yan Liu, Ph. D. Associate Professor, Urban Ecology and Environmental Centre, Shanghai Normal University, Guilin road 100#, Xuhui District, Shanghai, 200234, Email: [liudy@shnu.edu.cn](mailto:liudy@shnu.edu.cn) [ardisia1969@yahoo.cn](mailto:ardisia1969@yahoo.cn). Sept 2010-Sept 2011.

Kim, Ho-Jin, Soil Environment Laboratory, Department of Environmental Horticulture, The University of Seoul, 90 Jeonnong-Dong, Dongdaemun-Gu, Seoul, Republic of Korea. [soilkim@hotmail.com](mailto:soilkim@hotmail.com). April 2010-April 2011.

Ms. Rui Liu, Nankai University. Spet 2010 – Aug 2012.

Mr. Bing Yue, Environmental Protection Research Institute of Light Industry No. 27, North Road of West Third Ring, Haidian District, Beijing 100089, China. Oct. –Dec. 2010.

Dr Ravinder Kaur, ICAR National Fellow Division of Environmental Sciences Indian Agricultural Research Institute New Delhi 110 012 (India), Mobile:9811041187, [rk132.iari@gmail.com](mailto:rk132.iari@gmail.com). May 2010.

Mr. Franco H. Obando Mancayo, Soil Scientist, Department of Production Systems, Faculty of Agriculture Sciences, Universidad de Caldas, Manitales, Colombia. March, 2010. [francoh.obando@ucaldas.edu.co](mailto:francoh.obando@ucaldas.edu.co)

Ms. Huiqin Ren, Researcher, College of Resources and Environmental Sciences, Chinese Agricultural University, 2/09-5/10.

Mr. Rodrigo Arroyo Garcia, Departamento de Produção Vegetal/Agricultura Faculdade de Ciências Agronômicas, Universidade Estadual Paulista, Rua José Barbosa de Barros, 1780, Lageado, CEP 18609-307, Caixa-Postal 237, Botucatu, SP-Brasil. May-Nov. 2009. [ragarcia@fca.unesp.br](mailto:ragarcia@fca.unesp.br)

Ms. Yanli Nie, Assistant Professor, Yunnan Forestry Academy, Yunnan, China, 11/08-10/09.

Ms. Sapna Mulki, Master student, Brandeis College, Boston, USA. 10/08-5/09. Currently is working for the World Resource Institute (WRI).



Mr. Shengsen Wang, visiting scholar, Shandong Agricultural University, Shandong, China, 2/07-2/08.

Mr. Murad Ali, Visiting Professor from NWFP Agricultural University, Peshawar, Pakistan, 2007.

Dr. Shizhe Liu, Professor, South China Agricultural University, China, 2006

Mr. Gauies Eudoxie, Assistant Lecturer of Soil Science, Department of Food Production, University of the West Indies, St. Augustine, Trinidad. 2004.

Mr. Raynaud Raymond, Agronomist, Haiti, 2000.

Ms. Xia Yu, Visiting Professor of Chemistry, Shandong Medical University, China, 12/98- 3/99. She is in Canada now.

Ms. Xiuping Sun, Visiting scientist, MS in weed science/biochemistry, University of Illinois. 1997. She is working for USDA now.

#### **LABORATORY CHEMISTS/RESEARCH ASSISTANTS:**

Mr. Jianzhong Qiao, B.S. in medical science, 2008-2009.

Mr. Newton Campbell, B.S. in Chemistry, Florida State University, 2003-2007.

Ms. Quiqin Yu, Laboratory assistant (2002-2007), senior chemist (2007-present), B.S. in Soil Science, Shandong Agricultural University, China.

Ms. Laura Rosada, Research assistant, B.S. in Chemistry, Enrique Jose Varona University, Cuba. 1998- July 2010.

Mr. Gilberto Aleman, B.S. in Agricultural Engineering, Central University of Las Villas, Cuba. 2003.

Ms. Li Ma, Laboratory assistant, B.S. in Soil Science, Shandong Agricultural University, China. 2001-2002.

#### **COLLEGE STUDENTS-Internship:**

Ms. Eileen Linares, college intern, Florida International University, July 2012-

Mr. Reynaldo Garcia, Intern from Florida International University, 06/10-08/10.

Mr. Pierre Audate, Intern from the Earth University, Costa Rica, 08/09/12/09.

Ms. Jill Ploetz, FIU, January 2007.

Mr. Luis Diego Roman Delgado, Earth University, Costa Rico, Aug. –December, 2006.

Mr. Paul Marcelini, David Lipscomb University in Nashville, Summer 2006.

Ms. Nadine Amann, University of Applied Sciences (Fachhochschule Osnabruck), Germany, Oct., 2004 – April 2005.

Ms. Caroline Zennie, University of Virginia, Jun-Aug., 2004

Mr. Calvin Andre' Samuel, State University of New York, 2004

Mr. Luis Pablo Barquin Valle, Earth University, Costa Rico, Aug. –December, 2003.

Ms. Lizette Locay, Miami-Dade Community College, 2003

Ms. Juanita Sanchez, Miami-Dade Community College, 2001- 2002

Mr. Scott Haybert Miami-Dade Community College, 1999

Ms. Allison Gardner, Florida International University, 1998.

**9. TEACHING EVALUATIONS**

None

**10. GRADUATE FACULTY STATUS**

1997-present

**11. GRADUATE COMMITTEE ACTIVITIES**

| <b>Role</b>                              | <b>Student</b>                                   | <b>Research topics</b>  | <b>Home Dept.</b> | <b>Complete Date</b> |
|--|--|---|-------------------|----------------------|
| Chair/<br>Co-Chair<br>Ph.D.<br>Committee | Eduardo F. Chávez<br>(2011-2012,<br>Transferred) | Soil fertility in Cacao plantation  | SWS <sup>1</sup>  | 2015                 |
|  | Xiaoling Dong<br>(Co-chair)                      | Mechanisms of biochar-induced immobilization of Cr and Hg in contaminated water and soils   | SWS <sup>1</sup>  | 2013                 |
|  | Jeffery Van Treese<br>(2010-11,<br>Transferred)  | Nutrient management for biofuel crops   | SWS               |                      |
|  | Marcel Barbier                                   | Nutrient Management for sweet potato  | SWS               | 2014                 |
|  | Zhiguang Liu                                     | Environmental impacts of Controlled release fertilizers   | SDAU <sup>5</sup> | 2014                 |
|  | Pamela Fletcher                                  | Participatory decision support for ecological forecasting: Improving planning and response to climate variability and ecological events | SWS               | 2014                 |
|  | Richard Yudin                                    | Treating wastewater from vegetable packing houses in Belize   | SWS               | 2014                 |
|  | Wayne Worthley                                   | Soil testing calibration for calcareous soils   | SWS               | 2014                 |
|  | Daniel Irick                                     | Soil phosphorus characteristics and sources in tree islands of the Florida everglades   | SWS               | 2012                 |
|  | Dakshina Murthy Kadiyala                         | Nutrient and irrigation management for dry land rice in India   | SWS               | 2012                 |
|  | Chung Nguyen                                     | Calcium carbonate biogeochemistry and its effects on phosphorus removal in natural and constructed wetlands                             | SNER <sup>4</sup> | 2011                 |
|  | Yi-Ming Kuo<br>(Co-chair)                        | Using vegetative filter strips to reduce phosphorus transport from the phosphorus mining area   | ABE <sup>3</sup>  | 2008                 |
|  | Gabriel Kasozi (Co-chair)                        | Sorption and transformation of organic pesticides in calcareous soils of south Florida  | SWS               | 2007                 |

|                                     |                                |  |                  |                     |
|-------------------------------------|--------------------------------|--|------------------|---------------------|
|                                     | Xing Wang                      | Effect of soil amendments on soil fertility and crop production                                      | SWS              | 2006<br>Transferred |
| Chair/Co-chair<br>M.S.<br>Committee | Amy Boone                      | Non-thesisThesis   | SWS              | 2013                |
|                                     | Christine Coffins              | Hydrologic affects on the morphologic and physio-chemical properties of marl soils in south Florida  | SWS              | 2012                |
|                                     | William Higginbotham           | Non-thesis   | SWS              | 2011                |
|                                     | Kiah Barrette                  | Control phosphorus reflux from sediment in Everglades  | SNER             | 2011                |
|                                     | Jeffery Van Treese             | Non-thesis   | SWS              | 2010                |
|                                     | Henry Mayer                    | Nutrient management for ornamental plants  | SWS              | 2010                |
|                                     | Daniel Irick                   | Non-thesis   | SWS              | 2009                |
|                                     | Hollie Hall                    | Influence of cover crops on phosphorus in a Peruvian soil  | SWS              | 2008                |
|                                     | Richard Yudin                  | Non-thesis   | SWS              | 2008                |
|                                     | Joaquin Jimenez (Co-chair)     | Fertilization of ornamental plants   | SWS              | 2007                |
|                                     | Jeanna Ragsdale                | Influence of cover crops on nutrient availability in a sweet potato cropping system in South Florida | SWS              | 2006                |
|                                     | Member,<br>Ph.D.<br>Committees | Christopher Vincent  |                  | SNRE                |
| Eduardo F. Chávez                   |                                | Soil fertility in Cacao plantation   | SWS <sup>1</sup> | 2015                |
| Octavio Menocal                     |                                | Silicon nutrition  | HS               | 2013                |
| Jeffery Van Treese                  |                                | Nutrient management for biofuel crops  | SWS              | 2014                |
| Isaya Kisekka                       |                                |  | ABE              | 2013                |
| Xiaolin Liao                        |                                | Nitrogen cycle in the restored wetlands in the HID, Florida Everglades                               | SWS              | 2012                |
| Shengsen Wang (2010-2011)           |                                | TBD  | SWS              | 2014                |
| Subodh Acharya (2009-2010 only)     |                                | Modeling Water Table Fluctuation under Seepage Irrigation and Drainage                               | SWS              | 2012                |
| Yandi Fan                           |                                | The effects of irrigation and nitrogen management on potato tuber yield, n                           | SWS              | 2010                |

|                        |                      |   |      |                     |
|------------------------|----------------------|---|------|---------------------|
|                        |                      | recovery and leaching in northeast florida  |      |                     |
|                        | Nicholas Kiggundu    | Assessing nutrient leaching under different nutrient and irrigation management practices  | ABE  | 2010                |
|                        | Oscar Perez-Ovilla   | Simulation of phosphorus through vegetative filter strips on phosphate mining areas in the Peace River Basin, FL                  | SNER | 2010                |
|                        | David Kaplan         | Measuring and modeling soil moisture, soil water salinity, and bald cypress seedling survival in the Loxahatchee River Floodplain | ABE  | 2010                |
|                        | Richard Carey        | Land use change and water quality in the Biscayne Bay Watershed, South Florida  | SNER | 2009                |
|                        | Qin Lu               | Effects of organic amendments on sandy soil quality   | SWS  | 2009                |
|                        | Lauren Serra         | Pine land restoration in the Hole-in-the-Donut, Everglades National Park  | SWS  | 2009                |
|                        | Mark Nickum          | The Effect of flooding and drought stress on mamey sapote growth, development, and physiology                                     | HS   | 2009                |
|                        | Deoyani Sarkhot      | Soil organic carbon profile of sandy Spodosols as affected by intensive loblolly pine management in Southeastern U.S.             | SWS  | 2006                |
|                        | Fernando Munoz       | Nitrogen uptake efficiency as influenced by potato root system  | SWS  | 2004                |
|                        | Rashid Al-Yahyai,    | Effect of irrigation on carambola growth and yield  | HS   | 2004                |
|                        | Maritza Ojeda        | Flooding, root temperature, iron nutrition and growth of <i>Annona</i> species  | HS   | 2003                |
|                        | Umpika Poonachit     | Effects of soil water contents on flowering, fruit development and yield of 'Tahiti' lime   | HS   | 1999<br>Transferred |
| Member, M.S. Committee | Nicole (Nicki) Dobbs |   | ABE  | 2012                |
|                        |                      |   |      |                     |
|                        | Luis Barquin         | Shallow water table contribution to soil-water retention in the capillary fringe of a very gravelly loam soil                     | ABE  | 2009                |
|                        | Subodh Acharya       | Study of Physical Properties of a Shallow Hardpan and Subsurface Lateral Flow of Water  | SWS  | 2008                |
|                        | Amanda Mortl         | Soil salinity and hydroperiod analysis in the floodplains of the Loxahatchee river watershed.                                     | ABE  | 2006                |

|  |                   |  |     |      |
|--|-------------------|--|-----|------|
|  | Jonathan Schroder | Development and Testing of a Soil Moisture Sensing Drip Fertigation System to Improve Agricultural Sustainability                | ABE | 2006 |
|  | Hilary George     | Effect of root temperature and mulch on growth, gas exchange, and nutrition of 'Arkin' carambola ( <i>Averrhoa carambola</i> L.) | HS  | 2000 |

<sup>1</sup>Soil and Water Science, UF

<sup>2</sup>Horticultural Science, UF

<sup>3</sup>Agricultural and Biological Engineering, UF

<sup>4</sup>School of Natural Resources and the Environment, UF

<sup>5</sup>Shandong Agricultural University, China

## 12. RESEARCH NARRATIVE

(CRIS PROJECT FLA-HOM-004894 and collaborating on FLA-HOM-04160: Environmental Physiology and Management of Subtropical and Tropical Fruit Crops in Florida; FLA-HOM-04327: Improving Water Quality at the Watershed Level by Targeting High-Return Stakeholders; FLA-HOM-004651: Foliar Acid Applications to Prevent Iron Deficiency in Tropical Fruit Crops in Calcareous Soils)

My research program addresses soil and water issues in the Everglades basin in south Florida. I have focused on nutrient cycling in calcareous soils and the development of management practices to improve nutrient use efficiency, crop production, and water quality in agricultural and natural ecosystems.

Several hundred commercial crops and numerous native plant species grow on the calcareous soils of south Florida. When my work began, information on these soils was scant; but in the intervening years, my research group determined their physical, chemical, biological, and mineralogical properties, and conducted laboratory, greenhouse and field experiments on soil chemistry and fertilizer use efficiency in these soils. We found that most calcareous agricultural soils have high concentrations of phosphorus (P) in forms likely to move into surface and groundwater, and that additional applications of P fertilizer did not increase P availability to plants and crop yields. Our research group developed a simple one-point isotherm method to predict saturation and leaching potential of P in calcareous soils. Also we found that apatite is formed in calcareous soils farmed for several decades. We are developing and facilitating the implementation of best management practices (BMPs) for various crops in south Florida, which include the use of appropriate P rates, optimal irrigation, and methods to increase soil organic matter.

Iron deficiency is a major challenge in growing tropical fruits on calcareous soils. Application of chelated iron to the soil is a standard practice, but can constitute up to 80% of the total fertilizer cost. Our research provided information on reducing fertilizer costs by improving application methods and finding less expensive fertilizers. We proved that foliar application of iron sulfate in a weak acid can prevent iron deficiency and significantly reduce production costs of tropical fruits. Our research on nitrogen nutrition of lychee found that inadequate maturation of vegetative flushes in the late fall or early winter prevents flowering. Low nitrogen concentration in lychee leaves in the fall reduces vegetative growth but increases flowering and fruit set.

Cover crop technology needs to advance as an integral part of vegetable production practices in Florida. We introduced >30 cover crops and evaluated mineralization rates of various cover crops residues and effects on soil organic carbon, soil microbial biomass, soil enzyme activity, nematode suppression, water holding capacity, and nutrient leaching. Significant increases in the extra large fruit and total marketable

yields of tomato grown in fields resulted when cover crops were used as a green manure. Our findings provide fundamental information on enhancing the sustainability of agriculture through use of improved cover crop technologies.

Several projects were conducted to evaluate the effects of organic solid wastes on crop production, soil fertility, parasitic nematode populations, and water quality. We developed a method to quantify organic carbon in organic waste amended calcareous soils that overcomes the interference of carbonate. We improved the fractionation methods used in determining organic carbon and metals in calcareous soils. We also developed management practices to utilize biosolids or composts that significantly increased soil organic carbon, soil nutrient availability and crop yields, but avoided problem with trace metal accumulation in soils and nutrient leaching into groundwater.

Water quality and quantity issues are of considerable concern because of the excessively porous, oolitic limestone-based soils that overlay the shallow aquifer in South Florida. We have established one of the best water quality monitoring networks and water quality analytical laboratories with state-of-the-art technology in southern Florida. We used new statistical techniques to analyze water quality data collected over 25 years in south Florida and determined the impacts of land use, climate and other factors on water quality. The work provided useful information to guide water managers in developing watershed management strategies to meet water quality goals.

During the last 5 years, I, as PI and Co-PI, have received more than \$5 million in extramural funding from federal and state agencies, grower organizations, and private companies. I have published more than 140 research papers and 70 extension articles. I am an editorial board member of Critical Reviews of Environmental Science and Technology, a prestigious journal in our research field, and of a popular journal in soil science, Communications in Soil Science and Plant Analysis. I was awarded the University of Florida Research Foundation Professorship in 2007 and the Wachovia Extension Professional Award in 2008.

### 13. CREATIVE WORKS OR ACTIVITIES

1) I and my coauthors have produced total 37 posters and 109 PowerPoint presentations since 2003.

| Year | Display sets (posters) | PowerPoint presentations |
|------|------------------------|--------------------------|
| 2011 | 11                     | 16                       |
| 2010 | 5                      | 21                       |
| 2009 | 7                      | 10                       |
| 2008 | 6                      | 11                       |
| 2007 | 4                      | 15                       |
| 2006 | 4                      | 20                       |
| 2005 | 5                      | 21                       |
| 2004 | 6                      | 16                       |
| 2003 | 5                      | 16                       |

2) Water Quality Short Course Website 2008: <http://conference.ifas.ufl.edu/ufwq/>. This web site was developed for the UF/IFAS Water Quality short course offered in April 2008. 25 USB flash drives with data and educational materials for the Water Quality short course were distributed.

3) Water Quality Short Course video tapes (~6 hours) were edited in 2009. We are in the process to develop an online workshop and graduate course.

3) Water Quality Short Course Website 2010: <http://conference.ifas.ufl.edu/ufwq2/index.htm>. This web site was developed for the UF/IFAS Water Quality short course to be offered in Feb 2011.

4) Water quality online training course with six modules was completed in 2012.

5) Communication in Academia with 12 recorded modules were completed in 2012.

## 14. PATENTS AND COPYRIGHTS

Slow Release Oxygen Fertilizer (UF Invention #11880):

Lack of soil oxygen, or hypoxia, is an environmental challenge that can negatively impact seed germination and plant growth. Hypoxia commonly occurs when soil becomes flooded, often leading to acute oxygen deprivation of plant roots by saturating pores in the soil. Currently, there is no product available that can be used to reduce the negative effects of hypoxia due to waterlogged soil. However, our research group discovered that solid oxygen fertilizer provides a means to infuse the soil with an oxygen source that promotes plant survival and growth. Furthermore, this technology can be used to apply an oxygen-releasing fertilizer as a seed coating, providing a controlled release of oxygen as the seed germinates and develops. The solid oxygen fertilizer also improves tolerance of plants to salinity and may enhance resistance of plants to soil-borne diseases.

## 15. PUBLICATIONS\*

### 15.1. Books, Sole Author: None

### 15.2. Books, Co-authored:

1. Migliaccio, K. and Y.C. Li. 2012. Communication in academia – A guide for graduate students and young scientists. (in preparation)

### 15.3. Books, Edited:

- 2 Huang, P.M., Y.C. Li, M.E. Sumner (ed.) 2011. Handbook of Soil Sciences, 2<sup>nd</sup> ed. Taylor & Francis, Boca Raton, FL. <http://www.taylorandfrancis.com/books/details/9781439803035/> (Dr. Huang passed away before the editing) (2012 Outstanding Academic Title by the *Choice, Current Reviews for Academic Libraries*)
- 1 Li, Y.C. and K. Migliaccio (ed.) 2010. Water Quality Concepts, Sampling, and Analyses. Taylor & Francis, Boca Raton, FL. (It also was translated in Arabic in 2011) <http://lib.myilibrary.com/Open.aspx?id=290252&loc=&srch=undefined&src=0>

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\* Underline denotes senior/principal author(s). <sup>1,2,3,4,5</sup> denote authors the author as undergraduate students, graduate students, technicians visiting scientists, technicians and or postdoctoral associates, respectively.

- water from soil and sediment. p. 93-112. *In* Y.C. Li and K.W. Migliaccio (ed.) *Water Quality Concepts, Sampling, and Analyses*. Taylor and Francis/CRC Press, Boca Raton, FL.
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##### 15.6.2.1. Non-refereed Proceedings

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  - 9 Li, Y.C. 2000. Calcareous soils in Florida. *Vegetarian* 00(8): 4-5.  
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  - 8 Li, Y.C., H.H. Bryan, R. Rao, N. Heckert, and T. Olczyk. 1999. Summer cover crops for tomato production in south Florida, P.18-21. Proc. Conference Florida Tomato Institute, Citrus &Vegetable Magazine, Tampa, Fl. (4 pages).
  - 7 Li, Y.C. 1999. Sunn hemp – a new cover crop for Florida. *Vegetarian* 99(4): 1-2.
  - 6 Li, Y.C. 1999. Phosphorus availability and response of tomato to phosphorous fertilizer in calcareous soils. *Vegetarian* 99(8): 6-7. Also published on Miami-Dade Ag News, 1:3-4. Also published on Vegetable Production and Marketing News, October, 2000: 10 (<http://aggie-horticulture.tamu.edu/extension/newsletters/vpmnews/oct00/vpmoct00.html>)
  - 5 Li, Y.C. 1999. 1998-1999 Oriental vegetable introduction in South Florida. *Vegetarian* 99(12): 6-8. <http://www.hos.ufl.edu/gjhweb/99/December.htm>
  - 4 Li, Y.C. 1998. Evaluation of summer cover crops in south Florida. *Vegetarian* 98 (3):4.
  - 3 Li, Y.C. 1998. What are mineralization rates of composts in south Florida? *Vegetarian* 98(8): 1.
  - 2 Li, Y.C. 1998. Scheduling irrigation using tensiometers for tomatoes on calcareous rocky soils. *Vegetarian* 98(12): 4-5.
  - 1 Li, Y.C., H.H. Bryan, M. Lamberts, M. Codallo, and T. Olczyk, 1997. Phosphorus nutrition for tomato in calcareous soils. P 56-60. Proc. Conference of Florida Tomato Institute. Special issue of Citrus &Vegetable Magazine, Tampa, Fl.

#### 15.6.2.4. Web Publications

- 5 Li, Y.C., E. Hanlon, W. Klassen, Q. Wang, and T. Olczyk. Cover Crop Benefits for South Florida Commercial Vegetable Producers” for Florida CCA self-study program (online <http://cca.ifas.ufl.edu/list.html>).
- 4 Simonne, E., D. Studstill, B. Hochmuth, T. Olczyk, M. Dukes, R. Munoz-Carpaena and Y.C. Li. Drip irrigation in the BMP era - an integrated approach to water and fertilizer management for vegetables grown with plasticulture. [Online.] Available at [http://www.citrusandvegetable.com/home/2002\\_OctIrrigation.html](http://www.citrusandvegetable.com/home/2002_OctIrrigation.html). Citrus & Vegetable Magazine, Tifton, GA.
- 3 Li, Y.C., H.H. Bryan, and P.J. Stoffella. Utilization of fly ash/urban yard waste compost as soil amendments to improve soil fertility. [Online.] Available at <http://nvirosol.com/IFAS.htm>. N-Viro International Corporation, Toledo, OH.
- 2 Li, Y.C., H.H. Bryan, R. Rao, N. Heckert, and T. Olczyk. Summer cover crops for tomato production in South Florida. [Online.] Available at <http://www.imok.ufl.edu/LIV/groups/cultural/cover/covercr1.htm>. Southwest Florida Research and Education Center, IFAS, University of Florida, Immokalee, FL.
- 1 Li, Y.C., H.H. Bryan and T. Olczyk. Sunn hemp - a cover crop in Florida. [Online.] Available at <http://www.imok.ufl.edu/LIV/groups/cultural/cover/sunnhemp.htm>. Southwest Florida Research and Education Center, IFAS, University of Florida, Immokalee, FL.

#### 15.10. Miscellaneous

(Contributed information to media releases in Popular Journals, Magazines, Newsletters and Newspapers)

- 27 Yuncong Li- his academic career as climbing Mountain Tai. Shandong Agricultural University Newspaper, Sept 27, 2010. [http://weekly.sdau.edu.cn/html2006/2006/xyfc/2010\\_15\\_39\\_47294.htm](http://weekly.sdau.edu.cn/html2006/2006/xyfc/2010_15_39_47294.htm)
- 26 Is recycling coal fly ash at farms environmentally safe? Environmental Health News February 6, 2009. <http://www.environmentalhealthnews.org/ehs/news/recycling-coal-waste-at-farms> (Published daily online by Environmental Health Sciences are available for free and are used by over 300 other websites around the world).
- 25 Biscayne Bay Restoration, South Florida Ecosystem Restoration Task Force, 2007. Restoration Quarterly, 1 (2):3.
- 24 Center of tropics, Miami Herald (Newspaper). May 19, 2007.
- 23 The science of clean water, 2006 Research Report, IFAS, UF. 2007.
- 22 Sunn hemp may be cover crop for Florida tomatoes. Farm World, Feb. 28, 2007. (A weekly newspaper - It is the largest farm newspaper in the Midwest).
- 21 Pepper field day in Homestead – Exploring methyl bromide alternative of Miami-Dade county growers. <http://www.hos.ufl.edu/vegetarian/07/April%202007/Pepper%20Field%20Day%20in%20Homestead%20-%20Exploring%20Methyl%20Bromide%20Alternatives%20for%20Miami-Dade%20County%20Growers.htm>
- 20 The science of clean water, IFAS Research Report, 2006.
- 19 Weed. <http://www.ag.auburn.edu/hort/landscape/STGOjuly2005.html>

- 18 Fertilizer: Too much of a good thing? Miami Herald, April 24, 2005.  
<http://www.miami.com/mld/miamiherald/living/home/11463581.htm>
- 17 Planning grant supports research in cover crop technology. International FOCUS. Vol. 16. 4 (April 2005) <http://international.ifas.ufl.edu/focusweb/focusapr05005.htm>
- 16 Living on the edge. IMPACT (A publication of UF/IFAS) 20(2) 8-13. (2004)  
<http://impact.ifas.ufl.edu/ImpactSummer2004.pdf>
- 15 Workshop for soil, water management practices for horticultural crops. South Dade News Leader (Newspaper). May, 2004.
- 14 South Dade News Leader (Newspaper). March, 2004.
- 13 State of Florida multi-tasks with autoblock. Express news. 2003 fall volume 1.  
(<http://envexp.com/a00999be2364caacc07ab55ee93e1a67e/newspdf.pdf>)
- 12 IFAS, CERP, and the Everglades. Linkages (A publication of the Center for Natural Resources, UF), 3(9):2. (2002) (<http://cnr.ifas.ufl.edu/newsletters/Volume3/Issue9/default.htm>)
- 11 Lychee, longan workshops scheduled. Dade-Monroe Grower (Newspaper), January 11, 2002.
- 10 Vegetable field day set for Friday. South Dade News Leader (Newspaper). Feb. 13, 2002.
- 9 The science of shrinking agricultural water use. Page 2. Stream Lines, Spring issue (April/2002). A quarterly publication of the St. Johns River Water Management District.  
<http://www.sjrwmd.com/programs/outreach/news/index.html>
- 8 Field day at TREC. South Dade News Leader (Newspaper). March 20, 2001.
- 7 UF project helps Florida vegetable growers compete with Mexico. UF IFAS news release (Web) at [http://news.ifas.ufl.edu/print/2001/01\\_0417.html](http://news.ifas.ufl.edu/print/2001/01_0417.html). April 17, 2001 and Florida Agriculture (Newspaper), June: 6 (<http://www.fb.org/flfb/flag/june2k1/mexico.html>)
- 6 Trying to level the ag playing field. Dade-Monroe Grower (Newspaper). April. 9, 2001.
- 5 Tropical Research and Education Center-It's the only university facility in the continental United States that focuses on a large number of tropical and subtropical crops. IMPACT (A publication of UF/IFAS) 15(3) 14-17. (2000)
- 4 Combustion byproducts recycling consortium. Fly ash, pigs & tomatoes. Ashlines (A newsletter for the National Mine Land Reclamation Center) 1(2):1-5. (2000)  
<http://ecbc.nrcce.wvu.edu/ASHLINES2.pdf>
- 3 Finding an alternative to the methyl bromide system. BioCycle (Magazine) 2000(8) 66-67.
- 2 Combustion Byproducts Recycling Consortium. Clarification of "fly ash, pigs & tomatoes" printed in summer 2000 issue. Ashlines 1(4): 7. (2000) [http://cbrc.nrcce.wvu.edu/Ashlines\\_vol1\\_no4.pdf](http://cbrc.nrcce.wvu.edu/Ashlines_vol1_no4.pdf)
- 1 Researching cover crops. South Dade New Leader (Newspaper). September 21, 1998.

## 17. CONTRACTS AND GRANTS FUNDED

### a. Funded externally

| Effective date | Amount <sup>1</sup> | Funding agency <sup>2</sup> | Project title                                  | Role  |
|----------------|---------------------|-----------------------------|--|-------|
| 2011-          | \$951,500           | DOE                         | Bio-diesel cellulosic ethanol research project | Co-PI |

| <b>Effective date</b> | <b>Amount<sup>1</sup></b> | <b>Funding agency<sup>2</sup></b> | <b>Project title</b>  | <b>Role</b>  |
|-----------------------|---------------------------|-----------------------------------|---|--------------|
| 2013                  | (3.3%)                    |                                   |   |              |
| 2011                  | \$11,085                  | WCF                               | World Cocoa Foundation fellowship   | PI           |
| 2011                  | \$10,125                  | WCF                               | World Cocoa Foundation fellowship   | PI           |
| 2010-2011             | \$2,000                   | Vietnam Education Foundation      | VEF Fellowship grant  | PI           |
| 2010-2012             | \$239,168 (10%)           | SFWMD                             | C-111 Spreader canal phase 1 soil water and groundwater monitoring for planned S-18C water level increases    | Co-PI        |
| 2010                  | \$52,585                  | USDA/ARS                          | Role of cover crops and biofuel coproducts for enhancing carbon sequestration in vegetable production system  | PI           |
| 2010                  | \$1,000                   | Vietnam Education Foundation      | VEF Fellowship grant  | PI           |
| 2010                  | \$49,725                  | SFWMD                             | Chemical evaluation of soil and sediments collected from tree islands   | PI           |
| 2010                  | \$57,850                  | USAID                             | Soil testing and fertilizer recommendation-Winner project   | PI           |
| 2010                  | \$18,906                  | SFWMD                             | Evaluation of soils and sediments from tree islands   | PI           |
| 2009-2013             | \$161,598                 | USDA/SCRI                         | Locally grown ethnic greens and herbs: Demand assessments and production opportunities for east coast farmers | Investigator |
| 2009                  | \$19,688                  | SFWMD                             | Chemical characterization of tree island and march soil cores   | Co-Pi        |
| 2009                  | \$24,875                  | SFWMD                             | Chemical Analysis and Characterization of Soil Samples  | Co-Pi        |
| 2009                  | \$48,702                  | USDOI                             | Characterization of Natural, Disturbed and Newly Formed Soils in the Hole-in-the-Donut (HID)                  | PI           |
| 2009-2010             | \$389,656 (100%)          | Miccosukee Tribe of Indians       | Miccosukee water quality monitoring   | PI           |
| 2008                  | \$49,900                  | SFWMD                             | Statistical analysis of water quality trends  | Co-Pi        |
| 2008                  | \$45,360                  | SFWMD                             | Chemical analysis of sediment samples   | PI           |
| 2008                  | \$14,000                  | SFWMD                             | Analysis of field and laboratory ash data   | PI           |
| 2008-2009             | \$73,415                  | USDA/ARS                          | Role of cover crops and biofuel coproducts for enhancing carbon sequestration                                 | PI           |
| 2008-2009             | \$49,900                  | SFWMD                             | Improving cypress survival and growth in the flooding plains of Loxahatchee River using oxygen fertilizer     | PI           |
| 2007-2008             | \$43,200                  | SFWMD                             | Biscayne bay watershed water quality data analysis  | Co-Pi        |
| 2007-2008             | \$15,000                  | FDEP                              | Field and data maintenance of the FDEP BoMR Vegetative  | Co-Pi        |
| 2007-2008             | \$30,000                  | FDEP                              | Analysis of salinity and oxygen availability in the floodplain of the Loxahatchee River Watershed             | PI           |
| 2007-2009             | \$63,450 (100%)           | USGS                              | Soil chemistry changes affected by pine trees and exotic plants in native and disturbed pine rockland,        | PI           |

| <b>Effective date</b> | <b>Amount<sup>1</sup></b> | <b>Funding agency<sup>2</sup></b> | <b>Project title</b>  | <b>Role</b>  |
|-----------------------|---------------------------|-----------------------------------|---|--------------|
| 2007-2009             | \$55,000<br>(100%)        | Vietnam Education Foundation      | Everglades National Park VEF Fellowship grant   | PI           |
| 2006-2008             | \$118,525<br>(100%)       | SFWMD                             | Influence of prescribed fire on phosphorus speciation in ash and redistribution in water and sediment.                              | PI           |
| 2007-2008             | \$20,000<br>(50%)         | SFWMD                             | Calcium carbonate biogeochemistry and its effects on phosphorus removal in natural and constructed wetlands                         | Co-Pi        |
| 2006-2007             | \$87,589<br>(10%)         | USDA                              | Sustainable water resource management: U.S.-India collaborative research and education  | Investigator |
| 2006-2008             | \$1,030,400<br>(12%)      | EPA319                            | Implementation of BMPs for Florida vegetable and row crops  | Co-Pi        |
| 2003-2009             | \$1,970,251<br>(100%)     | Miccosukee Tribe of Indians       | Miccosukee flow-proportional monitoring project   | PI           |
| 2005-2008             | \$238,000<br>(20%)        | USDA/CSREES                       | Improving water quality at the watershed level by targeting high-return stakeholders  | Co-Pi        |
| 2005-2008             | \$29,000<br>(100%)        | USGS                              | Chemical analysis for developing midge bioassessment methods for evaluating Everglades marsh water quality                          | PI           |
| 2005-2006             | \$49,000<br>(100%)        | SFWMD                             | Characterization and analyses of water quality data in the Indian River Lagoon.   | PI           |
| 2005-2009             | \$146,300<br>(10%)        | SJRWMD                            | Lateral subsurface water flow in vegetable production areas under seepage irrigation in northeast Florida                           | Co-Pi        |
| 2005                  | \$26,152<br>(100%)        | USAID                             | Cover crops in natural resources improvement and tree crops sustainability under tropical agro-forestry systems in South America    | PI           |
| 2005-2007             | \$75,662<br>(10%)         | USDA/TSTAR                        | Foliar acid application to prevent iron deficiency in tropical fruit crops grown in calcareous soils                                | Co-Pi        |
| 2004-2007             | \$150,000<br>(30%)        | USDA/TSTAR                        | Development of a system approach to organic greenhouse herb production for protected agriculture in a mild weather climate          | Co-Pi        |
| 2004-2007             | \$23,000<br>(50%)         | USDA/ARS                          | Tropical cover crops for plant-parasitic nematode suppression in southern Florida   | Co-Pi        |
| 2004-2005             | \$5,500<br>(50%)          | FL Tomato Committee               | Development and demonstration of practical drip-irrigation application of fumigants to reduce emissions, worker exposure, and costs | Co-Pi        |
| 2004-2005             | \$135,000<br>(80%)        | SFWMD                             | Soils and hydroperiod analysis in the floodplains of the Loxahatchee River Watershed  | PI           |
| 2004-2005             | \$19,000<br>(100%)        | SFWMD                             | The effects of salinity and altered hydrology on the growth, survival and restoration of baldcypress seedlings                      | PI           |
| 2004-2006             | \$470,249<br>(5%)         | USGS/SFWMD                        | Development of a procedure for using selected water quality model components with existing hydrologic models                        | Co-Pi        |
| 2004-                 | \$118,750                 | FDEP                              | Developing and field testing a design model for   | Co-Pi        |

| Effective date | Amount <sup>1</sup> | Funding agency <sup>2</sup>                   | Project title   | Role  |
|----------------|---------------------|---|---|-------|
| 2006           | (10%)               |   | runoff phosphorus filtering with vegetative filter strips   |       |
| 2003-2005      | \$104,187 (20%)     | USDA/TSTAR                                    | Micronutrient evaluation of highly weathered soils of the tropics   | Co-Pi |
| 2003-2004      | \$12,351 (100%)     | USDOI   | Analyses and evaluation of water, soil, and plant samples from Everglades National Park   | PI    |
| 2003-2005      | \$73,737 (100%)     | SFWMD   | Using zeolite as a soil amendment to improve water quality in C-111 basin   | PI    |
| 2003-2006      | \$26,000 (100%)     | USDA  | Chemistry and gaseous loss of nitrogen in different soils and production systems  | PI    |
| 2003-2004      | \$18,351 (100%)     | USDOE   | Analyses of calcareous soils from Marshall Island for DOE dose assessment and radioecology program  | PI    |
| 2003-2005      | \$179,776 (50%)     | USDA/SARE                                     | Development of sustainable vegetable production systems for south Florida and Virginia based on use of cover crops and precision irrigation.      | Co-Pi |
| 2003-2004      | \$75,000 (30%)      | South Dade Soil & Water Conservation District | Study of Frog Pond hydrology and water quality modifications introduced by the CERP detention pond implementation                                 | Co-Pi |
| 2002-2003      | \$5,000 (20%)       | South FL Grower Association                   | Using soil organic amendment to improve lychee production in South Florida  | Co-Pi |
| 2002-2004      | \$98,000 (20%)      | FL Fruit and Vegetable Association            | Evaluating and demonstrating chemically based and biologically based alternative systems to methyl bromide for tomato production in south Florida | Co-Pi |
| 2002-2003      | \$47,590 (30%)      | South Dade Soil & Water Conservation District | Water quality along a land transect delimited by two canals at the Frog Pond agricultural area adjacent to the Everglades National Park           | Co-Pi |

<sup>1</sup> Numbers in parentheses are percents of grant funds available to my program.

<sup>2</sup>WCF - World Cocoa Foundation; SFWMD – South Florida Water management District; SJWMD – St. Johns Water management District; FDEP – Florida Department of Environmental Protection.

### Project before 2002:

Munoz-Carpona, R., **Y.C. Li** (Co-Pi), H. Bryan and J. Crane. Effects of groundwater depth on soil water and air availability at the Frog Pond agricultural area. South Dade Soil and Water Conservation District. 12/01-11/02. \$40,549.

**Li, Y.C.** (PI) and H.H. Bryan. Determining application rates and mineralization rates for biosolids used for crops grown on calcareous soils in Frog Pond. South Dade Soil and Water Conservation District. 11/01-10/02. \$40,000.

Klassen, W., H.H. Bryan, R. McMillan and **Y.C. Li** (Co-Pi). Production Management Research: weed & nematode control (post methyl bromide). Florida Tomato Production Committee. 10/01-8/02. \$15,763.81.

**Li, Y.C.** (PI) Vegetable cultural practice components as a part of Miami-Dade Agricultural and Rural Land Retention Study (Robert Degner, PI. \$500,000). FDACS. 5/00-12/01. \$20,000.

**Li, Y.C.** (PI) Analyses and evaluation of water, soil, and plant samples from Everglades National Park. US Department of the Interior. 8/01-7/02. \$22,632.

Klassen, W. and **Y.C. Li** (Co-Pi). Development of sustainable vegetable production Systems. USDA/ARS. 8/01-8/04. \$103,000.

Klassen, W., **Y.C. Li** (Co-Pi), and H.H. Bryan. Biologically-based sustainable tomato production system without use of methyl bromide. USDA-Integrated Research, Education, and Extension Competitive Grants Program. 10/01-10/03. \$266,833.

**Li, Y.C.** (PI) and T. Davenport. Maximizing lychee yields through improved flowering and fruit set. USDA/TSTAR. 10/01 to 9/03. \$66,598.

Ploetz, R. and **Y.C. Li** (Co-Pi). Identifying the cause of a bean disease in the Frog Pond. South Dade Soil and Water Conservation District. 2001-2002. \$4,063.

**Li, Y.C.** (PI) and H.H. Bryan. Developing management practices to prevent or reduce flooding damage of crops in Frog Pond area. South Dade Soil and Water Conservation District. 5/01-4/03. \$40,000.

Calvert, D.V., Z.L. He, P.J. Stoffella, and **Y.C. Li** (Co-Pi). Dolomite phosphate rock as fertilizer in vegetables and citrus production: economic analysis. Florida Institute of Phosphate Research (FIPR), 11/01-12/02. \$31,260.

Stoffella, P.J., Z. He, P. C. Wilson, D. V. Calvert and **Y.C. Li** (Co-Pi). Beneficial re-use of marine muck sediments. South Florida Water Management District (SFWMD), 7/00-6/01. \$72,000.

**Li, Y.C.** (PI) Chemical, physical, and biological evaluation of newly formed marl soils in the wetland restoration area in the Hole-in-the-Donut. US Department of the Interior. 7/00-6/01. \$29,416.

**Li, Y.C.** (PI) Analyses and evaluation of soil nutrients in Frog Pond area. South Dade Soil and Water Conservation District. 10/99-9/00. \$23,200.

Calvert, D.V., **Y.C. Li** (Co-Pi), P.J. Stoffella. Assessment and evaluation of nitrogen, phosphorus and heavy metals (including copper) in surface runoff from citrus groves and vegetable fields in the Indian River Area. Florida Department of Environmental Protection (FDEP), 7/00-11/04. \$421,662 (Year 1: \$189,992; Year 2:\$131,966; Year 3:\$99,704)

**Li, Y.C.** (PI) Measuring soil enzyme activities to determine quality of compost amended soils. The Center of Biomass Programs, University of Florida. 07/99-06/00. \$6,000.

Calvert, D.V., **Y.C. Li** (Co-Pi), P.J. Stoffella. Implementation of best management practices (BMP) for citrus and vegetable crops to reduce surface water runoff and improve surface water quality in Indian River area. EPA319, SFWMD, SJWMD. 7/99-6/04. \$428,263. (The proposal was used as an example in FDEP's RFP).

Stoffella, P.J., **Y.C. Li** (Co-Pi), H.H. Bryan. Utilization of fly ash/urban yard waste compost as soil amendments to improve soil fertility. Department of Energy (DOE). 7/99-7/01, \$75,466.



Sotomayor, D., P.J. Stoffella, **Y.C. Li** (Co-Pi), and E. Roman. Nitrogen availability in vegetable systems amended with biosolids-yard waste compost. USDA/Special Grant in Tropical and Subtropical Agriculture. 7/99 to 7/02, \$135,150.)

**Li, Y.C.** (PI) and W. Klassen. Water quality project in C-111 basin. Center for Natural Resources, University of Florida. 7/99-6/01 \$50,000.

Bryan, H.H. and **Y.C. Li** (Co-Pi). Alternative to methyl bromide-solarization, cover crop, fallow and chemical effects on yield, quality and disease suppression of tomatoes in south Florida. USDA-ARS. 7/98-6/99. \$10,000.

Olczyk, T. and **Y.C. Li** (Co-Pi). Demonstration of optimized irrigation schedule to conserve water and reduce nutrient leaching for vegetable grown in south Florida. UF/IFAS Extension State Major Program Enhancement Award 1999-2000. 7/99-6/00. \$4,000.

**Li, Y.C.** (PI) Determination of leachability of nutrients from a disposal soil mounds in HID using a column leaching and TCLP methods. US Department of the Interior. 7/98-6/99. \$17,365

**Li, Y.C.** (PI) and H.H. Bryan. Evaluation of summer cover crops for tomato production in south Florida. Florida Tomato Production Committee. 7/98-6/99. \$5,000.

**Li, Y.C.** (PI) Analyses of water and soil samples from disposal soil mounds in HID. US Department of the Interior. 6/98-6/02. \$112,140.

Bryan, H.H. and **Y.C. Li** (Co-Pi). Developing technology for improving and accelerating germination of herbs. Plantation Medicinals, Inc., Florida, 2/98-2/00, \$56,546.

Schaffer, B., R. Savabi, **Y.C. Li** (Co-Pi), K. Campbell. Agro-hydrology research studies in the C-111 Basin. USDA-ARS, Cooperative Research Agreement with the University of Florida. 1/98-12/98. \$65,000.

Davenport. T.L. and **Y.C. Li** (Co-Pi). Lychee nutrition. Florida Department of Agriculture & Consumer Services. 12/97-11/99. \$28,000.

**Li, Y.C.** (PI) and J. H. Crane. Effect of iron fertilizer on carambola production. Florida Department of Agriculture & Consumer Services. 12/97-11/99. \$11,400.

**Li, Y.C.** (PI) and J. H. Crane. Effect of N fertilizer on carambola production. Florida Department of Agriculture & Consumer Services. 12/97-11/99. \$10,400.

Crane, J.H., **Y.C. Li** (Co-Pi), and B. Boman. Fertilizer and irrigation management survey for tropical fruit in southern Florida. 1998. UF/IFAS Extension State Major Program Enhancement Award 7/97-6/98. \$4,000.

**Li, Y.C.** (PI), H.H. Bryan and W. Klassen. Analysis of nutrients in soils and selected plants in Everglades National Park and a preliminary investigation of the role of nutrients in facilitating the take-over by *Schinus*. US Department of the Interior. 7/97-7/98. \$14,012.

**Li, Y.C.** (PI) Mineralization and volatilization of compost. The Center of Biomass Programs, University of Florida. 7/97-6/98. \$4,000.

**Li, Y.C.** (PI) Research Enhancement Award, 7/97-7/98. IFAS, University of Florida. \$12,000.

Alva, A.K., D.V. Calvert, **Y.C. Li** (Co-Pi). Best Management Practices (BMP) for irrigation and fertilization of citrus on flatwoods soils. Florida Department of Agriculture and Consumer Services. 10/96-9/99. \$229,601.

**b. Funded internally from state resources:**

| Effective date | Amount    | Project title   | Role  |
|----------------|-----------|---|-------|
| 2012-2013      | \$84,089  | A novel plant phytase to exploit the large pool of unavailable organic phosphorus in soils and animal feeds | Co-Pi |
| 2011           | \$8,000   | Fertilizer research   | PI    |
| 2011           | \$5,000   | Develop a new course  | Co-Pi |
| 2010           | \$50,000  | Optimizing biodegradation of hydrocarbons for remediation of crude oil pollution                            | Pi    |
| 2010           | \$32,000  | Matching assistantship  | PI    |
| 2010           | \$11,000  | Faculty Enhancement Opportunity (FEO) award   | pi    |
| 2010           | \$9,623   | Fund for purchase of hydride generator  | Co-Pi |
| 2009           | \$200,000 | Fund for laboratory renovation  | Pi    |
| 2009           | \$49,800  | Colloid-facilitated mercury transport and methylation: mechanisms and modeling                              | Co-Pi |
| 2008           | \$1,500   | BMP workshop  | PI    |
| 2008           | \$500     | Wachovia Extension Professional and Enhancement Award   |       |
| 2007           | \$3,000   | Research foundation professorship award   |       |
| 2007           | \$7,323   | Heirloom tomatoes for Florida small farms   | Co-Pi |
| 2007           | \$7,000   | Extension demonstration greenhouse for small farms outreach programs in South Florida                       | Co-Pi |
| 2003           | \$12,000  | Graduate student assistantship for tropical agriculture   | PI    |
| 2003           | \$24,000  | Graduate student assistantship  | PI    |
| 2006           | \$12,000  | Graduate student assistantship  | PI    |

## 18. UNIVERSITY SERVICE AND GOVERNANCE

### 18.1. Institute of Food and Agricultural Sciences

- Member of IFAS Professional Development Leave committee (2012-present)
- Member of the Advisory committee for Dr. Shouan Zhang, Assistant Professor of Plant Pathology at the Tropical REC (2007-present)
- Member of Committee for the Review of IFAS Internal Management Memoranda. 2009.
- Member of IFAS Review Committee of University of Florida Research Foundation Professorship awards. 2009.
- Member of commercial nursery Advisory Committee for Miami-Dade County Extension Office (2008-present)
- A representative of the Faculty Assembly, IFAS (2008-present)
- Member of the Advisory committee for Dr. Guralp Toor, Assistant Professor of Soil and Water Sciences at

- the Gulf Coast REC (2008-present)
- Member of the Advisory committee for Dr. Maria Silveira, Assistant Professor of Soil and Water Sciences at the Range Cattle REC (2007-present)
- Member of the Advisory committee for Dr. Carl Fitz, Assistant Professor of Soil and Water Sciences at the Ft. Lauderdale REC (2008-present)
- Task Force for Fertilization Recommendations for Palms (2007-present)
- Member of the waste management team in FL (2007)
- South Florida vegetable production focus group (2005-present)
- Vegetable Fertilization Standards Task Force (2005-present)
- BMP implementation team leader for Miami-Dade County (2005-present)
- Member of the UF IFAS Vegetable BMP Implementation Team, 2005-present.
- Member of the UF IFAS Extension Water Resources Focus Team, 2004-present.
- Member of the UF IFAS Extension Commercial Vegetable Focus Team, 2004-present.
- Search&Screen Committee for a soil & water quality faculty position in Belle Glade (2004)
- Peer evaluation committee, Everglades Research and Education Center (2004)
- Search and Screen Committee for a soil faculty position in Immokalee (2003-2004)
- Member of the Extension State Major Program FL 411 Design Team: Water Conservation, 2002-2004.
- IFAS Nutrient Management Education Core Group (2000-present)
- Member of the South Florida Leadership in Vegetables, 1999-2003.
- Member of the Extension State Major Program FL 111 Design Team: Tropical Fruit Crops Management in Florida, 1998–2004.
- Member of Vegetable Advisory Committee for Miami-Dade County Extension Office (1997-present)

### **18.2. Tropical Research and Education Center**

- Member of Director's Advisory Committee (2008-)
- Member of Capital campaign committee (2010-)
- Member of Search and Screen Committee for the Center Director position (2009-10)
- Member of Search Committee for an office manager position (2009)
- Group leader for drafting the research road map for natural resource section (2008).
- Chair of seminar committee (2007-2008)
- Member of Search and Screen Committee for a vegetable faculty position (2007)
- Member of Search and Screen Committee for a hydrology faculty position (2004)
- Member of external space allocation committee (2004-2009)
- Chair of Director's Advisory Committee (2003-2004)
- Member of Computer Committee (2000-present)
- Member of Library Committee (1999-present)
- Member of Interior Space Allocation Committee (1997-2004)

### **18.3. Soil and Water Science Department**

- Hoc committee to reviewing matching assistantships (2012)
- Administrative Affairs Committee (2009-2012)
- Ad Hoc Committee for the extraction procedure change on IFAS Soil Testing Laboratory, 2009
- Ad Hoc Committee for Florida Research Foundation Professorship awards. 2009
- Chair's Advisory Committee (2008-present)
- Graduate Studies Committee (2008-present)
- Committee member of Outreach Publications and Research Briefs (2008-present)
- Coordinator of Nutrient Management for Everglades Basin write up for CSREES
- Departmental Review document (2007)
- Search and Screen Committee for a wetlands and water quality faculty position in Gainesville (2004)

- Chair of REC Faculty Committee (2004-present)
- Member of Courtesy/Affiliate Faculty Committee (2003-present)
- Member of Outreach Publications Committee (2001-present).

## **19. CONSULTATIONS OUTSIDE THE UNIVERSITY**

N/A

## **20. EDITOR OF A SCHOLARLY JOURNAL, SERVICE ON AN EDITORIAL ADVISORY BOARD OR REVIEWER FOR A SCHOLARLY JOURNAL**

### **Member of Editorial Board:**

- Communication in Soil Science and Plant Analysis (2002-present) (20 manuscripts)
- Critical Reviews of Environmental Science and Technology (2006-present) (5 manuscripts)

### **Member of External Advisory Committees or review panels**

- USDA/TSTAR, 2009 proposal review panel, Hawaii, June 3-5, 2009.
- NIH project, Department of Earth and Environmental Science, University of Texas at San Antonio, 2003 (4 reports)
- The MBRS/SCORE Program at UTSA, 2003-2009 (5 proposals)

### **Evaluator/Examiner for:**

- Proctor for a graduate student (Brigette Castro) at the Environmental Engineering Department, University of Florida, 2009.
- The thesis of a master student, University of the West Indies, West Indies, March, 2009.
- The dissertation of Ph.D. students (total 10), University of Agriculture, Faisalabad, Pakistan, 2007-2010.
- Faculty tenure/promotion at the Department of Plant and Environmental Sciences, New Mexico State University, 2008.
- Faculty promotion at the Institute for Clean Energy Technology (ICET), Mississippi State University, 2008.
- Faculty promotion at the Kwame Nkrumah University of Science and Technology, (KNUST), Kumasi, Ghana, 2008.
- Lipscomb University Environmental Science Program Internship, 2006.
- The thesis of an undergraduate student, University of Applied Sciences (Fachhochschule Osnabruck), Germany, July 1, 2005.

## **21. INTERNATIONAL ACTIVITIES**

I have been invited to give keynote talks and lectures in many countries and taught short courses on integrated nutrient management and soil and water quality in Brazil, China, Columbia and Mexico. In collaboration with international colleagues, I have conducted field research in Asia and South America and these activities have resulted in many scholarly publications and change in practices. In collaborations with over 200 international scholars from 27 countries, I edited the Handbook of Soil Sciences. The book is a comprehensive and cohesive reference on the discipline of soil science and serves as a valuable resource for soil scientists, agronomists, engineers, ecologists, and biologists. This handbook will have long lasting benefits to the world

of soil science. Our second book entitled “Water quality concept, sampling and analyses” has been distributed worldwide and used by scientists and environmental professionals for protecting water resources. I have hosted many international scientists and students for long term studies and short visits and made significant international contribution to promote research, teaching and extension of soil and water sciences.

### **Involving International organizations or programs:**

USAID programs: 1) Provided assistance for USAID-WINNER program in Haiti for soil testing, fertilizer recommendation, laboratory setup and feasibility evaluation of blending fertilizer processing plant, 2009-present; 2) Submitted a proposal to USAID-Horticulture Collaborative Research Support Program (Horticulture CRSP) in 2011; 3) Received funding from the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) to establish international collaboration in South America, 2005-2006; 4) Submitted a proposal to SANREM CRSP in 2006

USDA International Programs: Assisted the cacao research project in South America and provided one MS student to the project, 2005-present.

U.S. Department of State: Invited lecture for the International Visitor Leadership Program- Sustainable Development and Environmental Protection, May 9, 2006.

The World Cocoa Foundation: 1) Served as a conference moderator for the Partnership Meeting & Roundtable Sessions in San Francisco, CA, May 18-19, 2011; and 2) Hosted 2 cocoa fellow supported by the Norman E. Borlaug International Agricultural Science and Technology Fellows Program, 2011

The Foundation for Democracy in Africa: Invited speaker at Africando, Sept. 16, 2004

Association of Chinese Soil & Plant Scientists in North America (ACSPSNA): 1) Served as a treasurer, vice president and president and organized many scientific activities, 2009-present; and 2) Recruited an international sponsor for establishing the Kingenta Agricultural Science Award through the American Society of Agronomy, 2010

### **Activities in Asia and Oceania:**

#### China:

- Assisted UF Beijing representative to establish 2+1+1 program with Chinese Universities and UF. First group of Chinese students have started at UF this fall, 2010-2011
- Courtesy professor at Shandong Agricultural University (SDAU)
  - Taught a graduate course on research methods (~120 students)
  - Gave >10 seminars for undergraduate students, graduate students and faculty (~3000 persons)
  - Serve as a major advisor for a PhD student
  - Established collaboration between UF and SDAU
  - Assisted researchers to obtain national grants (~\$1.5 million)
- Courtesy professor at Chinese Academy of Tropical Agricultural Sciences, 2010-present
  - Provided sources and assistance for the introduction of tropical crops
  - Assisted for national grant applications (948 project)
  - Gave 4 seminars to introduce TREC, IFAS and UF and advance technology on nutrient management
  - Keynote speaker for the Symposium of Tropical Crop Production and Nutrient Management (Nov 28, 2011)
- Chinese Academy of Sciences, 2003-present

- Gave 4 seminars on advanced soil research and scientific writing
  - Edited manuscripts for young scientists and graduate students
  - Obtained a grant from Chinese National Science Foundation for research of soil phosphorus in grassland (~\$30,000)
- Guangdong Academy of Agricultural Sciences, 2009-present
  - Provided training and recommendations for the national water project on drinking water source protection in rural area
- Yunan Academy of Forestry Sciences, Forestry Extension Service, and Agricultural University, 2008-present
  - Trained scientists
  - Provided help for grant application of a collaborator
  - Gave 3 seminars and was invited lecturer for the advanced workshop of forestry in 2010
- Hosted visiting scientists/students from China: 15
- Hosted short term visitors from China: >120
- Other activities:
  - Developing a study abroad course to bring UF students to China and also to bring Chinese interns to UF
  - Keynote speaker for the National slow-release fertilizer forum, Wuhan, Aug 25, 2010
  - Gave 22 seminars in 11 universities/Institutes in 2010
  - Recruited 4 authors for the Handbook of Soil Sciences, 2010
  - Attended the 9th International Conference on the Biogeochemistry of Trace Elements, Beijing, July 15-19, 2007
  - Attended the 15th International Plant Nutrition Colloquium (XV IPNC), Beijing, Sept. 14-19, 2005
  - Attended the International Symposium on Phytoremediation and Ecosystem Health, Hangzhou, Sept. 10-13, 2005.

### India

- Involved in US-India Agricultural Knowledge Initiative project, 2006-present
- Advised a PhD student who was a researcher at the Acharya NG Ranga Agril University, Hyderabad
- Conducted research on conservation of water and fertilizer for rice production in Hyderabad area from 2007-2010
- Hosted Dr Ravinder Kaur, ICAR National Fellow Division of Environmental Sciences Indian Agricultural Research Institute New Delhi, May 2010.
- Hosted Dr. K. Soorianathasundaram (Soori), Assistant Professor, Department of Fruit Crops, Horticultural College and Research institute, Tamilnadu Agricultural University, Coimbatore, India. June 28, 2001

### Philippines

- Hosted a visiting professor for 5 months in 2011
- Collaborated with Dr. Leonila M. Tolentino from the Southern Mindanao, Kabacan, Cotabato, Philippines on research of cover crops and composting

### Vietnam

- Received a fellowship grant from Vietnam Education Foundation and training one PhD student, 1997-present
- Developing collaboration with the Nong Lam University

### Pakistan

- External reviewer for over 15 PhD dissertations and MS theses at University of Agriculture, Faisalabad, Pakistan
- Assisted a student publishing his manuscript in a refereed journal
- Hosted Mr. Murad Ali, Visiting Professor from NWFP Agricultural University, Peshawar for 6 months, 2007.
- Hosted Dr. M. I. Lone, Professor, Director Research, University of Arid Agriculture, Rawalpindi, Pakistan.9/24/06

### Bangladesh

- Hosted a visiting professor, Dr. Mohammad Rahim from *Bangladesh* Agricultural University and assisted the professor on USDA- Bangladesh proposal writing
- Collaborated on a proposal in 2011 with Dr. Mofazzal Hossain, Professor and Head of Horticulture, Bangabandhu Sheikh Rahman Agricultural University, Dr. Manjur Chowdhury, IPM Specialist for Safeway Pest Control, UAE Moitree Complex, Banani, Dr. Khalilur Rahman Bhuiyan, Senior Scientific Officer for Tuber and Root Crops, Bangladesh Agricultural Research Institute, Jaintapur, Sylhet, Bangladesh
- Hosted visitors from the Ministry of Agriculture, Bangladesh (Mrs. Afroza Moazzam, Senior assistant chief, Mrs. Monwara Begum, Senior assistant chief, Mr. Md. Ibrahim Khalil, Deputy Director, Dept. of Agricultural Extension, Mr. Nabab Ali Dewan, Deputy Director, Dept. of Agricultural Extension, Mr. David Rutland, Senior specialist in fertilizer technology, IFDC). March 11, 1999

### Bhutan

- Trained a water quality specialist, Mr. Jamyang Jamyang during the water quality workshop in 2008 and provided assistance for building new greenhouse in 2009

### Indonesia

- Hosted Mr. Raden Tomi Supratomo, Head of Sub Division Data, Directorate General of Marine, Coasts and Small Islands of the Ministry of Marine Affairs and Fisheries; Mr. Halili, Head of Fisheries Division, Faculty of Marine Science and Fisheries, Halu Oleo State University; and Regional Director of South East Sulawesi SPP; Mr. Ricky Gimin, Head of Fisheries Division, Faculty of Agriculture, Nusa Cendana State University; and Regional Director of East Nusa Tenggara SPP, December 9, 2009.
- Collaborated with a scientist from Sriwijaya University on the Handbook of Soil Sciences

### Israel

- Collaborated on the handbook of Soil Sciences with two scientists from the Volcani Center Agricultural Research Organization

### Japan

- Collaborated on the Handbook of Soil Sciences with two Japanese scientists from Nagoya University
- Hosted Dr. Tetsushi Hidaka, Head, Japan International Research Center for Agricultural Sciences, Okinawa Subtropical Station, Okinawa, Japan, 1997

### South Korea

- Advised a visiting student, Ho-Jin Kim from the Soil Environment Laboratory, Department of Environmental Horticulture, University of Seoul, 2009-2010

#### Nepal

- Provided information of water quality for Surendra Parajuli, Scientific Administrator Water Engineering & Training Centre Pvt. Ltd. Dillibazar, Kathmandu, Nepal, 2008-present

#### Australia

- Collaborated on the handbook of Soil Sciences with 11 Australian scientists from Commonwealth Scientific and Industrial Research Organisation, University of Adelaide, University of Sydney, University of South Australia, Southern Cross University, Southern Cross University
- Hosted Dr. Baskaran Sundram, Researcher, Cooperative Research Center for Soil & Land Management, Glen Osmond, South Australia, 1997

#### Marshall Islands

- Analyzed ~600 soil samples provided by the University of California, 2002

#### New Zealand

- Collaborated with two scientists from Landcare Research and University of Waikato on the Handbook of Soil Sciences

### **Activities in South and North America**

#### Brazil

- Sponsored and coordinated a grant planning conference in 2005 to bring together more than 20 scientists from EMBRAPA, CEPLAC/ CEPEC, Universidade Estadual de Santa Cruz, and Universidade Estadual do Norte Fluminense
- Hosted two graduate students, Rodrigo Arroyo Garcia (São Paulo State University) and Adriano Stephan Nascente (National Rice and Beans Research Center, EMBRAPA) for their doctoral research at UF, 2009-present
- Co-authored with Dr. N. K. Fageria, soil scientist at the National Rice and Bean Research Center, EMBRAPA for two refereed papers.
- Invited by the Sao Paulo State Agency for Agribusiness Technology (APTA) and the Universidade Estadual Paulista (UNESP) to teach a short course on water and soil quality (September 24-October 2, 2011)
- Hosted visitors from the University of Brasilia, Feb 29, 2008
- Collaborated with 11 scientists from Universidade Federal do Rio Grande do Sul, and University of São Paulo on the Handbook of Soil Sciences

#### Haiti

- Visited Haiti in January 2012
- Provided assistance to USAID-WINNER project:
  - Drafted feasibility report for establishing fertilizer plan



- Analyzed ~1200 soil samples
- Conducted fertilizer trials on corn and vegetables
- Involved drafting fertilizer recommendation
- Provided recommendation for setting up a soil testing laboratory
- Hosted 9 project managers in Homestead, June 12, 2011
- Hosted Mr. Raynaud Raymond, Agronomist from Haiti, 2000 and 2009

### Colombia

- Invited by CORPOICA and Universidad de los Llanos to give a lecture on nutrient management of tropical fruits during “Curso internacional de citricos y frutas tropicales”, Oct 27, 2011
- Invited by the University of Cordoba to give a lecture on “extension of agricultural research” through polycom on April 6, 2011
- Invited by the University of Cordoba to give a lecture on nutrient management of tropical fruits, Feb 19, 2010
- Hosted Mr. Franco H. Obando Mancayo, Soil Scientist, Department of Production Systems, Faculty of Agriculture Sciences, Universidad de Caldas, Manitales, Colombia. March, 2010.
- Hosted Mr. James Cock, Head, CIAT Tropical Fruit Program, January 29, 2003
- Hosted Dr. Aart van Schoonhoven, Director for Research, International Center for Tropical Agriculture, CIAT, Cali, Colombia, April 18, 2001

### Mexico

- Invited by Universidad Autonoma de Chiapas to give a lectura on nutrient management. 2005 and 2007
- Hosted Dr. Martha E. de Coss, Ciencias Agricolas of UNACH, Mexico. Sept 26, 2008
- Attended the Annual meeting of Interamerican Soc. Trop. Hort. Oaxtepec, Mexico. Oct. 1-5, 2001.

### Peru

- Established cooperative agreement between UF and the Institute for Tropical Crops (ICT) at Tarapoto
- Sent a MS student to conduct cover crop research in a cacao plantation
- Provided assistance to USDA program
- Hosted Dr. Julio Alegre, Principal Soil Science Professor in the Agrarian University La Molina Lima Peru (UNALM) President of the Peruvian Soil Science Society and Braulio La Torre Principal Soil Science Professor, Chief of the Soil, plant and water annalsisi Lab service of UNALM, 2010
- Host Mr. Enrique Arevalo, and two others from ICT, Peru, June 19-21, 2006.

### Ecuador

- Accepted a PhD student, Eduardo Chavez, a junior researcher from Escuela Superior Politecnica del Litoral (ESPOL) who is finically supported by Ecuador government, 2011

### Bahamas

- Conducted evaluation of old farmlands in the Great Abaco Island for potential agricultural uses, January, 2002

### Chile

- Collaborated with a scientist from Universidad de La Frontera on the Handbook of Soil Science

Canada

- Co-edited the handbook of Soil Sciences with the professor of University of Saskatchewan, Saskatoon, Saskatchewan. The book was also cained chapters written by seven other Canadian scientists from University of British Columbia, Agriculture and Agri-Food Canada, University of Saskatchewan, and University of Western Ontario
- Attended the 6<sup>th</sup> International Conference on the Biogeochemistry of Trace elements. Ontario, Canada. July 29-Aug. 2, 2001

Costa Rica

- Advised student interns from EARTH University
  - Mr. Pierre Audate, Aug – Dec 2009
  - Mr. Luis Diego Roman Delgado, Aug. –December, 2006.
  - Mr. Luis Pablo Barquin Valle, Aug. –December, 2003.
- Hosted visitors from EARTH University:
  - Dr. B.K. Singh, Professor of Soil Science, Nov 12, 2009
  - Dr. Marlon Breve Reyes, Dean and professor, Oct. 30, 2006.
  - Mr. Frankys de la Osa, Dec. 4, 2001

Guatemala

- Collaborated on a proposal in 2011 with Dr. Lauriano Figueroa, Professor and Dean of School of Agriculture, University of San Carlos of Guatemala; Mrs. Karin Elizabeth Calderon Muller, Outreach and advisory specialist, School of Agriculture, University of San Carlos of Guatemala, and Mr. Marcel Barbier, Livelihood and Economic Recovery Coordinator, University of San Carlos of Guatemala

Nicaragua

- Collaborated on a proposal in 2011 with Dr. Roger M. Valenzuela, Professor, University of North Nicaragua; Mrs. Melba Castellon Padilla, Leader of women"s communities, De la Curasao media cuadra al Oeste, Esteli, Nicaragua, and Mr. Roberto Molina, Smallholder Farmer in Miraflor, Esteli, Nicaragua

Trinidad and Tobago

- External evaluator for MS thesis for Mervin Luce, University of the West Indies, West Indies, 2009
- Hosted Dr. Chesney, Executive Director of CARDI, March 11, 2008.
- Hosted Mr. Gauies Eudoxie, Assistant Lecturer of Soil Science, Department of Food Production, University of the West Indies, St. Augustine, Trinidad. June 21-July 7, 2004.

Anguilla

- Advised Mr. Calvin Andre' Samuel, intern and Agronomist, Ministry of Agriculture, 2004

Ghana

- External evaluator for faculty promotion, Mr. Mensah Associate professor, Kwame Nkrumah University of Science and Technology, (KNUST), Kumasi, Ghana, 2009

#### Honduras

- Attended the annual meeting of Interamerican Soc. Trop. Hort. Tegucigalpa, Honduras. Oct. 7-11, 2002.

#### Guadeloupe

- Attended the 41st annual meeting of the Caribbean Food Crops Society, July 10 – 16, 2005, Gosier, Guadeloupe (French West Indies)

### **Activities in Africa**

#### Nigeria

- Advised a visiting scientist, Dr. Moses Ogunlade, Cocoa Research Institute of Nigeria, Soil and Plant Nutrition Section, April-June, 2011.

#### Ethiopia

- Co-chair a PhD student, Desta Woldetsadik Demissie from Jijiga University on research of waste water reuse

#### Egypt

- Assisted a proposal writing of “Effects of heavy metals on the spectral reflectance properties in crop leaves” by Dr. Ahmed Yahya Hammad, Researcher and Head of Agriculture Applications Division, National Authority for Remote Sensing and Space Sciences (NARSS), Cairo
- Hosted seven Egyptian from Soil, Water and Environment Research Institute, Cairo University, Egypt, June 26, 2000

#### South Africa

- Hosted Dr. Wayne Truter, University of Pretoria, South Africa. Oct. 29-30, 2001
- Collaborated with seven scientists from Institute for Soil, Climate and Water , Stellenbosch University on the Handbook of Soil Sciences

### **Activities in Europe**

#### Germany

- Advised Ms. Nadine Amann, student intern from University of Applied Sciences (Fachhochschule Osnabruck), Germany, Oct., 2004 –April 2005.
- Examiner for an undergraduate student thesis, University of Applied Sciences (Fachhochschule Osnabruck), Germany, July 1, 2005.
- Hosted Prof.Dr.L.Figura, Hochschule Bremerhaven, University of Applied Sciences, Bremerhaven, Germany

- Collaborated with 9 German scientists from University of Cologne, Institute for Epidemiology and Pathogen Diagnostics, Christian-Albrechts-Universität zu Kiel, Leibniz Centre for Agricultural Landscape Research (ZALF), Institute of Radiochemistry, and Institute of Soil Ecology on the handbook of Soil Sciences

Poland

- Hosted Prof. Bozenne Borkowska and Prof. Stefan Dziabata, Poland, July 10, 2002.

Russia

- Collaborated with 9 scientists from Moscow State University and V.V. Dokuchaev Soil Science Institute
- Hosted Dr Vladimir Matichenkov, Institute of Fundamental Problems of Biology, Russian Academy of Sciences, Russia, Dr. Elena Bocharnikova, Institute of Physicochemical and Biological Problems, Russian Academy of Sciences, Russia, December 12, 2009
- Hosted Prof. Victor Proshin, Head of Consulting-Service Center, Voronezh State Agrarian University, Voronezh, Russia, January 5, 2005

Iceland

- Collaborated with a scientist from Agricultural University of Iceland on the Handbook of Soil Sciences

Italy

- Collaborated on the Handbook of Soil Sciences with 10 Italian scientists from University of Florence, Università di Torino and European Commission-Joint Research Centre

Spain

Collaborated with a scientist/editor on a book of Soil-water-solute process characterization: an integrated approach

United Kingdom

- Hosted two owners of a British Vegetable Company <http://www.gs-marketing.com/>. March 28, 2008
- Collaborated with 8 scientists from University of Warwick, Centre for Ecology & Hydrology, University of Aberdeen, and Centre for Ecology & Hydrology, Bangor University, and Swansea University on the handbook of Soil Sciences

Sweden

- Attended the 7<sup>th</sup> International Conference on the Biogeochemistry of Trace elements. Uppsala, Sweden, June 15-19, 2003.
- Collaborated with 2 scientists from Swedish University of Agricultural Sciences on the handbook of Soil Sciences

Switzerland

- Hosted Dr. Hans Herren, International Institute of Tropical Agriculture, Switzerland. Feb 27, 1998
- Collaborated with 5 scientists from Eidgenössische Technische Hochschule Zürich on the handbook of

## Soil Sciences

### The Netherlands

- Collaborated with nine scientists from Wageningen Agricultural University, International Soil Reference and Information Centre, World Reference and Information Centre, Blgg AgroXpertus, and Winand Staring Centre on the handbook of Soil Sciences

### Belgium

- Collaborated with a scientist from Flemish Institute for Technological Research on the Handbook of Soil Sciences

### Czech Republic

- Collaborated with a scientist from University of South Bohemia on the Handbook of Soil Sciences

### Denmark

- Collaborated with a scientist from Aalborg University on the Handbook of Soil Sciences

### France

- Collaborated with four scientists from Institute of Research for Development, Ecologie Fonctionnelle et Biogéochimie des Sols et Agro-Ecosystèmes, Institut National de la Recherche Agronomique on the Handbook of Soil Sciences

### Hungary

- Collaborated with a scientist from Szent István University on the Handbook of Soil Sciences

## 22. EXTENSION PROGRAM

(Extension appointment: 30%)

### **Optimizing Nutrient Management and Protecting Water Quality in South Florida**

#### **Situation**

**Fertilizer management:** The predominant agricultural soils in this area are typified by Krome very gravelly loam, which is characterized by an alkaline pH, very gravelly texture, low water holding capacity, but rapid permeability. These unique soil conditions create universal problems for crop production in this area, such as low use efficiency of fertilizers, micronutrient deficiencies, and potential leaching of nutrients into groundwater. Most agriculture soil samples have high plant available and total P, and that the addition of P fertilizer did not improve crop yield and quality. Over-fertilization leads to unnecessarily high production costs, may decrease yield and quality, and poses a risk to the environment. Moreover, excessive rates of phosphorus may induce iron chlorosis or other micronutrient deficiencies of crops grown on rocky soils. On the other hand, micronutrient deficiencies are common problems for most crops in the area due to high soil pH, inadequate fertilizer applications, or use of improper fertilizer formulas.

**Soil organic amendments (cover crops and composts):** Sandy and gravelly soils in south Florida are low in organic matter, have low water and nutrient holding capacities, and high nutrient leaching potentials. Using organic materials as soil amendments on Florida soils usually improves soil fertility and generally (but not always) increases crop yields. Soil organic amendments are usually in the form of cover crops, biosolids, or municipal solid waste composts. Various research projects have demonstrated that biosolids or composts can serve as soil amendments to increase soil organic matter, improve soil microbial activity, provide nutrients and ultimately improve plant growth and yield. However, high variability in the quality of operations between and within compost production facilities leads to unpredictable compost quality. Often, the use of immature composts can result in plant phytotoxicity. The introduction of viable weed seeds and high salt concentrations are also potential hazards of compost utilization in cropping systems. These conditions have created a need to inform producers about proper management practices for the use of organic wastes for crop production.

Cover crops, commonly referred to as green manures, are also important soil organic amendments. Cover crops are used to improve soil physical properties, increase soil organic carbon, conserve soil water, reduce surface runoff, and recycle nutrients during the heavy summer rains. Legume cover crops can contribute as much as 300 lb N /ac and non-legume cover crops can contribute ca. 100 lb N /ac to the following crops. However, few growers have adjusted their fertilizer programs to consider the nutrient input from cover crops. A wide variety of plants are used as cover crops in south Florida. Legumes like cowpea contribute more nitrogen by fixing nitrogen (N) to the soil than non-legumes like sorghum-sudangrass due to symbiotic N fixation. This program is introducing various cover crops to growers, and helping them to account for the nutrient contributions in the design of their fertilizer management programs.

**Water quality:** Water quality issues are of considerable concern because of the excessively porous, oolitic limestone soils that overlay the Biscayne Aquifer, and through which it flows. The aquifer underlies the Everglades Protection Area and Miami-Dade County and empties into Biscayne and Florida Bays. These areas and bays represent large natural resources for water, recreation, and habitat for native flora and fauna, which must be protected from pollution. In addition, groundwater is the primary source of drinking water for Miami-Dade County residents. Agrichemicals (P and pesticides) at elevated concentrations have been measured in aquatic systems of south Florida indicating a need to pro-actively reduce agrochemical leaching through innovative management. In addition to agriculturally related natural resource initiatives, urban sources of pollution (residential and city-urban) also need to be addressed. Our water quality training program focuses on basic concepts of water chemistry and hydrology, and provides practical training related to water sampling and analysis, instrumentation, water quality data analysis, evaluation and reporting.

### **Target audiences**

County extension agents, water managers, commercial crop growers, crop consultants, horticulturists in botanic gardens, fertilizer dealers, solid waste management companies, environmentalists, and researchers.

### **Objectives**

1. Demonstrate improved fertilizer management strategies through on-farm trials, grower and county extension workshops, and seek grower adoption of these practices.
2. Educate target audiences on using soil organic amendments for crop production and introduce new cover crops to growers through field demonstrations;
3. Provide training to target audiences on water quality concepts, sampling and chemical analysis;

**Extension Effort and Activities** (Impacts of these activities will be presented in the section of “Accomplishment/impact”):

1. **Contributed to State Major Programs:** I played a lead role in developing and implementing fertilizer and irrigation Best Management Practices (BMP) for Miami-Dade area. I am a member of committees and groups that drafted state-wide “white papers” on 1) Vegetable Fertilization Standards, and 2) Fertilization Recommendations for palm. I am actively involved in the IFAS Vegetable BMP Implementation Team, reviewer for 2008 BMP for Florida Specialty fruit and nut crops, Water Resources Focus Team, fruit focus group, Nutrient Management Education Core Group, and South Florida Vegetable Focus Group. I conducted my extension program in collaboration with county extension agents, other state extension specialists, and representatives from federal and state agencies. (Objectives 1, 2, and 3)
2. **Organized or contributed to workshops, field days and seminars:**  
(Total 48 events and over 1250 attendees)
  - 1) In-Service training, New Technology for Commercial Vegetable Production, February 27, 2013; 8:30 AM – 4:00 PM. The event will be conducted via Polycom from 2156 Fifield Hall on the UF campus.
  - 2) In-Service training, The Second Generation (G2) of Best Management Practices (BMPs) for Commercial Crop Production, Apopka, FL, February 29, 2012. Organizer and presenter (29 participants). 89% of the participants are satisfied for the program and 100% with the topics; 83% with the handouts. Increased knowledge by 40%. Among the 20 topics for the next IST listed on the survey, the participants’ top two choices are: 1) Water saving technology; and 2) Importance of timing and placement of fertilizers for vegetables. Other interested topics: 1) Controlled release fertilizers; 2) Water quality and salinity control; 3) Soil amendment; 4) Biochar application; and 5) Pest control in organic vegetable production.
  - 3) Vegetable field to demonstration new fertilizers, February 8, 2012. Organizer and presenter ( 41 participants)
  - 4) 2011 Horticulture course for nursery and landscape industry, Plant Nutrition and Fertilizer, Sept 20, 2011. Organizer and presenter
  - 5) Workshop of “Soil Management in Nurseries and landscapes”. March 29, 2011. Organizer and presenter ( 44 participants)

Here are the results for the successful workshop on March 29<sup>th</sup>.

| <b>Male</b>                               | <b>Number</b> |
|---|---------------|
| African American                          | 14            |
| Hispanic                                  | 10            |
| White                                     | 13            |
| Other                                     | 0             |
| <b>Total male</b>                         | <b>37</b>     |
| <b>Female</b>                             | <b>Number</b> |
| African American                          | 2             |
| Hispanic                                  | 2             |
| White                                     | 3             |
| Other                                     | 0             |
| <b>Total female</b>                       | <b>7</b>      |
| <b>Total of attendees(Male + Female):</b> | <b>44</b>     |

6) Below is the table with overall rating score to the questions:

- 2.92/5.00: Average knew something about water shortage and nursery BMP
- 4.24/5.00: Average said that they were Satisfied with Seminar presented
- 4.00/5.00: Learned new things about Soil Management
- 3.10/5.00: Average public will perform from some changes after this Seminar was presented.

- 7) Water quality concepts, sampling, and analysis training course, Feb 21-25, 2011. Organizer and presenter (35 participants)
- 8) Demonstration of pH and EC measurements at the Plant Nutrition and Fertilizers class, as a part of the 2010 Horticulture Course for Nursery and Landscapers. Sept 28, 2010. ( 42 participants)
- 9) Demonstration of effect of irrigation management on soil applied nutrient movement, Papaya Irrigation Management Seminar and Field Demonstration, Homestead, Fl Sept 9, 2009.
- 10) Demonstration of searching online information related to crop production, Homestead, Fl. June 16, 2009. (13 participants)
- 11) The certificate for horticulture class for landscape professionals and homeowners, Homestead, Fl. March 3, 2009. Demonstrated water and fertilizer movement in various soils. (83 participants)
- 12) Workshop of how to grow healthy plants, Homestead, Fl. Sept. 23, 2008. Presenter.
- 13) Florida BMP Workshop, Apopka, Fl. May 20, 2008. Presenter.
- 14) Water quality concepts, sampling, and analysis training course, April 14-19, 2008. Organizer and presenter.
- 15) CCA workshop, Lake Alfred, Fl. April 9, 2008. Presenter.
- 16) Water Quality In-Service Training, Homestead, Fl. Feb 18-19, 2008. Organizer and presenter.
- 17) Technology, irrigation and nutrient management school, Homestead, Fl. Aug. 22, 2007. Organizer and presenter. (70 participants)
- 18) Provided training for the Monroe County Master Gardeners and presented “Nutrient management for calcareous soils”, Homestead, FL, March 19, 2007. (12 participants)
- 19) Field day of Foliar Iron Applications Update for Tropical Fruit Crops, Homestead, Aug. 24, 2006. (24 participants)
- 20) Workshop of Technology, Irrigation and Nutrient Updates for South Florida Vegetable Growers”, Homestead, Aug. 23, 2006. Presented “How to reduce nitrogen volatilization loss after fertilizer applications”. Knowledge gain:  $(12.06-9.41)/9.41 = 28\%$ . Total # of participants: 38 (6 Hisp., 1 Bl., 7 As; 9 females).
- 21) Field and lab training of water quality sampling and analysis, Homestead, May 19, 2007. (22 participants)
- 22) The meeting of Biscayne Bay Regional Restoration Coordination Team, presentations, tour of the laboratory and field experimental sites, Homestead, May 11, 2007. (18 participants)
- 23) Provided a seminar for NOAA Atlantic Oceanographic and Meteorological Laboratory, Miami, FL, Feb. 26, 2007. (22 participants)
- 24) Gave a seminar to scientists from SFWMD, Homestead, FL, Jan. 18, 2007. (11 participants)
- 25) Field day of Foliar Iron Applications Update for Tropical Fruit Crops, Homestead, Aug. 24, 2006. (24 participants)
- 26) Gave a seminar and tour for environmentalists from SFWMD and AMOL, Homestead, Fl. Sept. 29, 2006. (8 participants)
- 27) Workshop of Technology, Irrigation and Nutrient Updates for South Florida Vegetable Growers”, Homestead, Aug. 23, 2006. Presented “How to reduce nitrogen volatilization loss after fertilizer applications”. Knowledge gain:  $(12.06-9.41)/9.41 = 28\%$ . Total # of participants: 38 (6 Hisp., 1 Bl., 7 As; 9 females).
- 28) Provided a seminar for Agroecology Workshop for High School Teachers at Florida International University, July 18<sup>th</sup>, 2006. (35 participants)



- 29) Workshop of Nursery production series: Reduce your production costs: optimize irrigation & fertilizer applications. Homestead, FL, May 31, 2006. (33 participants)
- 30) In-Service training of Water Quality Sampling and Monitoring Technology, Homestead, March 15-16, 2006. Presented “Water quality monitoring technology”. (24 participants)
- 31) Involved in the Certified Crop Advisor Seminar and CEU session and presented “The role of soil phosphorus in south Florida agricultural and natural ecosystem”, Fort Pierce, FL. Oct. 12, 2005. (50 participants)
- 32) Training for Monroe County Master Gardeners, Homestead, FL, July 22, 2005. (21 participants)
- 33) Provided a Certified Crop Advisor Seminar and presented “Selection, production and benefits of cover crops”, Lake Alfred, FL. April 13, 2005. (60 participants)
- 34) TREC Seminar, Homestead, Jan. 20, 2005. Presented “The role of soil phosphorus in South Florida’s agricultural and natural ecosystems.” (35 participants)
- 35) Vegetable field day, Homestead, FL. Jan. 13, 2005. Presented Zeolite as potential soil amendment.” (18 participants)
- 36) The South Florida Tropical Fruit Irrigation and Nutrition Workshop, Homestead, Dec. 9, 2004. Presented “Fertilizers, biosolids, and their role in fruit production. “ (16 participants)
- 37) Workshop of Agricultural, restoration and hydrology: water quality and flow in the Frog Pond Area. Homestead, FL. Oct. 21, 2004. (25 participants)
- 38) Gave a seminar at South Florida Water Management District, West Palm Beach. Sept. 22, 2004. (12 participants)
- 39) Irrigation and nutrient management school, Homestead, FL. Aug. 26, 2004. Presented “Nutrient management practices-fertilizer, soil amendments and cover crops.” (88 participants)
- 40) Workshop on new soil and water management practices for horticultural crops in south Florida. Homestead, FL. May 26, 2004. Presented “Soil amendments and their role in improving crop production.” (42 participants)
- 41) Sweet Corn field day in Miami-Dade: Update on phosphorus fertilization and soil moisture monitoring. Homestead, FL. Feb. 23, 2004. Presented “Phosphorus behavior in calcareous soils.” (18 participants)
- 42) Gave a seminar at South Florida Water Management District, West Palm Beach. January 22, 2004. (11 participants)
- 43) Presented Fertilizer recommendations for lychee at Lychee and Logan Production Workshop, Bokeelia, FL. Nov. 22, 2003. (21 participants)
- 44) Avocado workshop, Homestead, FL. Nov. 6, 2003. Presented by Dr. Crane on “The effect of foliar-applied urea and boron on plant nutrition and yield of ‘Lula’ and ‘Booth 7’ avocado trees.” (25 participants)UF South Florida Research and Outreach Discussion Meetings, Gainesville, FL. Oct. 29, 2003. Presented “Soil and Water Science Research at TREC.”Workshop of South Maimi-Dade Hydrology Study: Findings and Implications of the C-111 Project. Homestead, FL. Sept. 30, 2003. Presented “Water quality trends associated to the regional water management and land use in the Frog Pond area.” (31 participants) Workshop of “Topics in lychee and longan production. Homestead FL. Sept. 4, 2003. Presented “General fertilizer recommendations for lychee.” (41 participants)
- 48) Irrigation School, Homestead, FL. Aug. 21, 2003. Presented “Minimizing Flood Damage in Vegetable Production.” (78 participants)Provided a seminar for South Dade Soil and Water Conservation District, Florida City, FL. Aug. 20, 2003. (16 participants)Provided a seminar on “Fertilizer management for calcareous (high pH) soils” at the Tropical Flowering Tree Society, Miami, FL. Jan. 13, 2003. (48 participants)Fairchild Tropical Garden seminar. Miami, FL. Nov. 21, 2002. Presented “The role of soil phosphorus in south Florida Agricultural and Natural Ecosystem.” (37 participants)
- 52) South Florida Drip Irrigation School, Homestead, FL. Aug. 22, 2002. Presented “Sources and technology of fertigation for vegetable crops in south Florida.” 82 attended. Pre- and post-tests indicated 20% knowledge increase of trainees. (77 participants)

- 53) Certified Crop Advisor Program (CCA)/ continuing education (CEU) Agronomic Seminar, Sebring, FL. April 24, 2002. Presented “nutrient management practices for calcareous soils”. (51 participants)
- 54) Vegetable Research Field Day, Homestead, FL. Feb. 15, 2002. Demonstration of crop nutrient management. ( 28 participants)
- 55) Lychee Growers Workshop, Homestead, FL. Jan. 31, 2002. Presented “fertilizer recommendation for lychee trees”. (75 participants).

(Objectives 1, 2, and 3)

- 3. Published 25 extension fact sheets in EDIS (Extension Digital Information Source) and 31 newsletter articles that include information on fertilizer management, water quality, and program-related topics during last 5 years. These extension publications are available as hard copy through county extension offices or on the World Wide Web. (Objectives 1, 2, and 3)
- 4. Provided interpretation of soil-testing results from UF Extension Soil Testing Laboratory for soil samples with high pH from many counties, including Miami-Dade County, and for writing fertilizer recommendations for growers and landowners. I have provided about 38 written fertilizer recommendations for last 5 years. County extension agents such as Teresa Olczyk, contacted growers to follow up the implementation of my recommendations. (Objective 1)
- 5. Assisted the Plant Diagnostic Clinic at TREC with soil and plant nutrition related problems, and provided nutrient management recommendations. I conducted more than 80 quick soil and tissue tests to diagnose plant disorders. I also replied promptly to assistance requests from extension agents through the web-based Distance Diagnostic and Identification System (DDIS). (Objective 1)
- 6. Visited more than 100 fruit groves, vegetable farms, ornamental nurseries, and botanic gardens during the last 5 years and provided fertilizer recommendations, usually in the company of county extension agents. (Objective 1)
- 7. Provided technical assistance to the USDA/NRCS Environmental Quality Incentives Program (EQIP) in Miami-Dade County. (Objectives 1 and 3)
- 8. Introduce various cover crops to growers and provided quantitative information on the benefits of cover crops with respect to soil fertility, crop production, and environmental protection. Our group conducted demonstration trials with more than 30 cover crop species and various biosolids and composts during 2002-2007. We organized 8 relevant workshops and field days. More than 200 persons participated in these events. (Objective 2)
- 9. Cooperated with the hydrologist and the county extension agent and conducted laboratory and field performance evaluations of several new water status monitoring devices for calcareous soils in Miami-Dade County. Results of this study were presented to the growers during workshops in 2003-2006. (Objective 1)
- 10. Involved in two grower workshops to discuss development and implementation of Best Management Practices for Miami-Dade County vegetable growers, coordinated two meetings of the Miami-Dade BMP Steering Committee, and supervised the IFAS BMP extension specialist stationed at TREC. I participated as a CoPI on “IFAS Vegetable and Row Crops BMP Implementation”, a project funded from EPA 319 funds and by several other agencies; and submitted another extension proposal to FDACS in 2007. (Objective 1)

11. As a member of UF IFAS Fertilization Standards Task Force (appointed by the Dean for Extension), reviewed the current IFAS fertilization recommendations for vegetable crops, cooperated in identifying the gaps in the research data, developing temporary consensus-based recommendations and developed a strategic plan to identify priority research/extension work. The “white paper” developed by this group has been presented to the UF IFAS Plant Nutrient Oversight Committee. (Objective 1)
12. In collaboration with a hydrologist and a county extension agent, organized a two day In- Service Training on ‘Water Quality Sampling and Monitoring Technology’ for extension agents in 2006 and a one-day training program for environmentalists in 2007. The programs were supported by the IFAS Water Resources Focus Team. The objectives were to introduce field concepts and applications related to environmental evaluation of surface water and ground water, including water chemistry and hydrology, through lectures and field tours. The program included hands-on experiences of water sampling and water quality analysis in the laboratory using various methods and instruments. A chemistry teacher who was participated the training in May 2007 brought her 13 students for 2 hours training in July 2007. We generated ~6 hours videos based on training of April 2008. We anticipate using a portion of this video for development of web based trainings. In addition, we are currently adapting the training into a book that will be published by CRC Press in 2010. (Objective 3)
13. Conducted the following field demonstrations in growers' fields in collaboration with county extension faculty, and as requested by the area growers and Crop Advisory Committees, I.
  - Demonstration of controlled release fertilizers (2006-2007).
  - Three large-scale sweet corn trials with reduced levels of phosphorus. (2002-2005).
  - Zeolites as soil amendments for sweet corn. (2003-2005).
  - Two demonstrations of cover crop influence on root knot nematode population suppression in okra and summer squash production, (2003-2005).
  - Four field trials evaluating cover crops as biological and chemical alternatives for methyl bromide for tomato and bell pepper production. (2003-2005).
  - Four trials evaluating organic growing media and certified organic fertilizers for fresh organic greenhouse herb production (2005-2006).
  - Cover crops/ irrigation and soil amendments as possible alternatives to methyl bromide for eggplants, pepper and grape tomato production. (2004-2005).
 (Objectives 1 and 2)
14. Published 24 articles on the websites of the “Vegetarian” (Monthly newsletter published by the UF IFAS Horticultural Sciences Department, available at: <http://www.hos.ufl.edu/vegetarian/>), Citrus & Vegetable Magazine ([http://www.citrusandvegetable.com/home/2002\\_OctIrrigation.html](http://www.citrusandvegetable.com/home/2002_OctIrrigation.html)), at N-Viro International Corporation (<http://nvirosoil.com/IFAS.htm>), Southwest Florida Research and Education Center (<http://www.imok.ufl.edu/LIV/groups/cultural/cover/covercr1.htm>); and Smartgrow (<http://www.smartgrow.net/commutesting.html>). (Objectives 1, 2 and 3)
15. Collaborated with county extension faculty and state specialists on small farms and organic farming to obtain extension grants for \$13,000 in 2007 to build a demonstration shade house and greenhouse in Homestead. We conducted a heirloom tomato demonstration project in 2007, shade house hydroponic tomato production in 2008, and organic greenhouse demonstration project in 2009. (Objective 1)
16. Actively involved in the education of local school students on agricultural and environmental sciences. I advised and hosted over 70 high school students and teachers. Fifteen of the high school students conducted their school science projects in my lab. I am advising the South Dade High School on a rocky soil related issue for rebuilding the student experimental farm. (Objectives 1, 2 and 3)

17. Actively involved in mass media promotion of the UF and my program: Over the last 5 years, I contributed 17 media releases for Environmental Health News (Published daily online by Environmental Health Sciences are available for free and are used by over 300 other websites around the world), Miami Herald (the largest new newspaper in Florida, circulation 400,000), Farm World, (the largest farm newspaper in the Midwest with circulation 40,000), South Dade Newsleader (circulation 10,000), Dade-Monroe Grower (circulation 4,000), IFAS Research Report, International FOCUS, IMPACT, Linkages, Stream Lines, a quarterly publication of the St. Johns River Water Management District), and others. (Objectives 1, 2, and 3)

### **Accomplishments/Impact**

1. Our BMP implementation team visited more than 30 farms representing 38,500 acres of crop land in south Florida, assessed 32,800 acres for BMP implementation, and assisted growers in signing up for the BMP program via the official NOI (notice of intent) for 6,000 acres. We estimated that growers following BMP practices will save at least 40% water consumption and 20% fertilizer usage. The savings represent at least of 720,000 gallons water, 36,000 lb nitrogen and 24,000 lb phosphorus per year, and result in lowered production costs and improved the environment in south Florida. (Objective 1)
2. Approximately 1,115 clients participated in our workshops, fields and other group learning activities related to water and nutrient management. The surveys indicated that 85% of them gained knowledge. The knowledge increase was between 20-58% per event. (Objectives 1, 2, and 3)
3. Our annual program titled: "The South Florida Irrigation and Nutrient Management School" have been presented each year from 2002-2009. Approximately 400 clients (growers and industry) participated in these all-day educational sessions, which included classroom presentations on nutrient and water management, irrigation system design, maintenance, and trouble-shooting and hands-on field activities pertaining to topics including water and chemicals movement in the soil shown with blue dye, water chlorination, injection of methyl bromide alternatives through the irrigation system and field determination of irrigation uniformity. 100% of the participants graded this program as very good-excellent. The pre- and post- test results indicated a knowledge gain of 38% for each session (52% increases in 2007). (Objective 1)
4. Following our fertilizer demonstrations, five snapbean growers reduced nitrogen application rates by 15% on 850 acres of snap beans. Since the total fertilizer cost/acre is about \$150 (information from growers) and N cost is about \$50/acre, these farmers saved \$6,375 in fertilizer cost and reduced N impact on the environment for each crop of snapbeans using this BMP approach. In addition to these factors, the posharvest quality of beans was better when the N amount is reduced. The use of phosphorus fertilizer was reduced by 2 sweet corn producers who cooperated with field trials (400 acres with no P application for 2 years). Two sweet potato growers changed fertilization practices by splitting nitrogen applications during the growing season to prevent nutrient leaching as I recommended. Two okra growers changed fertilization practices reducing amount of nitrogen by 20% to reduce plant growth and induce flowering and fruit set. (Objective 1)
5. In the last two production seasons, there was a significant increase in acreage of okra grown on plastic mulch with drip irrigation (from about 10 acres five years ago to approximately 400 acres). Four okra growers started producing okra on plastic mulch with drip irrigation. About 30% of this acreage was planted with okra as a second crop after tomato. This double cropping of a traditional and new crop is a direct impact of several years of Extension efforts (field trials and workshops). (Objective 1)

6. We strongly recommended a legume cover crop, sunn hemp, which produced as much as 300 kg N per ha and is resistant to nematodes. Using the cover crop could reduce chemical fertilizer use by 50% and save production costs of as much as \$2 million in Miami-Dade County. After we conducted several cover crop demonstration trials, several growers expressed interest in planting sunn hemp as a cover crop to improve organic matter content, reduce weeds, reduce nematodes and supply organic nitrogen for the following crop. Three local certified organic growers are using this cover crop on about 5 acres. Another okra grower who participated in a 5-acre field demonstration indicated that use of the legume cover crop before planting okra significantly improved the yield and quality of cash crop and suppressed nematodes. One citrus grower in Lee county will grow sunnhemp and other cover crops in 2010 after consulted with our research/extension group. (Objective 2)
7. I provided quick testing of soil and tissue samples for growers in urgent cases, such as suspected fertilizer or chemical burns. These tests were free of the charge and saved the growers more than \$5,000 from the 250 samples analyzed using this quick-test. My recommendations for remediation of damages were effective in most cases. One nursery growers had 2000 palm trees burned by over-fertilization. My recommendation of removing fertilizers and rinsing with water saved the grower in excess of \$25,000. (Objective 1)
8. A successful organic production system for greenhouse grown potted herbs was developed by our research group at TREC, as a result of four research/extension trials testing different application rates of certified organic fertilizers with basil, dill and cilantro. This project is funded by a USDA TSTAR Grant. One small producer growing herbs for farmers market implemented this production system and 2 organic growers are interested in implementation of this system. (Objectives 1 and 2)
9. We developed the method for tensiometer installation in calcareous soils and promoted the use of soil moisture monitoring tools for scheduling irrigation. Prior to implementation of these efforts in 2000 only 2 growers used tensiometers. About 50 growers used tensiometers for scheduling irrigation during 2002-2005. This increased adoption of tensiometer use represents about 400 acres of tropical fruits, (mostly small, 1-5 acre groves) and about 400 acres of vegetables per growing season. Two other farmers used other irrigation scheduling tools and methods like Time Domain Reflectometers (TDR) meters and the 'pan evaporation method'. More than 20 growers have been using tensiometers longer than 2 years. Tropical fruit growers are reporting savings in water use by 30-50% and in fertilizer use up to 30%. Analyses of these data suggest that these growers are potentially saving about \$65.00 per acre/year in fertilizer costs. This fertilizer reduction rate represents \$61,750 in savings to growers who are using tensiometers. An added benefit is that up to 30% of the nutrients will not be leached to the groundwater. With about 11,000 acres in tropical fruit production, potential savings in fertilizer use may reach up to \$715,000 annually as adoption of this program proceeds. (Objective 1)
10. More than 300 tropical fruits growers participated in workshops and field days related to nutrient management, especially iron fertilizer. Proper application of iron fertilizers can increase fruit yield by 25% and also improve fruit quality. By introducing more brands of chelated iron fertilizers to growers and combining other factors, the price of chelated iron fertilizers has been reduced by as much as \$5 per lb, and this has translated into major savings in fertilizer costs to growers. By adopting the new iron fertilizer alternative (weak acid plus iron sulfate), grower can save as much as 75-88%. (Objective 1)
11. We transferred the knowledge and the skills in using fertigation techniques to vegetable and fruit growers through 3 workshops and one field demonstration. Surveys conducted at the end of these workshops showed 100% of the participants were likely to improve their practices based on the

information we provided. Improved fertigation technology is not only increasing crop production, but also reducing nutrient leaching potential and protecting our environment. Currently, growers are fertigating all tomatoes and they are progressively increasing the use of fertigation in the production of other crops. (Objective 1)

12. In collaboration with a county extension agent and other extension specialists, I organized a two day In-Service Training on ‘Water Quality Sampling and Monitoring Technology’ for extension agents in 2006 and 2008, and one-day and 5-days training program for environmentalists in 2007 and 2008. The program included hands-on experiences of water sampling and water quality analysis in the laboratory using various methods and instruments. Pre- and post-tests showed the knowledge increase was 28% in 2007 and 73% in 2008 [Knowledge Gained = ((pre-post mean)/(pretest mean))\*100. In lecture series, a typical number for knowledge gained is usually in the 9% range. For good lecturing with some hands-on, the number can be as high as 50%.] It appears that our lectures, hands-on, and ample discussion time helped considerably with participant achievements. One of participants wrote: “Congratulations on an outstanding job of organizing the Extension Water Quality In-service Training. This was one of the best I have attended in recent years... demonstrated through the classroom lectures, field sampling, tour of pump stations and Everglades National Park, airboat collecting trip, and finally the great water analysis lab sessions. Even some of us old hands learned new things.” A chemistry teacher who was participated the training in May 2007 brought her 38 students for 2 hours trainings in July 2007 and July 2008. Water quality training events have been requested frequently and next event is anticipated in 2011. (Objective 3)
13. Based on the circulation of newspapers and other media, we reached as many as 1 million people through our media releases and reports. These releases presented our research findings on sustainable agriculture, crop production, water quality, and ecosystem restoration in south Florida. (Objectives 1, 2 and 3)

## 23. SERVICE TO SCHOOLS OR COMMUNITY

- Judge for Miami-Dade County middle and high school Public Speaking Contest for Agriculture Leadership. Jan 28, 2010.
- Water quality training, 25 Students and 2 professors from Miami College, July 25, 2008
- Soil and water research tour for students from West Miami Middle School, April 30, 2008. (32 students and 4 teacher/parents). (Lisset Perez-Munoz, teacher: It was a great experience and we really enjoyed it. The kids had a great time and are still raving about touching tissue cultures that were in space. One of the kids said that it was the best field trip, and the parents were commenting on how much they learned. Please thank all the scientists on our behalf. We had a great time and learned tremendously.)
- Hosted Dr. Diane Owen and students from FAU, March 28, 2008.
- Soil and water research tour for students from Ponce De Leon Middle School, March 25, 2008 (42 students and 5 teacher/parents).
- Water quality training, 13 Students and 2 professors from Miami College, July 6, 2007
- School project, Kris Overholt, Kenwood Elementary School, Miami. 2007.
- Provided advice on creating an experimental farm for South Dade High School, Dec. 2006-present.
- Judge for Miami-Dade FFA Chapters (Agriscience) - the Area VI Ornamental Horticulture Demonstrations. April 1, 2006.
- Advised science projects for 6 Coral Reef Senior high school students (Jan, 2006)

- Host 48 students from John A. Ferguson Sr. High School with Agriscience and Biotechnology teacher, Mr. Will Dukes, Jan. 19, 2006.
- Assisted on USDA/Miami-Dade College Agricultural Education Enhancement Program for high school students, January 20, 2005.
- Provide scientific assistance to Ms. Jessica Cadmus, Center for Advanced Technologies at Lakewood High School. Her independent research project of “The effect of superphosphate on plant growth and water quality” won the first place in regional science fair, 2004.
- Hosted 8 high school science teachers of the Agriscience and Natural Resources Education Program, Maimi-Dade County (July 1, 2004)
- Judge for Miami-Dade County middle and high school Public Speaking Contest for Agriculture Leadership. Dec. 3, 2004.
- Served as a scientific witness at a court proceeding (2003)

#### HIGH SCHOOL STUDENTS:

Liza Mack, Science project with magnesium, MASH Academy, Miami. June 19, 2009.

Host and presentation to John A. Ferguson Sr. High School students, January. 19, 2006.

Advised 6 students from Coral Reef High School- IB program. 2005-2006.

Assist on USDA/Miami-Dade college agricultural education Enhancement program for high school students, January 20, 2005.

Provide scientific assistance to Ms. Jessica Cadmus, Center for Advanced Technologies at Lakewood High School. Her independent research project of “The effect of super triphosphate on plant growth and water quality” wan the first place in regional science fair, 2004.

School project, Kris Overholt, Kenwood Elementary School, Miami.

#### Student interns:

Ms. Diana Sosa, Student Internship, Coral Reef High School, 2003

Ms. Qian Wang, Student Internship, South Dade Senior High, 2002.

Mr. Jinshun Wang, Edgewater High School, Orlando, 2002. Science Project, Second place.

Mr. Zachary West, Laboratory Research Internship, South Dade Senior High, 1998 – 1999.

Mr. James Dunn, student, South Dade Senior High, 1999.

Mr. Krzysztof Olczyk, South Broward High School, 1998

#### Host domestic scientific and political visitors:

Nan Rich, Florida State Representative, 8/2/04.

## 22. MEMBERSHIPS AND ACTIVITIES IN THE PROFESSION:

- Association of Chinese Soil & Plant Scientists in North America (President, 2011-12, member since 1987)
  - American Society of Agronomy (member, 1989-present) and the Science Policy Advisory

- Committee (member, 2007-present)
- Florida State Horticultural Society (member, 1996-present)
- Interamerican Society of Tropical Horticulture (member, 1997-present)
- Soil and Crop Science Society of Florida (member, 1996-present)
- Soil Science Society of America (member, 1989-present)
- Soil Science Applied Research Award Committee (Chair 2002-2003) and Soil Science Society of America's General Awards Committee (member, 2003).
- ASA Kingenta Agricultural Science Award committee (member, 2011)
- Membership Committee of Soil and Crop Science Society of Florida (Chair, 2002-2003).
- Member-at-Large, Inter-American Society of Tropical Horticulture (2002-2004)
- Honorary member of Tropical Flowering Tree Society (2003-present)
- Professional Association for China's Environment (member, 1999-present).
- Sino-Ecologists Association Overseas (member, 2007-present)

## 24. HONORS

- Art Hornsby Distinguished Extension Professional and Enhancement Award, Extension Association of Florida, 2012.
- International Educator of the Year, Senior faculty award, UF/IFAS, 2011
- Fellow of American Society of Agronomy (ASA), 2010
- Fellow of Soil Science Society of America (SSSA), 2010
- UF/IFAS Research Innovation Award, 2010
- Senior Faculty Award, the Gamma Sigma Delta, the honor society of agriculture, 2009.
- Wachovia Extension Professional and Enhancement Award, Extension Association of Florida, 2008.
- Research Foundation Professorship, University of Florida, 2007.
- Nominated for the Outstanding Specialist Award, Florida Association of County Agricultural Agents (FACAA), 2004.
- Junior Faculty Research Award, the Sigma Xi, the international honor society of science and engineering, 2004.
- Nominated for UF Achievement Award, 2004
- Nominated for the Art Hornsby Extension Professional Improvement and Enhancement Award, 2003
- Jim App Award for Outstanding Design Team, IFAS, UF, 2002
- Outstanding Paper Award, Florida State Horticultural Society, 2001
- Member of the Honor Society of Agriculture (Gamma Sigma Delta), 1999-present
- Outstanding Research Award, Indian River Research and Education Center, IFAS, 1996
- Wilson Popenoe Award, InterAmerican Society for Tropical Horticulture, 1996
- Traveling award for the Excellence of Teaching, University of Maryland, 1993
- Fellowship, Food and Agricultural Organization (FAO), 1987