

Farming Systems at the
University of Florida:
1979 to the present
From my memoirs

by

Peter E. Hildebrand

Copyright 2011

Forward

Prior to coming to UF, I had been with The Rockefeller Foundation for five years working with ICTA in Guatemala. I had known for several months that the new Gerente was not going to approve renewal of my visa and that I would be leaving ICTA by the end of August, so leaving Guatemala on August 31, 1979 was part of a planned process. However, I was not sure where I would be going. Among other options were going to Sumatra with IADS, to Egypt with New Mexico State University, a Rockefeller Foundation study leave at the University of Florida, and to Colombia with The Rockefeller Foundation. But before looking into any of these situations, I had a series of commitments to complete.

I had a meeting at North Carolina State University scheduled to begin Monday morning, September 3. The meeting was to help set up the USAID-funded Soils Management Collaborative Research Support Project (CRSP) that was later to be known as 'Tropsoils.' After two and a half days of meetings in Raleigh, we all went to Washington, D.C. to meet with the USAID officials to explain what we had decided in Raleigh. After that meeting on Thursday morning, I headed to Las Cruces, New Mexico to talk with the people at New Mexico State University about the Egypt position. They had a contract there with USAID and were interested in me being their Chief-of-Party. During the visit, it looked to me like one of the most important things a Chief-of-Party would be responsible to do was to spend several million dollars each month as part of the massive U.S. spending program in both Egypt and Israel. So, I decided against going to Egypt.

From Las Cruces, I went to Gainesville, Florida, to spend a few days at the University of Florida. The main purpose of this trip for me was orientation before going to Bolivia to consult with the UF contract there. The university had a project to try to find profitable alternatives for the small farmers who were producing coca leaf. This was a very old custom in Bolivia, but recently had increased rapidly to fuel the illicit cocaine trade. From

Gainesville, I headed to La Paz. From La Paz (12,000 ft.) I flew to Cochabamba (9,000 ft.) where Pat and Tito French, among others, were then living and working with the Florida contract. Tito had worked with me during the two years I was with the University of Florida working with CENTA (agricultural research and extension) in El Salvador. Another person there with Florida at the time was Van Crowder. Also, coincidentally, my cousin, Katherine Hildebrand was there with her husband, Ken Adams, but on a different contract.

With Tito we drove to the Chapare, the area of coca production where he was working. It was very interesting for me to see small farmers openly producing coca as a cash crop. We visited with some of them and talked about how they did it and what their production problems were. They took their leaves to the road where it was legally purchased and picked up by truck and then taken to Cochabamba. Cochabamba had historically been the market for coca leaves and trade was still legal there. However, as soon as the leaves left this market is where the illegal processing began.

From Bolivia, I went to Colombia to talk with AID about the possibility of my working on a new project they had. From Bogotá I returned to New York City where I spent a week reporting back to the Foundation about the work in Guatemala. By this time we had decided that rather than one of the foreign assignments, I would go to the University of Florida on a Rockefeller Foundation Study Leave (similar to a sabbatical leave).



Coca field in the Chapare



Coca leaves in the Cochabamba market

RF study leave at UF: 1980

In setting up the study leave, the Rockefeller Foundation asked me what I wanted to accomplish. I told them that then Vice President Ken Tefertiller had asked me to help the university set up a “world class center” in farming systems. Joe Black the head of the Social Science Division and my boss, wrote back and said that was well and good, but what did *I* want to do. I thought about that a while and decided that helping create the center would help me pull together my thoughts and experiences as well. So that became my focus during study leave.

My university home during this time as visiting professor (and later as professor) was the Food and Resource Economics Department where Ken Tefertiller had been Chair before moving up to Vice President, and Leo Polopolus was the new Chair. Chris Andrew was also in the department (as well as Assistant Director of International Programs in the Institute of Food and Agricultural Sciences - IFAS) and became my closest associate. One of the first things Chris suggested was that I go around the department to talk with all the faculty members to see what research they were doing. It was an excellent suggestion and I began it right away.

The process created my first great shock at being back in a U.S. university environment after 15 years in other countries. Without fail, when I asked people what they were doing, they said, “What interests *me* is . . .” and not “*Our* focus is . . .” There was no sense of a joint mission, either of the department or of IFAS. It got even worse. Sometimes I would ask if they were working with another person in the department I had talked to doing much the same thing. Much to my amazement, often they did not even know what their colleague in the department was doing. For 15 years I had been working abroad in organizations with specific missions. With the exception of USAID, everyone in those organizations knew exactly what role they played in the mission of the organization. For example, at ICTA in Guatemala, when people asked me what I was doing, I always began by explaining the mission of ICTA, then the mission of *Socioeconomía Rural* (SER)

within ICTA. Then I would elaborate on all the activities of SER. In that kind of a framework, it simply would not make sense to ask what individual interests were involved. This did not suppress individual initiative, however. People were encouraged to be innovative, but it was always necessary to demonstrate how individual ideas and interests were potentially in the interests of ICTA's clients before resources could be invested in the activity.

A few years later, some of the writings of George Axinn (FAO, Ford Foundation, Michigan State University, Editor of the Journal for Farming Systems Research-Extension, and good friend) would help explain what had happened in the university (and department) environment during the time I was out of the country. *People had become more and more specialized, thus narrower and narrower in focus.* This created 1) increasing specialization in vocabulary and terminology, resulting in 2) decreasing capability to communicate with others outside the specialization -- even within the same department, and 3) increasing loss of the bigger picture -- including the mission of the organization. These changes, of course, 4) eroded contact with clients so 5) research results could no longer be measured by benefits to the clientele. The only way to evaluate these "research specialists" was through "refereed journal" articles that could only be read by others in the same narrow specialization. It was no wonder that *individual interests, rather than mission to the public* became the drivers of the Land Grant Universities.

Even in the midst of all the specialization, there were people at the University of Florida who were interested in the concept of farming systems research and extension. Elon Gilbert, another agricultural economist who had some farming systems experience in Africa, had been spending time on campus prior to my arrival and continued on for a few months, was working with a group that included Chris Andrew, some young faculty -- P.J. van Blokland, also of Food and Resource Economics; Tim Olsen of Animal Science; Steve Kostewicz of Horticulture; and Art Hansen of Anthropology -- and some graduate students including Sandra Russo (Agronomy) and Mickie Swisher (Geography and Soils).

We organized a 4-credit, graduate level course in the spring in which all participated to see if it was possible “to teach farming systems to others,” a challenge that Ken McDermott had made to me on one of his trips to Guatemala while I was there. We started with discussions of farms as systems, and then, based on the ICTA experience, conducted a Sondeo and carried out a simulated on-farm trial using radishes (that would produce within five weeks during the semester). The course, offered jointly by the Horticulture Department and Food and Resource Economics, had an enrollment of 18 from a number of departments.

I had been directly involved with agronomic research for nearly 10 years and was not ready to give up that aspect of a research program just because I was on study leave in an agricultural economics department. The Agronomy Department provided me land on the campus (part of the experiment station) to conduct an intercropping trial of corn with forage and vegetables as a possibility for small, north Florida farmers with whom we started to work in the farming systems course.

With all this interest being shown in the budding farming systems program at the University of Florida, I decided to cast my lot with the university and the farming systems program rather than continue with the Rockefeller Foundation. Prior to making this decision, I had traveled to Colombia with Miguel Altieri (now of the University of California at Berkeley), a graduate student who was taking the farming systems course, to further develop the possibility of a farming systems project there with the Foundation and USAID. Miguel would have been resident in Colombia if that had materialized. However, after the visit, USAID decided not to commit to more loan funds and I decided to become a Visiting Professor of Food and Resource Economics at UF.

During the study leave, I traveled twice to Washington, D.C. to work with USAID. The first trip was to present a seminar on FSRE and the second was to work with AID on a \$45,000 grant proposal for initiating an international FSRE training program for UF. I presented a seminar at Michigan State University and consulted with them on their farming systems program and their

project in Cameroon. I went to North Carolina State University for a meeting of the External Advisory Panel of the Soils Management Collaborative Support Project (Tropsoils), and to Colorado State University to help review the USAID-funded FSRE Guidelines being written by Bill Shaner, Bill Schmehl (both of Colorado State University) and Perry Philipp (University of Hawaii) representing the Consortium for International Development and for which Ken McDermott was the USAID Project Manager. Besides the trip to Colombia, international trips included one to CIMMYT in Mexico to participate in a farming systems conference which was the only time David Norman, Mike Collinson and I had been together at the same time. I also went to the Dominican Republic and Peru with John Nicholaides of North Carolina State University in my capacity as a member of the External Advisory Panel of Tropsoils.

The Farming Systems Program at the University of Florida

After I decided to stay at UF, Vice President Ken Tefertiller appointed me Coordinator (a non-title at the university!) of the Farming Systems (FSRE) Program (a non-entity at the university) that was to be university wide and with both domestic and international activities. The Coordinator was to:

- 1) Provide leadership for the development of and coordinate research, extension and training programs in farming systems in the national and international dimensions of IFAS (Institute of Food and Agricultural Sciences). Particular emphasis was to be placed on the interface between the domestic and the international components. Programs developed were to require a multidisciplinary approach to solving contemporary problems in agriculture.
- 2) Act as an advisor to IFAS on farming systems programs.
- 3) Direct graduate research and develop and participate in other graduate program activities as they related to farming systems programs in IFAS.

- 4) Develop extension and training materials in farming systems and disseminate these materials through appropriate outlets.

An Administrative Coordinating Committee of the Deans of Research and Extension, and the Associate Director of International Programs (Chris Andrew); and an Advisory Committee of nine IFAS department chairs were appointed for the FSRE Program.

The USDA Office of International Cooperation and Development (OICD) expressed interest in what we were doing and with them we developed a project with their funding to accomplish three objectives: 1) Hold a conference in San José, Costa Rica, to develop a book covering what we then knew about on-farm research. 2) Create a farming systems project in north Florida to determine if what was being achieved abroad could be used in North American agriculture and hopefully improved upon for further application abroad. 3) Provide some of my time to consult with them in their overseas projects. IFAS invested nearly \$50,000 the first year to help fund the north Florida farming systems project to augment the funds from the USDA-OICD (which overall totaled about \$350,000).

I began picking up graduate students and by the end of 1980 was on 11 graduate student supervisory committees, chairing three of them. Of the 8 Master's and 3 PhD students, eight were from Food and Resource Economics, two from Agronomy and one from Entomology.

During the last half of 1980, after leaving The Rockefeller Foundation, I traveled to the University of Illinois for the annual meetings of the American Agricultural Economics Association; Utah State University to participate in a soil and water conservation course being taught in Spanish; to Cornell University to participate in a farming systems seminar which was utilized by them as preparation for a farming systems course; to Washington, D.C. for a meeting of the External Advisory Panel of Tropsoils; to Detroit to chair and participate in a panel on farming systems and multiple cropping sponsored by the International Division of the

American Society of Agronomy (which I had joined in 1976) at their annual meetings; and again to Washington, D.C. to participate in a farming systems workshop sponsored by the USDA/OICD and USAID.

1981

In 1981, besides taking over sole responsibility for the farming systems course, I also collaborated with Tim Olson of the Animal Science Department to offer a three-credit course we called Animals in Small Farm Systems. Fourteen graduate students enrolled in the course which I considered to be very successful. We covered both 1) the management and nutrition of the animals and 2) their role and use in small farm systems. The students presented term papers on animals in 14 different systems from around the world. It was a course that should have been continued on an annual basis, but I was never again successful in getting someone from Animal Science to take the time to do it with me. Even though I had a B.S. degree in Animal Science (1955, Colorado State University) I felt I needed more depth in the course from that perspective.

Four of the students with whom I was working (two as Chair of their supervisory committees -- or major professor) received Master's degrees in 1981 and I was working with 11 others from Food and Resource Economics, Agronomy, Dairy Science, Entomology, Geography and Latin American Studies. This started a trend of working almost exclusively with graduate students. They were usually split between foreign and Americans and most of the Americans were former Peace Corps volunteers or had other overseas experiences.

In support of working to create an international center of excellence in farming systems, Chris Andrew and I spent a great deal of time and effort in 1981 with the IFAS International Programs, the UF Foundation (SHARE), and the Vice President's office on a proposal for an International Farming Systems

Research and Training Center that would have included two endowed chairs. The effort came to an abrupt halt when the potential benefactor died unexpectedly.

Gustavo Antonini of Geography and the Center for Latin American Studies, some other faculty, and I worked on a proposal to train a group of graduate students from the Dominican Republic in several disciplines. All the theses and dissertations were going to be based on the development of the Las Cuevas watershed in the western part of the country. The project was funded by USAID and several students were in residence at UF during 1981. I chaired one of the student's supervisory committees and served on several others. Aspects of this project were going to become important in the farming systems program in future years.

We began work on a proposal for an FSRE training program for FONAIAP, the Venezuelan agricultural research organization with anticipated signing in February, 1982. We were going to present courses in Spanish in Venezuela that could carry UF graduate credit for any participants who were going to obtain advanced degrees sometime in the future. The courses would appear on UF transcripts generated for those who paid tuition so the credits could be used either at UF or any other university. Any theses developed in the project were to be on Venezuelan problems and FONAIAP would pay travel and research expenses. Jack Fry, the UF Assistant Dean of Agriculture for graduate studies was instrumental in getting the program approved by the university and in moving the paper work through the system when the courses began.

The USDA increased its funding for the North Florida project by \$142,000 to cover both the activities in north Florida and for international travel. State support beyond line positions for north Florida totaled \$91,400 for the year. In that project, we completed a Guatemalan style *Sondeo* in Suwannee and Columbia Counties (<http://ufdc.ufl.edu/IR00000198/00001>) after reducing the number from six counties, and began research on both farms and stations. Stations included the Live Oak Agricultural Research

Center in Suwannee County and the Beef Research Unit (BRU), Green Acres Research Center, and the campus in and near Gainesville. Problems we had detected in the *Sondeo* were 1) a scarcity of high quality winter forage for cattle, and 2) an alternative crop to substitute for corn. In an attempt to solve both of these problems, we initiated winter wheat trials on seven farms (177 acres). A new variety of wheat had recently been released by UF that appeared promising, however no good information was available on grazing effect so on one of the farms we also initiated a grazing trial using exclosures placed at different times during the winter grazing period. Participating farmers also began keeping records for us of both their wheat and corn crops and provided us information from their previous corn crop. Part of the station research was on perennial peanut as a forage and hay crop and we were planning to plant some on farms in 1982 to study problems of establishment, a known problem.



The grazing trial using exclosures placed at different times during the winter wheat grazing period.

Even as the North Florida Project was just getting started, it began to attract a lot of attention. Visitors during 1981 included: Luis Frómata, Director General of FONAIAP in Venezuela; Gerald Thierstein, ICRISAT, Hyderabad, India; Robin Henning, North Carolina A&T University (and who had been with the USDA in Colombia when I was there); Johnson Ekpere, Ibadan University, Nigeria; Ruth Harris, Virginia Polytechnic University; the Dean of Agriculture from Rwanda; John Hyslop, USDA, Washington, D.C.; a group from Ecuador (INIAP, CONACYT and USAID); and a group of extensionists from Brazil.

Besides me, full time personnel working in the project in north Florida included: Tito French, Agronomy; Mickie Swisher, Soil Science; George Clough, Vegetable Crops; Jim Dean, an anthropologist assigned to Food and Resource Economics; and Noel Beninati, Agronomy. Della McMillan, an anthropologist and Assistant Director of the Center for African Studies at UF, was involved part time. Graduate students involved in the project included: Ramiro Ortiz (formerly Regional Director and Technical Director at ICTA in Guatemala), PhD, Agronomy; Francisco Romero, PhD, Dairy Science (whose wife, Jeannette was my highly valued bilingual, executive secretary for many years at UF); Dwight Schmidt, PhD, Anthropology; Juan Herbas, M.S. Agronomy; Bruce Dehm, M.S., Food and Resource Economics; and John Wake, M.S., Food and Resource Economics. Extension personnel from the counties where we were working also participated in the project. Following lessons learned at ICTA in Guatemala, at least the core or full time persons and the graduate students met weekly to discuss activities during the previous week, problems, and plans. At these meetings we all agreed on both short term and long term activities and strategies. It proved to create a very cohesive group.

In support of these activities I had an active travel schedule during the last half of the year after I no longer was teaching the farming systems course. In June I went to Kenya to consult with the USDA project team in that country and where I again saw

Mike Collinson who was working in that country at the time. In July, I went to Venezuela to initiate discussions with FONAIAP about the proposed training program. In August, I went for three days to Utah State University to participate in a short course in Spanish being offered by the International Irrigation Center, (the Director was Ted Olsen who had been with me in Pakistan), and to the American Sociological Association meetings in Toronto to present an invited paper.¹ In September I made a one day trip to Washington to discuss the USDA/OICD project in Portugal. In October I was in Ecuador to consult with INIAP and CONACYT and initiate discussions on a collaborative farming systems program with that country. Also in October I was at the University of Minnesota for three days to present a farming systems seminar and consult with them on several of their research projects. The last week of October I went to Portugal to consult with the USDA/OICD team in that country and initiate discussions concerning an FSRE training program for them. In November I presented an invited paper at the Farming Systems Research Symposium at Kansas State University in which Cornelia Flora and David Norman played critical organizational roles and that was to become the first of a continuing series of symposia. The last half of November I was in Guatemala to update information and data on ICTA, and in December I spent another day in Washington in discussions with the USDA/OICD on the Portugal project.(<http://ufdc.ufl.edu/UF00080633/00001>)

1982

In 1982, the permanent designator number for the farming systems course was assigned. We opted for a general agricultural

¹ Hildebrand, P.E. 1981. Toward an agrosocioeconomic methodology. Paper presented at the didactic seminar on "The role of sociologists in the field among other professions" at the 76th annual meeting of the American Sociological Association. Toronto, Canada.

designation (AGG 5813) rather than a Food and Resource Economics designation (AEB) for a number of reasons. Most importantly, this would allow graduate students from any major, including FRE, to use the course for a farming systems minor. If it carried an AEB designation, FRE students would be prevented from the possibility of a farming systems minor because the course was one of the required courses for the minor. Also, the department did not like the idea of having a graduate course with an AEB designator that was open to students from any major and who did not have a number of math, stat and economics prerequisites. This created some confusion when students tried to find the course in the catalog, but in the long run it was a very good choice. *In 1982, another 19 students took the course and one professor, Joe Conrad from Animal Science, took it for no credit!* Even though Joe was a senior full professor, he participated right along with all the students in all the exercises and was very well accepted by the students. He added a very interesting dimension to the course.

To facilitate international training, in 1982 we compressed my farming systems course into a one-month short course and began preparing materials in Spanish and Portuguese as well as in English. The first of these courses was presented in Venezuela in March and April, 1982. As part of the program we had negotiated with FONAIAP in Venezuela, 10 of the participants took the course for credit and another 9 took it as audit students. James C. (Jim) Jones was the primary trainer and Bob Waugh and I also participated. Jim was one of my first graduate students after I arrived at UF. He came to FRE after completing a PhD in Anthropology and took a non-thesis MAMRD (Master of Agricultural Management and Resource Development) degree with me. He had spent a number of years in Bolivia and was fluent in Spanish. Bob had been in Guatemala with ICTA and had come to UF on a contract basis to participate in the farming systems program.

Also as part of our international training efforts in farming systems, Jim Jones and I led a Sondeo exercise (equivalent to a

one-credit module from the AGG 5813 course) in the Napo River area of the upper Amazon Basin in Ecuador over a two plus week period in February and March. This was based at the INIAP experiment station in that area where they were planning to initiate a farming systems program to benefit both the colonists and the indigenous people in the area which had recently been opened for the extraction of petroleum. The Sondeo was also part of the UF program in Ecuador where Kamal Dow was Chief-of-Party. Although Kamal did not go to the Napo with us, Hugh Popenoe, Director of International Programs for IFAS, did visit us during the writing phase of the course. I took him on a tour to get a feel of the area. In the Sondeo, all the technicians from the station including the Research Director, and the Director of Research for INIAP (Patricio Espinosa) also participated as did an American Peace Corps volunteer who was stationed in the area.

At the request of USAID in Honduras we made a training needs assessment in May and submitted a training proposal. Based on mission response, we prepared a course and ordered materials, but at the last minute, AID decided not to sign the contract. This helped us realize that with USAID, nothing was certain until the money was in our hands! Later, in October, I presented a short course in Malawi in southern Africa about on-farm research as part of the University of Florida project in that country. In this case, the money for the course was already in Florida's hands as part of their project contract.

One of the purposes of the USDA/OICD project with us was to host an international workshop to pull together all that was known at the time about on-farm research. It was hoped that the material would be put out as a book. Much of our time in 1982 was spent in organizing this conference which was held in conjunction with IICA in San José, Costa Rica. At this time, less than a decade after initial efforts at anything resembling FSRE had been undertaken, most people thought of on-farm research as being a process moving from experiment station results to exploratory trials superimposed on farmers' fields, to site-specific trials controlled by researchers, to researcher-managed regional trials

specifically for agronomic evaluation, to researcher-managed trials incorporating socioeconomic evaluation, and finally to farmer-managed trials. In part this process reflected the then, nearly globally accepted procedures for approval of improved genetic materials (varieties) that had to go through a prescribed sequence prior to being “released” by the country involved.



This is me and our vehicle on a ferry crossing the Rio Napo.



A family in the Napo region with a snake skin they had recently killed.
On the right is one of the INIAP technicians.



Our water taxi on the Rio Napo

For the conference in San José we tried to locate persons with practical experience in all phases of this sequence and asked them not only to bring ideas and their knowledge, but also data that could be used as specific examples for each of the phases. After a wide-ranging search we assembled, September 5-11, the following persons: Ramiro Ortiz, AGRIDEC, Guatemala; Federico Poey, AGRIDEC, USA; Julio Henao, Raúl Moreno and Luis Navarro from CATIE, Costa Rica; Anila Wijesinha, Central Bank of Ceylon, Sri Lanka; Franklin Arboleda, CONACYT, Ecuador; Juan Herrera, ICTA, Guatemala; Nicolás Mateo, IDRC, Colombia; Antonio Pinchinat, IICA, Peru; Rufo Bazan, Victor Quiroga, Jorge Soria, Karel Vohnout and Quentin West, IICA, Costa Rica; Guillermo Joandet, INTA, Argentina; Lynne Rienner, Lynne Rienner Publishers, USA, who was interested in publishing the book and helped us with preliminary organization and editing; Larry Nelson, North Carolina State University, USA; Donald Ferguson, OICD/USDA, USA; and me and Bob Waugh from the University of Florida. We did get a very rough draft of a document, but it was to be another couple of years before a book based on this conference was to be published.

On the flight back from San José I had a long conversation with Lynne Rienner about the possibilities and potential for an

FSRE journal. Lynne was enthusiastic, but also cautious. It would be another decade before the journal would be born.

During this period, the North Florida Farming Systems project continued in full swing as well. Tito French became the day-to-day manager, but I kept in close touch with it. During 1982, we had activities on 40 different farms. These included: 9 farmers keeping wheat enterprise records; 26 farmers keeping corn enterprise records; 7 on-farm winter wheat trials, one of which was also a grazing trial; 7 trials on methods of establishing perennial peanut; 5 trials on planting corn with minimum horsepower, reduced tillage equipment for small farmers; 4 corn trials; 3 soybean trials; 5 alyce clover trials; and 4 miscellaneous exploratory trials. Based on this activity, we sponsored two perennial peanut field days and one wheat growers meeting.



Grazing exclosure in an on-farm winter wheat trial.

As part of this project we prepared two slide-tape modules which we used for state, national and international meetings and conferences. One was on the north Florida project, itself, and the other presented the need for the FSRE approach to technology generation and dissemination and compared this need in Florida with that in developing countries around the world. We found

these slide presentations to be especially effective when visitors came to Florida to see what was going on in the project. During 1982, the following persons and/or groups were given the presentations and escorted to the project in Suwannee and Columbia Counties: Bill Morris, Purdue University; Marcus Ingle, OICD/USDA, Washington, D.C.; Kamal Dow, Vince Cusumano and two Ecuadorians from CONACYT, Ecuador; Luis Frómata, FONAIAP, Venezuela; Jorge Soria, IICA, Costa Rica; Mario Lalama, INIAP, Ecuador; Bill Wright, The Rockefeller Foundation, New York; Don Ferguson, OICD/USDA and Ruth Harris, VPI; Bill Hoofnagle, OICD/USDA, Washington, D.C.; two different groups from the Philippines; an individual from Fiji; a group from Portugal; Ian McLean, UF, Malawi; a group from China; and a group from three countries in Africa. The slides were also used at a seminar I gave at North Carolina A&T University, at a banquet speech I gave at the second Kansas State University Farming Systems Symposium, and at the first annual review of the Farming Systems Research and Extension Program at UF.

This annual review, *an innovation at UF*, was held June 30 to July 2. Besides faculty, students and staff from the project, also participating in the review were: Ken Tefertiller, Vice President for Agriculture; John Woeste, Dean for Extension; Neil Thompson, Assistant Dean for Research; Charlie Dean, Chair of Agronomy; Don Maynard, Chair of Vegetable Crops; Bill Smith, Extension Director in Suwannee County; Bill Thomas, Extension Director in Columbia County; Jimmy Rich, Director of the Live Oak Agricultural Experimental Station; Chris Andrew and Bob Waugh.

The Soils CRSP, Tropsoils, headquartered at North Carolina State University, became fully operational in 1982 and I was appointed to the permanent External Evaluation Committee. Responsibilities were to evaluate orientation and progress of the contributing projects and report directly to AID. Other committee members were: John Coulter, Science Advisor, World Bank, who was the Chair and Marlowe Thorne, University of Illinois. Marlowe, a former Chair of the Soils Science Department at Illinois, and John were both soil scientists. I was also appointed to

the External Review Panel for the Bean/Cowpea CRSP headquartered at Michigan State University. Responsibilities were the same as for the Tropsoils committee. Other members were: Clarence Gray, formerly of the Rockefeller Foundation, Chair; Mel Blase, University of Missouri; Hugh Bunting, Reading University in England; Luis Camacho, INTSOY, Puerto Rico; Antonio Pinchinat, IICA, Costa Rica; and Charlotte Roderuck, Iowa State University. In particular, Hugh Bunting and I became very good friends.

Chris Andrew and I had been working on an unsolicited proposal for USAID/Washington to help fund an international FSRE training center at UF to provide training for the increasing number of farming systems projects AID was creating in their missions around the world. As I recall, we requested \$40,000 to get it started. This proposal was not funded, but after a number of meetings with AID, they came out with a request for proposals for a “Farming Systems Support Project,” FSSP, that would be somewhat similar to a CRSP (but not one) and would have worldwide responsibilities for training, technical assistance, networking and state-of-the-art components. This project was similar in many ways to our original proposal and eventually was awarded to the University of Florida as a Cooperative Agreement.

1983 - 1987: USAID/UF Farming Systems Support Project (FSSP)

Chris Andrew became the FSSP Project Director at UF. I was not employed directly by the project (my salary was part of the UF matching funds), but rather served as “Senior Scientific Advisor.” This project, originally set up as a \$10,000,000, five year project, was to become a major part of the farming systems program at UF. The project was approved in 1982 but did not really get underway in a big way until 1983. Heaviest emphasis was on training and preparing training materials.

At this time, the number of people with firsthand knowledge and experience with farming systems activities was very limited. The FSSP was charged with providing both training and technical assistance on a world-wide basis, so one of the first priorities was to train trainers. Besides working on the book about on-farm research coming out of the San José meeting, I began working on a book of readings for my university course and for the short courses. The first short course was offered in Gainesville on June 5-10, 1983, to 17 people coming from the following universities: Iowa State, Washington State, Florida, VPI, Michigan State and Illinois, as well as from CIMMYT and our own FSSP staff. The second short course was on July 17-22 and was offered in Gainesville to 29 people from: LSU, Florida, Kentucky, Michigan State, Colorado State, Minnesota, VPI, Arkansas, Development Alternatives, Inc., PRECODEPA (Guatemala), USAID/El Salvador, CARDI in the eastern Caribbean, USAID/Mali, and one private consultant. *By design, some of the people from the first course participated as trainers in the second course.* After these two courses were offered, other courses, based on these and with more participants becoming trainers, were offered at: VPI, August 29 to September 2; Michigan State, August 21 to 24; and Colorado State, September 26 to 30. Internationally, courses based on the Gainesville course were offered in

Ouagadougou, Upper Volta (now Burkina Faso) September 25 to 30 in French; and Paraguay December 11 to 16 in Spanish.

Much of my work in 1983 was on the slide-tape modules we used in the FSSP for training. During the year we produced the following modules for which I was the principal author and source of slides. Most were also put out in French and Spanish.

Introduction to Farming Systems Research and Extension.

Many people, including many from USAID, did not know what FSRE really was. Some had their own ideas, but they were very different from what we felt it was, so we needed to let people know what it was we were doing.

Economic characteristics of small-scale, limited resource family farms: Implications for technology development, Part I. (Mainly for non-economists).

These kinds of farms had many special characteristics that were very different from the kinds of commercial farms most people were familiar with. One of the most important was that these farms were first homes rather than first a business.

Economic characteristics of small-scale, limited resource family farms: Implications for technology development, Part II. (More technical than Part I). Based on Hildebrand and Luna 1973 <http://ufdc.ufl.edu/UF00075671/00001>.

Because many people who needed to understand the nature of these farms were not economists, we felt it necessary to make one non-technical set for them. Then for economists, the second could also be used.

The small-scale family farm as a system (with Jim Dean)

Technologies were generated in the FSRE approach based on a sound knowledge of the systems aspect of the small farms. We used as a basis the work that Bob McDowell and I did as a follow up to the Bellagio conference (McDowell and Hildebrand 1980). These figures have shown up in many publications since.

Defining recommendation domains: A case study of Santiago Sacatepequez, Guatemala.

This was the Sondeo report that Maria Chinchilla presented as a representative of ICTA at the PCCMCA meeting in Tegucigalpa, Honduras, in 1979. <http://ufdc.ufl.edu/IR00000270/00001> The term “Recommendation Domain” was just coming into use. This was a first attempt to describe how one was defined. It was based on the concept of a homogeneous farming system. Later, in my own work I was going to modify this definition. It was also one of the most complete Sondeo reports written by ICTA. Among other things it had a pretty complete discussion of the women’s role in the farming system of the area.

Designing alternative solutions: Case study of Jutiapa, Guatemala.

It was unclear to many people how to move from the knowledge of a farming system and its constraints to deciding what kinds of solutions made sense. Too often, “low yields” translated into “improved varieties” to increase yield (production per unit of land area). The point of this set was that land, while small in area, was not often the *most* limiting of the resources available to the farmers. In this case study, we showed that the amount of bean seed available at planting time, and labor at planting time right when the rains started, were the constraints on the system (based on Hildebrand and Cardona 1976) <http://ufdc.ufl.edu/UF00055937/00001/2j> We also demonstrated some technologies designed to alleviate these constraints.

Designing alternative solutions: Case study from Zapotitan, El Salvador.

This was an irrigated area and very different from the eastern Guatemala situation in Jutiapa. Here, labor was relatively abundant, inputs relatively available, market infrastructure was adequate, but land was very scarce. This case was based on the work that Tito French and I were involved with in El Salvador where we designed a system (the *multicultivos*) that allowed a

family to make a good living on only about one acre of land. (based on Hildebrand 1976 <http://ufdc.ufl.edu/UF00055920/00001/2j>) By using the two alternative solution sets together, it gave a good idea of the kinds of things that could be done.

Designing alternative solutions: Case study of the North Florida FSRE Project.

The question was always asked if FSRE could be used in the U.S. We developed this set to demonstrate that it could.

Design and analysis of on-farm trials.

At the time the FSSP began, most people felt strongly that “good” research could not be done on farms because of the “lack of control” they faced. Others, who were willing to try, had little or no idea how to go about designing and analyzing farmer -managed on-farm research. This module responded to both concerns. Based on Hildebrand and Poey 1985 <http://ufdc.ufl.edu/UF00080557/00001>

During 1983 alone, these slide-tape modules were distributed, at the request of the institutions to the following: AID/Manila, AID/Upper Volta, CIMMYT/Turkey, IITA/Nigeria, AID Senegal, AID/Washington, CIP/Peru, OICD/USDA, and the following universities: Arizona, Colorado State, Hawaii, Southern Illinois, Kentucky, Minnesota, California/Davis, Illinois, Iowa State, Missouri, Oklahoma State, Washington State, Oregon, and VPI. I also used them in my classes as PowerPoint presentations for many years. We had them in French for the course in Ouagadougou, but, of course, most of the pictures were from Latin America. It is interesting that the French and American officials attending the course were upset that we did not have African slides. But the Africans in the course thought it was great to see slides and cases from other continents. This was just another example of the difference between the donors and the locals.

It should be mentioned that the FSSP was a cooperative project and had as partners, besides USAID, some 20 U.S. universities and four consulting firms. It was obvious that the project was beginning to have an impact even in its first year.

My travels in 1983 consisted of the following:

- * March 8-9, Washington, D.C. to present a seminar to OICD/USDA.
- * April 11-12, Cleveland to participate in a meeting of authors of a book on the impact of the Land Grant system on international agriculture.
- * April 19-20, Washington, D.C. to present a seminar to USAID
- * July 7-13, Dominican Republic to obtain materials for a new slide-tape module and conduct a needs assessment with USAID on participation of the FSSP in the DR.
- * August 14-Sept. 1, Utah State University, International Irrigation Center to write a monograph on the use of farming systems principles in designing and operating irrigation projects (Hildebrand 1983 <http://ufdc.ufl.edu/UF00081823/00001> and participate in a short course about on-farm water management.
- * September 16-30, Ouagadougou, Upper Volta (now Burkina Faso) to participate in the ICRISAT West African Program workshop on farmer participation in development and evaluation of agricultural technology and to attend the FSSP short course as a resource person because the workshop was in French.
- * October 10-13, Washington, D.C. to attend a meeting of the Tropsoils CRSP External Review Panel.
- * October 30 - Nov 4, Kansas State University to attend the third annual international farming systems symposium and the second annual FSSP meetings.
- * December 5-6, Honduras for an on-site review of the Bean/Cowpea CRSP project as a member of the External Review Panel.
- * December 7-9, Guatemala for an on-site review of the Bean/Cowpea CRSP project as a member of the External Review Panel.
- * December 11-17, CIAT, Cali, Colombia to review the on-farm bean research program as a member of the External Review Panel of the Bean/Cowpea CRSP.

Although my international and domestic travel schedule was very heavy, I continued general supervision of the North Florida FSRE project. In the beginning of the project, the funds were put in FRED, but to be honest, our front office was very inefficient in their management. In 1982, the Agronomy Department, where Tito French was located and who had a super efficient manager (Nancy Bird), agreed to manage the funds for us so we transferred them. In 1983, a multi-county extension agent (Mickie Swisher) was appointed to the project and was headquartered at the Live Oak Agricultural Research Center. It was planned to gradually move the funds from Gainesville to Live Oak, along with management and administration of the project. I considered this an orderly and healthy process toward institutionalization.

1984

In 1984 the farming systems course had an enrollment of 23. For some reason, the year before it had dropped to five. Perhaps we had satisfied the initial demand for those already in degree programs, I don't know. Also, I agreed to take over responsibility for the course AEB 4164 that was called Managing Farms in Tropical Areas. P.J. van Blokland had taught it as an alternative to the regular farm management course, using tropical types of farms as examples. It was still oriented toward commercial farming. I agreed to take the course, but to modify it to treat limited resource, family farms. Enrollment in the fall was 18. There were some undergraduate students in it because it was an undergraduate level, but most were graduate students.

My MS student, John Wake, did his thesis in north Florida on the effect that the *cost of learning* to use a new technology has on its adoption. To effectively use a new technology, a farmer must first obtain the necessary information then learn by doing. If a technology is complicated (for example, soybeans as opposed to wheat in north Florida) and it is not done well the first few times,

then higher costs are not offset by higher profits. Wake concluded that because wheat technology was simpler, wheat diffused more rapidly than soybeans in the area.² Another of my MS students, Bruce Dehm, studied the constraints to adoption of “modern” technology on small farms in north Florida. He found that the smaller farmers mostly were part-time farmers and did not have access to the capital required for the newer technology. They would use their livestock for collateral, but not their land which was considered “home” rather than a business investment.

What I always considered a milestone occurred in 1984 when the *Agronomy Journal* (official journal of the American Society of Agronomy) published my article on “Modified Stability Analysis.” Stability analysis had long (about half a century) been used by plant breeders to help them decide which cultivars should be released. They placed emphasis on “stability,” even though they did not all agree on what the term meant. I liked the procedure when I first got acquainted with it in Guatemala, but not the concept and the way they were using it. I felt it would work better to help find *niches for different cultivars*, based in on-farm research data, rather than *broadly adaptable cultivars* that was how the breeders were using it. I considered my use was a “modification” of the traditional use, thus the name I gave it. The data I used in the *Agronomy Journal* article were those obtained by the UF farming systems team in Malawi headed by Art Hansen, an anthropologist, and used during the short course I had given there. Because the data were not from replicated trials (the bible in agronomy), were from on-farm trials, and under the supervision of an anthropologist, I was not at all confident the *Agronomy Journal* would accept them and the article based on them. But they did.³

2. Wake, J.L., C.F. Kiker and P.E. Hildebrand. 1988. Systematic learning of agricultural technologies. *Agricultural Systems* 27:179-193.

3. Hildebrand, P.E. 1981. Modified stability analysis of farmer managed on-farm trials. *Agronomy Journal* 76:271-274

Another breakthrough was being able to obtain funds from IFAS to support four *farming systems assistantships* for graduate students from *any department* in the College of Agriculture. These were to be viewed as prestigious assistantships and were pegged at the rate then being paid in the Food and Resource Economics Department which was the highest in the College with the exception of Agricultural Engineering. They were also made available from the beginning of the students' programs until they finished. The students were expected to take the *farming systems minor* and do "farming systems" research. It proved to be a very powerful and effective recruitment tool and resulted in some outstanding students (B.K. Singh who did his research in Brazil and John Russell <http://ufdc.ufl.edu/UF00056220/00001> who did his research in Africa among the best).

Much of my time in 1984 was spent on finishing and final editing of the state-of-the-art book on analysis and design of on-farm agronomic trials that had been initiated in the San José conference and used in one of the slide-tape modules. It went to press in December.⁴ I also completed writing a co-authored (with Bob Waugh and Chris Andrew) chapter (Farming Systems Research and Extension) of a book sponsored by the Experiment Station Committee on Organization and Policy of the CSRS/USDA and sent it to the book editor. It was finally published in 1989.⁵ That this chapter was included in a CSRS/USDA book indicated that FSRE was formally being recognized by the Land Grant

4. Hildebrand, P.E. and F. Poey. 1985. On-farm agronomic trials in farming systems research and extension. Lynne Rienner Publishers. Boulder CO. <http://ufdc.ufl.edu/UF00080557/00001>

5. Waugh, R.K., P.E. Hildebrand and C.O. Andrew. 1989. Farming systems research and extension. Chap. 9 *In*: Compton, J.L. (Ed.) The transformation of international agricultural research and development. Lynne Rienner Publishers. Boulder CO

system. Continued international recognition was evidenced by my being invited to write and present a paper at a “Workshop on Agricultural Research Policy and Organization in Small Countries” at Wageningen Agricultural University in the Netherlands and co-sponsored by the International Service for National Agricultural Research (ISNAR), one of the International Agricultural Research Centers, in The Hague.⁶

As part of the North Florida FSRE project, John Wake completed his thesis and prepared a poster to present at the annual farming systems symposium at Kansas State University on the “Cost of learning new technology.” Based on work I had done in preparing a slide tape set on the economics of small farms we hypothesized that small farms where resources were very limited could not afford to invest in high cost new technology that was difficult to learn to use because if it were not effective the first year, it was difficult for the farm to recover the costs in future years. Larger farms with more resources could afford early losses because they were organized more as businesses and would have larger enterprises in the future to recover any early losses. The research in north Florida supported this hypothesis. Note: later, in 1998 we began to understand that household composition had the same effect as farm size.

My travel in 1984 was as follows:

January 8-12 to Atlanta for the annual meeting of the Bean/Cowpea CRSP. Hugh Bunting of Reading University in England was also serving on the External Review Panel of this

6. Hildebrand, P.E. 1985. Researcher-farmer linkage for technology and agricultural development. pp. 70-75 *In: Agricultural research policy and organization in small countries.* Netherland Ministry of Agriculture and Fisheries, Agricultural University Wageningen, Technical Centre for Agricultural and Rural Cooperation and International Service for National Agricultural Research. <http://ufdc.ufl.edu/UF00094298/00001>

CRSP and we became very good friends. Unfortunately, the CRSP seldom sent us on foreign trips together, but we did meet often in the U.S.

February 14-15 to the University of Kentucky to present an invited paper on the “Design and assessment of on-farm agronomic trials.”

May 3-12 to Raleigh, N.C. and Lima and Yurimaguas, Peru to review the NCSU Soils Management CRSP Project. Yurimaguas was the site of a long-term NCSU project and was continued under the Soils CRSP. Unfortunately, it was also in the area of much violence and later became very dangerous to travel in.

August 5-8 to Cornell University to the annual meetings of the American Agricultural Economics Association. My wife and our daughter went on this trip with me. One morning while eating breakfast in the Holiday Inn, a man came over to the table to talk with me. He was Tom Sutton who had been at Colorado State University in Animal Science when I was there and was at the time Dean of Agriculture at the American University in Beirut. He and his wife were also at a meeting at Cornell. Shortly after they returned to Beirut, Tom was kidnapped and held for something like five years.

September 9-15 to Wageningen, The Netherlands for the conference on agricultural research in small countries.

October 7-12 to Kansas State University for the annual Farming Systems Symposium. This was the fourth annual international farming systems symposium. The symposia had been started by Cornelia Flora and Dave Norman as a one year meeting to bring together people from around the world who were working in farming systems activities. It was such a success that it continued for many years and was a powerful force in helping to shape agricultural research and extension activities. At this meeting, the FSSP also had its third annual meeting during which we prepared a draft format that we were suggesting should be used for all farming systems reports and articles. This document, the “Minimum Data Set” was circulated for discussion and we wanted it to be available in time for all papers to be presented in the following symposium

to use it. It was a valuable document that should be used in any kind of article that purports to present applied agricultural research.

<http://ufdc.ufl.edu/UF00096111/00001>

October 14-20 to Michigan State University to review the MSU Bean/Cowpea CRSP project and the Management Office at MSU. Pat Barnes-McConnell was the Director of this CRSP and was headquartered at Michigan State where the Management Office was located. This was the first time I had been back to Michigan State since leaving East Lansing after graduating with my PhD in 1959.

November 1-4 to Guatemala to review the Cornell/ICTA Bean Cowpea CRSP project. Porfirio (Pio) Masaya was the Coordinator of the Bean Production Program at ICTA and had been a student of Don Wallace who was the Principal Investigator of the project at Cornell. Together they were working on the impact of temperature (which in the tropics is a function of altitude) and day length on common bean maturity, flowering and fruiting. Their work showed that the conditions at Cali and Palmira, Colombia, where CIAT had the international bean program, were just about optimum for producing beans. The problem was, when CIAT sent their materials to other countries for multi-locational trials, the materials that had done very well at CIAT often were dismal failures at the higher or lower altitudes and with days of different length in the other countries. At first, CIAT tried to offset these problems with a tightly controlled protocol that the countries had to follow when planting these so called multi-locational trials. At ICTA we had fought these controls because it meant the conditions under which the beans were being evaluated were far from what Guatemalan farmers would be able to duplicate. Therefore, the trials that were using ICTA resources would do little for Guatemala.

November 12-15 to Raleigh, N.C. for the annual Soils CRSP meeting. The Chair of the Permanent External Evaluation Committee of this CRSP was John Coulter, a great big Irishman, who had spent many years living and working in Asia and at the time was head of agricultural research at the World Bank, stationed

in Washington, D.C. He and I did travel abroad on many occasions and usually were roommates when there was not sufficient space for us to have our own rooms.

December 8-15 to Botswana to review the Colorado State University Bean/Cowpea CRSP project. Pat Barnes, the Director of the CRSP also went on this trip, and David Norman was one of the resident scientists on loan from Kansas State University to Colorado State. It was on this trip that I first saw the multi-oxen teams hitched by heavy chain to the farm equipment. These teams are quite common in southern Africa. Unfortunately, I did not get to see any of the Kalahari Desert in Botswana nor the wild animal areas in the northern part of the country, but even where there is enough water (and not too much) for agriculture, there are many wild animals around. The experiment station has 8 foot high fence around it to keep out the kudu! When I was returning from this trip I had quite a long wait in a very crowded airport in Johannesburg, South Africa and had finally found a corner table where I could sit to work on my trip report. Just as I was getting settled, someone called my name and invited me over to their table. They were from Colorado State University and working on their contract in Swaziland. Needless to say, I didn't get my trip report done in Johannesburg.

During 1984 I worked with 19 graduate students of which seven graduated during the year. Seven of these students were from the Food and Resource Economics Department and the others were from Agronomy, Geography, Soils, Anthropology, Food Science, and Agricultural Education and Communication. I also worked with a former graduate student from Anthropology (Dwight Schmidt)⁷ on a synopsis of the progress on the north Florida FSRE project. This was to be used as a background

7. Schmidt, D.L. 1984. Synthesis of North Florida farming systems project, University of Florida, 1981-1984. University of Florida, Gainesville. <http://ufdc.ufl.edu/UF00056159/00001/2j>

document for a domestic FSRE conference that was held on campus in September.



Eight ox team in Botswana pulling a plow.

1985

This was a year of travel including two trips to Asia and one to Europe, but none to Africa or Latin America. The first trip was through Hawaii to Indonesia in May for the Soils Management CRSP evaluation of the joint Hawaii/North Carolina State project in Sumatra. During this trip I presented seminars both at the University of Hawaii and in Indonesia on the value of on-farm research. The CRSP project in Sumatra was in a humid tropical forest area that the government of Indonesia had made into a large colonization project to help alleviate the crowded conditions on the densely populated island of Java where the capital, Jakarta, is located. Except for the people and the nature of their houses and other buildings, the area looked very much to me like the upper Amazon area of Colombia and Ecuador. I stayed with Carol

Colfer, an anthropologist and old Indonesia hand (and part of the University of Hawaii contingent), and who was (or became) the Chief-of-Party for the Soils CRSP in Indonesia. This was a true innovation and one the Soils CRSP (Tropsoils) should be very proud of. Carol really knew Indonesia and the people and helped the technical scientists comprehend the situation of the colonists.

I slept on Carol's screen porch and could hear all the night sounds of the village. Besides all the animal sounds there were many made by the people themselves. The neighbors beside her were celebrating a birthday or something and they had music made by drums that was truly fantastic. One night the neighbors across the street were setting up a set of loud speakers so the whole village could help them celebrate a birth. The speakers were pointed right at Carol's house so I was evacuated to the house of another CRSP scientist and his wife about a half mile away.

On this trip I flew from Honolulu to Singapore via Hong Kong on Singapore Air Lines, truly a great airline. Carol met me in Jakarta and after a night's rest we flew Garuda (Indonesian) airlines from Jakarta to Padang on Sumatra. From there we took a very interesting jeep trip over the mountains and down into the colonization area, formerly occupied by orangutans, and the village of Sitiung where the CRSP team lived and worked. On the way we passed the Winrock-sponsored experiment station in a lovely and pleasant area in the mountains. Jack Traywick had apparently at least partly designed the beautiful buildings, but he was not there at the time. I had first met Jack when he was working in Panama.

The second trip to Asia was to China where I had been invited to present a paper at the International Multiple Cropping Systems Conference at Jiangsu Academy of Agricultural Sciences in Nanjing (the Nanjing Agricultural University). My wife, of course, accompanied me: "You're not going to China without me!" The Chinese Academy of Agricultural Sciences was a co-sponsor of the conference. Not having been to China before, I really did not know what to expect. But in many instances, I did not expect what I saw. China appeared to be a booming economy in rapid transition. Free enterprise was widely evident and its effects were

being felt. Farm land was assigned to families or groups who had quotas to meet. But their surplus was theirs to do with what they wanted. The country had been able to begin producing surplus rice, so there was rapid diversification into other, higher valued crops and into feed and fiber crops. Townships (formerly communes) were also diversifying into rural industry that was employing 20% of the workers in some areas we visited. Private entrepreneurs were able to hire workers and many were making excellent profits. Purchase of non-essential consumer products was rising rapidly. Western suits, new colorful clothes for women and children, and cameras were widely observed. Most people appeared to be content with the changes even though there were still a number of state-imposed constraints. Most families were limited to one child. People could not move from a rural township to a city (and add to the population pressure there). It was just “not allowed.”

The practice and advancement of science in China received a severe blow during the Cultural Revolution as did many of the symbols of their cultural heritage such as the Great Wall and the Forbidden City. The latter two were being reconstructed. The Chinese scientists who participated in the conference had been able to effectively practice their profession only during the previous six years or so. Conspicuous by their absence were mid-career scientists. Older scientists and their young graduate students were the only ones who presented papers.

When the conference was over, we caught a train to Shanghai. The sun came up on us en route. At the Shanghai airport we were again with PanAm. It was nice to “get home.” We watched the Tuesday evening sunset while awaiting the PanAm flight, non-stop Tokyo-New York, in the Tokyo airport. The flight was in the short version of the Boeing 747 equipped for long hauls and took us over the polar route. That is, up along Korea and Russia then to Alaska, across Canada, and into New York. We woke up as the sun was coming up over the coastal range in Alaska, *on the same Tuesday morning* as we had when we left the interior of China almost 24 hours before! The flight was 13 hours

long. After we landed, we saw the sun go down on the *same* Tuesday, once again. That was a long and exciting day and it really was good to be home again.

1986

My graduate student load increased to 24 in 1986, of which five had Farming Systems assistantships (O'Connor, PhD in FRED; Russell, PhD in Agronomy; Singh, PhD in Soils; Fiebig, MS in Agronomy; and Niles, MS in Agronomy). All but one of the 24 had farming systems minors. The students were majoring in: FRED, Latin American Studies, Agronomy, Soils, Sociology, Agricultural Engineering, Poultry Science, Anthropology, Agricultural Extension Education, and Human Nutrition. Eleven of the 24 were Americans. Foreign students were from El Salvador, the Dominican Republic, Bangladesh, Honduras, Guatemala, Nepal, and Zaire. Enrollment in the farming systems course was 18 and there were 15 students in the tropical farm management class. It was quite obvious that there was tremendous interest in farming systems among graduate students, both foreign and American, and that the program was having a strong effect on campus.

With my international activities, it was hard for me to keep up with the North Florida project, and because the management of the funds had been shifted to Agronomy and Tito French, it was not necessary that I be involved continuously. However, I did maintain contact with them and was involved with graduate students doing their research in the project.

During 1986, however, in a move that appeared to be smooth *institutionalization* of the North Florida Farming Systems Project, the IFAS administration decided to move the funds and management from Agronomy on the campus to the Director of the Agricultural Research and Extension Center in Live Oak where Mickie Swisher, the multi-county farming systems extension agent was also located. I viewed this move favorably. However, as soon

as the Director of the Center in Live Oak had control of the funds, he began to create his own projects and financed them with the farming systems funds. There was nothing that those of us who created the program could do. The funds were his and he somehow had autonomous authority to use them as he wanted. Whether or not this was what the administration had intended, *it had the effect of killing the North Florida Farming Systems Project.*

IFAS, specifically the Dean for Resident Instruction and the Director of International Programs were interested in increasing the number of short courses and special training programs, and many of these were based on FSSP activities. In 1986, I organized and was the main presenter of a three-week international farming systems short course in Gainesville that had 13 persons enrolled from 8 countries. Also in Gainesville, we had two short courses for U.S. university personnel who were involved in farming systems projects abroad. One was for SECID (a consortium of universities in the southeast) and the other was for Washington State University.

I had been editing a set of readings I used in the farming systems course and that was being used in many of the FSSP short courses. In 1986 it was published as a book. <http://ufdc.ufl.edu/UF00072280/00001> Although in 1998 the book went out of print, I continued to use many of these readings in my courses. Also, we developed what could be used as an “in-class” Sondeo based on materials from our work in the Las Cuevas watershed of the Dominican Republic. In cases when it was not convenient to travel into the field to do a Sondeo, we used slides and a set of questionnaires that had been taken in the DR from which “farmers” (people who were familiar with Las Cuevas or similar situations) could respond about specific family and farm situations. It worked surprisingly well and was used on a number of occasions, both in short courses and in my farming systems course. I also developed a training unit on economic analysis of on-farm trials that I used in my tropical farm management class and that also became part of the FSSP training materials.

On-farm research with animals had been neglected and was becoming a concern to me. One of the students I was working with (Tom Fattori, a PhD student in Poultry Science) initiated a simulated on-farm experiment as part of his dissertation research. He was working with broilers on the university experiment station. In one of the broiler houses, he set up a number of different “environments” by using shade and ventilation combinations.⁸ It worked very well.

During this year we had an historic conference on the campus. Organized by anthropologists: Susan Poats, Associate Director of the FSSP; Marianne Schmink, Associate Professor of Latin American Studies and Co-Director of the Women in Agricultural Development Program (WIAD); and Anita Spring, Associate Professor of Anthropology and Associate Dean of the College of Liberal Arts and Sciences, the course treated *gender issues* in farming systems research and extension. It was historic for a number of reasons, but mostly because it was the first time that a conference did not involve militaristic confrontations of feminists with the establishment, but treated *how* gender issues could better be incorporated into development work. The term *gender analysis*, and its use in development began to displace the term *gender issues*. The term *issues* connotes confrontation while *analysis* connotes understanding and utilization. Attendees included some of the most important people in gender: besides the organizers, Rosalie Norem, Janice Jiggins, Dianne Rocheleau, Patricia Garrett, Maria Fernandez, Anne Ferguson, and Jean Due. The conference and the book that resulted made significant positive impacts on development. <http://ufdc.ufl.edu/1/UF00076562/00001>

8. Fattori, T.R., F.B. Mather and P.E. Hildebrand. 1990. Methodology for partitioning poultry producers into recommendation domains. *Agricultural Systems* 32:197-205.

Moving definitions of Recommendation Domains

At that conference I contributed a paper with Peter Wotowiec and Susan Poats. <http://ufdc.ufl.edu/UF00076562/00001> In earlier work I had argued that recommendation domains were homogeneous groups of farmers, or farmers with homogeneous systems (“The concept of ‘homogeneous systems’ and its usefulness” in the 1986 book of readings, and in the 1981 article in *Agricultural Administration on the Sondeo*). We had thought that one could identify these homogeneous systems during a Sondeo and that they would be convenient means for developing “location-specific” technologies. “The premise on which the selection of a homogeneous cropping or farming system is based is that all the farmers who presently use it have made similar adjustments to a set of restrictions which they all face and that, since they made the same adjustments, they must all be facing the same set of agrosocioeconomic conditions” (Hildebrand, 1981). This idea recognized the diversity of farming systems within a single geographic area, but was still based pretty much on the idea that the homogeneous systems (and therefore, recommendation domains) could be recognized during a Sondeo, even though refined from time to time.

In the gender issues paper, we carried the concept of diversity further. We argued that different fields on a single farm could be in different recommendation domains, or that women’s fields or parts of fields could be in separate domains from their husbands’ fields. We also tried to clear up some confusion by defining three different kinds of domains. Research domains were areas in which institutes or teams focused their research and consisted of a relatively wide range of environments and farming systems. Their delineation was based mostly on biophysical (and sometimes political) delineations. Recommendation domains were based on “the response of a specific technology to the agrosocioeconomic conditions found on farms.” The third kind of domain was the diffusion domain, or “interpersonal communication networks through which newly acquired

knowledge of agricultural technologies naturally flows.” My definition of recommendation domains was to undergo yet another redefinition in a few more years.

In part because the farms and technologies with which farming systems practitioners work were low input, I was asked to serve on a National Research Council (NRC), Board on Agriculture Committee on “The Role of Alternative Farming Methods in Modern Production Agriculture.” This committee was looking into alternatives to the high-input kind of technology that was then pretty much the accepted or conventional technology used in the United States, but was being recognized as a contributor to the declining quality of our own environment. The deliberations resulted in a book published in 1989.⁹ Some of the other committee members were: John Pesek, formerly head of the Agronomy Department at Iowa State University and also President of the American Society of Agronomy (ASA); Kate Clancy from Syracuse University; Dick Harwood who would shortly be going to Michigan State University after being in a number of positions including at IRRI; Bill Heffernan, University of Missouri; Glenn Helmers, the other agricultural economist, from the University of Nebraska; Willy Lockeritz, Tufts University and soon to be Editor of the American Journal of Alternative Agriculture; Bob Miller, head of Soils at North Carolina State; David Pimentel, the ecologist from Cornell; Cal Qualset from the University of California at Davis and who would become President of the ASA; and Ned Raun, formerly of The Rockefeller Foundation and whom I knew in Colombia and at the time was Winrock International’s representative in Washington.

The Office of Technology Assessment of the U.S. Congress asked the FSSP to prepare a paper for them on “Farming Systems

9. National Research Council. 1989. Alternative agriculture. Committee on the role of alternative farming methods in modern production agriculture. National Academy Press. Washington, D.C.

Research and Extension: Status and Potential for Low Resource Agriculture.” Susan Poats, Dan Galt, Chris Andrew, Lisette Walecka (now Staal), Ken McDermott and I worked on it and submitted it in December, 1986.¹⁰

I was appointed to the Editorial Board of the Elsevier journal “Agricultural Administration and Extension” that was interested in publishing farming systems articles. After a couple of years this journal folded into Agricultural Systems and continued publishing farming systems articles with me as a member of the Editorial Board.

I declined an invitation from ICRAF, the International Center for Research in Agroforestry headquartered in Kenya, to participate in a workshop on the design and analysis of on-farm agroforestry research to be held in India. I also declined an invitation by ICRISAT, the International Center for Research in the Semi-Arid Tropics headquartered in Hyderabad, India, to participate in a farming systems workshop at their headquarters. I declined these as well as an FAO activity in the Ivory Coast simply because I was too busy with the graduate students, the courses and the other activities. However, I did go in February to IITA, the International Institute for Tropical Agriculture in Ibadan, Nigeria, for a strategic planning session on their program, and in July to Niger for a project review for the Soils CRSP. As part of this last review, we visited the ICRISAT Sahelian Center in Niger, so I did get to part of ICRISAT.

10. Poats, S., D. Galt, C.O. Andrew, L. Walecka, P.E. Hildebrand and J.K. McDermott. 1986. Farming systems research and extension: Status and potential in low-resource agriculture. Submitted to Office of Technology Assessment, Congress of the U.S. Washington, D.C.
<http://ufdc.ufl.edu/I/UF00056190/00001>

1987

In all its wisdom, USAID decided that “farming systems” was “not working” and that they had to shift their focus to “sustainable agriculture.” It did not occur to the bureaucrats who made these kinds of decisions that sustainability was a *concept* and that the best way to generate sustainable agriculture was through the use of farming systems *methodology*. Thus, just at the time there was a tremendous momentum built up around the world for agricultural development programs using farming systems methodology, and after AID had invested only about \$8 million of the original \$10 million estimate, the FSSP was terminated by AID in 1987 after five years of effort. One of the legacies of the FSSP was a four volume set of training documents that would continue to be used and requested for at least another decade as *people began to realize that farming systems methodology was, in fact, very useful if not critical for efforts at creating sustainable agriculture in very diverse situations around the world*. The other legacy was an active training unit headquartered at the University of Florida. The institutions affiliated with the FSSP agreed that Florida should continue to be the center of farming systems training activity and to call upon others as demand required. Without the FSSP structure, we needed something more formal than just the International Programs office of IFAS to support continued and, hopefully, even more active training activity and began the process of creating a training division in IFAS. Chris Andrew and I wrote a white paper on the topic that was to serve as a basis for the new effort.

That farming systems training was in demand was reflected by my own participation in courses. In July I taught a four-day short course in Gainesville in English on “Design and analysis of on-farm trials” to 20 participants from the Bean/Cowpea and Sorghum/Millet CRSPs. In October and November I taught a three-week concentrated version of my regular farming systems course in Gainesville in Spanish to 21 participants from ICTA, DIGESA and DIGESEPE, all from Guatemala. In addition to

these, I offered my regular courses in spring semester. There were 36 students in the farming systems course (the largest enrollment in the history of the course, and really too many students.) Only four of the total in the course, however, were from FRED. This was becoming an established pattern as the FRED graduate program pushed its students more and more into theory and quantitative methods and did not provide them time nor incentive to get involved in *practical applications* such as farming systems. There were 12 in the course on tropical farm management.

My graduate student load increased again in 1987 to 31 of which *nine graduated* during the year. Again, all but one of the 31 had a farming systems minor and seven of them were on farming systems assistantships (Fattori, PhD in Poultry; Bannister, PhD in Agroforestry; O'Connor, PhD in FRED; Russell, PhD in Agronomy; Singh, PhD in Soils; and Fiebig and Niles, both MS in Agronomy).

After serving seven years on the External Evaluation Panel of the Soil Management CRSP, I was rotated off in 1987. However, I made two trips for them prior to leaving. In February I made a 12-day trip to the University of Hawaii and Indonesia, going again to the Sumatra site. Duane Acker, formerly President of Kansas State University and then a Deputy Administrator for USAID accompanied us on this trip. In September I made an 11-day trip to Ithaca, NY (Cornell) and Brazil. On this trip was the only time I was in Rio de Janeiro and we overnighted at Ipanema at a hotel recommended by the CRSP people stationed in Brazil. Ipanema really is a sight worth seeing. Most of this trip was spent in and around Brasilia in the *Cerrado* region. I was still on the Bean/Cowpea panel and traveled to East Lansing, Guatemala, the Dominican Republic and Puerto Rico for them. This was also my only time in Puerto Rico. To me the culture was an exasperating combination of Latin and North American. I could probably get used to it, but it somehow did not feel right to me at the time. However, I did get to see a large part of the island as Jim Beaver and I drove from San Juan to Mayaguez and back.

I also made another very interesting trip to Guatemala in 1987. The purpose was to create a Cooperative Agreement between Rafael Landívar University and the University of Florida. Chris Andrew and Jack Fry (with Susanne, his wife) accompanied me on the trip. Jack was the Assistant Dean of Agriculture for graduate programs and always a strong supporter of the farming systems training program. We dealt with Mario Martínez, then Dean of Agriculture at Rafael Landívar and who had formerly been the *Gerente General* of ICTA when I worked there. One day we rented a car and I took Jack, Susanne and Chris on a trip to the Salvadoran border and through the La Barranca area where I had spent a lot of time when I lived in Guatemala. Jack and Susanne were concerned about getting too close to the Salvadoran border and I said not to worry. There was a lake a couple of miles before we got there and I would stop. What I didn't realize was that the lake had dried up and there were crops planted where it had once been. So I drove right past it and up to within about 100 yards of the border before I realized where we were. We stopped and turned around, but at least they got a glimpse of El Salvador. On the way back we turned off to go into the La Barranca area where we had done so much work with the small farmers who farmed in the rocks. After showing them the general area I stopped at the house of the Guerra family with whom we had worked closely. Doña Blanca was home and when she recognized me she came running out and gave me a big hug. We stayed quite a while visiting. It was good to see her again.

After six years at Kansas State University, the international farming systems symposium moved for three years to the University of Arkansas in Fayetteville. Among other things, this provided me an opportunity to get acquainted a little bit with the Ozark area of the U.S. Fayetteville was a small college town and in the middle of October the leaves were turning. They had a nice conference center and altogether, this provided an excellent location for the symposium. I chose to drive there because it also offered me an opportunity to see much of Alabama, Mississippi,

Louisiana and Arkansas, areas that I had not had the chance to see before.

Even though 1987 seemed like a relatively slow year, my training activities brought in a total of over \$200,000. This provided the administration with incentive to help us create an International Training Center to provide support for the activities that we were undertaking with no organized support.

1988-1994: International Training

During 1988, international farming systems training activities increased, but we were not successful in getting a training center operating. On an ad hoc basis, I conducted two short courses and was involved in two other activities that could have been managed through such a center.

Following a preliminary trip and seminar with Marianne Schmink to Rio Branco, capital of the western state of Acre, Brazil, we organized and presented a three-week short course there in June and July. For the preliminary visit in February, Marianne had invited most of the organizations involved in development in this Amazonian area to the seminar. We (Marianne in her perfect Portuguese and I in Spanish and a little bit of “Portuñol”) first discussed what farming systems involved and then what the participants thought the approach might be able to do for them and their development and conservation efforts in the region. As a result of the seminar, and with the support of the Ford Foundation in Rio de Janeiro, it was decided to present the short course. In 1987, the Ford Foundation in Nairobi had contracted us to create a shortened version of our four FSSP training manuals and translate them into Portuguese for use in the African Luzophone countries (mainly Mozambique and Angola). We used this manual in the Acre course but took along our translator (African Portuguese) so we could convert it into a Brazilian version. The changes were made during the short course and the Brazilian version was also printed. <http://ufdc.ufi.edu/l/UF00083017/00001> Besides Marianne and me,

Ken Buhr of the UF Agronomy Department also participated as a trainer. Ken had spent two years in Brazil and spoke very good Portuguese. The Ford Foundation had invested in two months of Portuguese training for me in Gainesville prior to the short course. For the course my *Portuñol* was understandable if not spectacular, and I was able to understand about 85% of what was said. Included in the course were seven students from the University of Florida who obtained three course credits for it, and 27 Brazilians from 12 Brazilian university, development, extension and research organizations. Some of the Brazilians who were hoping to come to UF for advanced degrees also obtained three course credits at UF for their participation in the short course. Jack Fry again facilitated this process.

There were enough people in the course that we were able to divide them into three groups for conducting Sondeos. One group went into an Indigenous (Indian) area along a river, another into the rubber tappers' reserve, and a third into a colonization project. This activity was conducted during the second week of the short course. The hand-written reports were completed during the second week as well. During the third week of the course, while the participants worked in on-farm research design and analysis, several secretaries typed the documents and they were proof read in the evenings. At the end of the third week, all three bound and very useful reports were delivered at the closing banquet. <http://ufdc.ufl.edu/UF00054660/00001/1j> This was really impressive and created a great deal of enthusiasm for conducting Sondeos among both the participants and the governmental and other organizational representatives present.

As a direct result of this short course, a non-governmental organization (NGO) was created in Acre for agroforestry research and extension activities. It was called PESACRE. Research in Portuguese is *pesquisa*, and seemed to me to come from the idea of "fishing around." PESACRE has been very successful and in 1998 celebrated its 10th anniversary. We have had a number of very good graduate students associated with PESACRE and several faculty have been involved with it.

I also had a graduate student in Manaus, on the Amazon River north of the state of Acre. B.K. Singh, one of the farming systems assistants, and from Nepal, was doing his dissertation research in conjunction with the Soils Management CRSP (Tropsoils), EMBRAPA (the Brazilian national research organization) and EMATER, the national extension organization. When B.K. originally came to Florida we anticipated he would work with Ken Sayre of CIMMYT on research in Mexico. Ken had known B.K. in Nepal and suggested he come to Florida for farming systems. However, that prospect for research fell through and after several months of negotiation with Tropsoils (originally thinking of his working on the Cerrado out of Brasilia), we arranged for him to work with them in Manaus. Walter Bowen (later to become director of International Programs in IFAS at UF) who had been with Tropsoils in Brasilia was also in Manaus and worked with B.K. Following the first seminar in Rio Branco, I stopped in Manaus on my way home to visit B.K., Walter, Tropsoils, EMBRAPA and EMATER. I also visited B.K.'s site on the *Rio Preto da Eva* about 80 kilometers north of Manaus. The work B.K. did was eventually to become an important training document as well as a chapter in one of my books.

Also, after a number of months of negotiation, this time with IITA in Nigeria, we arranged for another farming systems assistant, John Russell, to do his dissertation research in northern Cameroon working in sorghum and millet cropping systems. John had a two year contract with IITA. Part of his work for them was his dissertation. His research would also form part of a chapter of a book (Adaptability Analysis) that he and I would jointly author. <http://ufdc.ufl.edu/UF00072042/00001/2j> Another of my graduate students, Richard Piland, working on a Master's degree in Latin American Studies and for whom I was Chair, was conducting his thesis research in the Bení Biosphere Reserve of Bolivia.

Searching and arranging for research opportunities for my graduate students abroad was a time consuming, but necessary part of my job in my mind. After a number of phone calls and letters, I was able to arrange with George Wilson of the Jamaican

Agricultural Research Foundation, an agreement by which we could send a number of graduate students to Jamaica to conduct research the Foundation considered necessary. (I had met George during a trip to Nigeria when he was a scientist working with bananas at IITA.) They would pay research expenses and a minimum stipend for living expenses, help get the students set up in their communities, and the research would have to be approved ahead of time by George and the Foundation. Because the money George had available came from the Jamaican Agricultural Research Foundation, we were able to circumvent much of the bureaucracy normally associated with this type of arrangement. After we agreed on a budget for a specific project and student, George would simply send me a check for the estimated pre-travel expenses, I put it in my personal account, and then we purchased whatever it was the budget called for. The student took receipts with him/her and that settled the account. After the student arrived in Jamaica, the Foundation picked up the expenses. All together, we were able to send three Master's students to Jamaica on this arrangement coming from Vegetable Crops, Entomology and FRED.

By 1988 the farming systems minor had become the largest among graduate students in the College of Agriculture (Jack Fry, Assistant Dean for Graduate Programs, personal communication). In 1988 there were 28 graduate students currently enrolled with a farming systems minor and 34 graduate students had already graduated with the minor. I served on many, if not most of their supervisory committees. *Also, in the 1988-89 academic year, 18% of the graduates in the College of Agriculture receiving advanced degrees had taken my farming systems methods course!* I was serving on 27 graduate student supervisory committees and *graduated eight* of them during the year. Yet the Food and Resource Economics Department was so narrow in orientation that they had not given me tenure until 1986 and I was still not a member of the “doctoral research faculty” (DRF) even by 1988. I was probably the only non-tenured full professor until 1986 and no one with whom I served on supervisory committees

could believe I was not on the DRF. Neither of these factors particularly hindered me in what I was doing, although it did effectively block me from being able to chair a PhD supervisory committee in FRED. Most PhD students in the department, however, had been molded into theorists by the time they were really interested in a major professor anyway. But I was embarrassed for the department more than anything else. Also reflective of the nature of FRED was the fact that of the 27 students on whose committees I served, only two were in my own department. The others came from Latin American Studies (2), Animal Science (2), Soils (4), Agroforestry (1), Sociology (1), Agricultural Engineering (1), Agronomy (10), Anthropology (2), and Vegetable Crops (2). Twelve were foreign students and the others predominately former Peace Corps Volunteers who wanted to return to countries, regions or activities they had been doing while in the Peace Corps.

Much of the work I did as Coordinator of the Farming Systems Program was administrative in nature, yet because I did not have an administrative position, while it was acknowledged, none of that effort was ever formally evaluated. Nor was serving on supervisory committees, except as chair, evaluated adequately. For example, I served on the committees of all four students who were working abroad on their research, but was the chair only of one, a Master's student, and that one was majoring in Latin American Studies, not FRED. So the work and time involved in setting up their overseas research program was never really considered in faculty evaluations.

Edgardo Moscardi, an Argentinean, worked with the FSSP and had been attached to FRED while he served on the University of Florida project in Ecuador. He later became the Director General of the Argentinean national agricultural research and extension organization, INTA (later he was the IICA representative in Colombia and in 1998 was named Executive Secretary of FONTAGRO, a foundation for agricultural research with a \$200 million endowment and headquartered at the InterAmerican Development Bank in Washington, D.C.). While he was the DG

of INTA he asked me to come to Argentina to present a series of seminars to INTA personnel scattered in several experiment stations in the northern part of the country. I did this on a two-week trip in August. INTA had (or hired) a plane with two pilots who flew me around to four separate stations during that period. Edgardo was trying to incorporate a national farming systems program in INTA and wanted me to discuss the methodology of both Sondeos and on-farm research and extension. It was a very interesting trip for me, giving me an understanding of Argentina and allowing the sampling of the superb Argentinean beef and wine.

In 1988 I made one last trip for the Bean/Cowpea CRSP, to Costa Rica for the annual evaluation meeting. Following this meeting I was rotated off after eight years of service on their External Evaluation Panel. One of my biggest regrets was not being able to see and interact with Hugh Bunting on a regular basis.

My farming systems methods course had an enrollment of 21 students from 12 departments (only one from FRED). The other course, Managing Farms in Tropical Areas, a senior level course, had only 10 students and most were graduate students from other departments. Following Spring semester when the latter course was taught, I decided to change it to “Economic Analysis in Small Farm Livelihood Systems,” and make it more of a companion course to the farming systems course. Students interested in farm management could get that in the regular farm management course in FRED. There was no need for a separate tropical course on this topic. *But there was definitely need for a course on small farm livelihood systems. There was a tremendous need for persons working in agricultural or economic development to understand the nature of these “peasant” or family farms that differ so much from larger and purely commercial farms.*

Besides the short course in Acre, Brazil, I also provided a three-day short course with John Lichte (a private consultant and frequent FSSP collaborator) for 14 participants in Fayetteville, Arkansas following the annual International Farming Systems

Symposium. Ten of the participants were from India, three from Nepal and one from Cameroon. The Indians and Nepalese were part of the Ford Foundation and FAO farming systems program that George and Nancy Axinn worked with in those countries and included university researchers and administrators from India, and government researchers and administrators from Nepal. The Cameroonian was sponsored by UF. He was with the Agricultural University Center in Cameroon where UF had a team working on a USAID contract.

I also participated as a trainer (not lead trainer) in a short course offered for a group from the Philippines and sponsored by USAID. We had originally been requested to organize this short course, but because our UF “Training Center” was missing a Coordinator (that is, not yet functional), we asked one of the farming systems network collaborators to undertake it. Personnel from UF participated in the portion of the course held in Gainesville.

Following the end of the FSSP, most of the people and organizations that had been involved decided to keep a post-FSSP farming systems network with UF charged with most of the training. I served on the Steering Committee for this new network that reported its deliberations on the creation of an international farming systems association at the annual meetings in October.

At the personal request of the Deputy Director of USAID in Guatemala, I helped develop a proposal for training 15 to 30 college-level students from that country who were to study for one year in the United States. We were able to put together a program that was very much to their liking, but they were unwilling to approve the budget required for that type of program. We found this all too often, particularly when working with AID. They wanted a Cadillac program but on a Model-T budget. As part of our training materials, the Hildebrand and Poey book was translated into Spanish in its entirety during the year.¹¹

11. Hildebrand, P.E. and F. Poey. 1989. Ensayos agronómicos en fincas según el enfoque de sistemas agropecuarios. Editorial

I sponsored two people taking sabbatical leaves during the year. One was Tim Bembridge from Fort Hare University in South Africa. His main interests were the extension aspects of FSRE. The other was Malik Ashraf from IITA in Nigeria. Both were active in farming systems work. Malik stayed on beyond his sabbatical and participated in a number of activities with UF. We authored a joint paper for the 1989 farming systems meetings at the University of Arkansas.¹²

1989

At the ninth annual International Farming Systems Symposium, held for the third year at the University of Arkansas, the Association for Farming Systems Research-Extension (AFSRE) was created and I was elected the founding President. This was the same group that had been associated with the FSSP, augmented by new participants who were attending the symposium. The association, global in scope, was

. . . organized to promote the development and dissemination of methods and results of participatory on-farm systems research and extension. The objective of such research is the development and adoption through the participation by farm household members--male and female--of improved and appropriate technologies to meet the socioeconomic needs of farm families; adequately supply global food, feed and fiber requirements; and utilize resources in a sustainable and efficient manner.

This statement, which says it so well, was authored by John Caldwell from Virginia Tech. John had also been an editor of the FSSP four volume training series and was one of the very active

Agropecuaria Latinoamericana, Inc. Gainesville FL.

<http://ufdc.ufl.edu/1/UF00054330/00001>

12 Hildebrand, P.E. and M. Ashraf. 1989. Agricultural sustainability as an operational criterion. Ninth International Farming Systems Symposium, Fayetteville, Arkansas. <http://ufdc.ufl.edu/UF00065559/00001>

persons in farming systems. Later he would also be elected a President of the Association. The AFSRE also took over responsibility for organizing the annual symposia; continuing publication of the FSSP Newsletter, which in the interim we had called the FSRE Newsletter, and became the AFSRE Newsletter; and creating and publishing a journal, the JFSRE.
<http://ufdc.ufl.edu/UF00071921?td=Journal+=Farming+=Systems+=Research-Extension>

After three years at the University of Arkansas, Michigan State University graciously offered to host the next three symposia. So I was once again involved with Michigan State, my alma mater. Every time I was at Michigan State, whether with the Bean/Cowpea CRSP or AFSRE, I was able to see Glenn Johnson, my major professor. I really looked forward to these visits.

*Also in 1989 I was nominated for the Chair of the International Division of the **American Society of Agronomy**.* John Nicholaides and Pedro Sanchez, both from North Carolina State and with whom I had worked in the Soils CRSP, made the nomination saying they thought the membership of the International Division ought to be ready for an economist to chair the committee. John, who later would become Dean for International Agriculture at the University of Illinois, and Pedro, who later would become Director General of the International Center for Research in Agroforestry (ICRAF) headquartered in Nairobi, Kenya, had said since the 1976 meetings in Lexington, Kentucky, that I was the only economist they knew who had chlorophyll in his veins. I expect that was one of the reasons they put up with me on the External Evaluation Panel of the CRSP.

The emerging concern with “sustainability” was evidenced by three papers I presented in 1989. Two were at the farming systems symposium (“Farming systems research/extension and the concepts of sustainability” with Chuck Francis, <http://ufdc.ufl.edu/UF00080875/00001> and “Agricultural sustainability as an operational criterion” with Malik Ashraf <http://ufdc.ufl.edu/UF00065559/00001>), and one at the Agronomy meetings

(“Agronomy’s role in sustainable agriculture: Integrated farming systems”¹³). Chuck Francis and I had also presented a paper on the subject in the 1988 farming systems symposium, “Farming systems research and extension (FSRE) in support of sustainable agriculture.”¹⁴ In the 1989 paper Chuck and I argued: ***“A more sustainable agriculture will not be achieved just because society desires it. Means must be derived for efficiently achieving the diversity of location-specific technology necessary to support it.”*** Our point was that farming systems methods are cost and time efficient for helping achieve diversity and therefore sustainability.

In our paper, Malik and I presented “. . . an approach to evaluating the implications associated with attempts to influence sustainability in such a way that 1) agricultural productivity (the agricultural system), 2) environmental survivability (the ecological system), and 3) human population and income changes (the human system) are all involved.” We used linear programming of a typical farm system in the Ijaye area in the derived Guinea savanna of southwestern Nigeria as an example. One sustainability equation accounted for the proportion of a farm that remains in bush fallow each year. The other treated the use of external chemical inputs (fertilizer). We concluded that sustainable agriculture in the Ijaye area, facing an ever increasing human population, will not be an agriculture free of chemical use, at least with the kinds of technology known at the time, and average farm size would have to remain above about 2.25 ha (average farm size at the time, including fallow land, was 7 - 11 ha). The Agronomy

13. Published in 1990 in the Journal for Production Agriculture (3:285-288).

14. Francis, C.A. and P.E. Hildebrand. 1989. Farming systems research and extension (FSRE) in support of sustainable agriculture. FSRE Newsletter 2:4-5. Gainesville FL.

<http://ufdc.ufl.edu/UF00080876/00001>

Society paper is a good summary of my thinking at that time. Permit me to quote the majority of it:

The world is becoming a smaller place. Phenomena which only a few decades ago we may never have known about are today transmitted live and instantaneously around the world via satellites. It is, perhaps, a quantum leap from farming systems to planetary systems. However, to put into perspective the relationship between sustainability and farming systems, we need to make at least most of the leap.

Concern with sustainable agriculture, and by extension, sustainable development, did not originate only in Florida, for example, where we are contaminating the ground water with agricultural chemicals and wastes nor in the High Plains of Texas with the depletion of the Ogallala aquifer. It has been influenced powerfully in recent years by the burning of the Amazon rain forest, the desertification of the Sahelian region in Africa, and by the denuded hillsides in Haiti. The concern spans the globe, if not the planetary system, and is directly related to the *pressure put on this planet's natural resources by a burgeoning human population*. These phenomena are being reported widely by all forms of media. Who amongst us has not seen articles about the depletion of the tropical rain forests in everything from the New York Times to our local newspapers, the Scientific American or the Economist? And it may be surprising how many of us have heard of Chico Mendes, the rubber tapper from the western Amazon rain forest, who was killed because he headed a group trying to protect part of the rain forest as an extractive reserve.

Sustainable Agriculture

The term 'sustainable agriculture' is difficult to define because it means different things to different people at different times. For example, it is possible to think of sustainability in such terms as economic, political, social, cultural, institutional, and ecological. Yet many people use the term sustainable agriculture, so it apparently is intuitively comprehensible. For this reason, let me raise some questions about the sustainability of several farming systems without defining the term, but to put into perspective some of the difficulties associated with its use.

Is the farming system of a rubber tapper who collects rubber and Brazil nuts from wild trees on perhaps 250 hectares of Brazilian rain forest and produces crops or pasture on only a few hectares sustainable? Or is the farmer in a colonization project in the same rain forest developing a more sustainable system? What about the small farmers in Peru and Bolivia who produce coca leaves for the incredibly lucrative illegal drug market? Is their system sustainable? What about citrus producers in Central or Southwest Florida where tourist attractions and urban concentrations are expanding explosively? Or the small grain and livestock farming systems in the near desert, rainfed areas of Morocco? Or, for that matter, the mixed farming systems found in north Florida or the corn/soybean cash grain farms in the midwestern US?

Most of these systems have something in common. They are in a state of flux and changing, or subject to change, quite rapidly. For example, in the Brazilian Amazon, as the rubber tappers organize and break the hold of the traditional rubber barons, they begin to produce more of their own food and may sell a little surplus. They also need animals to provide their own transport. Hence, slowly their holdings begin to look more like some of the colonists in the same area who tend to farm more land, and would like to become cattlemen, but also harvest the wild rubber and Brazil nut trees left standing on their 50 hectare holdings. In turn, the colonists are always tempted to sell their cleared land to the larger ranchers, who, most people argue, have a farming system that is not sustainable with present technology.

Sustainable agriculture, therefore, is not a constant state. Nor, as some would argue, is it a return to a former state. Similarly, it is not necessarily low input. There have probably been more grain combines and square straw balers sold in Morocco in recent years than in the United States! If we consider biological sustainability as the length of time a particular system can be maintained, then we must consider that chemicals can substitute for rotations or fallow, at least for some time. The coca farmers use chemicals and probably have systems that are biologically sustainable for a number of years. However, given current events, they may very well be concerned with the short term economic sustainability of their systems. The ranchers in the Brazilian rain forest are becoming concerned with the political sustainability of theirs. And farmers in the United States and Europe are becoming concerned with the ecological sustainability of their farming systems.

Farming Systems and Technology Adoption

The concepts of sustainability aside, it should be obvious that farming systems, themselves, are very complex. Individual

farming systems result from combining the resources and time available to farm managers into a set of enterprises and activities that provide for the needs and desires of the farm families (or corporate or government entities) who control the resources. The set of enterprises that form a farming system results from the environment within which the farms operate. On family farms (as opposed to corporate or government farms), this environment is influenced as much by socioeconomic factors, such as competing family needs for available cash, as it is by biophysical factors such as soils and climate. The environment in an individual field is also influenced by socioeconomic, as well as biophysical factors. For example, a field that is prepared and planted late usually provides a poorer environment for a crop than an otherwise identical field that was prepared and planted on time. It is for these reasons that farms and fields vary a great deal from one another.

Over the last few decades, in industrialized countries farmers were able to use technologies that could overcome these field and farm differences. These technologies were broadly adaptable because many of our farmers had the resources and the capital to be able to dominate the natural components of their environments with irrigation, chemicals and/or mechanization. Furthermore, our agricultural policies, supported for many years by the philosophy that farmers "should get big or get out," encouraged wide adoption of this kind of technology. Recently, with rising concerns for a more sustainable agriculture, there is pressure to reduce the use of fossil fuels, the amount of irrigation water, and off-farm produced chemicals. Policy makers are beginning to change the incentives that encouraged the use of broadly adaptable technologies. These factors will influence the kinds of technologies farmers will be able to use. In the future, *new technologies will have to conform with the environments* where they will be used, not dominate them. This means there will be *an increasing need for location-specific solutions* to emerging farm problems. These, then, are the challenges to agronomy in the future.

Institutional Setting

Agronomists ply their trade today in an institutional setting that has responded to the same forces that molded farm environments over the last few decades. Associated with environmental changes affecting farms and farming over this time period has been an institutional drift toward specialization. Many agronomists work in a Land Grant university or similar setting with research and extension, as well as teaching responsibilities. Beginning, perhaps, in 1962 with the publication of Everett Roger's Diffusion of Innovations, the definition of clientele began to shift from that which was the basis of the establishment of the Land Grant system. We started to look at who was adopting the new technologies being produced. We called them "innovators" or "early adopters" as opposed to the "laggards" who did not adopt the technology. We studied *the characteristics of the adopters* and began to consider them as the clients for whom we developed more technology. This created a drift toward technology requiring heavy capital inputs, often one of the characteristics of the innovators and early adopters. One of my colleagues reminded me recently that in north Florida, many of these innovators had the least sustainable systems during the last decade and a high proportion no longer farm.

As technology became more sophisticated, researchers and extension workers became increasingly specialized. Increasing specialization created communication problems as each specialty developed its own vocabulary. In agriculture, this specialization, or narrowing of focus away from the whole farm and toward its components, fomented a drift away from farmers as the primary clientele group. Specialized agronomists, an increasing number without farm backgrounds, were less able to communicate with farmers who were unable to understand the specialized vocabulary. As a result, *the new clientele group for those in the Land Grant system became their own peers* -- the only persons with whom there was easy communication. The most evident manifestation of this orientation is the emphasis on journal articles rather than technology adoption as a criterion for professional advancement. A more subtle result is that much research is designed to have a high probability of *statistically significant* results, therefore more readily publishable. *Practical significance takes a back seat, as does research directly applicable to solving farmers' problems.* Perhaps even worse, this situation foments a proprietary attitude toward data, and even genetic material, inhibiting collaborative efforts. The pressure is particularly great on young faculty needing tenure and promotion who almost inevitably take the least risky alternative to a sustainable job!

The Dilemma

The dilemma facing agronomists in a world increasingly concerned with sustainable agriculture is that they face a need to solve urgent, location-specific problems in an institutional setting that places more emphasis on journal articles, and therefore the statistical significance of obscure results, than on the importance of the results to the industry. If that were not bad enough, it is becoming increasingly obvious that in sustainable agriculture it is necessary to work collaboratively in multidisciplinary teams, in an institutional structure that rewards persons so highly specialized they have difficulty communicating, sometimes even with persons in the same discipline or department.

Agronomy's Role in Sustainable Agriculture

Agronomists are in the front line in the battle to create a more sustainable agriculture; an agriculture that meets our needs, but is kinder to the environment and reduces the drainage on non-renewable resources so it will not jeopardize the potential for future generations to satisfy their needs. To accomplish this task will require some shifts in methods, habits and incentives that have been built up over several decades.

Many agronomists will need to return to the farm. Because of the location-specificity of farm and field environments and the need to formulate solutions more in tune with these environments, it will be necessary to carry out first-hand assessments of farmers' conditions, problems, needs and desires in order to understand these environments. These assessments should provide orientation for research and extension programs so investment in them is more effective and efficient. Because sustainable technology will be less able to dominate environments but will need to fit into them, we will encounter more treatment by environment interaction in our experiments than we are used to. This will make it critical for much more research to be carried out on farms and *under farm conditions* than in the past. Simply moving experiment station conditions to a farm will not suffice -- the purpose of on-farm research is to help us understand and work with real farm environments and variability. Research must be designed to help us understand environmental interaction and farm to farm variability so we can make recommendations for specific environments. This approach will also have a positive impact on biodiversity, a priority of many concerned with the loss of genetic variability. Research must also be designed so farmers can help evaluate results, not just observe results in a demonstration. Well designed on-farm research can serve demonstration purposes, but most demonstrations serve poorly for research.

Closer contact with farmers and on-farm research will require that agronomists work more closely with persons from other disciplines including economics, anthropology and animal science,

as well as horticulture and pathology. Multidisciplinary on-farm research and extension will require more than simply having joint projects. Failures of multidisciplinary efforts frequently result because teams are organized more as committees that meet occasionally to 'coordinate' efforts but in which crop work is left to agronomists, surveys to anthropologists and desks to economists. In these cases there is not a single identified product but rather several products or reports purported to be concerned about the same problem. Agronomists should work with anthropologists and economists to assure that these social scientists have an adequate understanding of the crop components of the farming systems. They in turn will help assure that agronomists understand the human elements and their impact on the crop systems. Animal scientists need to interact with both the social and plant scientists to assure an adequate understanding of plant/animal interactions and the interactions of these components with the human element. Close multidisciplinary team collaboration will help assure that relevant problems are researched and *appropriate evaluation criteria* are utilized in the analysis and interpretation of data. Evaluation criteria will be more location specific than we have become accustomed to with the use of kg ha^{-1} as a universal (although not necessarily universally valid) criterion. A criterion such as kg of a product per ha of forest destroyed may have meaning in the rain forest, but not in south Florida where gallons of milk produced per unit of phosphate leached would be more appropriate.

On-farm research has a number of benefits that cannot be achieved with fixed-location station research. It can help us avoid the selection of technologies that perform well under controlled conditions but fail or perform poorly under real farm conditions. More important, it can help us avoid rejecting technology which might do well under farm conditions but does poorly in the superior environments we create for research purposes on experiment stations. In this case, farmers may never have the opportunity to evaluate it! Also, if we know farmers are watching and evaluating our research, we are more apt to use evaluation criteria that are important to them and not only criteria that are important to us as researchers. With the selection of a wide range of environments, it is often possible with appropriate design and analysis, for example, Modified Stability Analysis (Hildebrand, 1984) to reduce substantially the number of years of testing required before recommendations can be made or plant material named and released. And during the testing, on-farm research can be used for demonstration as well as evaluation purposes.

Administrative structures and professional evaluation procedures will need to be modified to reflect new responsibilities and methods if agronomists are to accept this role in sustainable

agriculture. On-farm research does not preclude publishable results nor publishing. But because the orientation for on-farm research is development and testing of technology for sustainable agriculture, less time is available for the tasks associated with publishing. Multiple authorship can also be a problem particularly in multidisciplinary teams and when priority for professional advancement is placed with single author articles or there is concern with "senior authorship." The most appropriate audiences for many articles are not necessarily those who read the mainline professional journals. Choices may have to be made between readership and disciplinaryity. Travel budgets will have to be increased, but these costs can often be offset by the investments farmers make in on-farm research. Farmers usually provide land, machines, labor and other inputs for research that interests them. This can be a significant savings compared to station research. Provision should be made to provide Principal Investigator status to multidisciplinary teams instead of to individuals. This provides more assurance that participation in a team effort will reap at least as much reward as individual effort.

In closing let me repeat a statement made by Congressman George E. Brown (1989, p. 103) at these meetings last year: "Sustainability is a useful concept for focusing agricultural research because it captures a diverse set of concerns about agriculture as an economic system, an ecological system, and a social system."

Agronomy's role in sustainable agriculture is pivotal. As problem solvers, agronomists face a new and rigorous challenge. The world's human population is burgeoning. The technologies developed over the past few decades, as successful as they were in feeding the world, are consuming resources and contaminating the environment at rates that promise doom for future generations. We must use all our scientific capacity and innovative genius to devise new, more sustainable farming systems. We must continue to feed the world. But in doing so, we must find ways to do so with less destruction to the earth's biosphere which is home to us all.¹⁵

Enrollment in the farming systems course in the spring was 18 but there were only 7 in the farm management class. It was obvious that the course number of the latter (senior level) was not attractive to graduate students, many of whom could not include a

15. Hildebrand, P.E. 1990. Agronomy's role in sustainable agriculture: Integrated farming systems. *Journal of Production Agriculture* 3:285-288.
<http://ufdc.ufl.edu/UF00081547/00001>

non-graduate course in their minimum course requirements. I began thinking about making it into a graduate level course.

We were successful, finally, in getting the International Training Division of IFAS created in the office of the Dean for Academic Programs with Ellis Matheny from Entomology as Director on a half time basis. I was on the Faculty Advisory Committee for the Division. As part of the activities of the Division, Marianne Schmink, Ken Buhr and I (as lead trainer) presented another short course in Rio Branco, Acre, Brazil. This time the title of the course was research and extension methods in *agroforestry* systems. There were 41 participants including three from UF. All participants received two graduate credits from UF. Again, main funding came from the Ford Foundation, Rio de Janeiro. On the way to Rio Branco I went through Manaus to visit B.K. Singh and presented a seminar (in Portuguese) to about 50 research and extension persons. The topic was analysis and design of on-farm research. I also presented a one-day segment of a short course in Jamaica to 25 participants who were also interested in analysis and design of on-farm trials. Funding was from the Jamaican Agricultural Development Foundation. In Gainesville I was involved in a four-day short course for several government officials from the Philippines, including one Sub-Secretary of Agriculture.

The University of Nebraska had a major technical assistance project in Morocco and asked me to evaluate their progress and help them move into an on-farm research phase. This was more of a challenge because beyond being able to order food and sort of get around, I did not (and do not) speak French (nor Arabic). As a result of a one-week trip to Morocco, INRA (the Moroccan research institute) and Nebraska requested that I put together a budget for a short course the following year.

I worked with 27 graduate students during 1989, of whom 5 graduated. By this time a total of 42 graduate students had graduated with the farming systems minor and 25 more were actively working on it—a total of 67!

1990

After leading the International Training Division (ITD) for one year, Ellis Matheny resigned to go to IRRI in the Philippines to work in their training program. Not having another interested candidate, I agreed to take the responsibility on the condition that I be given a post-doc position to teach the farming systems course in

Spring Semester of the 1990-91 academic year. Sandra Russo, who had taken one of the early farming systems courses and was heavily involved in the WIAD program on campus, took the position. She was a forage agronomist, thus also involved in animal science, and had several years of experience in Africa. The other reason I agreed to take this position was because Lisette Walecka, who had been the Training Coordinator for the FSSP was the Training Coordinator of the ITD. She was responsible for most of the day to day activity in the ITD.

I took over duties of the Director in mid year. For the year, the ITD sponsored seven short courses with total fees of \$241,552, of which \$57,620 was transferred to nine IFAS units (Agricultural Engineering, Agronomy, Citrus County Extension, Editorial, Entomology, Forestry, FRED, International Programs, and the Agricultural Research and Education Center (AREC) in Quincy, Florida). To my knowledge, no funds had ever been directly transferred to departments from this type of activity before. Preparing proposals for funding represented a significant investment of time for the personnel (Director, Coordinator and Secretary) of the ITD. Several were prepared in 1990 including one for \$473,000 for the first year of a training program in Poland. The project would have involved about nine faculty during the first year with additional faculty required in future years. Unfortunately we were not successful in getting it (mostly because our strength was in the tropics, not temperate climates). However, we did have several faculty with connections and projects in Poland at the time.

Prior to assuming the position of Director in mid year I had 17 students in the farming systems course and 10 in the farm management course. Nine departments were represented in the farming systems course and five in the farm management course. In addition, in June, I taught a two week short course on farming systems methods (Sondeo and on-farm research) in Settat, Morocco at the INRA station. Teaching with me were Mimi Gaudreau, a soil scientist and consultant, and Pam Pozarny, a PhD student in Anthropology at UF, both fluent in French. At this writing (1998) Mimi is Chief-of-Party of an AID contract in Madagascar and Pam is with the United Nations Development Program in Rwanda following two years there with AFRICARE.



Persian wheel well in Morocco

I was working with 33 graduate students in 1990 and seven of them graduated during the year. At this time only six of the 33 were women. One of the students who graduated, Carlos Parera from Argentina, did his horticulture thesis on sweet corn and the supersweet gene *sh2* (shrunken 2). As a result of this thesis, I decided to change the crop I had been using for simulated on-farm research in the farming systems courses (including the short courses when applicable) from radishes to sweet corn. The radishes had always taken five weeks to be ready to harvest and required a lot more space and time both in producing and harvesting. With the sweet corn, for which we evaluated only emergence (up to about two inches in height) we could be in and out of the field in 10 days to two weeks depending on time of year and soil temperature. And each plot with only 25 seeds was only a meter square. The *sh2* corn required a near perfect environment for germination and emergence so I was comparing it with some standard varieties such as Golden Cross Bantam and Silver Queen. It worked very well because I was able to obtain land right on the main campus with both open sun and shade from trees. This was combined with irrigation and rainfed situations. Later, at the urging of university vice president for IFAS, Mike Martin, I published the procedure.¹⁶

16 Hildebrand, P.E. 2005. Simulated on-farm research: a 15 day class exercise. NACTA Journal 49:31-33.

I was invited to a planning meeting at the National Research Council in Washington in November for the proposed Sustainable Agriculture and Natural Resource Management (SANREM) CRSP project. When I got back to the campus I contacted possibly interested faculty to advise them of the proposed project and then had a series of meetings with a combined total of about 45 faculty from all across the campus. By year's end there appeared to be a great deal of interest in making a multiple department, multiple college, multiple center proposal that would provide for a strong collaborative effort in sustainable development on campus as well as a significant source of funds for research. The group was convinced that even if we did not finally complete the proposal, or if we were not successful with funding, the process would provide us with a useful product-- enhancing the University's capability to carry out multidimensional research in a strongly collaborative effort.

In 1990 I had three students in Jamaica under the agreement I had negotiated with the Jamaican Agricultural Research Foundation, and in May I went there with Christy Gladwin to visit them. Christy was on the committee of Carolyn Tierney, for whom I was Chair. This was an interesting trip for a number of reasons. Traveling with Christy always is exciting. George Wilson had arranged for us to rent a car and it was the first time in many years that I had driven on the left hand side of the highway. It was more stimulating the scary. The three students were working in a scallion producing area in a remote part of south-central Jamaica and all three were working on that crop. Mac Davis (Horticulture) was studying the grass mulch system the farmers used. Steve Cook (Entomology) was studying one of the main insect pests of scallion, and Carolyn was studying the farmers' production system as a whole. Most of our time was spent with Carolyn and her linear program. Because there was no place for us to stay in their village, the students had located a guest house for rent on the beach near a small, even more isolated village. It came with a cook/housekeeper and was in an ideal setting. We spent a couple of days at the guest home working on the program. Later, Christy, Carolyn and I drove to Montego Bay on the north side of the island, spending one night before Christy and I returned to Kingston, turned in the car and returned to Gainesville. It was a very good introduction to the country.

Professor C.R.W. Spedding of Reading University in England was considered one of the founders of systems modeling in agriculture and held the Chair of Agricultural Systems at

Reading. He was also a founder of the journal Agricultural Systems on whose Editorial Board I sat. I was honored to be one of 13 “eminent colleagues” invited to contribute a paper to an international symposium to mark his retirement in September. Two other colleagues were Barry Dent of Edinburgh University and Editor of Agricultural Systems and Gordon Conway of the Ford Foundation, New Delhi and who would be made President of The Rockefeller Foundation in 1998. My old friend from the Bean/Cowpea CRSP, Hugh Bunting attended many of the sessions and one evening gave me a ride back to our hotel. My paper on farming systems became Chapter 6 in the book, Systems Theory Applied to Agriculture and the Food Chain, which was also the name of the symposium. The book was published by Elsevier who is also the publisher of the journal.¹⁷ Because several of the members of the Editorial Board were in Reading for the symposium we also had a Board meeting while I was there.

Much to my surprise, but also bringing great satisfaction was being *elected Chair of the International Division of the American Society of Agronomy*. The Chairs are responsible for planning the annual meeting. My term began October, 1991.

1991

From serving on the committee to select the Women in Agricultural Development (WIAD) assistantship recipient in 1990, *I became a co-coordinator of the WIAD program* with Sandra Russo in 1991. This program was becoming very active with a seminar series and a training program. My FRED office became the secretariat and RoseMary Espailat, my secretary, the secretary.

Training activity in 1991 was negatively impacted by Desert Storm and associated USAID travel restrictions. I did, however, participate in a short course in Nicaragua in March that was funded by FINIDA (the “AID” agency of Finland). Van Crowder, Tito French and Carlos Parera were also trainers in this course that had 30 participants from the Nicaraguan Extension Service. The course was held at a motel across the street from the airport. The hotel workers were on strike during the course, so we

17 Hildebrand, P.E. 1990. Farming Systems Research-Extension. Chapter 6, *In: Jones/Street*. Systems theory applied to agriculture and the food chain. Elsevier Science Publishers, Ltd. England, United Kingdom. pp 131-143.

and the participants were the only guests. They did maintain minimum services for us so it was not too bad. Van later became the FAO representative in Nicaragua.

Even though training slowed somewhat in 1991, the ITD sponsored seven short courses for a total contract amount of over \$250,000. Of this amount, some \$55,000 was distributed to seven IFAS units (Agronomy, Editorial, Entomology, FRED, Forestry, Vegetable Crops, and the Suwannee County Extension office). Courses were conducted in Nicaragua, Brazil and Gainesville. In addition, we prepared training proposals including courses in or for: India, Morocco, Burkina Faso, Ghana (2), Honduras, Pakistan, Costa Rica, Nigeria and Egypt. Five unsuccessful proposals had been submitted for El Salvador, Haiti, Brazil, Poland and Singapore. As Director of the ITD, I joined the Association for International Agricultural Research and Development (AIARD) and attended their annual meeting in Washington, D.C. in June.

During this period, Van Crowder and I worked with the Agricultural Education and Communication Department (AEC) to create a *new M.S. degree with a concentration in farming systems*. IFAS communication people had recently been merged into the former Agricultural Education and Extension (AEE) Department and Van was one of the persons who were shifted. Prior to this time there was no one in the old AEE department who was qualified in farming systems (except that the Chair of the department, Carl Beeman, had been on the North Florida Farming Systems Project Advisory Committee). With Van being in the department it made a natural fit for a new farming systems degree. We proposed both a thesis and non-thesis M.S. degree. First, we felt that it had to be a Master of Science degree to carry appropriate weight in other countries (the Master of Agriculture non-thesis degree was not appreciated). We argued that we needed both kinds of M.S. degree because some foreign students were on a firm, fixed two year limit to obtain a Master's degree and we could not guarantee one if the student were to do a thesis. For the non-thesis degree, the student would have to do at least three credits of supervised research, but this could be in any field and under the supervision of only one faculty member, not the whole supervisory committee. The report, not being a thesis, would not have to go through the graduate school approval process, also saving time. But for those students who had the time, the thesis, which was also valued in most countries, could be done. The department already had a thesis and non-thesis Master's degree, so we requested a "specialization" or "concentration" in farming systems. This

meant that it could be approved by the Graduate Council of the University of Florida and not need to go to the Board of Regents as would have been the case for a new Master's degree program (i.e., a farming systems *major*).

In getting approval of the new degree, we had the support of the Dean of the Graduate School, Madelyn Lockhart, who had told me earlier that the farming systems *minor* was one of only two in the whole university that warranted the honor of being called a minor. The other was a geriatrics minor in the medical school. To support the graduate activity, we had a strong farming systems seminar series in which graduate students, faculty and visitors shared farming systems experiences from throughout the world. I was also supporting the WIAD seminar series from my office. This complemented the farming systems seminars very well and many people actively participated in both. The WIAD program also organized a six-part training session for UF faculty to help them better incorporate gender issues and analysis in their courses. For one of these sessions, I reorganized one of the original FSSP slide-tape sets (The small-scale, limited-resource family farm as a system) with a graduate student from Forestry (Todd Johnson).

Vice President Zachariah had authorized me to make a world-wide announcement of the farming systems assistantship program, soliciting qualified candidates. In 1991 alone, RoseMary, my secretary, and I *responded to 167 letters from 35 countries from interested persons*. Even though we were able to provide assistantships only to a very limited number of students, this provided a tremendous amount of exposure to UF and our farming systems program. In 1998 I was still receiving letters requesting information on the farming systems assistantships for which we had not had funds for a number of years.

During the short course in Morocco the previous year, I had met the biometrician from Nebraska, Walter Stroup. I immediately liked him because he understood and supported Modified Stability Analysis! He agreed to provide documentation (that eventually turned out to be both a paper and a video) to support the procedure. Later, he, Chuck Francis (also from the University of Nebraska) and I would write a paper for a book chapter which supported Modified Stability Analysis.¹⁸ This was presented as one of *three papers* I co-authored for the 1991 Agronomy meetings.

18. Stroup, W.W., P.E. Hildebrand and C.A. Francis. Farmer participation for more effective research in sustainable agriculture. Chapter 12 *In*: Ragland, J. and R. Lal. 1993. Technologies for

Chuck Wood (from Sociology and who would become Director of the Center for Latin American Studies in 1997) and I spent a lot of time in 1991 as Co-Principal Investigators for the SANREM CRSP proposal that we and about 45 other faculty worked on during the year. Unfortunately, we were not successful in our efforts (the University of Georgia won the competition). However, we did pioneer an administrative structure for such a complex, multi-college project by setting up the mechanism for being housed in the office of the Dean of the Graduate School rather than in IFAS, the office of the Dean of Liberal Arts and Sciences, or other location.

Although my travel was minimized by the ITD duties at home, I did go to the University of California at Davis where I presented an invited paper, "Farming Systems Research: One Methodology for Systems Research" at a conference on "Agricultural Systems: Incorporating Environmental and Social Concerns." Following the conference I led a two-day workshop on the analysis and design of on-farm research for research and extension faculty from the University of California. By this time, personal computers were widely enough available that I used them rather than hand-held calculators for data analysis. Several were available in the room we used for the workshop and I had one with a projector so the whole group could see what I was doing.

Other things I did to "keep busy" in 1991 included serving on the Executive Committee of the Center for Latin American Studies, the Faculty Advisory Committee for the Certificate in Tropical Agriculture, and as co-coordinator of the WIAD program. These in addition to being Coordinator of the Farming Systems Program. Also in 1991, a milestone, I was finally appointed to the Doctoral Research Faculty!!!

1992

In 1992 I hit a new high in number of graduate students, 35, of which seven were women (20%). I also hit a new high in

sustainable agriculture in the tropics. American Society of Agronomy, ASA Special Publication No. 56. Madison.

<http://ufdc.ufl.edu/UF00053919/00001/2j>

number of graduate students graduated, 11, or about one in three. I had an enrollment of 18 in the farming systems course from 10 majors plus one special student (a visiting scientist from India). I offered the former farm management course as a special topics course at the graduate level as Economic Analysis in Small Farm Systems and had four students (from four majors) enrolled. ***By 1992 some 64 graduate students had completed a farming systems minor and another 16 were working on the minor.***

The visiting scientist was C.B. Singh, a senior scientist from the Dairy Research Institute in India, who came to UF funded by Wageningen University in the Netherlands by way of Winrock International to take my regular farming systems course and to work with me on data analysis using some of his former research data. As part of the data analysis he wanted to do linear programming. In working with him we set up a dairy goat situation as an example, based on his data. Over the years I have modified that original set of exercises and continue to use the “goats” in my economic analysis class and in short courses. A newer version of the exercises was co-authored with two graduate students: Abib Araújo (Brazil), and Elena Bastidas (Ecuador). The 2008 version is authored with another, Victor Cabrera (Peru).

In a previous year, the USDA had advertised for someone to offer a short course for them in farming systems. One had been offered at the University of Arizona before. I was against bidding for the course at the time because the USDA wanted to dictate too much of what would be included, and they were not willing to pay commensurate with what they wanted. However, other faculty were interested and willing to do it for the reduced budget (reduced from what I would have insisted on) and we did do the course. However, the other “interested” faculty got involved in other activities (probably because they finally realized they would not be properly remunerated), so the task of principal trainer for a course I had not wanted fell on me. This was a one-month course offered in July and August.

In February I traveled for two weeks to South Africa where I presented the keynote address at the inaugural Southern Africa Farming Systems Conference and to *consult with the Southern Africa Development Bank* on needed shifts in agricultural research and extension programs under the envisioned new governmental arrangements with the end of apartheid. The Bank funded the trip and Ted Stilwell was my host. When I arrived in Johannesburg after a 17 hour flight from New York on South African Airways, I went first to Ted’s home for a shower and lunch. To my surprise,

Jerry Eckert was also there. Jerry was a long time farming systems hand from Colorado State University and was working in southern Africa at the time. This trip was right before the referendum when the South Africans were to vote on apartheid and I was a bit concerned with the timing. However, it was really an exciting time to be there. Everyone I met, white or black, was enthusiastic about getting apartheid behind them and joining the world. They really felt very isolated. Among others at the conference was Jacques Faye who had been the Executive Secretary of the West African Farming Systems Research Network (WAFSRN) and was currently working with CIRAD in Montpellier in France. Dave Norman was also there.

South Africa had an excellent agricultural research and extension program associated with the “Whites’ Own” Department of Agriculture. They served some 55,000 large-scale white farmers who used some of the most modern technology anywhere. There were something like 20 other Departments of Agriculture in the country serving the 1.1 million black, small farms in the homelands. But they had little or nothing to work with individually nor as a group. The thought was that all these departments would become one and that persons from the former Whites’ Own Department would have to service the 1.1 million black farmers as well as the 55,000 whites. And they simply did not know how to cope with this large number of small farmers. A farming systems approach seemed like the only hope.

One of the things that had already been organized was the creation of “emerging farmers,” who were black farmers organized into commercial operations. One I saw was a five hectare banana farm. Another was a one hectare leather fern farm under plastic screen. In both cases, there were large commercial firms associated with them to do the marketing. Besides the tremendous investment involved with each individual farmer, this simply did not seem to me to be the way to go. While my hosts in the Department of Agriculture were attentive, I do not think they were very enthusiastic with my suggestions. However, some of Mandela’s people were at the farming systems conference and they were very attentive to what was going on. So it looked like the farming systems approach would be important in the new South Africa as well as Southern Africa in general.

On the weekend break while I was there, Ted and I visited Kwazulu, one of the homelands, where I met Howard Beck. He worked very hard to improve the agriculture in this homeland. Part of what he was involved in was providing services, from tractors to

seed to fertilizer for the small farmers in his area. This seemed like a much better approach. After visiting him, we were able to spend an evening and the next day in Kruger National Park. This is a very well run park and has an excellent array of animals. I very much appreciated the time Ted took with me on the whole trip.



Women on a path in Kwazulu.



Bongo in Kruger National Park.

I was also invited to present a paper in Chapingo, Mexico at the Autonomous University. They had a conference on “Agroforestry for sustainable development” and my paper was

called “Farming Systems Research for Agroforestry Extension.” This paper which I did with four former graduate students was later published in *Agroforestry Systems*.¹⁹ In this paper we argued that *knowledge of farmers’ evaluation criteria* plays an important role in the analysis of on-farm research data and in the dissemination of the resulting technology. Research conducted by the four students in Brazil, Costa Rica, Haiti and Kenya was used as examples. I had been having discussions with Bellows, Campbell and Jama as a group for a number months in which we discussed the commonalities emerging from their apparently very different research situations.

I returned to Settat, Morocco in September to present another short course, this time on analysis and design of on-farm research. Working with me in this course were former student John Russell (PhD Agronomy) who was at the time working in Zanzibar, and current student Debbie McGrath (PhD Forestry), both fluent in French. In this course, where there were about 25 participants from both research and extension and some of the Moroccans who had taken the first course were acting as assistant trainers. We split the participants into two groups: those who wanted to work with computers (predominately the research group) and those who wanted to use hand-held calculators (predominately from extension). The extension people did not have access to computers and did not know how to use them. The researchers predominately did, on both counts. It was interesting because the two groups (computer vs. calculator, not research vs. extension) competed with each other to see who could finish exercises first. As often as not, the calculators won! My message with Modified Stability Analysis has always been that computers are not necessary. Analysis can be done on the ground with a stick if necessary. Debbie stayed on in Morocco after the course ended looking into possible dissertation research topics and collaborators. However, she finally opted for Brazil where she collaborated with PESACRE, the organization that we helped create in Rio Branco.

19. Hildebrand, P.E., B.K. Singh, B.C. Bellows, E.P. Campbell and B.A. Jama. 1993. Farming systems research for agroforestry extension. *Agroforestry Systems* 23:219-237.

1993

In 1992, the Association for Farming Systems Research-Extension recognized a number of regional chapters: 1) Asia, 2) Southern Africa (which has effectively become Southern and Eastern Africa), 3) Europe, 4) Latin America and 5) North America. It was generally decided that the global association would meet in even numbered years and the regional chapters in the odd years. At the University of Florida we decided to host the first North American chapter symposium in 1993. I was Chair of the Overall Organizing Committee, and Terry Kelly, my PhD graduate student was the official Coordinator. RoseMary Espailat, my secretary, was the official secretary of the symposium and did an outstanding job both before and during the conference. This was a major undertaking that took up a lot of our time during the year. We decided that we should have several farmers attend and were able to obtain funding from the Kellogg Foundation for this purpose. We had farmers and ranchers from several states including Oregon, Montana, Pennsylvania and Florida. Ray William, formerly with UF and then with Oregon State, had begun “story telling sessions” in some of his work and we also incorporated these in our program. They have proved to be extremely popular. The farmers (or others) get together with an interested group, usually in the evenings, and tell the stories of their farms. At our symposium, David Norman also told his story. Although I missed it, I was told that it was a big hit, and I am sure it was.

At this symposium I presented a paper on how to create multiple extension messages from a single set of on-farm trials using adaptability analysis.²⁰ *This I think was an important contribution toward a method to maintain diversity by permitting recommendations for very different biophysical conditions and socio-economic situations if they have been included in the design of the trial.* I emphasized *coordinated* on-farm trials because farmers had to agree on a minimum number of common treatments to be included on each farm or field in the trial. Individual farmers can opt to have other treatments on their own farms, but these treatments would not be included in the adaptability analysis.

20 Hildebrand, P.E. 1993. Targeting technology diffusion through coordinated on-farm research. Food and Resource Economics Staff Paper SP 93-25. <http://ufdc.ufl.edu/UF00081830/00002>

In working with so many graduate students (I was involved on 37 supervisory committees in 1993) I began to see us accumulating a really vast amount of knowledge on sustainable development based on their research. It occurred to me that we should try to compile a synthesis of all this work. Too often, when theses were finished they either just stayed on the shelf or else the results were published in diverse journals. This way, the *whole* of their (and our) work was never seen except by someone who worked with so many of them and attended many seminars. I had worked with four of my graduate students (two from Soils and two from Agroforestry) on the paper that was published in *Agroforestry Systems*.²¹ I thought this kind of effort could be expanded to include many more of the students.

The IFAS administration decided that the International Training Division should be paying its own way and not need to depend on support funding from IFAS. As a result, we began a transition, moving the ITD back into IFAS International Programs which we had been successful in getting it out of about five years before. Over the 4 1/2 years that we were under our own Director (of which I was Director for 3 1/2 years), the portfolio was nearly \$1,000,000 with \$210,000 returned to the individual units (mostly departments). In 1992 when we were fully operational, we had a portfolio of \$310,000. We had been able to get 33 faculty involved in short courses. Three graduate students had been course coordinators, eight served as trainers, and another eight had served as program assistants. I thought the program was an excellent outreach activity for IFAS. It brought us tremendous international exposure and helped recruit a number of outstanding graduate students. ***But IFAS was in the process of decreasing international involvement*** and the decision was made.

In 1993 the university finally began to consider the creation of a new college that would be based on multiple disciplines all working on natural resources and the environment. This was similar to an approach that I and a group of faculty had been working on for several years. Within FRED, several of us had begun working on a “Concentration Cluster” that would free us from the rigid disciplinarity that then existed in the department. We began to see the new college, the College of Natural Resources

21 Hildebrand, P. E., B. K. Singh, B. C. Bellows, E. P. Campbell and B. A. Jama. 1993. Farming systems research for agroforestry extension. Special issue of *Agroforestry Systems*, Volume 23, Nos. 2-3. *Directions in Agroforestry: a Quick Appraisal*.
<http://www.springerlink.com/content/lt064715h5249n76/fulltext.pdf>

and Environment (CNRE) as the best option because our department was not at all receptive to making the kinds of changes we felt were needed.

My international travel in 1993 involved only two trips. One to Managua, Nicaragua to participate as a trainer for a short course on gender analysis in FSRE activities funded by FINNIDA, the Finnish “AID” agency. I also went to Jamaica to evaluate the Jamaican Hillside Agriculture project. We had several students working in this project. Also in 1993 the revision of the methodology book that Chris Andrew and I had been working on was published.²²

1994-1997: Conservation, Development and Food Security

In the 1994 annual evaluation reports from the faculty, the Chair of the department asked for a statement of what we considered our most significant efforts during the year. In my statement I said: “My most significant efforts have been toward increasing the multi- and inter-*disciplinarity* of systems research and study. This has come about from my activities related to:

- 1) managing the new Agricultural Systems Panel for the National Research Initiative/Competitive Grants Program of the U.S. Department of Agriculture during its first year of existence;
- 2) agreeing to chair the task force for creating a graduate curriculum on Sustainable Development for the new College of Natural Resources and Environment at UF; and 3) working with the large number of graduate students in the a) farming systems, b) agroforestry, c) WIAD, and 4) Tropical Conservation and Development Programs on campus.”

During 1994 I was working with 41 graduate students (6 of whom graduated during the year). These students were majoring in 12 different departments (Ag Education and Communication, Ag Engineering, Agronomy, Anthropology, Mass Communication, Dairy Science, Forestry, FRE, Geography, Latin American Studies, Soil Science, and Wildlife). All told, they were working on research in 12 countries: Bolivia, Brazil, Colombia, Costa Rica,

²² Andrew, C.O. and Peter E. Hildebrand. 1993. Applied agricultural research: foundations and methodology. Westview Press, Boulder, CO. <http://ufdc.ufl.edu/UFO0055232/00001>

Cuba, Ecuador, Haiti, Honduras, Jamaica, Korea, Peru and St. Lucia. *Eighteen of them were working for a farming systems minor (another 71 graduate students had graduated with the minor for a total of 89!).* Enrollment in the farming systems course continued to be strong (12 students) but the economic analysis course had dropped down to 4 students in the spring semester. During the year I decided I had to change it to a graduate level course and begin teaching it in fall semester. Many graduate students wanted to take it, but because it was a senior level course they did not do it.

In 1994 the first students graduated with an M.S. degree in Agricultural Education and Communication with the Concentration in Farming Systems: José Garcia, James Glisson, Donna Rieper and Lynne Schreiber. Seven others were enrolled in the program. The Vice President for Agriculture and Natural Resources advised me that he would fund only one more farming systems assistantship and then would terminate the program. The program had brought a tremendous amount of worldwide attention to the farming systems program and the University of Florida. At a time when academics, extension and research were finally moving towards a systems approach, I felt that terminating the assistantship program was very short sighted. Obviously the Vice President and I disagreed on this point. Nevertheless, I felt the assistantship program had been highly successful.

ICTA in Guatemala had created an “International Council” and had asked me to serve on it. In 1994 I traveled to Guatemala for of meeting of the council. Also in 1994 I spent a month in Tanzania, contracted by the Government of the Netherlands to serve on a team to evaluate their farming systems program in that country. On the latter trip, I left Gainesville on Tuesday, September 13, overnighted on Delta to Zurich where I had a 10 hour layover and then caught SwissAir to Dar es Salaam arriving after landing first in Nairobi and getting a great view of Kilimanjaro from the air as the sun came up (Thursday, September 15). In customs I was met by two people from the Dutch Embassy who were waiting to accompany me on a charter flight to Mwanza on the shores of Lake Victoria. I was on the ground only fifty minutes before being airborne again, this time in a six passenger, twin engine Piper. I had to put whatever I took to Mwanza in my carryon bag because there was not space and weight for my checked bag. This was taken by the driver back to the Dutch embassy where I would connect with it in about 10 days. On this

trip we crossed Lake Victoria on a ferry to Bukova. I also flew to Mtwara near the Mozambique border.



On our way to check out some of the work of the Bukova team.

1995

The change in the economic analysis course from a senior to a graduate level course and from spring to fall semester was a success. In spring semester, taught under the temporary number of AEB 6933, I had 7 students (compared with only 4 the previous spring semester). Then I taught it again in fall semester under its new permanent number (AEB 5167) and I had 15 students in the course. *I incorporated gender analysis as well as food security considerations. I was beginning to concentrate more and more on linear programming in the course and many students began using it as the basis for the analysis of their thesis and dissertation research.* I was convinced that with the increasingly common availability of desk top computers or even laptops in remote areas, linear programming with spreadsheet software was becoming very feasible. A few students in the class were able to use data already collected, but many more used it as a means to help them determine what data they needed when they went to the field. Students in the course were coming from many departments, both in IFAS and “across campus” but very few from my own

department were taking it. This reflected the still very rigid stance in the department on theory and quantitative economics with little tolerance for applied work.

About this time I began working with Elena Bastidas who had finished a B.S. in FRED and was working on the M.S. degree in Agricultural Education and Communication with a concentration in farming systems. Both she and her husband, Diego Luzuriaga were Ecuadorians and Zamoranos and both were outstanding graduate students at UF (Diego in Food Science). Elena was my assistant trainer for two summer short courses in 1995. One was economic analysis, based on linear programming, and the other on analysis and design of on-farm research. One of the students in both courses was Mamadou Lo from Senegal who later got the farming systems MS degree in AEC. Elena and I also worked on a proposal for a short course in Helsinki that fell through, and for one in Cuba involving on-farm research and prepared all the materials in Spanish when the contractor said that I was too old to be an FAO consultant (FAO was paying for the course). So that course did not materialize either. We were going to use the new book, *Adaptability Analysis* that John Russell and I had written and was sent to press in 1995.²³



Mamadou Lo, Dean Jack Fry, Elena Bastidas and me at a closing ceremony for one of the short courses.

23. Hildebrand, P.E. and J.T. Russell. 1996. *Adaptability analysis: A method for the design, analysis and interpretation of on-farm research-extension*. Iowa State University Press. Ames.

<http://ufdc.ufl.edu/UF00072042/00001>

At the North American AFSRE conference in Ames, Iowa, I had volunteered to set up an electronic network for all participants from the meeting. I thought I would be able to even get the farmers who had computers but did not have access to email on the net using the FRED 800 phone number. I did get this set up and did make it possible for farmers to use our 800 number to get free email (but not other web) connections. This proved to be very popular. The people at Oregon State used the list as well for their farming systems conference in 1997. In addition to the North American net, I also created a farming systems net for campus use, the FSNET. This was not a list server but rather just a mailing list on my computer. I forwarded announcements on seminars, classes, jobs, etc. to both graduate students and faculty who were interested in the topic of farming systems. This has proven to be very popular and useful and is still (2011) in full operation with many now around the world on it. Also during the year I had been meeting with a group of students interested in expanding the concept of agricultural sustainability beyond the farm. We held periodic seminars on Community Sustainability and I also created a COMSUS network for this group. Although this group, itself, was not sustainable, the idea of meeting on a regular basis with a diverse group of graduate students on specific topics did persevere and has been very useful.

My secretary, RoseMary Espaillat and I both won awards in 1995. RoseMary won the Superior Accomplishment Award which is offered annually to persons who are outstanding in staff and support positions. I have always strived to have a competent secretary, and it is always a struggle to keep one once I have one. RoseMary was a trained and experienced bilingual (Spanish/English) executive secretary and the wife of a student in Agronomy working on both a Master's and a PhD degree (fortunately for me because this meant she was able to stay with me about seven years). Over time, and as computers began to take over many of the tasks formerly handled by secretaries, the department began to lose secretaries. This meant that two or more faculty began to share a single secretary. As this process progressed, there was much pressure on me because I still had my own secretary. It didn't make any difference to those who were jealous that their pool secretaries spent much time with little to do and that RoseMary was always busy with a list of tasks and priorities lined up. I guess they just did not understand how a secretary was a member of a productive team. RoseMary and I

worked together in a very productive relationship. Without her, our office would not have been able, for instance, to become the secretariat of the 1) Women in Agricultural Development Program, 2) to manage the FSRE assistantships, 3) to organize the Farming Systems library, (<http://ufdc.ufl.edu/?c=fao1&s=ifsa&>) 4) coordinate the Farming Systems seminar series, 5) host the North American AFSRE Symposium, and I would not have been able to manage the tasks of the 6) director of the International Training Division. Some excerpts from her letters of nomination follow:

In all of my encounters with RoseMary, she has been the epitome of efficiency and helpfulness. Her abilities to do any task requested of her, find anyone or anything you may need, turn around a document (in either Spanish or English) in record time, schedule appointments and meetings, take on extra assignments, learn new skills, teach staff, faculty and students what she has learned, and maintain a cheerful demeanor throughout is truly extraordinary.

Visitors to the University, as well as everyone who comes to Dr. Hildebrand's office, are made to feel comfortable and welcome. Certainly Ms. Espailat's ability to work in two languages and cross culturally is an asset that serves the University in the broadest context as she readily shares those skills to help with visiting dignitaries and new students.

I have known Ms. Espailat in several capacities, including when I chaired the NAFSRE symposium last year and over the years for both the Farming Systems and WIAD programs. Ms. Espailat is simply an excellent secretary, dedicated professional, and loyal Gator. If something needs to be done for any of these programs and activities, then RoseMary does these things and they are done correctly.

It has been my good fortune to have worked with RoseMary many times. Not only is RoseMary always willing to help, epitomizing cooperation and positive attitude, she is willing and eager to learn. I have instructed many people in the use of electronic communications in the last several years and no one has learned and applied the information as quickly as RoseMary. Importantly she is always willing to help others and share skills with others. RoseMary has repeatedly taken it on herself to prepare "how-to-do-it guides" and teach skills in mini-short courses.

Last year, RoseMary took the initiative to computerize the listing of the Farming Systems library housed in Dr. Hildebrand's office. A few months later, when we wanted to start a departmental reading/reference room, RoseMary volunteered several hours of her time to teach another employee how to use the library software. Her support of this effort was a key to the successful launching of the departmental reference/reading room.

It should be quite obvious that a secretary like RoseMary is a powerful force in making her supervisor more productive. Much of what I have been able to do over the years has been due to having (and usually keeping) good secretaries.

Also in 1995, I won the Alpha Zeta "Professor of the Year" award which was truly a surprise for me because I had always associated it with undergraduate teaching. It turned out that a large group of my graduate students submitted the nomination and were successful. I very much appreciated the award. But it would not have been possible without the excellent graduate students and secretarial support I had over the years.

1996

In my 1996 annual evaluation report I made the following statement in an attempt to better convey to my Chair and the upper level administration of IFAS the nature of what I was doing, and perhaps an understanding of why students from so many different departments were interested in farming systems.

Farming systems professionals, important participants in agricultural and sustainable development activities, work in the world of forests, farms and rural communities as well as that of commerce, governmental and non-governmental organizations, international organizations and multinational companies. They often act simultaneously as functionaries, advocates and community members. For them research is a tool, not an end. It is used to help diagnose sources of problems and conflicts and search for appropriate solutions. Primary data and first-hand knowledge of the poorly understood circumstances of the clientele are critical. Many at the moment are working in remote areas on the important interface between wildlife and natural resource protection and conservation, and agricultural and economic development. Their multidisciplinary training

necessarily requires people skills, participatory techniques, gender analysis, a capability to communicate with persons in many fields and cultures, a comprehensive understanding of development, and, of course, expertise in some primary socioeconomic or biophysical field.

Most of my time in 1996, besides my classes, was with graduate students. As a reflection of the interest by graduate students in farming systems, *my graduate student load swelled to 46 in 1996* and a new major (Political Science) was among them. Of these, *19 graduated* during the year! Sergio Ruano who had been with me in ICTA in Guatemala was working as a consultant to the Centro Maya in the Petén of Guatemala. Through him I managed to negotiate for three students (two graduate students and a senior honors student) to work with them during the summer on different aspects associated with the Maya Biosphere Reserve.

Also in 1996 I worked with Christina Gladwin and other faculty from UF on a proposal that we submitted to the new Soils CRSP. I was a member of the committee to screen the proposals (at North Carolina State University) for this program. Our project was selected for support, but initially with no funding! However, during the year Christina did manage to get a minimum level of funding so we initiated activities during the year.

1997

My graduate student load dropped a bit to 39, but it did not mean I was working any less with them. In spring semester, Marianne Schmink and I set up a seminar-type “non-course” on gender analysis and had about 15 students involved. They were taking from zero to three credits apiece, depending on what they wanted to contribute and accomplish. We couldn’t decide what to call it so called it simply “Juanita.” Don’t ask me where that came from! The non-course generated a great deal of interest among students, both those involved and others who were not in it. In fall semester, I agreed to continue the idea, but with a theme based on food security, that had come up repeatedly during the previous semester. Again, there were about 15 students involved, not all the same from the previous “Juanita.” From this non-course, Juanita II, we generated a number of papers around the theme of food security among small holders based on the research experience of the students (and some faculty) who were participating. Many of

these were using linear programming analysis and had taken, or were taking concurrently my economic analysis class.

We decided we ought to do two things with the papers we were working on. First, we submitted a proposal to the Southern Africa Farming Systems Association who were going to host the 1998 global AFSRE symposium. We suggested that we put on a half or whole day special session on food security. Also, we thought we should be able to end up with a book on the topic. We were seeing a lot of similarities among a highly diverse set of small farm livelihood systems. *All were extremely diverse and depended on this diversity for sustainability and food security. The seasonal needs for cash and food drove the systems and household composition dictated the relative capabilities to meet them.*

Two students went to Guatemala to work with the Centro Maya: A.J. Shriar, a PhD student in Geography; and Christy Vollbracht, a senior honor student in Wildlife. A.J. was doing preliminary research for his dissertation and Christy doing her honors thesis. This was my first time working with an honors student and I was very much impressed with her and the honors program. Her thesis involved methods of storing maize.

I went to the University of Guelph in Ontario, Canada, in early March to review their farming systems program and help them move from conceptualization to an action program. March in Ontario is cold, and I, of course, had no warm clothes so they had to loan me a coat for the duration of my stay. John Smithers picked me up at the Toronto airport with the coat and I gave it back to him when he dropped me off again at the airport. Later in the year I went to the University of Georgia in Athens (my first trip to “Dawg” town) to help them design the second phase of the SANREM (Sustainable Agriculture and Natural Resource Management) CRSP. Bob Hart, one of the old farming systems hands, was the Director of the CRSP. I had known Bob since I was working in El Salvador and he was in Honduras with a CATIE program.

I was very pleased in 1997 to receive the University of Florida and College of Agriculture 1996-97 Graduate Teacher and Advisor of the Year Award. Elena Bastidas and several other graduate students took advantage of the first year this award was offered to submit my nomination. They were as happy as I was when I won. Besides Elena, other students involved in the nomination included Mamadou Lo from Senegal; Mike Dougherty, an American; and Abib Araújo from Brazil.

In November, the biennial North American Association for Farming Systems Research-Extension symposium was held in Oregon, the only state of the lower 48 I had not yet been in and leaving only Alaska. One of the graduate students in the farming systems concentration in Ag Education and Communication had a poster accepted and she and I went to the meeting. Angela Snyder had done an excellent job with her linear programming term paper in my economic analysis class and this was what she prepared for a poster. The symposium was held in a resort (Resort at the Mountain) near Mount Hood. We flew out on Saturday for the lower fares and were able to tour the area on Sunday before the meetings began.

1998-2003: Food Security, Household Diversity and Sustainable Livelihood Systems

In spring semester, 1998, I continued working on the idea of a food security book with the group of graduate students and faculty. We met about twice a month to continue discussing ideas and improving our comprehension of the topic. Around the world, these small holder systems are very diverse and there is great diversity within each system. *The most important strategy appears to be diversity. This is important because it reduces the risk of depending on a single source in any particular season for food or cash and it is necessary so that seasonal demands can be met. But the capability of any household to meet these demands depends to a large extent on the composition of the household.* In households with only two adults and one to several small children, it is very hard for the adults to adequately feed the many mouths while at the same time caring for the children at home. When children are older, households become relatively well off with several persons able to work in production activities or help with household reproduction activities. In particular, if a person is away from the *hearthhold* (not living in the household) but sending money back to the household as remittances, it provides an opportunity for the household to begin to accumulate wealth such as more land or oxen, or engage in such activities as soil conservation that produce longer term gains at the expense of short term expenses. This also makes it more feasible for a household to begin exploring and learning to use new technology, a topic we explored nearly 20 years before in John Wake's thesis. I contacted Lynne Rienner who had published a couple of my earlier books and she expressed an interest in publishing it.

I had been negotiating with a donor who wanted to send a senior Bangladeshi scientist to UF to take my economic analysis and farming systems courses. Originally they wanted it done in two months (November and December) as special courses. However, they did not want to pay the price of one-on-one courses. Eventually they decided to send him in spring semester as a registered non-degree student when I was teaching the farming systems course and I agreed to provide him a "special topics" course over the economic analysis material. After I decided to do this, *I announced it on my farming systems network on campus and*

ended up with six other people taking the economic analysis course even though I had just finished teaching the course in fall semester.

It was in the 1997-98 academic year that I began using a computer in class on a frequent basis. Also, the students began using a computer for making their presentations in class. This required a laptop computer and portable projector. The department had these and usually they were available. However, as I began to use them on a regular basis in class in fall semester, I finally obtained my own laptop and later a projector. This equipment is particularly useful in teaching linear programming. The students were grasping the material much more rapidly than previous classes and I was fully convinced they would all be using the technique in their own research and future careers.

In 1998, several UF faculty and a number of graduate students were involved in the second year of our participation with the Soils Management CRSP. Christy Gladwin was the UF Principal Investigator. We planned on having several graduate students in the field over the summer and fall. In order to do this, of course, planning starts many months before. We were supposed to have our money from USAID, by way of the University of Hawaii, by February or so. However, the delays were incredible and we sent students overseas in the summer with little real financial support. *On the CRSP we had students in Malawi, Uganda, Ethiopia, Senegal and Mali. In addition, I had students in Peru, Bolivia, Ecuador, Colombia and Guatemala. With the exception of the one in Bolivia, all were working with small holders and all, including the one in Bolivia, were using linear programming in their theses and dissertations.* They were majoring in Forestry, Geography, Latin American Studies, Agricultural Education and Communication, and Anthropology. All were working on the interface between conservation and development and most included food security concerns as a major consideration.

In order to keep the courses going, the book progressing (albeit slowly), the farming systems seminars active and keep up with my graduate students, I needed help in the office and was fortunate to be able to have Elena Bastidas as a graduate assistant. She moved into my office (taking the inner office where I had been when I still had a secretary) and I was in the larger, outer office where RoseMary had been. Elena and her husband, Diego, were both former 'Zamoranos' and both working on PhD degrees. I was Elena's major professor so it worked out very well to have her in my office. She had been working with me on several short courses

and was super organized. In an interesting aside, Elena had a baby in December 1997 so she and Diego immediately began actively living the kind of household stress we were talking about in our food security work.

The University of Florida was involved with EPCOT in Disney World, and the World Bank in a program they called 'International Communicators.' The World Bank funded the 'communicators' from several countries to come to Epcot during their annual spring Flower Festival and create typical farm scenes from their home countries or areas. They would give presentations periodically during the day. These communicators came to UF one day for lunch and to get acquainted with the departments relative to their individual disciplines. I hosted two, Tet Lopez from the Philippines and Francis Sumba from Kenya. Both were agricultural economists. Later in May, as their guests, I went to EPCOT to see their presentations. Another communicator who had been to UF at the lunch was Amy Gough, a US representative. She was later admitted into the farming systems program in AEC and began in spring 1999.

Also in May, I attended the 25th anniversary celebration of ICTA in Guatemala where I had worked in the 70s. This was a major, three-day celebration with lunches, banquets, a dance and many talks. I had been invited to give the keynote address on the first morning following the address by the Minister of Agriculture. Although my title was grandiose, "The Political and Economic Situation over the Last 25 Years," I talked mostly about what the impact of ICTA had been on agricultural research and extension methods in the world since ICTA was established 25 years before.²⁴ There was a great difference between the Minister's talk and mine. His reflected the current development line of competition, efficiency, comparative advantage, export and commercialization. It also was in line with ICTA's new direction of 'responding to research needs' of companies (mostly multinational) or organizations that could pay for it. The Minister simply wrote off the *campesino* population which in 1998 probably numbered more than the total population of the country in the 1970s when I was working there. He indicated that *the small holders who were too small to commercialize were not part of his portfolio*. Rather they were a social problem for some other Ministry. Believe it or not, this was similar to my thinking 40

²⁴ <http://ufdc.ufl.edu/UF00065469/00001/2j> (Spanish)
<http://ufdc.ufl.edu/UF00065469/00002/2j> English

years before when I finished my PhD degree. The Minister was just going to ignore half of Guatemala's population who produced at least half of the food the country consumed.

I argued that ICTA had to continue working for the small holders to help them increase the production of their basic foods. The kind of technology they need is very different from that needed by the commercial producers of export products and there was no other entity in the country that could or would produce it. *Thinking only in terms of productivity per unit of land as the Minister had iterated, was not appropriate for the small holder producing food for the family and a little to sell.* Their scarcest resources often are their own labor particularly in critical times of the year such as planting and weeding, and cash which is needed for much more than purchasing inputs from the market. ICTA's methodology originally was developed to help this kind of producer. Most *campesinos* were not able to attend meetings to organize themselves to request funds because they were already fully employed just trying to feed their families. In a letter to the *Gerente General* of ICTA following the celebration (May 22, 1998), I suggested that if the Ministry was not going to provide funds for ICTA to serve these people then ICTA should look to the 'social' funds the Minister said were responsible for them.

I made my first trip to Monterrey Tech in Monterrey, Mexico in July and was very much impressed with it. They have excellent funding support and appeared to have used the money very well. One of their professors was getting a PhD degree from Monterrey Tech and had spent a year at UF as part of his program. Jim Jones from Agricultural Engineering at UF was serving as his major professor and I was also on his committee. Another external person was from California and the other members were from Monterrey Tech. We held the oral part of his qualifying examination there and worked with him on his research proposal.

Traveling with Jim offered us a time to get better acquainted (even though we worked on several committees together, we had never had time to socialize). One result of the trip was my agreement to work with him on a NOAA (National Oceanographic and Atmospheric Administration) research project he had with the University of Miami and Florida State. They were modeling the 'ENSO' phenomenon known as El Niño and La Niña and modeling the effect on crops from these climatic deviations. Jim was working on the possibility of making recommendations to farmers on how to change their cropping practices when these variations are predicted. NOAA decided that they should get the

farmers involved by 1) finding out what *they* thought, and 2) trying out some of the recommendations in on-farm trials. Jim agreed to fund an assistantship for fall semester and I managed to get Angela Caudle to take it. She was one of the students who had been in the Petén in Guatemala earlier in the year. She began working in Alabama and Georgia and a bit in Florida. I thought it might work to have my farming systems class use this topic for the class Sondeo exercise in the farming systems course in spring semester. We were able to continue funding Angela as well.

In November I agreed to serve on a committee to review the Leopold Center for Sustainable Agriculture at Iowa State University in Ames, Iowa working with the former director of the Indiana Agricultural Experiment Station at Purdue, the current director of the Cooperative Extension Service for New Jersey at Rutgers, and Lorna Butler, a long time friend and farming systems extension person from Washington State. Lorna headed up the group. Dennis Keeney was the director of the Center and former President of the American Society of Agronomy. He and I had worked together on a chapter for Mike Collinson's book on the History of FSR.²⁵ Coincidentally, (I think) both Lorna and I had been nominated (possibly by Dennis) for the endowed Chair for Sustainable Agriculture that had just been created at Iowa State. Dennis and the Center had done an outstanding job of trying to bring an integrated, systems perspective to research in the very reductionist ISU College of Agriculture and the endowed Chair could help their efforts considerably. The Chair would have been a challenge, but I decided that living in Iowa was not for me. In particular, I had just signed up (July 1) for the State of Florida DROP program. My retirement rate was set at that point and the money was paid into a fund to accumulate while I continued working (and making my regular salary) for up to five years more. But at the end of five years *I had to retire*. Then my retirement income would continue and I would have access to the fund that had built up in the meantime. Lorna did apply and got the position.

Late in 1997, Chris Andrew had been approached by a person at Kansas State University who had the idea of nominating me, Mike Collinson and David Norman for the World Food Prize.

²⁵ Hildebrand, P. and D. Keeney. 2000. Agronomy and FSR—a reluctant marriage? Chap. 10.3 IN: M. Collinson (Ed.). A history of farming systems research. CABI Publishing.
<http://ufdc.ufl.edu/UF00091275/00001>

The nomination would be in 1998 for the 1999 prize. He and Elena Bastidas worked very hard on it, particularly toward the end of 1998 (the nomination was due December 31). Also helping in the process were Marianne Schmink and Chuck Wood from the Center for Latin American Studies. The recently-named President of The Rockefeller Foundation (Gordon Conway) officially made the nomination (which had to be made by an institute, not an individual). Gordon had been a long-time member of the farming systems association and worked in farming systems activities mainly in India for many years. The idea of the nomination was that the three of us, all farm management agricultural economists, had been among the founders of farming systems which was having a worldwide impact on food production.

1999

The last year of the millennium turned out to be busy, interesting, exciting and sad as well. The excitement did not involve the World Food Prize which we did not win. However, Gordon Conway, the President of The Rockefeller Foundation, requested permission to re-nominate us for the 2000 prize, which, of course, we all agreed to. Rather, our family took two great vacations, I took on a second job at the university, and my international travels began to increase again. Let's start from the beginning and leave the sad part for later.

In December, 1998, the Rector (President) of the Escuela Superior Politécnica del Litoral (ESPOL) in Guayaquil, Ecuador, took advantage of being in Gainesville to visit his daughter (Elena Bastidas, my graduate student), to meet with then director of International Programs, Peter Hartmann. The Rector was interested in a 'strategic alliance' with the University of Florida with specific interest in development of the small-scale farmers in the part of Ecuador where ESPOL was located. Hartmann sent him to see me and we began a very productive relationship. The first activity was a one-week short course that Elena and I presented at ESPOL in March, during Spring Break. Participants in the course included not only people from ESPOL but also a number of other entities and private individuals interested in the development of the Santa Elena Peninsula and the Guayas River Basin. The course was an introduction to farming systems research and extension methods. We did a one-day Sondeo exercise during the course in an area of small rice farmers north of Guayaquil. *It was an eye-opener to most of the participants who*

had absolutely no idea of what it was to be a small farmer nor how they struggled just to feed themselves and survive. They changed from having an impression of small farmers as just being lazy and spending the days in their hammocks to one of an industrious group eager to improve their livelihoods but facing a nearly insurmountable barricade of constraints that required outside help to overcome. As a result of the course, work began on creating a formal ‘cooperative agreement’ between ESPOL and UF.



L. to R. Elena Bastidas, me, Ing. Victor Bastidas, Rector of ESPOL

During the trip I was invited by the Rector to attend a ceremony in May in which ESPOL was going to award an honorary degree to the President of the InterAmerican Development Bank, the IDB. I was unable to attend but with the Vice President’s blessing we sent Larry Connor, Dean of Agriculture Emeritus, and Rich Beilock (from FRED) to represent UF and to further look into the benefits of creating a cooperative agreement with ESPOL. They came back very enthused and recommended that we proceed. At the same time, work began on two joint proposals for activities to be submitted by ESPOL for funding. These were oriented both toward the development of the peninsula and basin and for joint research and teaching.

In April, Mike Martin, the new Vice President of UF for Agriculture and Natural Resources (and head of IFAS) asked me if I would consider a half-time appointment as director of International Programs in the Office of the Vice President. As had most of the faculty, over time I had become disenchanted with the IFAS Office of International Programs. Faculty, like I was for that matter, were doing their own thing internationally, but little was

happening through International Programs and there was no coordinated effort at an IFAS-wide program. Because Mike Martin was dedicated to enhancing the international activities and image of IFAS, I decided to do it. This meant I would be replacing a full time position on a half time basis in addition to doing what already amounted to a very heavy full time job, *thus I took on two full time jobs!* My appointment was to begin mid June.

Earlier in the year, a group of six graduate students and I (part of the group working on the food security book) decided we would submit a set of joint papers to be presented at the North American AFSRE meetings to be held at the University of Guelph in Ontario. We proposed to make a single one-hour presentation in which we would take turns rather than to make seven separate presentations. The planning committee at Guelph was somewhat skeptical, but finally agreed on our plan so we began working on this presentation shortly after I started as director.

As a result of the Sondeo we had done in the farming systems course in spring semester for the NOAA project, <http://ufdc.ufl.edu/UF00054657/00001> I had agreed to field a team of students in the two-week break between summer and fall semesters (August 8-21). Eight students were involved (from anthropology, agronomy, agricultural extension, natural resource management, forestry, geography and community development), all having taken the farming systems course before. The field interviews with extension personnel from all over the state were conducted between August 9 and 18. Each two-person team had a car and traveled from Key West to Pensacola. Every other night the team met to discuss their previous days' interviews. After these meetings the teams were changed. The report structure was discussed and agreed to by the team members as a whole. Responsibility for writing drafts of the sections of the report was taken by two-person teams that began working on them following the last day of interviews. The entire Sondeo team worked together to edit and produce the final report. As the group discussed each section, changes were made to the document. Conclusions and recommendations were written collectively by the

whole team at the time of editing.²⁶ It was very well received by the consortium of universities working on the NOAA project (U of Miami, Florida State and UF), and because of it, more work of a similar nature was included in the following proposal submitted to NOAA in 2000.

In September I took John Gordon, my FRED Chair, to Ecuador on his first trip to a developing country. There were several purposes of the trip. One was to acquaint John with the whole concept of working in a developing country. A second was to review the UF project on privatization of extension being run by Kamal Dow (a FRED faculty member) in Quito. A third was to acquaint me and John with the Santa Elena Peninsula and the Guayas River Basin where we were planning to work with ESPOL and meet many of the key players involved, both public and private. Another was to sign the cooperative agreement that had been signed by the UF Vice President, Michael Martin, prior to our trip. A fifth was to plan for future action under the cooperative agreement with ESPOL. And last but not least, ESPOL and UF jointly were going to present a research proposal to Ecuadorian organizations for funding to work in ESPOL's area of responsibility.

Finally on October 4 Lisette Staal came to work for me in International Programs as assistant director. I had requested this position several months earlier and it had been approved, but it took many weeks to move through the system. Lisette had worked in the FSSP in the early 80s and had been involved with international activities at UF ever since. She had also been my assistant director when I was director of the International Training Division of IFAS several years earlier. Her arrival made a big difference in my hectic life even though she was working only half time.

On October 13 I made a rapid trip to Veracruz, Mexico with John Gordon and Dan Cantliffe, Chair of Horticultural

26. Hildebrand, P.E. (Ed.), A. Caudle (Coordinator), V. Cabrera, M. Downs, M. Langholtz, A. Mugisha, R. Sandals, A. Shriar and K. Veach. 1999. Potential use of long range climate forecasts by agricultural extension agents in Florida. Staff Paper SP 99-9. Food and Resource Economics Department, University of Florida, Gainesville. <http://ufdc.ufl.edu/?b=UF00053842>

Sciences, to visit Chris Andrew who was nearing the end of a one year sabbatical at the University of Veracruz in Xalapa. Chris had had both a productive and a frustrating year in Xalapa. He got a lot of things done, but many things moved much slower than he thought necessary. There was potential for UV to become a second main program of IFAS (along with ESPOL in Ecuador) but it appeared that it would require the full time presence of someone from UF in Xalapa. Chris had worked with a former student, Rey Acosta, but Rey was too involved in UV activities and politics to be an effective UF representative. Following two very full days, we were concerned that Hurricane Irene would interfere with our return to Orlando via Mexico City and Houston, but we had only intermittent rain on the drive from Orlando to Gainesville.

Two days later I was off to the North American AFSRE meetings in Guelph, Ontario, with six of my UF graduate students. I rented vans to get us from Gainesville to Orlando; for the round trip from Buffalo, N.Y. to Guelph; and from Orlando to Gainesville. The students were a great bunch and we had a lot of fun. We arrived early enough in Buffalo to be able to stop off at Niagara Falls on the way to Guelph and stopped again on the return trip, both times on the Canadian side.



The Guelph group: Elena Bastidas, Heather McIlvaine-Newsad, Amy Sullivan, A.J. Shriar, me, Victor Cabrera and Maxwell Mudhara.

For our joint presentation, I introduced the topic, “Diversity: The challenge of limited resource farming and natural resource conservation in the tropics.”

<http://ufdc.ufl.edu/1/IR00000665/00001> I argued that *diversity is found within each farm, among farms within communities, and among communities*. Because of this diversity, a necessary strategy for these farmers, it is very hard for them to adopt the kind of “broadly adaptable” technologies designed by industry for commercial or corporate farmers. The first student, A.J. Shriar, a Canadian PhD student in geography, covered the broader topic of land use and food security, drawing on his research in the Petén of Guatemala.

<http://ufdc.ufl.edu/1/IR00000666/00001> His conclusion was that on a broad scale, household economic constraints and poor market conditions limit more widespread adoption of alternative practices that could intensify agriculture and reduce pressure on the land. Heather McIlvaine-Newsad, an American PhD student in anthropology, looked at food security, ecotourism and conservation in two ethnically different communities in the Ecuadorian Pacific Coastal tropics. <http://ufdc.ufl.edu/1/IR00000667/00001> She concluded that different styles of natural resource management reflected current cultural, socio-economic, and gender differences within and between the two communities.

Maxwell Mudhara, a PhD student in Food and Resource Economics from Zimbabwe, looked at the relationship between household composition and food security among small holders in his country. <http://ufdc.ufl.edu/1/IR00000669/00001> He concluded that the availability of family labor differs with the household and plays an important role in determining the ability of different households to meet food security requirements. His study also showed that the gender of the head of the household and stage of family development are critical to the composition and performance of the household. Amy Sullivan, an American M.S. student in Agricultural Education and Communication (AEC) with a farming systems specialization discussed differences in strategies to alleviate food security stress between neighboring communities in southern Senegal. <http://ufdc.ufl.edu/1/IR00000668/00001> Ethnically different, women’s motivations, as dictated by cultural norms, influenced how the households reacted to stress.

Elena Bastidas, a PhD student in Food and Resource Economics from Ecuador, presented an alternative framework for participatory research taken from the joint efforts of all of us. <http://ufdc.ufl.edu/1/IR00000670/00001> *The approach recognizes the need*

to maintain biophysical and socioeconomic diversity in order to address the needs of limited resource farmers and at the same time is able to generalize findings of location-specific research. The approach includes the use of Adaptability Analysis and Ethnographic Linear Programming. This latter is a term Christy Gladwin gave to our use of participatory and ethnographic methods to obtain the information and data for linear programming analysis. Finally, Victor Cabrera, also a farming systems student in AEC and from Peru, presented a case study showing how household diversity within a coastal community in central Peru requires diverse extension approaches. <http://ufdc.ufl.edu/1/IR00000671/00001> His study was based on linear program models of 65 separate households. Based on these he was able to aggregate his findings for the area while maintaining the perspective of diversity. It was a good example using most of the methodology we were developing.

2000: Participatory Linear Programming?

During a family vacation at Crescent Beach (St. Augustine) I was reading the A. Scott Berg biography of Charles A. Lindbergh. Following the end of World War II, Lindbergh was becoming concerned about the misuse of the power of science and technology. Airplanes, with which he had been a leading figure and contributor for many years, not only had the advantage of bringing people closer together, but also allowed a much more rapid and widespread destruction in war. He was particularly alarmed when he viewed the destruction of the atomic bombs at Hiroshima and Nagasaki. With the advent of rockets, the dangers were even more significant. He was concerned that, “in worshiping science man gains power but loses the quality of life” (p. 484). Later, Lindbergh wrote an essay “aimed at breaking that grip of a scientific materialism whose values and standards ‘will lead to the end of our civilization’” (p. 484). This man, who had devoted his life to science and technology, began to believe that “an overemphasis on science weakens human character and upsets life’s essential balance” (p. 520).

Reading these thoughts made me reflect on some of the frustrations I have had over the years regarding the ‘worship’ of science by many of the scientists I have worked with. How often have I heard the phrase “it has to be good science” meaning that if it is not statistically significant, it has no value? *Dependence on*

this credo leads to the highly controlled experiments that have little value on limited resource farmers' fields. It also leads to the use of scientists' criteria to judge the value of a technology rather than the criteria of the users or farmers. “If it leads to a significant increase in yield, it is a good technology” to some of these scientists, regardless of whether or not farmers are able to use the technology. The fact that farmers cannot use their ‘good technology’ is not the fault of these scientists in their minds, but of others who are not providing the farmers with the conditions needed to benefit from the yield increasing technology (policies, infrastructure or Extension).

The dangers of this approach were made evident in the late 1990s with the rapid emphasis on biotechnology, particularly by the large, multinational companies who were controlling many of the critical agricultural input supplies. The worse potential abuse was the “terminator” gene controlled by Monsanto. With this gene inserted into its commercial seed, the seed would produce a crop the first year it was planted, but *seed saved from that crop would not germinate*. This forced farmers to continuously purchase seed from the company. In a country like the United States where most farmers did purchase their seed every year this was not a lethal constraint on farming. However, Monsanto wanted to market its terminator gene in the Third World where most farmers (especially the small farmers) do save their seed year after year. *Had Monsanto been successful, it would have resulted in famine over much of the world in but a few short years*. Fortunately, even the International Agricultural Research Centers (CGIAR system) came out strongly against this particular technology and Monsanto, at least for a while, did not market it.

A “good business” or profit motive combined with science was what had motivated Monsanto’s move to market the terminator gene in its seed corn. The same combination has also been responsible for the standardization of many crops resulting in the *loss of diversity* in the gene pool available to farmers. It is good business for companies to produce “widely adoptable” technologies. This reduces the number of products they have to manage, increases volume of individual lines, and allows them to reduce the necessary margin to be profitable.

When I was on the livestock judging team in my junior and senior years at Colorado State University, the ideal beef animal was short and blocky. As breeders began to select for this type and as semen from desirable bull types became widely available, this rapidly induced a wave of dwarfism in Hereford cattle.

Fortunately, enough genetic diversity was still available to rescue the breed before it was too late.

In their 1998 book, *World Hunger: Twelve Myths*, Lappé, Collins and Rossett in the section on Slashing and Burning the Tropics (pp. 49-51) argue that much of the deforestation is caused not by small holders but by loggers, ranchers and tree plantations. These large scale activities are promulgated by those with power nationally and internationally. They further say that this kind of development redistributes wealth upward. “The benefits provided by the forests ‘biological diversity, water catchments, soils, rivers, fertile land for gardening under forest-fallow systems, as well as energy sources for labor-intensive local industries’ are available to all, including even the poorest with no market power. But commercial plantations, logging, and ranching liquidate such benefits in favor of those accruing mainly to existing elites and to affluent groups, largely foreign interests. Permanent, broadly distributed benefits are exchanged for temporary, highly concentrated ones.”

*By concentrating international (as well as national) research resources on broadly adoptable technologies that depend on **modifying the environment to satisfy the requirements of the technologies**, rather than modifying technologies to meet the contingencies and constraints of the diverse biophysical and socioeconomic environments of small holders, the process is similar. Arguing that little response can be achieved under the difficult conditions of small holders (as was originally done by ICTA in Guatemala) or that “good technology” is a technology that increases yields whether or not it can be used by the multitude of small holders (as is done almost universally by researchers and research organizations) is also tantamount to a distribution of wealth upward. **We must learn to work with the great diversity under which small holders struggle and upon which they depend for the livelihoods.***

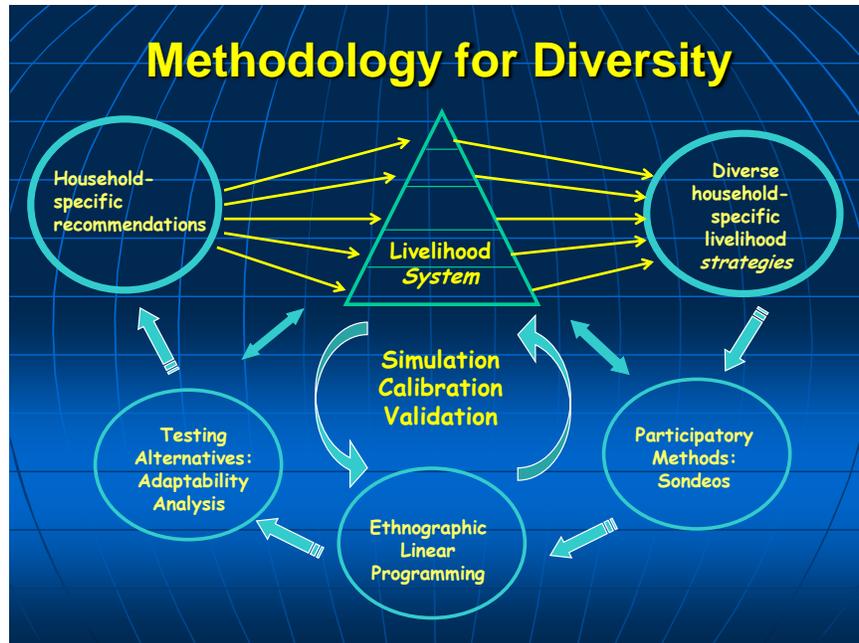
Over the years I have been working closely with anthropologists and my graduate students and I have developed a methodology that has helped anthropologists quantify much of their qualitative data. *The same methodology helps reduce the quantity of data needed and in this way makes the research process more efficient.* This methodology, which includes the use of Ethnographic Linear Programming, is running into some opposition from many of the professors with whom I work at UF. Some of them (from FRED) say we should not create a new term (LP is in the literature, but not ELP). Others question whether it

represents “good science.” The arguments are that if it is not already in the literature, and/or if as an average it is not statistically significant, it is not real. In many ways this is the same argument used against farming systems methodology. Incorporating the human factor reduces the legitimacy of the science to them, making it unacceptable. I recall again the statement I heard when biological scientists visited the early on-farm trials in Guatemala on farmers’ rocky and steep hillside fields: “This looks just like something a social scientist would do.” That is, incorporating the farmers’ real conditions and the human factor reduced the ‘scientific’ value of the research in their minds. Over the years, this feeling has been moderated somewhat, but it is still evident. Not only is it necessary to account for the human element, but *it is critical to account for socioeconomic as well as biophysical diversity, especially at the small farm level.* During the last years of the 20th Century, it was becoming clear in our work with food security, household diversity and sustainable livelihoods that *one of the most important factors leading to failed programs and projects in the developing world was the failure of those creating the programs to account for the socio-economic diversity found in limited-resource, farm-family households and the impact household composition has on the capabilities of these families to accept or respond to proposed changes. The tendency to use averages based on massive statistical surveys masks this diversity found not only among villages, but also among households within seemingly homogeneous villages.* An “average” household inevitably has adolescents as well as young children and the parents are approaching middle age. It is a period in the lives of many families when they can begin to obtain a little wealth, impossible in newer families when all children are younger requiring the near full-time attention of the mother. This prevents her from helping in the food production activities in the fields so the male is overly burdened just providing for a young family. Adolescent females can relieve the mother of some of these household burdens freeing her to work in the fields while adolescent males can help the father in the fields, forests and bush. Young unmarried men and women in the family also can earn cash from off-farm activities that make significant contributions to the well being of the family. *Probably only 40-60% of the families in any village have the capabilities of the “average” family.* This means that the other 40-60% of the families will not be able to take advantage of a project whose changes are based on the capabilities of the *average village family.* Because they cannot, they are made

relatively worse off than before. *Often “successful” project evaluations are based on what one or a few of the families with more household resources were able to do to take advantage of the opportunities offered by the project.*

One of the problems in working with all the diversity that exists is that it is *difficult to generalize* from it. *Averages give the impression of generalizing, but simply mask diversity.* My graduate students and I began working on a methodology to overcome this problem. It incorporated what we were calling ethnographic linear programming. We gave ELP this name because it uses information taken with ethnographic methods to incorporate in the linear programming models. This added information makes the model much more realistic. However, up until the end of 2000, most of the models we created were based on ethnographic data taken in the field *before* returning to Gainesville to create the models even though students were beginning to take lap top computers to the field with them. We knew that it would be much better to create the models in the field while working with the farmers and let them *participate* in the model development process. In this way, when discrepancies are noticed in the models, the reasons can be detected with the participation of the farmers, themselves, rather than being based on the student’s knowledge and recall after returning from the field. This method of creating realistic farm models could then warrant the name, *participatory linear programming.*

Diversity can be incorporated in the methodological process by modeling a number of different households with variable composition based on a single base model that reflects the commonalities that do exist in a community. For instance, people who farm by hand all use essentially the same kinds of practices in their fields. Those who use animal traction do the same. It is not necessary to model each individual household. Types of households can be modeled, or a sample of real households can be modeled using the same base model. This is what Victor Cabrera did in his MS thesis. <http://ufdc.ufl.edu/UF00091272/00001>



The model for incorporating diversity in development. It is based on the Sondeo, developed with ICTA in Guatemala, Ethnographic Linear Programming, developed with anthropologists at UF and Adaptability Analysis (formerly Modified Stability Analysis) developed in Guatemala and my early years at UF.

The rewards and the frustrations of working in international development were evident as a result of a short course in Nicaragua in January. Elena Bastidas, Victor Cabrera and I presented the one-week course on Adaptability Analysis to about 20 people from INTA, the research organization, and other organizations in the country. During the course it became evident that many of the people in it had taken a course we had offered 12 or so years before when we called it Modified Stability Analysis (MSA), the earlier name for the methodology. Furthermore, *they had been using MSA ever since the first course!* Because of this, much of what we had to do in the present course was to convert their thinking from stability to adaptability, rather than teach the methodology, itself. The other important aspect of the course was that we used computers rather than the hand-held calculators we used in the first course.

Maria Cruz, one of the “old hands” in IFAS International Programs and who was originally from Nicaragua, had gone ahead on vacation but joined us for the short course. She was the coordinator of the Nicaragua project in International Programs. While there, she and I had the opportunity to meet with the

Minister of Agriculture (MAGFOR). Officially he was considered my counterpart or partner in the USAID project we had with Nicaragua because I was director of International Programs in IFAS. But even then, the U.S. ambassador in Nicaragua would not let anyone meet with the ministers of state without his permission and without a member of his staff present. We managed to get both and held what appeared to be a useful meeting. Unfortunately, a short while later, the minister was let go for another person who would be the second of several ministers we would have as partners in the year and a half left in the project, one of the frustrations of international work. The other had to do with our post-course follow-up evaluation. Within six months following the course, of those who had been in it, almost all had been transferred into positions where they would not be able to use what they had learned in the course.

In February, I took eight faculty members from IFAS and one graduate student to Ecuador to conduct a two-week Sondeo with our counterparts from ESPOL. Elena Bastidas, my graduate student, was our coordinator and facilitator. The faculty members included Bill Brown, Asst. Dean for Research; Mary Duryea, Forestry; Don Maynard, Horticultural Sciences from the Bradenton REC; David Zimet, Food and Resource Economics from the Quincy REC; Dorota Haman, Agricultural and Biological Engineering and Co-PI on the project with ESPOL; Richard Beilock, Food and Resource Economics; and another Co-PI on the ESPOL project, Jack Rechcigl, Soils Science and assoc. director of the Bradenton and Ona RECs and me.

On the first night in Guayaquil, we met with 28 of the country's main agricultural *empresarios* or businessmen, many politicians including two former vice presidents of the country (one of whom was the president of the organization that combines characteristics of the TVA and Corps of Engineers in the U.S., and the other was the rector of the University of Guayaquil), other university representatives, foundation representatives, and miscellaneous other people. The purpose of the meeting was to discuss the collaboration we were initiating between UF and ESPOL and to listen to the concerns and expressed needs of those attending. ESPOL had arranged to have a professional facilitator to lead the discussion.

During the two week period, we covered the area from Quevedo in the upper reaches of the Guayas basin to Salinas on the tip of the Santa Elena Peninsula. We finished a report within a month that was mainly written by the UF people, but with input

from the ESPOL people who were with us. This report served as the basis for continuing collaboration between the two entities. <http://ufdc.ufl.edu/UF00056179/00001/> Based on the potential shown in the report, our vice president, Michael Martin, named an ESPOL Action Team to help formulate policy and generate interest among a wider number of IFAS faculty regarding collaboration with ESPOL. <http://ufdc.ufl.edu/UF00054322/00001/>

In May, five faculty from ESPOL returned the visit. This team, headed by the dean of the Faculty of Mechanical Engineering and Production Sciences, Eduardo Rivadeneira, visited Gainesville, and the Bradenton and Ona RECs and had the opportunity to talk with a large number of faculty and administrators. Vice president Martin hosted a reception on Monday evening that was attended by many of the department chairs in IFAS, all the deans and many other faculty. It was obvious that there was a lot of enthusiasm for working with ESPOL in the kind of arrangement we were developing.

March was a busy month. Both as director of International Programs and as a friend, I hosted the E.T. York distinguished lecturer, Don Plucknett who came to town for a week. This was in the middle of a series of six thesis and dissertation defenses. Three of these were M.S. degrees from the farming systems specialization in Agricultural Education and Communication (Amy Sullivan whose thesis was done in Senegal, Paul Litow who did his work in Guatemala, <http://ufdc.ufl.edu/UF00054865/00001> and Andrea Snyder-Anderson who did hers in Malawi), one was an M.A. in Latin American Studies (Raphael Pierre who did his research in Haiti) and two were PhD dissertations in Anthropology (Amanda Stronza who did her research in Peru and Heather McIlvaine-Newsad who did her work in Ecuador). <http://ufdc.ufl.edu/UF00065472/00001> Two other students gave farming systems seminars (Arthur Mugisha from Wildlife, on Uganda, and Carl Pomeroy from the farming systems specialization in AEC on the Dominican Republic) and another had a PhD oral examination for admission into candidacy (Richard Fluke from Entomology and Nematology who was going to do his research in Puerto Rico). I had been in all but two of those countries: Uganda and Haiti.

In August, Ramón Espinel from ESPOL visited us in Gainesville for a couple of days. As a courtesy professor in FRED, we were able to secure for him full access to the UF libraries from Ecuador. This, it seemed to me, was an exceptionally useful feature of our relationship with ESPOL. In October, our vice

president Mike Martin, the associate dean for academic programs Jane Luzar and I went to Ecuador for a three day visit to ESPOL. Mike and Jane were able to meet many of the important agricultural people in the country and visited most of the Santa Elena Peninsula. In a very impressive and formal ceremony celebrating the 42nd anniversary of ESPOL, Mike signed a 2+2 agreement whereby their students who complete two years at ESPOL can complete a UF bachelor's degree in Gainesville in two more years. Jane and Ramón had been working on this agreement for a few months and it was very important to ESPOL. One of the witnesses of the signing of the document was the vice president of the country, Pedro Pinto. At noon on our last day in Ecuador, Mike, Jane and I, along with Victor Bastidas, the rector, and members of the ESPOL Board of Directors planted trees on the campus to initiate a ceremony that ESPOL hoped to carry out when visiting dignitaries are on campus. Early in January of the next year there was an article in El Universo, the Guayaquil newspaper, with a picture of the first lady of the country planting a tree there as well.



Me planting a tree at ESPOL

As a result of the trip, Mike was very much impressed with the potential, not only of our cooperative agreement with ESPOL,

but also with this type of cooperative effort in general. He was becoming convinced, if he was not already, that this was a better way to enhance international opportunities for our faculty than trying to win large USAID projects that often involve few if any faculty. Following his return to campus, Mike wrote a memo to Chuck Young, president of UF:

As you may know, a small UF/IFAS delegation (Jane Luzar, Peter Hildebrand and I) recently made a visit to ESPOL, a sister institution in Ecuador. During our visit, we met with ESPOL's Rector, other administrators, faculty and students. We also formalized a 2 plus 2 undergraduate degree agreement which will bring ESPOL students to UF starting in the fall of 2001. (See attached).

This partnership should bring strong, dedicated international students to our campus. It also opens opportunities for our students to study at ESPOL and for faculty exchanges and other interinstitutional collaborations.

ESPOL represents a particularly good partner for UF in general and UF/IFAS in particular for several reasons. First, our programs align nicely. ESPOL's students are well prepared to successfully participate in our programs. Their institution is fully supportive.

Second, ESPOL is a relatively young institution (42 years old). They, like us, are still growing, developing and creating their traditions. Thus, we have numerous opportunities to support both institutions' commitment to globalization.

Third, Ecuador faces significant economic development and environmental quality challenges. This partnership offers us the opportunity to learn and to make a real difference. While our initial efforts will focus on providing improved human resources to Ecuador's agriculture/agribusiness sector, the relationships with ESPOL can evolve into a much broader range of activities.

Fourth, while we have significant interaction with institutions in Central America, we have not been as active in South America. The ESPOL partnership can serve as a springboard for forging other linkages with South American universities and organizations.

Fifth, ESPOL has a high quality faculty. They will be strong colleagues for our faculty and will serve our students well as we enlarge this partnership. For example, Ecuador has a fairly advanced aquaculture sector and ESPOL's faculty provide critical support to producers. In Florida, we are working to develop aquaculture. The ESPOL faculty can assist in strengthening our aquaculture faculty, potential students and our service to our state emerging aquaculture industry.

Sixth, this partnership holds the promise of attracting significant external funding. A proposal for a joint project has

already been submitted to a multinational agency. Others will most assuredly be forthcoming.

In summary, we have launched a very meaningful partnership with ESPOL. We believe it will offer a number of opportunities for IFAS and other UF units to enhance their international profile. We'll keep you posted as this relationship evolves.

To wrap up the ESPOL relationship for the year, Mike and President Young invited Victor Bastidas to sit on the stage during UF graduation ceremonies for Victor's daughter and my PhD student Elena Bastidas in December. President Young introduced Victor and the rest of Elena's family who were sitting in the front row of the VIP section. It was a very nice gesture.

I continued to be amazed at the difference in the two kinds of international activity we were involved in. The direct AID- and BID-funded projects mostly were problems or involved very few faculty or students. Kamal Dow's privatization of extension project in Ecuador and funded by BID (The InterAmerican Development Bank) was doing well, but involved only him so far as permanent faculty or graduate students were concerned. The AID-funded privatization of research project in Panama was an almost complete disaster. In two and a half years *no* research had begun. A lot of money was spent on administration, including UF's part, but by the end of 2000, two and a half years into the project, only one project had been approved and that in mid December. This was a very poorly conceived project and the subcontracts (and apparently the informal agreements) my predecessor had written with a company in Panama and AGRIDEC in Miami were not workable. The AID-funded project in Nicaragua was moving along, but we had problems with the prime contractor in Washington in allowing us to shift funds from travel to salary. A decision that should have taken a day or two stretched into several months. Ultimately this will have been a decent project. Finally, the AID-funded project in Egypt had problems from the start when the prime contractor (a Washington beltway bandit) and the Egyptian hosts changed the nature of the project from research to technical assistance without our participation. This not only cut down on the interest of our faculty but also allowed the prime contractor to bypass us (and the University of California as well) and use their own people. When this contract ends we will have utilized only a fraction of the funds we were allocated. This, of course, cuts down on faculty participation in that country.

During 2000 we won a subcontract to work in Haiti. A group of faculty was very interested in the project so we worked with them on the proposal and won. Faculty interest, of course, was in research both for faculty and for graduate students. This was clearly stated in our proposal. However, from the initiation, it was clear that the prime contractor was interested in technical assistance and no long-run research. We apparently had been used again so that a Washington firm could win a contract with our name on board and then change the nature of the work to suit themselves no matter what our proposal had said. This was confirmed by the end of the year when the firm (DAI) notified us that there would be no long term research involved and our subcontract, which still had not been written, would involve only short term technical assistance!

I don't know if it was sadder or more amusing, but another situation occurred in 2000. The farming systems specialization with an M.S. degree in Agricultural Education and Communication was a very popular degree program and provided most of the theses from that department. A couple of years before they had applied for and received approval of initiating a PhD degree program. Interestingly, two of the first students in the program came to UF because of the farming systems possibilities. This created a problem because the department had little expertise in farming systems and had lost those few faculty who had any experience with it. The chair of the department asked me if I would consider an affiliate professorship in their department. After consulting with my own chair and the dean for academic programs I agreed to do it. Their faculty then voted on it and I was accepted. This supposedly meant that I would then be able to chair both M.S. and PhD degree supervisory committees there, which was also stated in the letter I received from the dean of the Graduate School notifying me of the appointment. Most of the previous M.S. degree students in the farming systems specialization had desired this from the beginning but the department had resisted it.

However, the department had other ideas. They did not want me to chair committees--only serve on them. But this I had been doing all along anyway so there was no change. When she heard of this, the dean suggested we consider moving the farming systems specialization from the department to the college level. This had a number of advantages. It would immediately broaden the number of faculty who could chair the supervisory committees and thus broaden the farming systems base in the college. It would

also allow the college to give greater exposure to the program. But the downside would be a reduction in the number of graduate students in the AEC department. The department fought the idea and we decided not to pursue it further. So the fact that I was then an affiliate professor in AEC had changed nothing!

2001: The World Trade Center Towers Are No More

I had two sets of contract trainees during the year and both were with us on September 11. The first was a senior Bangladeshi scientist from the Farming Systems program of the Bangladesh Agriculture Research Institute, BARI, who came the end of July for a six-month post doctoral study. He was interested in both the Ethnographic Linear Program analyses of small farm systems and in on-farm research (Adaptability Analysis). Whether it was from the stress of September 11 or something else, he suffered from recurring chest and back pains during much of the time between September and December when he left. For this reason he was not able to get into Adaptability Analysis (although he did take home the book) but did get very much involved with the linear program modeling and the class. It was interesting to see him struggle with the idea of abundant land in some of the African and Latin American farming systems and compare them with the systems in Bangladesh. In his linear program, he used fractions of land measures and even square meters in some cases for different kinds of land. He even used roofs of houses for growing crops. Unfortunately, because of his illness he did not get around Florida very much except going to airports in Orlando and Tampa to check on his return. However, I did take him on a tour of Alachua County one Saturday. He was amazed that so much land (whether in town or in the country) in yards was used for nothing but grass--and it was not even grazed. But his presentations to the class and to a farming systems seminar were of great interest to the other students and also put their systems into perspective.

The second group (two persons) of contract trainees was from the U.S. Army Corps of Engineers (one working directly for the Corps and the other a contract consultant to the Corps). They were also interested in the linear programming analysis methodology. Jim Jones from Agricultural Engineering had met Elly Best (the one working directly for the Corps) at a meeting a couple of years before and suggested she might benefit from spending a few weeks with me in Gainesville. After a couple of

years of negotiation, she and the consultant finally came on September 9. They were to spend three weeks, but because of their anxiety to get back home following the WTC attacks, they left after two weeks. However, they worked very hard during their time in Gainesville, attended class, made two presentations to the class, and left with working models. They were modeling a part of the Mississippi River navigation system in a lake in Illinois where they were considering additional works to increase the navigation capacity. But they also had to take into consideration wildlife uses of the lake, fishing, private boating, marinas, etc. They also had an interesting system to model and the class benefitted from them as well.

In working with both the Corps people and the Bangladeshi (Mustaque Ahmed), Victor Cabrera was an indispensable help. Victor had finished an M.S. degree in the Agricultural Education and Communication Department with a farming systems concentration a couple of years before and had been working back in Peru prior to returning for a PhD in the College of Natural Resources and Environment. He could really make computers talk and both the students and the trainees loved him.

Besides the trainees, the “Sustainable Livelihoods” group on campus asked me (in February) to make a presentation to them on the use of linear programming to analyze livelihood systems. This was a group of faculty from a number of departments on campus.

We were able to get farming systems as an official concentration in the College of Natural Resources and Environment graduate curriculum. This was a milestone for two reasons. First, it already existed in Ag Education and Communication at the master’s level, but the department had essentially ceased using it and had not incorporated it in their new PhD program. Secondly, all other concentrations are based on departments. For example, there is a Food and Resource Economics concentration and an Anthropology concentration. So it was a milestone to get the farming systems concentration approved.

I continued with a heavy graduate student load, working with 23 of them and serving as major professor for seven. Of the total, *nine graduated* during the year. The students came from several departments, including Forestry, Food and Resource Economics, Agricultural Education and Communication, Latin American Studies, Anthropology, Entomology and Nematology, Horticultural Sciences, and the College of Natural Resources and Environment. Besides the U.S., they came from 10 other countries: Malawi, Botswana, Ethiopia, Venezuela, Paraguay, Brazil, Ecuador, Zimbabwe, Haiti and Argentina. Their names, in no particular order were: Tim Sulser (graduated), Paul Thangata, Lin Cassidy, Christy Grier, Gebre (graduated), Kelly Payson, Amy Gough (graduated), Amy Sullivan, Leo Ortega, Joe Warnick, Norman Breuer (graduated M.S.), Kevin Leach, Kim Langedyk (graduated), Noemi Porro, Robert Miller (graduated), Aly Dagang, Elena Bastidas (graduated), Mark Drew, Richard Pluke, Frank Merry (graduated), John Bellow, Steve Church, Maxwell Mudhara, Rafael Pierre (graduated and returned for PhD), Elio Jovicich (graduated), and Kristin Davis.

Several former students returned for a visit, including: B.K. Singh who was a professor at EARTH University in Costa Rica; Firmino Mucavele, a dean at Eduardo Mundlane University in Maputo, Mozambique; Reinhold Muschler, a department director at CATIE in Costa Rica; Rob Gilbert, who was coming into an assistant professor position at UF after spending several years in Africa; Joe DeVries, the Rockefeller Foundation Representative in E. Africa; William Odenya, a professor at a university in Kenya; Miguel Altieri, a professor at the University of California, Berkeley; and Mike Bannister who for years had been living and working in Haiti.

Other visitors to the farming systems program included: Vern Ruttan, emeritus professor from the University of Minnesota; Doug White (CIAT-Peru); Howard Shapiro (M&M Mars); Jorge Chang, director of FUNDAGRO in Ecuador; Felipe Manteiga, director of Agriculture for USAID; former DG of IRRI, Swaminathan; Jorge Marcos, an anthropologist from ESPOL;

Leonardo Corral (PROMSA in Guayaquil); Ramón Espinel from ESPOL; Manuel Arca, INIA-Peru; and Jorge Calderon, CENAIM Ecuador.

2002: Back in the Saddle Again

After several months of not traveling, only partially related to September 11, all of a sudden it started again. My first trip, in February, was to Ohio State University to participate in a workshop on “No-till Farming in South Asia’s Rice-Wheat System: Experiences from the Rice-Wheat Consortium and the USA.” I was invited to present a paper because of my interests in small farms and not, obviously, because of my knowledge of what the Rice-Wheat Consortium was doing in South Asia. After reading the material sent to me I called my paper (and PowerPoint presentation <http://ufdc.ufl.edu/IR00000208/00001/1j>) “Technology for Small Farms: The Challenge of Diversity.” Two things stood out in my mind. One was that the no-till aspects essentially required power that small farms normally did not have (although I understand that animal traction is increasing even in Bangladesh). But the no-till aspects largely required mechanized power. Secondly, there was the tendency to try to homogenize or de-diversify the farming systems they were working with. This, of course, was particularly true in the collaborating U.S. systems, mostly in Arkansas and Louisiana. Norman Borlaug (the Nobel Prize winner) was the featured speaker and, naturally, he was espousing his Green Revolution technologies, which depend on having adequate resources.

The following week Borlaug and I both participated in the 1st Henry A. Wallace Inter-American Scientific Conference on Globalization of Agricultural Research, in CATIE, Turrialba, Costa Rica. We were both giving keynote addresses. Norman’s address was very similar to the one he gave at Ohio State. I titled mine: “Global Research Challenges: Including Small Holders in

Rural Development.” <http://ufdc.ufl.edu/UF00082715/00001> In both this address and the one at Ohio State I stressed that the number of people living in rural areas in many countries of the world was still increasing at the turn of the century even though the *percent* of the total population of those countries living in rural areas was declining. People had been lured to sleep by the percentage figures and had not considered that the number of small farmers was still increasing. Thus, I considered that the global research challenge was including the small holders in rural development. After my address, Norman told me it was “interesting” but he did not say he thought I was right in my concerns. My host at CATIE was Reinhold Muschler, a former student (Agroforestry) and professor at CATIE. Among other things, we made a quick visit one morning to his finca near Turrialba. It is situated on a hill with a great view.

The day after the conference at CATIE I went to EARTH where we were working on enhancing the number of interns from EARTH we hosted at UF. Among others I met with was B.K. Singh, another former student (Soils) who was one of their founding professors. I use material from his dissertation (done in Brazil) in my courses and shortcourses and in the book: *Adaptability Analysis*. <http://ufdc.ufl.edu/UF00081797/00001/42> I also had lunch with five of their former, and one present, students all of whom would like to come to UF for advanced degrees. They were a great bunch.

In March, I visited one of my PhD students (Amy Sullivan) in the Commonwealth of Dominica in the Caribbean who was conducting a training program for the Food and Agriculture Organization (FAO) of the United Nations. She had previously done a similar training in St. Lucia, also for FAO. She used these experiences for her dissertation in *Interdisciplinary Ecology*.

In April I went to Florence, Italy, to attend the European Farming Systems conference. Then in June, I went to Guayaquil, Ecuador for a month. During my stay in Ecuador, I taught a two-week graduate course at the University of Guayaquil, hosted four Food and Resource Economics faculty from UF, met with the

Gender, Environment, Agriculture and Participation (GEAP) study abroad course from UF for which I was the professor of record, and twice visited an hacienda that the owner was considering donating to ESPOL (our sister university in Guayaquil) and UF. Later in July I taught a two-day short course at a facility of Columbia University in Palisades, NY.

In November I was hosting the 17th International (Global) Farming Systems (IFSA) Symposium in Orlando. This was the organization for which I had been founding president. Even though there were many problems of people obtaining visas and funding as a result of 9-11, it was a very successful event. Several of my graduate students presented papers and posters, and other participants came from such diverse countries as Sri Lanka, Zimbabwe and the Netherlands.



Dave Norman, me and Mike Collinson, all ag economists and three of the “fathers” of farming systems at the Global IFSA conference in Orlando in 2002. This was only the second time all three of us had been together.

I continued as director of International Programs, teaching two courses, and had a heavy graduate student load. During the year I was involved with a total of 23 graduate students, was the

major professor of 8 (1 M.S. and 7 PhDs) and graduated a total of 8 of them.

2003 - ? Retirement, Sort of

I received a nice surprise and honor early in the year. The InterAmerican Institute for Cooperation in Agriculture, IICA, headquartered in San José, Costa Rica, was celebrating its 60th anniversary. As part of the celebration they selected 60 Americans (from the U.S.) who “have made outstanding U.S. contributions to agriculture.” I was one of those chosen.

On February 1, Maria and I went to Washington, D.C. for the reception to be held February 4th in the Hall of the Americas of the building housing the Organization of American States at 17th and Constitution on the National Mall. Many of the honorees were deceased and of those living, only 15 were able to attend. I was asked to make the formal acceptance or response for all 60 honorees. However, I was only told about 20 minutes before I had to do it. As a result I was not able to concentrate on what the new director general of IICA, Dr. Chelston W.D. Brathwaite, had to say. I thanked IICA for all of us and said I would like to accept the honor in the name of all the *campesinos* of the world whose numbers are still increasing even though as a percentage of the total population they are getting fewer. I indicated that even though the honorees had contributed to enhancing agriculture globally, we still had not sufficiently accepted the challenge of working for these people who daily struggle just to survive. Quite a few people congratulated me on a statement from the heart and thought it was just right. Maria said it was too short! However, with just 20 minutes to think about what to say, I at least didn't stagger and stutter. In the publication they provided, this is what they said about me:

Hildebrand, who directs the international programs for UF's Institute of Food and Agricultural Sciences, joined the UF faculty following 15 years of living abroad and working on development programs. He developed many of the ideas that are the foundation for the farming systems research and extension methodology, and he was the founding president of the global Association for Farming Systems Research and Extension, which is now the International Farming Systems Association (IFSA).

Hildebrand's research on farming systems, gender analysis, small-farm livelihood systems, and tropical conservation and development pioneered participatory research techniques and narrowed the gap between research and farmers in developing countries

Also honored were such well-known people as Henry Wallace, Norman Borlaug and George Washington Carver.



This is me delivering the acceptance address in the Hall of the Americas at the Organization of American States. On my right is Dr. Brathwaite, Director General of IICA. On my far left is Felipe Manteiga, a former Gator and was then the IICA representative in Washington, D.C.

In late March, Ramón Espinel from ESPOL informed me as director of International Programs that the government of Ecuador, and specifically the Ministry of Agriculture wanted to know if ESPOL in partnership with UF/IFAS would take over one of their principal experiment stations, Pichilingue. This was an interesting proposition for a number of reasons, not the least of which was because UF had been involved in the establishment of the station in the 1950s and had a sporadic relationship since. The Ministry of Agriculture was interested in the station being used to help small, limited resource farmers as a primary effort. This, of course, was what farming systems was all about so it was of particular interest to me as well.

In early April, I met with a group of department chairs, deans and the vice president, Mike Martin, to discuss the idea that Pichilingue become formally associated with UF/IFAS. Mike authorized me to put together a group of IFAS faculty members to go to Ecuador for a week to look into the possibilities and potential. After a few false starts putting together a team, besides me, Bill Brown, asst. dean for research; Van Waddill, director of the Homestead TREC; Roger Natzke, professor of animal (dairy) science and soon to be director of International Programs; and Frank Chapman, professor of fisheries and aquatic sciences left on May 19 and returned on May 23.

On May 29 and 30 I attended the Board of Directors meeting of the Peanut CRSP in Griffin, Georgia. While I had served a total of about 15 years on the External Evaluation Panels of the Soils and the Bean/Cowpea CRSPs, I had never been involved with the Boards of Directors so it was an interesting experience. Many of the people serving on the Board were my counterparts at other universities and some were deans or associate provosts. Our UF/IFAS representative on the Board was Mary Duryea, assistant dean for research. She was unable to attend and asked me to go in her place.

Five years previously (in 1998) I agreed to get into a UF retirement incentive program called DROP. This meant that my

retirement pay started at that point, but was put into a type of IRA account while I continued working and collecting my regular salary. I continued to get raises as well, but my retirement rate was already set. At the end of five years I had to retire. I was hurried into this program because I was over 65 at the time they initiated it and had only about 30 days to decide to get in or to never have the chance. During the five year period I tried on several occasions to get out of it, but the vice president wouldn't let me. He said he did not want to open that gate and I suppose he was right, that a lot of people in my same situation would have wanted out. So *I officially retired on July 1, 2003* even though I still had an active research program via my graduate students and there was still a demand for my classes, which no one else was equipped to teach.

The big change for me at that time was giving up one of my two full-time jobs – the directorship of International Programs. This lifted a big load off my shoulders and allowed me to spend much more time with my students and teaching, the other full-time job.

Being “retired” made my time on campus much more relaxed! I got to the office closer to 7:00 than to 6:15 and left early afternoon unless there were meetings later in the day. I tried to take off on Fridays as well. I spent extended time with my students and was able, with them, to complete a number of articles that were in various stages, some for the last couple of years.

It wasn't easy to keep working, even if for free. First the department tried immediately to get me out of my office. Second, the university infrastructure immediately deleted my name from the UF and IFAS electronic directories (they did this to all retiring faculty unless and until they were given emeritus status). Third, they took my fall course off the course schedule. Fortunately, they let me stay on email!

I managed to get the fall course (economic analysis in small farm livelihood systems) back on the schedule and after advertising it via email I had 12 students enroll in it. A couple of other people sat in on the course and participated in most activities. It turned out to be one of the best classes I had had. When it came

time in the fall to register for the spring courses I discovered that they had also taken that course (farming systems) off the books. I managed to get that one back on late and had only four students enrolled.

The pressure was kept on to get me out of my office. I finally managed to get a small office assigned and was able to put two of my graduate students in a small communication closet with no windows along with most of my library and files that I did not have room for in the new office. I managed to find two other graduate students offices in a vacant office that had been International Programs. But that was only temporary.

In December, Richard Pluke (PhD Entomology) defended his dissertation on IPM control of the cabbage looper (diamond back moth) in Puerto Rico. http://etd.fcla.edu/UF/UFE0002941/pluke_r.pdf Besides doing excellent laboratory, station, and on-farm research to show the effectiveness of IPM to control the DBM, he also developed an ethnographic linear program based on a typical cabbage farm in Puerto Rico. He showed the constraints to adoption of IPM under existing conditions and what kinds of things would need to be done in order to make it attractive to the small cabbage farmers of that island. This was very well received by the entomologists on his committee.

2004

When I was about ready to cancel the spring farming systems course, the students who were enrolled came to me and asked if they got more students in it would I teach it. I agreed and they came up with two more so I had six enrolled. In addition, three of my own students (Tita Alvira, Alfredo Rios and Victor Cabrera) attended. The first two participated in the Sondeo and the sweet corn trial. Also for the sweet corn, Kibiby Mtenga from Tanzania, who had an incomplete from the year before, participated in the trial. For the Sondeo, we assessed the South East Climate

Consortium website that was under construction. It turned out to be a good course and the students were great.

Humphries, S., Y. Gichon, F. Rossi, J. Barham, D. Alvira and A. Rios. 2004. Assessment of the format, content and potential uses of the AgClimate website and crop yield assessment tool by extension agents in north Florida.
<http://ufdc.ufl.edu/IR00000216/00001>

Over the last five or six years I became more and more involved with the activities of the Florida Climate Consortium (UF, FSU, Miami) and now the South East Climate Consortium (added were Georgia, Auburn and Alabama Huntsville). In March I attended, along with Victor Cabrera and Norman Breuer, former students of mine who were employed by the University of Miami, a NOAA/RISA conference at FSU in Tallahassee. Most people were meteorologists and climatologists. Our contribution was bringing in the end users (farmers) of the improved methods of forecasting seasonal climate variability. This was an important aspect of Victor's dissertation with North Florida dairy farmers.

Former student, Heather McIlvaine-Newsad arranged for a special presentation at the Society for Applied Anthropology meetings in Dallas later in March. She, Elena Bastidas, Victor Cabrera, Diana (Tita) Alvira and I combined to make a joint presentation. <http://ufdc.ufl.edu/UF00100339/00001/> Amy Sullivan, who also delivered another paper, summarized ours. This, again, emphasized the highly diverse smallholder farm sector and treated participation and advocacy of the sector. I had not realized that all these years I was an *advocate* for the smallholder farm sector! I had thought of advocates as those marching around with signs and yelling. This meeting also gave us an opportunity to get together on the book on smallholder economics that we are trying to write. We were able to pretty well outline what we thought we needed in the book and who should be working on various sections.

From Dallas, Victor and I headed for Porto, Portugal for the European farming systems meeting via Boston and Paris, meeting

up with Norman Breuer at the Boston airport. Victor had submitted an abstract on his North Florida Dairy model and Norman on his dissertation work in Ecuador and both were accepted. I paid for the trip for all three of us out of funds from the Division of Continuing Education that I had earned with short courses I had given in the past. While in Portugal I met with Clive Lightfoot, current president of the global IFSA and a group of people from Europe who were trying to plan the next global IFSA meeting which was to be held in Europe. They were having trouble coming up with a location and the meeting would probably be held in the spring of 2005. FAO in Rome was a possible location.

On May 28, Victor Cabrera (PhD in Interdisciplinary Ecology), for whom I was major professor, defended his dissertation. http://etd.fcla.edu/UF/UFE0005581/cabrera_v.pdf Victor had created a very complex model of north Florida dairy farms to assess nitrate pollution into the Suwannee River system and the Florida aquifer. He combined animal models, plant models and economic models to simulate actual conditions on the farms and then also created a linear program to look at ways to optimize the farm management practices to reduce nitrate loss and maintain profit. All this was done with close participation of stakeholders at all levels: state regulatory agencies, dairy farmers, the water management district, extension agents and UF researchers in the different fields. In May, both Percy Peralta (M.S. in Interdisciplinary Ecology http://etd.fcla.edu/UF/UFE0006555/peralta_p.pdf) and Kristin Davis (PhD in Agricultural Education and Communication with a farming systems minor http://etd.fcla.edu/UF/UFE0006340/davis_k.pdf) defended their research. Percy did his research in Peru and Kristin in Kenya. I was on Percy's committee and co-chair of Kristin's.

2005

I had been working on doing a Sondeo in Ecuador for a couple of years and finally the funding came through (two presidents and seven ministers of agriculture later) so we scheduled it for the second week of May. Elena Bastidas (a former student) and I were going the week before to organize it and make sure all logistics were arranged. Going through two presidents and so many ministers was only part of the travail of the Sondeo. I went from Orlando to catch a COPA flight to Guayaquil via Panama. The Guayaquil airport had been remodeled since I had last been there so I was looking forward to arriving. However, even though the building and some of the equipment were new, the procedure was not. It was a complete zoo. Added to the problems were that the American Airlines flight arrived late and we arrived early, so there were two plane loads of us trying to get through immigration and customs at the same time. Also, ESPOL had always met me at the VIP lounge after immigration so I did not have to wait in line for my baggage and have it checked. But unfortunately, they no longer subscribed (or whatever it is they did) to the lounge, so I also had to wait to do that part. Oh, well, that is life in the tropics!

Monday and Tuesday Elena and I worked on getting materials, including maps, for the Sondeo. On Wednesday we were planning on going to Pichilingue where the Sondeo was to be held so we could get a feel of the area and talk with the people from the station who were going to be part of the Sondeo team. We knew that the '*transportistas*' were planning on stopping traffic on the road we were going to take but thought it would more delay us than stop us. WRONG! The first and second blockage we were able to get around but the third one, not far from the station we could not. We looked at our topography maps and thought there would be a way around by backtracking a few kilometers. When we got to the town where that road took off, the first person we asked about it said the road was OK, but it was

dangerous. We asked him what he meant by ‘dangerous’ and he said there were robbers who would stop us and rob us. So we decided to ask another person who fully collaborated what the first one had said. We called the station and after a few calls back and forth decided that it would just be best to return to Guayaquil as it was then about 11:00 and we were becoming worried about the time it might take us to get back. On the way back, we hit another road block that we could not get around, but fortunately, there was a road just a kilometer or so back that Edwin (from ESPOL and who was with us) knew about. We asked about it and it seemed to be OK and not ‘dangerous,’ so we decided to take it. In the small town we came to we asked a motorist coming toward us and he told us how to get to the road to Guayaquil. Because of the heavy rains that had recently ended, we also had to go through some flooded areas. That was the first time I saw horses wading and feeding on floating feed (see picture). We finally got back to Guayaquil about 1:30, having spent six hours and not getting to the station. Frustrating!

The rest of the week was spent on getting more materials and information for the team and Elena and I put together the presentations we would make Monday morning to the whole team in Pichilingue. On Sunday after several false starts, we finally left Guayaquil and arrived at the station just before dark. The rooms we had been told we would have were not available but we did find housing for everyone. Also, the dinner that was supposed to be prepared at the station (they have a very nice dining room) was not prepared so we all went into town (Quevedo) for dinner. The four people from the Pichilingue station were not there, but this offered an excellent opportunity for the four from UF and the four from ESPOL to get acquainted.



Horses grazing on floating vegetation

On Monday morning breakfast was ready for us at 7:00, as scheduled. They had set up a special table in the dining room for us (with flowers!) and instead of going through the cafeteria line, they brought our food to the table. Breakfast was very good as were all the meals they served us throughout the week. The whole team met at 8:00 and we started introductions, to each other and to the Sondeo methodology. Ramón Espinel discussed the history of the project and why we were there (to begin a program to work with smallholders). There was some discussion about this and about what constituted smallholders, but it was important that all understood what it was we were supposed to be doing. After lunch the four teams of three took off for the field for their first interviews.

After dinner the whole team met to share and process the afternoon's conversations. Elena started off by asking each team to spend about 10 minutes on their thoughts about the methodology. Most thought it was working very well and the

conversations with farmers were very open and sincere. Ramón, in particular, spent several minutes on one of his interviews. Elena wouldn't let them talk about the details of the interviews, just the methodology. It was a good beginning. Then we got down to the interviews, themselves, and Elena suggested another 10 minutes for each team before we opened it up to a general discussion. There was just too much for each team to say, so a minimum of a half hour was spent on each team with an abundance of information forthcoming. Again, the teams were very enthused with what they had found. However, it was quite obvious that there was a definite bias towards farmers larger and better off than the target farmers. We wanted farmers who had less than 5 ha but in one case they interviewed one just outside of Quevedo who had 19 ha and was a professor at the University of Quevedo! We didn't finish until nearly 11 that night.

On Tuesday after a full day of the teams in the field, we asked each team to get together and put just the cream of what they found that day on flip charts so that we could discuss the major points and not the details of the visits. This worked pretty well and we were beginning to see some major points coming out. It was obvious that the region is not very homogeneous, just like the rest of the country. Near the foothills of the Andes there is good fertility and water and people are very highly diversified. Going toward the Pacific, it gets drier, but strangely, there are water problems both of too much in the rainy season and too little in the dry season.

On Wednesday, with the teams in the field for another full day, Elena and I worked on an outline for the report based on what we had learned from the conversations on Monday and Tuesday. We felt this was the only way we were going to be able to get the report drafted by Friday evening. That night we worked until 12:30 in the morning! People were getting excited about the report. We assigned sections of the report to individuals and they said they wanted to stay in on Thursday morning to write their sections. On Thursday morning Elena and I went with one of the station team members who had scheduled a meeting with a group

of smallholders and had not been able to cancel it. So Elena and I finally got to do a bit of field work! As soon as everyone was finished we started working on the conclusions by going down only the section headings. It turned out to be easier to also think about recommendations at the same time because some people had them embedded in their conclusions. We did not finish but had a good start when we finally stopped late at night (after dinner).

On Friday we were working hard on the conclusions and recommendations when the INIAP people, including the national director for research, asked if they could come to our meeting. I said, sure, but they would not be able to say anything because it was a working session. They decided to wait until lunch (scheduled at 1:30) to talk with us. During lunch they said they wanted to have a meeting with us so we all went back to our conference room and spent about an hour and a half of our fast disappearing time with them. They finally left and we finished up about 6:00. Elena then had the task of getting the whole report put together so we could make CDs of it to leave with INIAP and ESPOL. We had earlier in the morning sent out the body of the report to make copies (Pichilingue could not do that for us!) so we had that to work with as well. The director asked if he could keep one of the copies so we let him have it. He listened to what conclusions and recommendations we had at the time and then made some comments where he thought we were wrong. It was interesting that after they left, the people in our group said he just did not know what he was talking about. So they had really gotten into the Sondeo and taken ownership of the report <http://ufdc.ufl.edu/I/IR00000457/00001>. Our celebration dinner was at 8:00. We had rum and whiskey and another excellent meal. I went to bed about 10:30 because I had not had much sleep the last few nights, but the others stayed much later. There was no question that the team had come together. We left the station the next morning after another great breakfast and goodbyes to all the people at the station.

I got back to Gainesville on May 15 and had more time than usual to be at home because I did not have any classes over

the summer and most of my graduate students were overseas doing their research. Of my own advisees, all five were abroad in 1) Peru, 2) Namibia and Botswana, 3) Guatemala and Mexico, 4) Cuba, and 5) Kenya and Ecuador. Others with whom I was working closely were in the Philippines, Tanzania and Brazil. All together I was working with 17 graduate students at the time.

I had to move my UF (FRED) offices once again. This time they moved me to a cubicle in the emeritus professor 'suite.' To get to it you went into a short hallway between the elevator and the men's room, past the janitor's closet, and through a communication closet that also had graduate students in it! My space was like a graduate student cubicle and there were five of us in the room (a former head of the USDA/FAS, a former dean, a former department chair, a former distinguished professor, and me). Fortunately, none of the others used their 'office' very much so it was almost like a private office. However, when new students come in to see me they must have had to wonder about it. Also, there was no room for my farming systems library which had been in a former storage and communication closet and in which the department had put two graduate students. The department said I would have to move out the library but that I could have the space for my own graduate students. So I had to rent self-storage for everything from my old office and the library.

The United Nations Food and Agriculture Organization (FAO) in Rome had been interested in digitizing my farming systems library, but they needed the material already digitized. I had received an estimate from IFAS Communications that they could do it for \$10,000, but that amount of money was not available. I got in contact with the UF digital library and they were interested and had some funds.

I had talked about going to the global farming systems (IFSA) meeting in Rome in 2005, but finally decided not to go. Also there were about 10 other UF representatives who were thinking about going, but in the end only Maria DiGiano, a current

student, and Maxwell Mudhara, a former student, were able to get there.^{aa}

I did make one other trip in 2005, to Miami, for a meeting at the University of Miami, Rosenstiel School of Marine and Atmospheric Sciences (RSMAS). I was working as a consultant for them assigned to the SouthEast Climate Consortium for conducting Sondeos and other studies evaluating the applicability of seasonal climate forecasts. The meeting was the week that Hurricane Wilma was forecast to hit the region so we were glad to get out before that happened. All of the University of Miami was closed for a full week after we left including the Monday it hit and the rest of the week.

2006

The UF library did agree to digitize my farming systems library. We moved it from storage to the digital library work rooms in Library East in March. It took a while to go through my library and all the other files to sort out what should be digitized and what (many student records, etc.) should be shredded. It took several weeks for me and several months for the library to finish the process, but eventually the entire library was to be available on the Internet for *anyone* to access at:

<http://web.uflib.ufl.edu/ufdc/UFDC.aspx?c=fao1&s=ifsa&>

Normally things in the UF library system are available only to those with a UF address, so this was a huge breakthrough. I understood from John Dixon that both FAO (in their farming systems website) and the CGIAR would add links to the library! The materials should also be accessible via search engines such as

aa Maria's thesis was: The potential impacts of environmental service payments on smallholder livelihood systems in Brazil's western Amazon. Her paper was from the thesis.

http://etd.fcla.edu/UF/UFE0014393/digiano_m.pdf

Google.

In May I went to Wageningen in the Netherlands for the meeting of the European chapter of IFSA. Also attending was David Wilsey, one of my PhD students who had a paper accepted. Wageningen has a university that is globally well known for its international agricultural development work. On one of the days we had an excellent field trip. I chose the one that emphasized the new move to shift agriculture from purely production to environmental friendliness as well as tourist friendly. It was very interesting to see how this was being done. It is also something that is beginning to happen in the rest of Europe as well as in the U.S.

In June and July I spent two weeks in Guatemala. I used the time to visit ICTA to see what reports I might be able to get that were not already in my library or that might have been lost. I had a good visit with Thelma Guerrero, one of my former secretaries, Roberto Bosarreyes, my former driver, and with Astolfo Fumagalli who had been both *gerente* and *subgerente* of ICTA during the time I worked there. I also had a very good meeting with the new *gerente*.

ICTA went through many years of bad times that started with the *gerente* who would not renew the visas of the expatriates--the cause of my leaving Guatemala in August 1979. All but one or two of the many *gerentes* that were named by succeeding governments had no idea what ICTA was or why it was formed in the first place. Many of the administration were mostly interested in what money they would be able to get out of the organization. The donors stopped funding anything except special projects and other projects were funded by multinational businesses to "test" some of their products to legitimize them. Employees had little to do so became lazy and many joined a union that gave them security of position so they couldn't be fired. They could come to work late and leave early and did.

It appeared that the new *gerente*, who had only been in office about three months, would try to do something to get ICTA back into shape, but he had many hurdles to jump. In our

discussion, it appeared to me that he had some very good ideas, if not the same as the original ideas that those of us who founded the institute had over 30 years before. He had no idea if there were any documents still around from the work we had done but asked the librarian to help us and also one of the engineers who knew me (and was still there) to help. Of course the librarian had no idea what kind of reports to look for, either.

After talking with both Astolfo and Thelma, we learned that there had been lots of work done to save the material from *Socioeconomía*, pushed by Thelma and one of the *gerentes* who had been with ICTA from the early years. Thelma called the document “*Rescate*,” meaning rescue. Thelma agreed to go back to ICTA with me the second week and we FOUND Rescate! There were 23 volumes, each about an inch thick, that added up to 46 pounds. The *gerente* was not in but his secretary got him on his cell phone. He gladly gave me permission to take it all to send to Florida on the basis that I would return it after it had been digitized. The UF library had also asked me to get his written permission to publish it electronically and he said, certainly. He asked me to write him a letter on the letterhead of UF making the request and he would respond when he returned to the office. I had the letterhead in my computer so was able to write the letter with the help of his secretary. She officially received it and gave me a copy. We repacked Rescate in a box we bought at Office Depot, called UPS and the same day they were on their way. Nearly beat me home! Things had sure changed from the time when I worked there.

The University of Florida was able to get a graduate student into Cuba to obtain primary data from them about their livelihood system. Vanessa Harper, my M.S. student in Interdisciplinary Ecology, spent about four months over a two-year period in that country and was able to have fairly extensive interviews with 15 limited resource farm households that comprised her thesis. http://etd.fcla.edu/UF/UFE0017890/harper_v.pdf These farmers not only have to produce a large number of different crops and some livestock but also have become entrepreneurs to be able to market

what they need to sell to get cash for what they need to buy. Purchasing what they need is also very complicated.

Ken Buhr, formerly of the UF Agronomy Department, wrote me the following in an email about Africa in 2006:

Just got back from four weeks in Uganda/Kenya. Of the many observations, there are a couple that I wanted to share with you: 1) everywhere I went, people were complaining about the "hostile weather," which meant dry weather in the region of Uganda where Save the Children worked, and 2) there is a fuelwood crisis on the horizon. The hills of Kenya that used to be covered with acacias are all but barren - with occasional mango trees, and gullies are frequent. The river that one of the students who took a couple of my classes was using for irrigation was rich chocolate colored. He said that 70-80% of the cooking fuel is coming from charcoal - the reason the acacias have been cut. It is common to see piles of poly bags of charcoal ("black gold" or "tree in a bag") along the road. It is a matter of time, a few years maybe, when there won't be any more trees to cut for charcoal. I am listening to see who has a suggestion of what is going to happen then. Already, "cooking time" factors into what people are growing and buying for the soup pot.

About that same time I was in Guatemala. On a trip in the Highlands, we began to see areas of the mountainsides that looked like a large hand had scraped fingers down large areas. This is a combined effect of two things: 1) people are cutting trees higher and higher up and on steeper and steeper slopes, and 2) hurricane Stan in 2005 that hit this area very hard. The soil just couldn't hold on those slopes and many small streams turned into large landslides. We went to the village of Panabaj on Lake Atitlan, just south of Santiago Atitlán. This village had been inundated with mud from two of these slides that came down off the volcano Tolimán. People from Guatemala City said they could not understand why people in the countryside were so dumb as to cut trees on the slopes of the mountains. What they did not understand is that the villagers in these areas *have no alternative*. There are

increasing numbers of people in the country and nothing for them to do if they were to go to the cities. Many try migrating to Mexico and the U.S. and a few succeed. Some go to the cities and eventually join gangs that are creating many problems with various crimes. *Those who remain in the rural areas must clear land to plant corn and beans, and cut firewood to cook with just in order to live. The only available land is higher up and on steeper and steeper slopes. Even though the fields are farther away from roads so they are not so visible, their numbers are still increasing.* It was sadly interesting to me to listen to educated Guatemalans deride the Guatemalan *campesinos* for being so dumb that they would keep cutting trees on the mountains and volcanoes.

There is a parallel between Guatemala and Kenya/Uganda where Ken Buhr was. It seems to me that *uncontrolled human population growth* and a direct consequence of it involving water (sometimes lack of it and sometimes too much of it) and sources of fuel are going to overwhelm much, if not most of the world in the not too distant future.

Even in the U.S. there are beginning to be problems with overpopulation and water. In Colorado this year, which is a drought year, cities are fighting farmers for water, and farmers who pump from the underground aquifer have to fight with farmers who have historic surface water rights. In Florida, over-populated south and central Florida is looking to north Florida for more water. North Florida feels it does not have surplus water and its population is also rapidly increasing. In fact, in 2006, another PhD student with whom I was working finished his dissertation trying to ascertain how much water the Suwannee River drainage had that might be available (under present demands in the same drainage).



Top photo shows the land slides. Bottom photo is part of Panabaj with Tolimán volcano in the background where more land slides are visible. The lower one was one of the two that hit Panabaj.

A recent (2006) article in *Agricultural Economics*, a prestigious journal, is titled: "The Impact of Soil Conservation and Output Diversification on Farm Income in Central American

Hillside Farming.” The authors conclude, “. . . income is determined simultaneously by the farmer’s decision to adopt soil conservation technologies and by the level of diversification (number of agricultural activities) on the farm.” What is sad about this is that they believe that the *adoption* of the technologies and diversification into non-food crops *caused incomes to rise* over the ten-year period studied. We know from our ELP models that the farmers with more resources (those with higher incomes) were the ones who were able to adopt the technologies and diversify into other (non-food) crops. Thus, the cause and effect are the other way around! Granted, the variables they studied are related, but they did not *understand* the livelihood system sufficiently to ascertain the error in their work! The size of the sample from the two countries (Honduras and El Salvador) was 678 farmers. The use of these large numbers obviously did not lead them into correct conclusions.

2007

During the year, four of the graduate students on whose committees I participated graduated. Jim Barham, PhD, Interdisciplinary Ecology did his research in conjunction with CIAT in Tanzania. http://etd.fcla.edu/UF/UFE0019544/barham_j.pdf Kibiby Mtenga from Tanzania, PhD Ag Ed and Communication did her research in Malawi. http://etd.fcla.edu/UF/UFE0021162/mtenga_k.pdf Tirhani Manganyi from South Africa, PhD Ag Ed and Communication did her research in her home country. http://etd.fcla.edu/UF/UFE0021601/manganyi_t.pdf Lauren Justice, MS, Interdisciplinary Ecology did her research in Jamaica. http://etd.fcla.edu/UF/UFE0021174/justice_l.pdf And one of my own students, Carolina Ribeiro, from Brazil completed her M.S. degree in Interdisciplinary Ecology doing her research in Brazil. http://etd.fcla.edu/UF/UFE0021342/ribeiro_c.pdf

Along with IFAS International Programs, Food and Resource Economics, ESPOL in Ecuador and an organization in Bangladesh, I participated in a proposal for a CRSP project. The project involved the pelleting of urea into briquettes to be used in patty rice. This technology had been very successful in Bangladesh and we proposed to introduce it into Ecuador. We were not successful with the CRSP proposal, but moved forward with a proposal just in Ecuador with ESPOL. Funding looked favorable. It was to involve Sondeos, on-farm research (Adaptability Analysis), development of a small industry to manufacture the pelleting machines and extension efforts. Several Ecuadorean M.S. students would be able to get their theses from the project.

My spring farming systems course had eight students. Because there was a staging area for a new building where we used to plant sweet corn for simulated on-farm trials (Adaptability Analysis), we used the ethnobotany garden area. One of the students in the class managed that area and volunteered it. It worked fairly well but was not completely satisfactory so I decided not offer the course in the spring of 2008. The class Sondeo once again involved the SECC. Rather than again ask farmers how they were using the seasonal climate forecasts, we decided to find out how they were making decisions. This turned out to be fairly interesting. There were many dynamic things happening at the time including the push for ethanol, pressure on migrant labor and “urbanization” of a lot of farming area. Some farms were getting larger and some smaller. But again, farmers were much surer of making any decisions based on weather forecasts (a few days) rather than seasonal climate forecasts (several months).

My fall class on Ethnographic Linear Programming had 10 students and turned out to be very good (and fun). Four of the 10 students use the Kefa book on a Zambian village upon which to base their models, but each one modeled something completely different. One was looking at the production of ornamental fish as a possible new activity. Another assessed the Heifer International program and its effect on households with different kinds of

composition. A third looked at the potential for agroforestry activities to improve soil fertility. The fourth looked at means of hiring labor, especially by women heads of household. One main source of funding for them was by making beer, done by women, and trading it for labor. Another looked at the potential for bullock power in northern Ghana where he intends to conduct his dissertation research. One looked at the potential for soil improvement practices in a Kenyan community where she had been. Another was assessing the effect of hurricanes on an area in Mexico. One looked at the livelihood system of displaced indigenous people in Guatemala. Another looked at the effect of improved transportation in the Darien area of Panama. And finally, one looked at the potential for CO₂ accumulation on medium-sized farms in the Brazilian Amazon.

This year was busy so far as publications were concerned: Thangata, P.H., M. Mudhara, C. Grier and P.E. Hildebrand. 2007. Potential for agroforestry adoption in Southern Africa: improved fallow and green manure adoption in Malawi, Zambia and Zimbabwe. *Ethnobotany Res & Appl.* www.ethnobotanyjournal.org/vol5/i1547-3465-05-067.pdf

Thangata, P.H., P.E. Hildebrand and F. Kwesiga. 2007. Predicted impact of HIV/AIDS on improved fallow adoption and rural household food security in Malawi. *Sustainable Development* 15:205-215. <http://onlinelibrary.wiley.com/doi/10.1002/sd.323/pdf>

Cabrera, V.E., S.S. Jagtap and P.E. Hildebrand. 2007. Strategies to limit (minimize) nitrogen leaching on dairy farms driven by seasonal climate forecasts. *Agriculture, Ecosystems and Environment* 122:479-489. http://www.sciencedirect.com/science?ob=MImg&imagekey=B6T3Y-4NJX40Y-1-1&cdi=4959&user=2139813&pii=S0167880907000953&origin=browse&zone=rslt_list_item&coverDate=12%2F31%2F2007&sk=998779995&wchp=dGLzVlb-zSkWB&md5=7d7f6e40ca3262499afe870ee1d65843&ie=/sdarticle.pdf

Alderman, P., J. Bost, N.E. Breuer, T. Gill, D. Graves, P. Hildebrand, E. Livengood, M. Mishkin, D.R. Ward and D. Wilsey. 2007. Farming systems and farmer decision making in Columbia and Suwannee Counties. SECC Technical Report Series: SECC-07-002. Gainesville. http://www.seclimate.org/pdfpubs/SECC_07_002.pdf http://www.seclimate.org/pdfpubs/SECC_07_02.pdf

Breuer, Norman, Victor Cabrera, Guillermo A. Baigorria, Peter E. Hildebrand and James W. Jones. 200X. Potential adaptations to seasonal climate forecasts by Florida beef cattle producers. *Agricultural and Forest Meteorology*. Submitted August 2007.

Breuer, N.E., V.E. Cabrera, K.T. Ingram, K. Broad and P.E. Hildebrand. 2007. AgClimate: a case study in participatory decision support system development. *Climatic Change*.

Cabrera, V.E., N.E. Breuer and P.E. Hildebrand. 2006. Participatory modeling in north Florida dairy farm systems: a method for building consensual environmental sustainability using seasonal climate forecasts. *Climatic Change*.

One of my PhD students, David Wilsey and I each submitted abstracts for the 2008 European IFSA symposium in France and both were accepted for full papers. Mine (with Dave as co-author) was based on the class Sondeo report: *Farmer Decision Making in the Face of Rapid Change in Columbia and Suwannee Counties, Florida*. <http://ufdc.ufl.edu/IR00000271/00001> Dave's paper, *Sustainability Transformation from Supply Chain Integration: Quality in Natural Resource Production Systems as a First Step toward Eco-Labeling?* was based on part of his dissertation and I was co-author. <http://ufdc.ufl.edu/1/IR00000673/00001> So we planned a trip to France for 2008.

2008

My MALAS (Master of Arts in Latin American Studies) student, Ricardo Mello from Brazil, had his paper accepted for presentation at Yale's Student Chapter of the Annual International Society of Tropical Foresters' Conference. The paper was the one he did for my fall class and I encouraged him to submit it. I was a co-author and had to spend a lot of time putting Ricardo's weak English into acceptable form for publication. I also, of course, worked with him on his PowerPoint presentation. The title was: *Modeling*

Effects of Climate Change Policies on Small Farmer Households in the Amazon Basin, Brazil. Afterwards they encouraged him (us) to submit it as a paper for the journal Sustainable Forestry.

As I had expected, I cancelled my spring class (Farming Systems Research and Extension Methods). Partly, at least, because it had been listed in the catalog as “staff” rather than with my name, it was difficult for students to find. Also, I had run out of land to do the simulated on-farm trial with sweet corn. So in a way, I was glad not to have to do it. However, two of my students still wanted all or parts of it, so I gave it to them as a special problems course, holding class in my “office” at regular class time. We worked our way through the Adaptability Analysis book that John Russell and I had written and that worked well for the on-farm research aspect. Only one of them was able to participate in the Spring Break Sondeo, however, so I had to figure out what the other one could do to get that credit. *But the demise of the farming systems course also meant the end of the farming systems minor (open to all graduate students) and the farming systems concentration open to all graduate students in Interdisciplinary Ecology. That was about all that was left of the farming systems program at UF and when I finally quit working that will end it.*

I had two students who were doing their research (one M.S. and one PhD) in western Kenya. Neither was there when the violence broke out following the presidential election and the M.S. student finished her field research and did not need to return. However, the PhD student needed to return at least once more and things had settled down before he returned in the summer. All together, I was working with 17 grad students as of June 2008 and serving as chair for 6 of them. Two were Master’s students and four were PhDs. They were working in Kenya (2), Brazil (2), Peru, and Mexico.

Maria, our daughter Annie and I left for Paris on July 1 to spend some time there before going to the European farming systems conference in Clermont-Ferrand July 6-10. We met up with Dave Wilsey and his wife, Heather at the train station in C-F. Also attending from UF was Wendy Lyn Bartell. Here is a picture of the three Gators at the conference.



Following the conference we spent some time in Provence, Cannes and Nice, returning home from Nice on July 15.



Maria, Annie and me in Cassis in July 2008

On July 23 I left for Guayaquil, Ecuador with Walter Bowen, the associate director of IFAS International Programs. Joining us later from UF were Pilar Useche, an assistant professor in FRED and her PhD student, Paul Jaramillo. Walter had formerly worked in Bangladesh where they had developed a new means of inserting small bricks of urea into the soil in paddy rice fields. This improved the productivity of the urea and reduced the escape of nitrogen into the atmosphere. We had written a proposal to see if this might be an appropriate technology for the rice farmers in the littoral north of Guayaquil. We conducted a Sondeo along with eight people from ESPOL, faculty and students, the week of July 27. I returned to Gainesville on Sunday August 3.

My fall Economic Analysis class had five students, from Interdisciplinary Ecology, Agriculture and Biological Engineering, Forestry, and Agronomy. One modeled the Kefa community from the textbook, one farms in Mali where she had spent two years, one farms in an area in Costa Rica connecting two reserves, one farms in India looking at more conservative uses if irrigation, and one looking at incorporating green chopped forage in north Florida dairy rations. As usual, it was a great mix. Tom Gill, my PhD student in Interdisciplinary Ecology who had returned from his summer in Kenya was the teaching assistant and he did a great job.

In December, Dave Wilsey who had been at the farming systems meetings in France in the summer, graduated with his PhD. *He was already an assistant professor at the University of Minnesota.*

Following is a list of some of the students with whom I have been involved over the years and what they are doing as of 2008. The list is not exhaustive but is an indication of what and where they are.

John L. Wake graduated MS in FRE 1984. I was his chair. He is an Associate Broker specializing in listing and selling homes in the greater Scottsdale, Arizona area. John worked as an economist at the U.S. Department of Agriculture in Washington D.C. and as an Agricultural Attaché at the American Embassy in Paris before returning to Arizona in the early 1990s.

Bruce Dehm graduated with an MS in FRE in 1984 and I was his chair. He is president of Dehm Associates, LLC in Genesso, NY, a dairy consulting service.

William Fiebig graduated in 1987 with an MS in Agronomy and I served on his committee. He is technical advisor at the Food Security Unit of the Save the Children Federation, Inc. and a farming systems agronomist with thirty years experience. He was an agricultural officer with the Food and Agriculture Organization of the United Nations from 1998 to 2002.

Peter Wotowiec graduated in 1987 with an MS degree in AEC and I was on his committee. He is a consultant with Partners of the Americas.

Tom Fattori, graduated in 1989 with a PhD from Poultry and I was his co-chair. He is with the RAMP/FAO Afghan Poultry Production Project, of Chemonics International.

Jonathan Dain graduated in 1990 with a MALAS degree and I was on his committee. He is professional skills coordinator, Tropical Conservation and Development Program, Center for Latin American Studies at the University of Florida.

Carlos A. Parera graduated in 1992 with a PhD degree in Horticulture and I was on his committee. He is a senior researcher with the Instituto Nacional de Tecnología Agropecuaria, Estación Experimental Agropecuaria San Juan, in Argentina.

Thomas Samkyi, graduated in 1993 with an MS degree in FRE. I was his chair. He is now Head of Business Development and Appraisal, Tanzania Investment Bank Ltd.

Terry C. Kelly graduated with a PhD in FRE in 1995 and I was his chair. He is a senior lecturer in farming research systems and organics at Massey University in New Zealand.

Jennifer Scheffee graduated in 1995 with an MS degree in AEC and I was her co-chair. She works with Helen Keller International.

Grace Morillo graduated with a MALAS degree in 1998. I was her chair. She is the Interim National Director of UCU (A sister organization to InterVarsity Christian Fellowship) in Colombia. UCU works on the campuses on 8 Colombia cities.

Heather McIlvaine-Newsad graduated with a PhD in anthropology in 2000. I was on her committee. She is associate professor of anthropology, Department of Sociology and Anthropology, Western Illinois University, Macomb.

Amanda Stronza graduated with a PhD in anthropology in 2000. I was on her committee. She is an assistant professor in the Department of Recreation, Park and Tourism Sciences at Texas A and M University.

Elena P. Bastidas graduated with a PhD in FRE in 2001 and I was her chair. She is assistant professor, Conflict Analysis and Resolution, Graduate School of Humanities and Social Sciences, Nova Southeastern University in Fort Lauderdale, Florida.

Maxwell Mudhara graduated in 2002 with a PhD in FRE. I was his chair. He is currently a professor at the University of KwaZulu-Natal in Pietermaritzburg, South Africa. He works in the Centre for Environment, Agriculture and Development, Farmer Support Group. He is also the Prolinnova Provincial Coordinator for KwaZulu-Natal.

Paul Thangata was the first PhD in SNRE in 2002 and I was his chair. He is a Research Fellow with IFPRI stationed in Ethiopia.

Vanessa Slinger graduated with a PhD in Geography in 2002 and I was on her committee. She is an assistant professor of geography at Kennesaw State University in Georgia. All of her work to date has been focused on natural resource management and ecotourism in developing countries of Latin America and the Caribbean.

Norman E. Breuer graduated with a PhD degree in SNRE 2003 and I was his chair. He is associate research scientist, University of Miami and courtesy assistant research scientist in the Agricultural and Biological Engineering Department at the University of Florida. He works with the Southeast Climate Consortium.

Richard Pluke graduated in 2003 with a PhD in Entomology and I was on his committee. He is Senior Agronomist/ Entomologist - Virgin Islands. He has more than 10 years of experience in agriculture. He is currently managing Fintrac's Tropical Training Center in the Virgin Islands.

Victor Cabrera graduated with a PhD in SNRE in 2004 and I was his chair. He joined the University of Wisconsin-Madison dairy science department as an assistant professor and extension dairy management specialist. He came from New Mexico State University, where he developed whole dairy farm decision-making models that factored in information about cattle, crops, soils, climate, and economics. Cabrera's appointment is 70 percent extension, so he spends most of his time providing assistance to extension staff working with dairy producers state-wide.

Kristin Davis graduated in 2004 with a PhD in Agricultural Education and Extension and I was her co-chair. She is a Research Fellow with IFPRI stationed in Ethiopia. Her current research interests include the role of farmer groups in agricultural innovation systems, participation and poverty in relation to farmer groups, and pluralistic extension systems in Africa.

Amy J. Sullivan graduated with a PhD in SNRE in 2004 and I was her chair. She is a post doctoral fellow for land and water productivity at the International Water Management Institute stationed in Pretoria, South Africa.

James Barham graduated in 2007 with a PhD in SNRE and I was on his committee. He is an economist with the USDA Marketing Services Branch.

Christina Storz graduated in 2008 with an MS in SNRE with a joint law degree. I was her chair. She is a law clerk at United States Army Corps of Engineers in the Jacksonville, Florida area.

David Wilsey graduated with a PhD in SNRE in 2008 and I was his chair. He is an Educator and Assistant Professor for Natural Resources and Environment at the University of Minnesota,

Cloquet MN. He had this position for a few months before graduating.

2009

During the fall class, the students indicated they had friends who would like me to teach the class in the spring. I said that if they found at least six to take it then I would teach it, since I was no longer teaching the farming systems course. I made arrangements for a classroom at the time I usually teach. There were six registered the first day and ultimately seven were taking the course! Their ELPs and papers involved situations in Tanzania, Botswana, an extractive reserve in Acre, Brazil (2), India, Germany, and one using Kefa in Zambia. Two were Brazilians, one from India, one from Germany and three were Americans.

Tom Gill is finishing a PhD in Interdisciplinary Ecology and I am his chair. He has accepted a project associate position in International Programs at Penn State University but they are allowing him to stay in Gainesville until after their baby is born and will let him return in September to defend his dissertation. Tom will be working on developing new projects in Africa.

2010-2011

In May I escorted two of my PhD students to graduation: **Tom Gill** who did his research in Kenya and **Alfredo Rios** who did his research in Peru. Alfredo is now in extension at Ohio State University. In December I was to escort two others, one my own and one on whose committee I served. My student was **Abib Araujo** who did his research in Brazil. The one on whose committee I served was **Maria Morera** who did her research in Kenya. Maria's chair was Christina Gladwin who was unable to escort her. However, at the last minute because of my nose surgery they had to find other escorts.

As of fall 2011 I am still chairing two PhD students (Harry Pellish doing research in Kenya, and Miramanni Miskin doing her research in Mexico) and one MS student, Liz Gregg doing her research in the Amazon area of Peru). I am also on a few committees. My ELP class has seven students from the US, China, Colombia, Ecuador and Haiti.

Though this story is not finished, I will close in 2011 with three pictures taken at our daughter's wedding April 9, 2011 at 'Tween Waters Inn on Captiva Island in the Gulf of Mexico off Fort Myers, Florida.



This is our daughter Annie as I escorted her to the ceremony. Part of 'Tween Waters Inn is in the background.



My wife and me leaving the ceremony. The Gulf is in the background.
Behind us are the groom's parents.



The happy couple, Michael and Annie Hughes.

EPILOGUE

I guess I certainly have not been fenced in! Not only did I stretch the limits of agro-socio-economic research particularly in the developing world, but I travelled widely and worked professionally in many of the 49 states in the US where I have been and in most of the countries in the world I have lived in or visited. My graduate students have also done research in several countries I have not had the opportunity to visit.

Places in the U.S. where I have lived:

Brush, Boulder and Fort Collins, Colorado; Riverside, California; Lansing, Michigan; College Station/Bryan, Texas; Arlington, Virginia; and, of course, Gainesville, Florida for the last 32 years with my lovely wife Maria and beautiful daughter Annie. I have also been in all the states of the United States except Alaska, but I have flown over Alaska as well.

Countries and cities besides the U.S. in which I lived and worked professionally:

Lahore, Pakistan (2 years); Colombia (3+ years in Bogotá and 2+ years in Cali); San Salvador, El Salvador (2+ years); and Guatemala City, Guatemala (5+ years).

Other countries in which I worked professionally, in alphabetical order by continent:

Africa: Botswana, Burkina Faso, Kenya, Malawi, Mali, Morocco, Niger, Nigeria, Senegal, South Africa, and Tanzania. Asia: China and Indonesia. Europe: France, Italy, Netherlands, Portugal, and Spain. South America: Argentina, Bolivia, Brazil, Ecuador, Peru, and Venezuela. North America, Central America and the Caribbean: Canada, Costa Rica, Dominica, Dominican Republic, Honduras, Jamaica, Mexico, Nicaragua, and Panama.

Countries in which I have had the opportunity to travel as a tourist (some solely as a tourist and some besides working

there):

Afghanistan, Aruba, Austria, Curacao, Ecuador, Egypt, France, Germany, India, Italy, Japan, Kenya, Monaco, Portugal, Singapore, South Africa, Spain, Sri Lanka, Switzerland, Tanzania, Thailand, The United Kingdom, Vatican City and Zimbabwe.

Countries in which I landed in the airport but did not leave it:

Belize, Cape Verde, Ethiopia, Haiti, Lebanon, and Turkey.

Planes I can remember flying on

Ford Trimotor

DC3, DC4, DC6, DC7, DC8, DC9, DC10

Comet, Trident, VC10

Boeing 707, 727, 737, 747, 757, 767

Concorde (Air France)

A300 Air Bus (Various versions)

Single Otter, Twin Otter, Beaver

Fokker F27 (turbo prop), F28 (jet)

Cessna 152, 172, 406

Ilyushins (Russian jets) (2 in China)

Beechcraft 99, Queen Air, King Air

Brazilian made twin jet

Two different kinds of helicopters

Piper Apache

Canadair CRJ-50 (4-engine, 50 passenger commuter jet)

Canadair twin jet (I don't remember the model)

Airlines I remember having flown on

Air Afrique

Air France

Air Malawi

Air Zimbabwe

Alitalia

ALM (Antillean)

American

American Eagle

ASA (Delata Connection)

Avianca (Colombia)

Avianca Air Taxi

Aviateca (Guatemala)

Braniff

British Airways

BOAC

CAAP (China)

Cathay Pacific (Taiwan)
Continental
COPA (Panama)
Delta
East African Airways
Eastern
Frontier
Garuda (Indonesia)
Iberia (Spain)
KLM (Dutch)
Lacsa (Costa Rica)
Lloyd (Bolivia)
Lufthansa (Germany)
Mideast (Lebanese, I think)
PIA (Pakistan)
Pan Am
Norstrum (Air France)
Northwest
Royal Ceylon Airlines (Sri Lanka)
SAA (South Africa)
SAHSA (Honduras)
SAM (Colombia)
Satena (Colombian military)
Singapore Airlines
Swiss Air
TACA (El Salvador)
Tanzanian Airlines
TAP (Portugal)
TWA
United
US AIR
Varig (Brazil)
VASP (Brazil)
Viasa (Venezuela)



My airline routes over the years.



PUBLICATIONS and PAPERS

Peter E. Hildebrand

BOOKS

Andrew, C.O. and P.E. Hildebrand. 1977. Planificación y ejecución de la investigación aplicada. ICTA, Guatemala.

Andrew, C.O. and P.E. Hildebrand. 1982. Planning and conducting applied agricultural research. Westview Press. Boulder, CO. <http://ufdc.ufl.edu/UF00055232/0000>

Hildebrand, P.E. and F. Poey. 1985. On-farm agronomic trials in farming systems research/extension. Lynne Rienner Publishers, Inc. Boulder, CO. <http://ufdc.ufl.edu/UF00080557/00001>

Hildebrand, P.E. 1986. Perspectives on farming systems research and extension. Lynne Rienner Publishers, Inc. Boulder, CO. <http://ufdc.ufl.edu/UF00072280/00001>

Hildebrand, P.E. and F. Poey. 1989. Ensayos agronómicos en fincas según el enfoque de sistemas agropecuarios. Editorial Agropecuaria Latinoamericana, Inc. Gainesville, FL.

Andrew, C.O. and Peter E. Hildebrand. 1993. Applied agricultural research: foundations and methodology. Westview Press, Boulder, CO.

Hildebrand, P.E. and J.T. Russell. 1996. Adaptability analysis: A method for the design, analysis and interpretation

OTHERS

1958

Hildebrand, P.E. 1958. The linear programming approach in farm management analysis. Agricultural Economics Mimeo No. 729. Michigan State University. East Lansing. 25 pages.

Hildebrand, P.E. and E. J. Partenheimer. 1958. Socioeconomic characteristics of innovators. **Journal of Farm Economics. Vol XL No. 2. pp 446-449.** http://chla.library.cornell.edu/cgi/t/text/pageviewer-idx?c=chla;cc=chla;rgn=full%20text;idno=5033566_4120_002;didno=5033566_4120_002;view=image;seq=0264;node=5033566_4120_002%3A4.35

1959

Hildebrand, P.E. 1959. Farm organization and resource fixity: modifications of the linear programming model. Agricultural Economics Mimeo No. 769. Michigan State University. East Lansing. 78 pages. <http://ufdc.ufl.edu/UF00082034/00001>

1960

Parker, C. A. and P.E. Hildebrand. 1960. Linear programming for profitable farming. In-service education workshop for teachers of vocational agriculture, Corpus Christi, Texas. <http://ufdc.ufl.edu/UF00081524/00001>

1961

Hildebrand P.E. 1961. Cost of producing lamb and wool on Edwards Plateau sheep ranches. The Agricultural and Mechanical College of Texas. Texas Agricultural Experiment Station. MP 553. College Station. 6 pages.

1962

Hildebrand, P.E. 1962. Discussion: Interregional competition in beef. Proceedings. XXXV Western

Agricultural Economics Association Annual Meeting. WAEA. Reno, Nevada. pp 46-47.

Hildebrand, P.E. 1962. Factors affecting the profitability of rootplowing in west Texas. Texas Agricultural Experiment Station. College Station, Texas.

Hildebrand, P.E. 1962. Discussion: Aspects of management of concern to the basic researcher. Proceedings. WAERC Farm Management Research Committee. Denver, Colorado. pp. 73-74.

1963

Hildebrand, P. E. 1963. A proposed regional model for agricultural adjustment in the west. Proceedings. XXXVI Western Agricultural Economics Association Annual Meeting. WFEA. Laramie, Wyoming. pp 112-117. <http://ufdc.ufl.edu/UF00080623/00001>

Walker, O., P.E. Hildebrand and R. Krenz. 1963. Procedural guidebook for production economics. Research contributing to GP-5.

1965

West Pakistan Water and Power Development Authority, and Tipton and Kalmbach, Inc., Engineers. 1965. Salinity control and reclamation programs, Project No. 4. Upper Rechna Doab. Lahore, Pakistan and Denver, Colorado. (Contributed as Chief Economist).

1966

West Pakistan Water and Power Development Authority, and Tipton and Kalmbach, Inc., Engineers. 1966. Salinity control and reclamation programs, Project No. 5, Lower Rechna Doab. Lahore, Pakistan and Denver, Colorado. (Contributed as Chief of Planning).

1967

West Pakistan Water and Power Development Authority, and Tipton and Kalmbach, Inc., Engineers. 1967. Regional Plan-Northern Indus Plains. \In\ Vol. II, Economics, Appendix B. value of water in the northern Indus Plain. Lahore, Pakistan and Denver, Colorado.

Hildebrand, P.E. 1967. An analysis of INCORA and the Law of Agrarian and Social Reform with reference to their impact on investment in private land. USAID. Bogota, Colombia

1968

Chacon, P.J, and P.E. Hildebrand. 1968. Report of farm machinery supply practices and problems in Colombia. USAID. Bogota, Colombia. <http://ufdc.ufl.edu/UF00080848/00001>

Hildebrand, P.E. 1968 Informe sobre el estudio del impacto de fertilizantes y pesticidas en la producción y productividad de cultivos comerciales en Colombia. USAID. Bogotá, Colombia.

Hildebrand, P.E. 1968. La incertidumbre en la oferta de insumos como restricción para el desarrollo agrícola en los países en desarrollo. Departamento de Economía Agropecuaria. Instituto Colombiano Agropecuario. Bogotá, Colombia. <http://ufdc.ufl.edu/UF00095085/00001>

1969

Mao, S.W., P.E. Hildebrand and C.N. Crain. 1969. The interdependence of economics and hydrologic criteria in planning water resources development. **Society of Mining Engineers. Transactions Vol 244. AIME. pp 15-24.** <http://ufdc.ufl.edu/UF00080639/00001>

Lopera, Jorge P. and P.E. Hildebrand. 1969. La brecha en la productividad agrícola en Colombia. Boletín Departamental No. 3. Departamento de Economía Agrícola. Instituto Colombiano Agropecuario, Bogotá, Colombia. <http://ufdc.ufl.edu/UF00072228/00001>

1970

Hildebrand, P.E. 1970. La incertidumbre en la oferta de insumos como restricción para el desarrollo agrícola en los países en desarrollo. Revista Colombiana de Economía Agrícola Vol. 2., No. 1.

Asociación Colombiana de Economía Agrícola. Bogotá, Colombia. pp. 37-40.

1971

Escobar, G., J. Gomez, O. Patiño, A. Gallo, and P.E Hildebrand. 1971. Análisis económico de la ceba de novillos en confinamiento. Informe No.6. Departamento de Economía Agrícola. Regional No. 5. Instituto Colombiano Agropecuario, Palmira, Colombia.

Gallo, A.C. and P.E. Hildebrand. 1971. Análisis económico de la ceba de novillos en pastoreo rotacional. Informe No. 5. Departamento de Economía Agrícola. Regional No. 5, Instituto Colombiano Agropecuario, Palmira, Colombia. <http://ufdc.ufl.edu/UF00054658/00001>

Gallo, A.C., P.E. Hildebrand and A. Warren. 1971. El cuidado de patos khaki campbell para huevos. Hoja informativa No.8. Departamento de Economía Agrícola. Regional No. 5. Instituto Colombiano Agropecuario, Palmira, Colombia.

Hildebrand, P.E. 1971. Un diseño experimental para mejorar recomendaciones en fertilización. Informe No. 2. Departamento de Economía Agrícola, Regional No. 5. Instituto Colombiano Agropecuario. Colombia.

Hildebrand, P.E., E. Santos and A. Warren. 1971. Cuántas ponedoras por jaula? Pp. 10-15, Revista Agrícola ESSO No. 5. Esso Colombiana S.A.

Hildebrand, P.E., E. Santos and A. Warren. 1971. La productividad y la rentabilidad de ponedoras en jaulas sencillas, dobles y triples. Informe No. 4. Departamento de Economía Agrícola, Regional No.5. Instituto Colombiano Agropecuario, Palmira, Colombia. <http://ufdc.ufl.edu/UF00095625/00001>

Lopera, J.P. and P.E. Hildebrand. 1971. La brecha en la productividad agrícola en Colombia. \El Agro\ (Suplemento Agrícola y Ganadero de "La Patria"), Manizales, Colombia, February 27. <http://ufdc.ufl.edu/UF00072233/00001>

Lopera, J.P. and P.E. Hildebrand. 1971. Divorcio entre la técnica y los agricultores. \El Agro\ (Suplemento Agrícola y Ganadero de "La Patria"), Manizales, Colombia, Abril 3.

Rincon P. and P.E. Hildebrand. 1971. Análisis económico de la fertilización nitrogenada en pasto peludo (Braquiaria decumbans). Hoja Informativa No.7. Departamento de Economía Agrícola, Regional No.5. Instituto Colombiano Agropecuario, Palmira, Colombia.

1972

Andrew, C.O. and P.E. Hildebrand. 1972. Planificación y ejecución de investigación aplicada. Departamento de Administración Agrícola. Dirección General de Economía Agrícola y Planificación. Ministerio de Agricultura y Ganadería. San Salvador, El Salvador. <http://ufdc.ufl.edu/UF00080893/00001>

Hildebrand, P.E. 1972. Análisis agroeconómicos mediante superficies de respuesta. Departamento de Administración Agrícola. Dirección General de Economía Agrícola y Planificación. Ministerio de Agricultura y Ganadería. San Salvador, El Salvador.

1973

Barona, M.T., A. Gallo y P.E. Hildebrand. 1973. El plátano en los Departamentos de Cauca, Valle del Cauca y Quindío. División de Investigación, Departamento de Economía, CNIAP. Instituto Colombiano Agropecuario. Palmira, Colombia. <http://ufdc.ufl.edu/UF00054725/00001>

Peña, E. y P.E. Hildebrand. 1972. Análisis económico de fertilización en cinco hortalizas en San Andrés. Departamento de Administración Agrícola. Dirección General de Economía Agrícola y Planificación. Ministerio de Agricultura y Ganadería, San Salvador, El Salvador. <http://ufdc.ufl.edu/UF00054302/00001>

1974

Hildebrand, P.E. and E.G. Luna. 1974. Unforeseen consequences of introducing new technologies in traditional agriculture. The future of agriculture: technology, policies and adjustment. XV international conference of agricultural economists. Oxford Agricultural Economics Institute. Oxford. pp 508-509. <http://ufdc.ufl.edu/UF00075671/00001>

Hildebrand, P.E. 1974. Análisis económico de fertilización de caña de azúcar. Departamento de Economía Agrícola. Centro Nacional de Tecnología Agropecuaria, (CENTA). Ministerio de Agricultura y Ganadería. San Salvador, El Salvador.

Hildebrand, P.E. and E.C. French. 1974. Producción de pepinos utilizando tallos de maíz. Departamento de Economía Agrícola, Centro Nacional de Tecnología Agropecuaria (CENTA). Ministerio de Agricultura y Ganadería, San Salvador, El Salvador. <http://ufdc.ufl.edu/UF00073332/00001>

Hildebrand, P.E. and E.C. French. 1974. Un sistema salvadoreño de multicultivos. Departamento de Economía Agrícola. Centro Nacional de Tecnología Agropecuaria (CENTA). Ministerio de Agricultura y Ganadería. San Salvador, El Salvador. <http://ufdc.ufl.edu/UF00075670/00001>

1975

Andrew, C.O. and P.E. Hildebrand. 1975. We call it research. Staff Paper No.9. Food and Resource Economics Dept. University of Florida, Gainesville, Florida. <http://ufdc.ufl.edu/UF00054843/00001>

Hildebrand, P.E. 1975. El papel de socioeconomía rural en el Instituto de Ciencia y Tecnologías Agrícolas - ICTA.

Hildebrand, P.E. 1975. Sistemas de producción agrícola y proyectos de reforma agraria. Presented at the 9th Annual meeting of the Presidents of Agrarian Reform Institutes of Central America. ICTA, Guatemala.

Hildebrand, P.E., E.C. French, M.A. Barahona, A.E. Chacon, and J. Biber. 1975 Manual para la siembra de multicultivos. Departamento de Economía Agrícola, Centro Nacional de Tecnología Agropecuaria (CENTA). Ministerio de Agricultura y Ganadería. San Salvador, El Salvador. <http://ufdc.ufl.edu/UF00055291/00001>

Reiche, C.E., P.E. Hildebrand and Sergio Ruano. 1975. Evaluación de algunas variedades de sorgo (maicillo) en pequeñas medianas fincas de oriente de Guatemala. Pp 329-372. \IN\ Programa cooperativo centroamericano para el mejoramiento de cultivos alimenticios (PCCMCA) Vol 11. San Salvador, El Salvador.

1976

Andrew, C.O. and P.E. Hildebrand. 1976. Planning and conducting applied research. MSS Information Corporation. New York. <http://ufdc.ufl.edu/UF00055253/00001>

Busto Brol, B., O. Calderón and P.E. Hildebrand. 1976. Evaluación de la aceptación de la tecnología generada por ICTA para el cultivo de maíz en el parcelamiento "La Máquina", 1975. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00066737/00001/>

Busto Brol, B., O. Calderón and P.E. Hildebrand. 1976. Registros económicos de producción con

agricultores colaboradores del parcelamiento "La Máquina". 1975. ICTA, Guatemala.

<http://ufdc.ufl.edu/UF00081574/00001>

Hildebrand, P.E. 1976. Generating technology for traditional farmers: a multidisciplinary methodology. Prepared for presentation at the conference on: Developing economies in agrarian regions: a search for methodology. The Rockefeller Foundation Conference Center, Bellagio, Italy. August 4-6, 1976.

ICTA, Guatemala. <http://ufdc.ufl.edu/UF00081824/00001>

Hildebrand, P.E., C.E. Reiche and E. Samayoa. 1976. Ensayo de sistemas de cultivos de ladera para pequeños y medianos agricultores: La Barranca, Jutiapa, 1975. \IN\ Informe Anual 1975-1976. ICTA, Guatemala.

Reiche, C.E., P.E. Hildebrand, S. Ruano and J. T. Wyld. 1976. El pequeño agricultor y sus sistemas de cultivos en ladera: Jutiapa, Guatemala. \IN\ Informe Anual 1975-1976. ICTA, Guatemala.

<http://ufdc.ufl.edu/UF00055935/00001/>

Zimet, D.J., C.O. Andrew and P.E. Hildebrand. 1976. The economic potential for increasing vegetable production in the Zapotitan district, El Salvador. Economic Report 78. Food and Resource Economics Department. University of Florida, Gainesville, Florida

Hildebrand, P.E. 1976. Multiple cropping systems are dollars and "sense" agronomy. Chapter 18. \IN\ **American Society of Agronomy. ASA Special Publication No. 27. Madison, Wisconsin. pp 347-**

371. <http://ufdc.ufl.edu/UF00055920/00001/>

1977

Andrew, C.P. and P.E. Hildebrand. 1977. Planificación y ejecución de la investigación aplicada, Instituto de Ciencia y Tecnología Agrícolas (ICTA), Guatemala. 132 pages.

Busto Brol, B., O.A. Calderón and P.E. Hildebrand. 1977. Registros económicos de producción de maíz con agricultores colaboradores del parcelamiento "La Máquina", 1976. ICTA, Guatemala.

De León Prera, C., J.T. Wyld and P.E. Hildebrand. 1977. Alcances geográficos de los sistemas de cultivos en el área piloto del ICTA, Región VI, 1975. ICTA, Guatemala.

<http://ufdc.ufl.edu/UF00055934/00001/>

Duarte, R., P.E. Hildebrand and S. Ruano. 1977. Tecnología y estructura agro-socioeconómica del minifundio del occidente de Chimaltenango. ICTA, Guatemala.

Godinez, L.H., L.M. Pando and P.E. Hildebrand. 1977. Registros económicos de producción con agricultores colaboradores en el sistema maíz-sorgo y cultivos de maíz y sorgo solo, en plano, Asunción, Mita, Jutiapa. 1976. ICTA, Guatemala.

Hildebrand, P.E. 1977. Generating small farm technology: an integrated, multidisciplinary system. Proceedings, 12th West Indian Agricultural Economics Conference, Caribbean Agro-Economic Society. April 24-30, 1977. Antigua. <http://ufdc.ufl.edu/UF00055921/00001/>

Hildebrand, P.E. 1977. Socioeconomic considerations in multiple cropping systems. An invited paper prepared for the Round Table Discussion on Agricultural Production Systems. XVI Annual Reunion of the Board of Directors, Instituto Interamericano de Ciencias Agrícolas (IICA), Santo Domingo, Dominican Republic, May 18. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00055923/00001/>

Hildebrand, P.E. and D. Cardona. 1977. Sistemas de cultivos de ladera para pequeños y medianos agricultores, La Barranca, Jutiapa, 1976. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00055937/00001/>

Hildebrand, P.E., S. Ruano, T. López, E. Samayoa and R. Duarte. 1977. Sistemas de cultivos para los agricultores tradicionales del occidente de Chimaltenango, ICTA, Guatemala.

López, J.T., S. Ruano, R. Duarte and P.E. Hildebrand. 1977. Registros económicos de producción con agricultores colaboradores del occidente de Chimaltenango, 1976. ICTA, Guatemala.

L. Ortiz, P.E. Hildebrand, and L.M. Pando. 1977. Registros económicos de producción en: maíz-frijol-sorgo, maíz-sorgo, maíz-frijol, y maíz solo, en ladera, área piloto ICTA, Región VI, 1976. ICTA, Guatemala.

1978

Duarte, R. and P.E. Hildebrand. 1978. Tecnología y estructura agro-socioeconómica del minifundio de Totonicapan, 1977. ICTA, Guatemala.

Hildebrand, P.E. 1978. An integrated approach to the improvement of farm production systems. Presented at the seminar on the improvement of farm production systems. Sponsored by the Club du Sahel, Bamako, Mali, Feb.20 - March 1, 1978. ICTA, Guatemala.

Hildebrand, P.E. 1978. Motivating small farmers to accept change. Prepared for presentation at the Conference on: integrated crop and animal production to optimize resource utilization on small farm in developing countries. The Rockefeller Foundation Conference Center, Bellagio, Italy. Oct 18-23, ICTA, Guatemala. <http://ufdc.ufl.edu/UF00055922/00001/>

Hildebrand, P.E. and S. Ruano. 1978. Integrated multidisciplinary technology generation for small, traditional farmers of Guatemala. Presented at the annual meeting of the Society for Applied Anthropology. Mérida, México. April 2-9. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00055925/00001/>

Ruano, S., M.E. Chinchilla and P.E. Hildebrand. 1978. Evaluación de la aceptabilidad de la tecnología generada para los cultivos de maíz y trigo en Quetzaltenango, ICTA, Guatemala. <http://ufdc.ufl.edu/UF00065179/00001/>

Ruano, V.M. Pacay and P.E. Hildebrand. 1977. Evaluación de la aceptación de la tecnología generada por ICTA para el cultivo de maíz en la región I. 1975. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00065178/1979>

Chinchilla, M.E. and P.E. Hildebrand. 1979. Evaluación de la aceptabilidad de la tecnología generada para los cultivos de maíz y ajonjolí en el parcelamiento de Máquina, 1977-1978. ICTA, Guatemala.

Chinchilla, M.E. and P.E. Hildebrand. 1979. Evaluación de la aceptabilidad de la tecnología generada para el cultivos de maíz en Quezaltenango, 1977-1978. ICTA, Guatemala.

Hildebrand, P.E. 1979. Summary of the sondeo methodology used by ICTA. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00055845/00001/lj>

Hildebrand, P.E. 1979. The ICTA farm record project with small farmers--four years of experience. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00055847/00001>

Hildebrand, P.E. 1979. Generating technology for traditional farmers -- the Guatemalan experience. Prepared for presentation in the symposium on socioeconomic constraints to crop protection, IX International Congress of Plant Protection, Washington, D.C. August 5-11, 1979. ICTA, Guatemala. <http://ufdc.ufl.edu/UF00055849/00001>

Hildebrand, P.E. 1979. Incorporating the social sciences into agricultural research: the formation of a national farm systems research institute. Report of a five year tour of duty. ICTA, Guatemala and the Rockefeller Foundation, New York.

Hildebrand, P.E. 1979. Rapid rural appraisal. Comments about multidisciplinary team efforts. A conference held at the Institute of Development Studies, University of Sussex. Brighton: BNI-9RE. **1980**

McDowell, R.E. and P.E. Hildebrand. 1980. Integrated crop and animal production: making the most of resources available to small farms in developing countries. A Bellagio Conference. The Rockefeller Foundation. New York. 78 pages.

Hildebrand, P.E. 1980. "FSR and national agricultural development". Proceedings, USDA/USAID Farming Systems Research Symposium, Dec. 8-9. Washington, D.C. <http://ufdc.ufl.edu/UF00073343/00001> **1981**

Hildebrand, P.E. 1981. Motivating small farmers, scientists and technicians to accept change. **Agricultural Administration, Vol 8, No. 5, pp 375-383.**

http://www.sciencedirect.com/science?_ob=MiamiImageURL&_cid=273248&_user=2139813&_pii=0309586X81900157&_check=y&_origin=browse&_zone=rslt_list_item&_coverDate=1981-09-30&wchp=dGLbVIS-zSkzV&md5=ef9f9b8a63d622481e2d28dc2b1b6bff/1-s2.0-0309586X81900157-main.pdf

Hildebrand, P.E. 1981. Combining disciplines in rapid appraisal: the sondeo approach. **Agricultural Administration, Vol 8, No. 6, pp 423-432.**

http://www.sciencedirect.com/science?_ob=MiamiImageURL&_cid=273248&_user=2139813&_pii=0309586X81900376&_check=y&_origin=browse&_zone=rslt_list_item&_coverDate=1981-11-30&wchp=dGLbVlt-zSkzk&md5=6f158ff8ed61127fb01b9d8f42b04e28/1-s2.0-0309586X81900376-main.pdf

Hildebrand, P.E. 1981. "Role, potential and problems of farming systems research and extension: developing countries vs. United States". Proceedings, Farming Systems Research Symposium "Small Farms in a Changing World" Prospects for the Eighties", Kansas State University, November 11-13.

<http://ufdc.ufl.edu/UF00094294/00001>

Hildebrand, P.E. 1981. Toward an agrosocioeconomic methodology. Paper presented at the didactic seminar on "the role of sociologists in the field among other professions" at the 76th annual meeting of the American Sociological Association. Toronto, Canada.

1982

Hildebrand, P.E. 1982. Farming systems research: issues in research strategy and technology design: discussion. **American Journal of Agricultural Economics 64, No. 5, pp 905-906.**

Hildebrand, P.E. 1982. Motivating small farmers to accept change. Chapter 7 **IN:** Shaner, W.W., P.F. Philipp and W.R. Schmehl. Readings in farming systems research and development. Westview Press. Boulder, Colorado. pp 100-109.

Swisher, M.E., P.E. Hildebrand, E.C. French, G. Clough and J. Dean. 1982. Algunas consideraciones en el desarrollo de tecnología apropiada para fincas pequeñas.

Hildebrand, P.E. 1982. FSR/E and the land grant system. Draft. University of Florida.

Hildebrand, P.E. and S. Ruano. 1982. EL SONDEO. Una metodología multidisciplinaria de caracterización de sistemas de cultivo desarrollada por el ICTA. Folleto técnico 21.

<http://ufdc.ufl.edu/UF00072339/00001>

1983

Hildebrand, P.E. 1983. The farming systems approach to technology development and transfer. Water Management Synthesis II Project. International Irrigation Center. Utah State University. Utah. 68

pages. <http://ufdc.ufl.edu/UF00081823/00001>

McDowell, R.E. and P.E. Hildebrand. 1983. Farming systems, including animals. Chapter 7. **IN:** Whyte, W.F. and D. Boyton. 1983. Higher yielding human systems for agriculture. Cornell University Press. Ithaca and London. pp 90-100.

Hildebrand, P.E. 1983. Características económicas de las fincas familiares de escala pequeña y recursos limitados: implicaciones para la tecnología.

Hildebrand, P.E. 1983. El concepto de "sistemas homogéneos" y su utilidad.

Hildebrand, P.E. and R.K. Waugh. 1983. Farming systems research and development. FSSP newsletter,

Vol 1, No.1. First quarter 1983. <http://ufdc.ufl.edu/UF00071908/00001/4j>

1984

Hildebrand, P.E. 1984. Modified stability analysis of farmer managed, on-farm trials. **Agronomy Journal Vol.76. pp 271-274.**

Hildebrand, P.E. 1984. Summary of FSR/E participation, activities, products and time frame. Farming Systems Support Project Newsletter. Vol 2, No.1. pp 4-5. <http://ufdc.ufl.edu/UF00071908/00004/4j>

Hildebrand, P.E. 1984. On the non-neutrality of scale of agricultural research.

1985

Hildebrand, P.E. 1985. Research/farmer linkage for technology and agricultural development. IN Proceedings of Workshop on Agricultural Research Policy and Organization in Small Countries. Wageningen, The Netherlands. Sept. 12-14, 1984. 17 pages

Hildebrand, P.E., E. Martínez and R. Ortiz. 1985. Generalized organization of FSR/E regions and field team. Farming systems Support Project Newsletter. Vol 3, No.2. <http://ufdc.ufl.edu/UF00071908/00009>.

Hildebrand, Peter E. and Federico Poey. 1985. Evaluating on-farm research. FSSP Newsletter, Vol 3 No.3 <http://ufdc.ufl.edu/UF00071908/00010>

Hildebrand, P.E. and S. Kearl. 1986. "Impact of a national farming systems program: Guatemala's Institute of Agricultural Science and Technology, ICTA". Farming Systems Support Project Newsletter. Vol 4, No.4. Fourth quarter. pp 12-14. <http://ufdc.ufl.edu/UF00071908/00015/12j>

Hildebrand, P.E. 1986. Forward. In: Jones, J.R. and B.J. Wallace (eds.). Social science and farming systems research: methodological perspectives on agricultural development. Westview Press. Boulder, Colorado.

1987

Poats, S., D. Galt, C. Andrew, L. Walecka, P. E. Hildebrand and K. McDermott. 1987. Future Directions for FSR/E. Farming Systems Support Project Newsletter. Vol 5, No. 3. pp 5-8.

<http://ufdc.ufl.edu/UF00071908/00018/5j>

Poats, S., D. Galt, C. Andrew, L. Walecka, P.E. Hildebrand and K. McDermott. 1987. Should FSR/E move towards greater inclusion of interhousehold issues, gender issues and non-farm income generating activities?. Farming Systems Support Project Newsletter, Vol 5, No.3. pp 11-12.

<http://ufdc.ufl.edu/UF00071908/00018/11j>

Poats, S., D. Galt, C. Andrew, L. Walecka, P.E. Hildebrand and K. McDermott. 1987. Relationship between FSR/ED and single-commodity research programs. Farming Systems Support Project Newsletter, Vol 5, No.3. pp 9-10. <http://ufdc.ufl.edu/UF00071908/00018/9j>

Hildebrand, P.E. 1987. Review: The economics of tropical farm management by J.P. Makeham. **Am J Agr Econ 69:717-718**

Wake, J.L. and P.E. Hildebrand 1987. The learning curve and the transaction cost of learning by doing: a case study of two technologies in north Florida. **Am. J. Agr. Econ. 69:1097-1097**

1988

Wotowiec, P., S. Poats. and P.E. Hildebrand. 1988. Research, recommendation and diffusion domains: a farming systems approach to targeting, Chapter 6 In: Poats, S., M. Schmink and A. Spring. Gender

issues in farming systems research and extension. 1988. Westview Press, Inc. Boulder, Colorado.
<http://ufdc.ufl.edu/UF00081675/00001>

Hildebrand, P.E. 1988. Technology diffusion in farming systems research and extension. **HortScience** **23(3):488-490**.

Wake, J.L., D.F. Kiker and P.E. Hildebrand. 1988. Systematic learning of agricultural technologies. **Agricultural Systems** **27(3):179-193**.

Hildebrand, P.E. and R. Piland. Inventory of shortcourses and university courses related to farming systems. Food and Resource Economics, University of Florida. 39 pages.

O'Connor, J.D., C.O. Andrew, and P.E. Hildebrand. 1988. Agricultural technology development and FSR/E: past problems and new directions. <http://ufdc.ufl.edu/UF00080890/00001>

Francis, C.A., and P.E. Hildebrand. 1988. Farming systems research and extension (FSR/E) in support of sustainable agriculture. Proceedings of Farming Systems Research and Extension Symposium-1988. University of Arkansas. Pp 391-394. IA <http://ufdc.ufl.edu/UF00080876/00001>

1989

Hildebrand, P.E., S. Poats and L. Walecka. 1989. (Translated by Miguel Proenca). Introducao a pesquisa e extensao de sistemas agropecuarios. IFAS. University of Florida. 98 pages.
<http://ufdc.ufl.edu/UF00055299/00001>

Waugh, R.K., P.E. Hildebrand and C.O. Andrew. 1989. Farming Systems research and extension. Chap. 9 In Compton, J.L. (ed). The transformation of international agricultural research and development. Lynne Rienner Publishers. Boulder. Colorado.

Hildebrand, P.E., and M. Ashraf. 1989. Agricultural sustainability as an operational criterion. Presented at the Ninth Annual International Farming Systems Symposium, University of Arkansas, Fayetteville, October 8-11, 1989. <http://ufdc.ufl.edu/UF00065559/00001>

Francis, C.A., and P.E. Hildebrand. 1989. Farming systems research/extension and the concepts of sustainability. Presented at the Ninth Annual International Farming Systems Symposium, University of Arkansas, Fayetteville, October 8-11, 1989 <http://ufdc.ufl.edu/UF00080875/00001>

1990

Fattori, T.R., F.B. Mather and P.E. Hildebrand. 1990. Methodology for partitioning poultry producers into recommendation domains. **Agricultural Systems**. **32:197-205**.

Hildebrand, P.E. 1990. Agronomy's role in sustainable agriculture: integrated farming systems. **Journal of Production Agriculture**. **Vol. 3. No. 3 (July-September)**. pp 285-288.

Hildebrand, P.E. 1990. Farming Systems Research-Extension. Chapter 6, In: Jones/Street. Systems theory applied to agriculture and the food chain. Elsevier Science Publishers, Ltd. England, United Kingdom. pp 131-143.

Hildebrand, P.E. 1990. Modified stability analysis and on-farm research to breed specific adaptability for ecological diversity. Chapter 13 In: Genotype-by environment interaction and plant breeding. Louisiana State University. Baton Rouge, LA. pp 169-180.

S.H. Angell, E.C. French, P.E. Hildebrand, W.G. Blue and E.B. Whitty. 1990. Field fertilization trials of four selected spices. Paper presented at the Caribbean Food Crop Society meeting, July 1990. Puerto Rico. <http://ufdc.ufl.edu/UF00075674/00001>

Niles, W.L., French, EC and Hildebrand, PE; et al. 1990. Establishment of Florigraze rhizoma peanut (*arachis-glabrata* benth) as affected by lime, phosphorus, potassium, magnesium and sulfur. **Soil Crop Sci Soc FL 49:207-210**

1991

Fattori, T.R., P.E. Hildebrand and H.R. Wilson. 1991. Response of broiler breeder females to feed restriction below recommended levels. Economic Analysis. **Poultry Science**. **Vol. 70. Pp 489-498**.

Ahmed, N.U, P.E. Hildebrand and V.R. Carangal. 1991. Dual-purpose legumes in the rainfed lowland rice-bases system in the Philippines. IRRi research paper series number 146. IRRi, Philippines.

Stroup, W.W., P.E. Hildebrand and C.A. Francis. 1991. Farmer participation for more effective research in sustainable agriculture. Food and Resource Economics Department staff paper SP91-32, September 1991. <http://ufdc.ufl.edu/UF00053919/00001/2j>

1992

Hildebrand, P.E. 1992. The FSRE approach: the meaning and value of FSRE to promote agricultural production and the welfare of rural families. Keynote speech presented at the Southern African Farming Systems Research-Extension Conference "Farming Systems Research-Extension in the 1990s: its relevance as a practical approach to solving the problems faced by farmers in Southern Africa.

Johannesburg, RSA, February 25-27. <http://ufdc.ufl.edu/UF00080657/00001>

Hildebrand, P.E., W.T. Bowen and T.C. Kelly. 1992. Testing modified stability analysis with biophysical process models. AFSRE symposium 1992. <http://ufdc.ufl.edu/UF00082699/00001>

1993

Hildebrand, P. E., B. K. Singh, B. C. Bellows, E. P. Campbell and B. A. Jama. 1993. Farming systems research for agroforestry extension. **Special issue of Agroforestry Systems, Volume 23, Nos. 2-3**. Directions in Agroforestry: a Quick Appraisal.

Hildebrand, P.E. 1993. Steps in the analysis and interpretation of on-farm research-extension data based on modified stability analysis: a training guide. Food and Resource Economics Department Staff Paper SP93-11. May 1993. <http://ufdc.ufl.edu/UF00055298/00001/>

Russell, J.T., P.E. Hildebrand, and C.K. Hiebsch. 1993. Making the most modified stability analysis: finding the "best fit" and determining specific adaptation to recommendation domains. Florida Experimental Station, Journal Series R-03513. Field Crop Research Journal. (Accepted).

<http://ufdc.ufl.edu/UF00081536/00001>

Hildebrand, P.E. 1993. Targeting technology diffusion through coordinated on-farm research. Prepared for presentation at the Association for Farming Systems Research-Extension North American Symposium on Systems Approaches in North American Agriculture and Natural Resources: Broadening the scope of FSRE. University of Florida, Gainesville. October 12-16, 1993. Food and Resource Economics Department Staff Paper SP93-25. November 1993. <http://ufdc.ufl.edu/UF00081830/00001>

Andrew, C.O., P.E. Hildebrand, and A. Fajardo. 1993. Agricultural research policy in transition: institutional barriers to merging the trade and environmental agendas. Prepared for presentation at the American Society of Agronomy meetings, November 7- 12, 1993. Food and Resource Economics Department Staff Paper SP93-26. November 1993. <http://ufdc.ufl.edu/UF00054793/00001>

Stroup, W.W., P.E. Hildebrand and C.A. Francis. 1993. Farmer participation for more effective research in sustainable agriculture. **Chapter 12 In: Technologies for sustainable agriculture in the tropics.**

ASA special publication 56. <http://ufdc.ufl.edu/UF00053919/00001/2j>

1994

Norman, D.W., T.R. Frankenberger, P.E. Hildebrand. 1994. Agricultural research in developed countries: past, present, and future of farming systems research and extension. **Journal of Production Agriculture, Vol. 7, no. 1.**

1995

Andrew, C.O., P.E. Hildebrand, and A. Fajardo. 1995. Agricultural research policy in transition: institutional barriers to merging the trade and environmental agendas. *p.229-243. In A.S.R. Juo and R.D. Freed (eds.) Agriculture and environment: bridging food production and environmental protection in developing countries.* ASA Spec. Publ. 60 ASA, CSSA, and SSSA, Madison, Wisconsin.

Hildebrand, P.E and E. Bastidas. 1995. Steps in the analysis and interpretation of on-farm research-extension data based on adaptability analysis: a training guide. Food and Resource Economics

Department Staff Paper SP95-4R. <http://ufdc.ufl.edu/UF00054817/00001/1j>

Hildebrand, P.E. 1995. Book review. Farmer participatory research: rhetoric and reality. By C. Okali, J. Sumberg, and J. Farrington: 1994; Intermediate Technology Publications, London. ISBN 18533922529.

Agroforestry Systems 30:382-383.

1996

Bellows, B.C., P.E. Hildebrand, and D.H. Hubbell. 1996. Sustainability of bean production systems on steep lands in Costa Rica. **Agricultural Systems 50(4):391-410.**

1997

Gladwin, C.G., K.L. Buhr, A. Goldman, C. Hiebsch, P.E. Hildebrand, G. Kidder, M. Langham, Donna Lee, P. Nkedi-Kizza and D. Williams. 1997. Gender and soil fertility in Africa. Chap. 9 *In: Buresh, R.J., P. Sanchez, and F. Calhoun (Eds.). Replenishing soil fertility in Africa.* Soil Science Society of America and American Society of Agronomy, Madison WI. <http://ufdc.ufl.edu/UF00102041/00001>

Hildebrand, P.E., . D.Zimet and G. Brinen. 1997. Organic agricultural production in north and central Florida: A *Sondeo* report. Staff Paper SP 97-4. Food and Resource Economics, University of Florida.

1998

Baker, M. Araújo, A.A. and Hildebrand, P.E. 1998. Agroforestry alternatives for the Brazilian Amazon: a case study of farming systems research and extension in Grupo Novo Ideal. **Journal of International Agriculture and Extension Education**.

1999

Hildebrand, P.E. 1999. Book review: The color of hunger: race and hunger in national and international perspective. By D.L.L. Shields, ed. Transforming Anthropology: **The Journal of the Association of Black Anthropologists**. 8:191-192.

Baker, M., A. Koyama and P. Hildebrand. 1999. Korean Natural Farming Association: A comparison of selected performance factors with national farming data. **Journal of International Agricultural and Extension Education**. 6:79-85.

<http://ufdc.ufl.edu/UF00081794/00001>

Hildebrand, P.E. (Ed.), A. Caudle (Coordinator), V. Cabrera, M. Downs, M. Langholtz, A. Mugisha, R. Sandals, A. Shriar and K. Veach. 1999. Potential use of long range climate forecasts by agricultural extension agents in Florida. Staff Paper SP 99-9. Food and Resource Economics Department, University of Florida, Gainesville.

2000

Kaya, B; Hildebrand PE and Nair, PKR. 2000. Modeling changes in farming systems with the adoption of improved fallows in southern Mali. **Agricultural Systems**. 66:51-68.

2001

Jagtap, S.S., Jones, J.W., Zazueta, F., Jackson, J., Beck, H., Hildebrand, P. 2001. Bridging the gap between climate prediction and its application in Florida agriculture. (Technical Report FC-UF-2001-1). Agriculture and Biological Eng., University of Florida, Gainesville.

Jones, J.W., Hildebrand, P., Jagtap, S.S., Zazueta, F., O'Brien, J.Z.J., Zierden, D. Letson, D. Posestá, G. 2001. An operational program for applications of climate information: a cooperative venture with Florida's Agriculture Extension system. No. 6.6. 12th Symposium on Global Change Climate Variations, 14-19 January 2001. Albuquerque, New Mexico by the AMS, Boston, Massachusetts.

Letson, D., Hansen, J. Hildebrand, P. Jones, J.W., O'Brien, J. Podestá, G., Royce, F., Zierden, D. 2001. Floridas agriculture and climatic variability: reducing vulnerability (Florida Consortium Technical Report FS-UM-2001-001).

Litow, P., M. Baker and P. Hildebrand. 2001. Swidden agriculture in a forest society: livelihood strategies in the Maya Biosphere Reserve community of Uaxactún, Guatemala. **Journal of International Agricultural and Extension Education (Fall): 49-55**

2002

Jagtap, S.S., Jones, J. W., Hildebrand, P., O'Brien, J.J., Podestá, G., Letson, D., Zazueta, F., 2002. Responding to Stakeholders Demand for Climate Information: From Research to Applications in Florida, **Agricultural Systems**, 74(3):415-430

Cabrera, V.E., Hildebrand, P.E. 2002. Family dynamics and household welfare in Cañete, Peru. FAO, Farming Systems, Agrippa 607_EN.

Gough, A.E., C. Gladwin and P. Hildebrand. 2002. Vouchers versus grants of inputs: evidence from Malawi's starter pack program. African Studies Quarterly, The Online Journal for African Studies. University of Florida

Hildebrand, P.E. and A. J. Sullivan. 2002. Small farm livelihood systems and food security: addressing diversity. Food and Resource Economics Staff Paper SP 02-7. University of Florida. <http://ufdc.ufl.edu/UF00054802/00001>

Merry, F. D., P. E. Hildebrand, P. Pattie, and D. R. Carter. 2002. An analysis of land conversion from sustainable forestry to pasture: A case study in Santa Cruz, Bolivia. **Land Use Policy** 19:207-215.

Mudhara, M. and P.E. Hildebrand. 2002. Potential adoption of improved fallows to improve income and food security of diverse smallholder famers in Mangwende CA, Ziimbabwe. FAO Farming Systems, Agrippa 623_EN.

Thangata, P.H., P.E. Hildebrand and C.H. Gladwin. 2002. Modeling agroforestry adoption and household decision making in Malawi. African Studies Quarterly, The Online Journal for African Studies. University of Florida

Thangata, P.H., P.E. Hildebrand and G. Hyden. 2002. The impact of poor health on agroforestry adoption and household food security in Central Malawi. FAO Farming Systems, Agrippa 630_EN. **2003**

Alvira, D., Cabrera, V.E., Galindo, S., Haile, S., Mtenga, K., Rios, F., Tripathi, N., Villagomez, J.A. 2003. Hildebrand, P.E. and Sullivan A.J. (eds.). Nutrient management in the Suwannee River Basin: perceptions of stakeholders. University of Florida, Food and Resource Economics Department, Staff Paper Series, SP 04-2. Gainesville, FL.

Breuer, N., V. Cabrera, P.E. Hildebrand and J.W. Jones. 2003. Potential response of North Central Florida livestock producers to long-term climate forecasting. Food and Resource Economics Staff Paper SP 03-4. University of Florida, Gainesville.

Breuer, N., V. Cabrera, P.E. Hildebrand and J.W. Jones. 2003. Potential response of North Central Florida livestock producers to long-term climate forecasting. The Southeast Climate Consortium Technical Report Series. SCC Staff Paper 01-03

- Cabrera, V.C. and P.E. Hildebrand. 2003. Economic and ecologic assessment of groundwater nitrogen pollution from north Florida dairy farm systems: an interdisciplinary approach. Food and Resource Economics Staff Paper SP 03-2. University of Florida, Gainesville. <http://ufdc.ufl.edu/UF00053829/00001>
- Hildebrand, P.E. and V.E. Cabrera. 2003. Modeling and analyzing small farm livelihood systems with linear programming. Food and Resource Economics Staff Paper SP 03-3. University of Florida, Gainesville.
- Hildebrand, P.E., N.E. Breuer, V.E. Cabrera and A.J. Sullivan. 2003. Modeling diverse livelihood strategies in rural livelihood systems using ethnographic linear programming. Food and Resource Economics Staff Paper SP 03-5. University of Florida, Gainesville. <http://ufdc.ufl.edu/IR00000405/00001>
- Mudhara, M. and P.E. Hildebrand. 2003. Economic assessment of constraints to the adoption of improved fallows in Zimbabwe using linear programming models. Food and Resource Economics Staff Paper SP 03-6. University of Florida, Gainesville.
- Mudhara, M., P.E. Hildebrand and P.K.R. Nair. 2003. Potential for adoption of *Sesbania sesban* improved fallows in Zimbabwe: A linear programming-based case study of small-scale farmers. **Agroforestry Systems 59:307-315.**
- 2004**
- Cabrera, V.E., P.E. Hildebrand and J.W. Jones. 2004. Modeling the effect of household composition on the welfare of limited-resource farmers in Cañete, Peru. **Agricultural Systems 86:207-222.**
- Hale, J. B. Heberling, E. Jovicich, A. Mugisha, L. Ortega, C. Pomeroy, D. Sano, A. Snyder, S. Stone, G.B. Maiah, P.Hildebrand and A.Caudle. 2004. Farmers' use of weather and climate forecasts and effects on farmers of changes in climate. Staff Paper SP 04-3, Food and Resource Economics Department, University of Florida <http://ufdc.ufl.edu/UF00054657/00001>
- Hildebrand, P.E. 2004. Technology for small farms: the challenge of diversity. **Chap. 26 In:** Lal, R., P. R. Hobbs, N. Uphoff and D.O. Hansen (Eds.) Sustainable agriculture and the international rice-wheat system. Marcel Dekker, Inc. New York.
- Davis, K., S. Franzel, P. Hildebrand, T. Irani and N. Place. 2004. Extending technologies among small-scale farmers in Meru, Kenya: ingredients for success in farmer groups. **The Journal of Agricultural Education and Extension 10:53-62.**
- Mudhara, M. and P.E. Hildebrand. 2004. Assessment of constraints to the adoption of improved fallows in Zimbabwe using linear programming models. **Chapter 11 In:** J.R.R. Alavalapati and D.E. Mercer (Eds.) Valuing Agroforestry Systems: Methods and Applications. Kluwer Academic Publishers, Dordrecht/Boston/London.
- Thangata, P.H., J.R.R. Alavalapati and P.E. Hildebrand. 2004. Metamodeling agroforestry adoption: Assessing factors influencing adoption of improved fallows in southern Africa using an integrated linear programming and econometric model. **Chapter 12 In:** J.R.R. Alavalapati and D.E. Mercer (Eds.) Valuing Agroforestry Systems: Methods and Applications. Kluwer Academic Publishers, Dordrecht/Boston/London.
- Cabrera, V.V. and Hildebrand, P.E. 2004. Economic and ecologic assessment of groundwater nitrogen pollution from north Florida dairy farm systems: an interdisciplinary approach. Sixth IFSA European

Symposium of the Farming Systems and Rural Systems Research and Extension. Vila Real, Portugal, April 2004. pp 857-870. Available at: http://home.utad.pt/~des/ifsa/ifsa_6th_eu_proceed.pdf

Hildebrand, P. E. a. Schmink, M. (2004). Agroforestry for Improved Livelihood and Food Security for Diverse Smallholders in Latin America and the Caribbean. Staff Paper. Gainesville, Food and Resource Economics Department, IFAS, University of Florida, Gainesville, FL, USA.

<http://ufdc.ufl.edu/IR00000264/00001>

2005

Breuer, N. V. Cabrera, P.E. Hildebrand and J.W. Jones. 2005. Climate-based management options for north central Florida beef cattle producers. CIR1476, University of Florida, IFAS Extension. Available at: <http://edis.ifas.ufl.edu/AE289>

Cabrera, V.E., Hildebrand, P.E., Jones, J.W., Letson, D., and de Vries, A. (InPress). An integrated North Florida dairy farm model to reduce environmental impacts under seasonal climate variability.

Agriculture, Ecosystems, and Environment(2006) 113: 82-97

Cabrera, V.E., N.E. Breuer and P.E. Hildebrand. Accepted. North Florida dairy farmer perceptions toward the use of seasonal climate forecast technology. **Climatic Change (2006) 78: 479-491**

- Cabrera, V. E., N. E. Breuer, P. E. Hildebrand, and D. Letson. 2005. The dynamic north-Florida dairy farm model: A user-friendly computerized tool for increasing profits while minimizing environmental impacts. **Comput. Electron. Agric.** **49:286-308.**
- Cabrera, V.E., P.E. Hildebrand and J.W. Jones. 2005. Modeling the effect of household composition on the welfare of limited-resource farmers in Cañete, Peru. **Agricultural Systems** **86:207-222.**
- Hildebrand, P.E. 2005. Simulated on-farm research: a 15 day class exercise. **NACTA Journal** **49:31-33.**
- Breuer, N., G. Canales, V. Cabrera, P.E. Hildebrand, S. Galindo, T. Kulstad, T. Manganyi, M. Morris, L. Ramos, E. Stonerook and D. Toro. 2005. Potential applications of seasonal climate forecasts for water management and extension agent perceptions of water issues in south Florida. SouthEast Climate Consortium Technical Report Series: SECC-05-005, Gainesville FL.
- Canales, G, B. Coles, C. Cornejo, T. Fletcher, T. Manganyi, K. Owusu, K. Painter, H. Pellish, E. Stonerook, D. Wilsey, P. Hildebrand, N. Breuer and V. Cabrera. 2005. Perceptions and attitudes of smallholder farmers in north central Florida regarding the potential usefulness of seasonal climate forecasts. Food and Resource Economics, University of Florida and the Southeast Climate Consortium. **2006**
- Manganyi, T., M. Hartmann, P. Hildebrand, M. McGuire and S. Russo. 2006. Learning about smallholder farmers in the southeastern US: the application of Sondeo methodology. AIAEE
- Cabrera, V.E., Hildebrand, P.E., Jones, J.W., Letson, D., and de Vries, A. 2006. An integrated North Florida dairy farm model to reduce environmental impacts under seasonal climate variability. **Agriculture, Ecosystems, and Environment** **113:82-97.**
- Cabrera, V.E., N.E. Breuer and P.E. Hildebrand. 2006. North Florida dairy farmer perceptions toward the use of seasonal climate forecast technology. **Climatic Change** **78: 479-491**
- Cabrera, V.E., deVries, A., Hildebrand, P.E. 2006. Manure nitrogen production in North Florida dairy farms: a comparison of three models. **J. Dairy Sci.** **89, 1830-1841.**
- Harper, V.K., L. Fernández-Granda, P.E. Hildebrand and W.A. Messina, Jr. 2006. Farm household livelihood strategies: Preliminary findings of a case study of fifteen households with limited resources in the Sierra del Rosario of western Cuba. Cuba in Transition: Volume 16. Papers and proceedings of the sixteenth annual meeting of the Association for the Study of the Cuban Economy (ASCE). Miami Dade College, Wolfson Campus, Miami FL August 3-5, 2006. Available at: <http://ufdc.ufl.edu/1/IR00000675/00001>
2007
- Thangata, P.H., M. Mudhara, C. Grier and P.E. Hildebrand. 2007. Potential for agroforestry adoption in Southern Africa: improved fallow and green manure adoption in Malawi, Zambia and Zimbabwe. **Ethnobotany Research & Applications.** <http://www.ethnobotanyjournal.org/vol5/i1547-3465-05-067.pdf>
- Thangata, P.H., P.E. Hildebrand and F. Kwesiga. 2007. Predicted impact of HIV/AIDS on improved fallow adoption and rural household food security in Malawi. **Sustainable Development** **15:205-215.**
- Cabrera, V.E., S.S. Jagtap and P.E. Hildebrand. 2007. Strategies to limit (minimize) nitrogen leaching on dairy farms driven by seasonal climate forecasts. **Agriculture, Ecosystems and Environment** **122:479-489.**
- Alderman, P., J. Bost, N.E. Breuer, T. Gill, D. Graves, P. Hildebrand, E. Livengood, M. Mishkin, D.R. Ward and D. Wilsey. 2007. Farming systems and farmer decision making in Columbia and Suwannee

Counties. Southeast Climate Consortium Technical Report Series: SECC-07-002. Gainesville, Florida.

Breuer, Norman, Victor Cabrera, Guillermo A. Baigorria, Peter E. Hildebrand and James W. Jones. 200X. Potential adaptations to seasonal climate forecasts by Florida beef cattle producers. Agricultural and Forest Meteorology. Submitted August 2007.

2008

Cabrera, V.E., N.E. Breuer and P.E. Hildebrand. 2008. Participatory modeling in north Florida dairy farm systems: a method for building consensual environmental sustainability using seasonal climate forecasts. **Climatic Change 89: 395-409**. <http://www.springerlink.com/content/k370245h603081v2/fulltext.pdf>

Breuer, N.E., V.E. Cabrera, K.T. Ingram, K. Broad and P.E. Hildebrand. 2008. AgClimate: a case study in participatory decision support system development. **Climatic Change 87:385-403**.

2010

Hildebrand, P.E. 2010. An efficient interdisciplinary methodology for designing and testing technology, infrastructure and policy to benefit poor and diverse smallholders in variable conditions in developing countries. <http://ufdc.uflib.ufl.edu/1/IR00000099/00001>

Wilsey, David S. and Peter E. Hildebrand. 2010. Chamaedorea Palm Frond Commercialization and Certification

Considered from a Smallholder Livelihood System Perspective. **Small-scale Forestry**. DOI 10.1007/s11842-010-9131-1

Gill, T.B. 2010. Modeling the impact of HIV/AIDS upon food security of diverse rural households in Western Kenya. **Agricultural Systems 103 (2010) 265–281**.

Breuer, N.E., Cabrera, V.E., Hildebrand, P.E., y J.W. Jones. 2010. Opciones de Manejo Basadas en el Clima para Productores de Ganado Vacuno en el Centro-Norte de Florida. Available: <http://edis.ifas.ufl.edu/ae468>