International Activities
1996 - 1997

College of Tropical Agriculture & Human Resources
University of Hawaii at Manoa
Highlights for 1995-1997

• $5 million awarded to CTAHR for international instruction, research and extension activities.

• CTAHR designated as Management Entity for the recently reorganized international Soil Management Collaborative Research Support Program. This program is budgeted at $26 million over a five year period.

• 24 faculty have research projects that involve collaboration with foreign scientists and overseas institutions in 13 countries.

• 87 visiting researchers from 19 countries hosted by CTAHR in 1987

• 4 international conferences sponsored by CTAHR

• 78 foreign students currently enrolled in CTAHR degree programs.

• More than 140 foreign trainees participated in various non-degree training programs offered by CTAHR faculty at Manoa and overseas locations

• 36 faculty traveled abroad to attend professional meetings in different countries in Asia, Africa, Europe and Latin America.

• 4 faculty took overseas sabbatical leaves

• 5 faculty currently serve as officers of international societies or on various international boards and commissions

• CTAHR has 12 international exchange agreements with foreign institutions in 4 Asian countries
Our Comparative Advantage

The College of Tropical Agriculture and Human Resources is the only Land Grant college of agriculture in the United States that is located in tropics and has an ecosystem focus. The diversity of environmental conditions which exist at the various experiment stations and research facilities operated by the College make possible research and training in an extremely wide range of temperature and climatic conditions.

At least 21 distinct eco-zones exist on the Island of Hawaii, ranging from tropical to alpine, from arid to wet, and from seasonal to nearly continuous rainfall. On Maui, approximately 80 percent of the tropical soil-climatic conditions of the world are duplicated on the slopes of Haleakala, a dormant shield volcano. Conditions range in rainfall from 3000 mm in forests exposed to the northeast trade winds to 250 mm in the desert of the mountain’s rain shadow. The mean annual temperature ranges from 25 degrees centigrade at sea level to 13 degrees C at 1,800 meters (the highest instrumented site of the MauiNet).

Hawai‘i’s natural tropical island laboratory supports species assessment and improvement research on a wide range of tropical crops and trees and associated pests and diseases. The large number of different environments also makes possible independent verification of research done in other tropical areas of the world. CTAHR is the only land grant college in the U. S. with this capability.

International Research and Scientific Exchange is Essential

For CTAHR, international involvement is not a luxury, but an essential component of our overall research, extension and instruction efforts to meet the needs of our students and clientele groups in Hawaii. Because of our location on the world’s most isolated land mass, and our island ecosystem focus, an active program of scientific exchange with other tropical and island-based research centers is critical to our ability to serve the agricultural and human resource needs of Hawaii and its people.

Active participation in internationally focused research, training and technical assistance is essential to CTAHR becoming the global center of excellence in tropical agriculture and human and natural resource management. Maintaining our comparative advantage in information technology and biotechnology on tropical agroecosystems and germplasm is of great benefit to the citizens of Hawaii — it is our edge in competing successfully in the global marketplace and ensuring a safe, stable, and healthy environment for future generations.

Unlike most of our sister land-grant institutions on the U. S. mainland, our professional neighbors, scientific colleagues and cultural family ties are not located in the next state. Instead, they are in tropical nations around the world. We can best serve the people of Hawaii, the nation, and the Asian-Pacific region by sharing relevant knowledge and experience that is the product of collaborative learning and interaction in the international community.
Our International Focus has a long History

CTAHR has been involved in international research and training with a focus on Asia and the Pacific for nearly 40 years. Between 1960 and 1970, 307 foreign students from 39 countries received M.S. and Ph.D. degrees from the College of Tropical Agriculture (CTA). Ninety percent of these students came from Asian and Pacific countries.

In 1962 the College signed a contract to participate in a three-year U. S. government-funded program to improve the agricultural research capability of Kasetsart University in Bangkok, Thailand. From 1964-1966 a number of UH animal scientists participated in a livestock consulting team in the Ryuku Islands. In 1966, a Tropical Rice Production Center was established on Kauai to train overseas bound government technicians and Peace Corps volunteers.

In 1971, CTAHR established an Office of International Agriculture Programs (OIAP) to promote a more organized and mutually beneficial involvement of CTA staff in international activities. By the mid 1970s, UH emerged as a key source of expertise on tropical agriculture for the U. S. Agency for International Development (USAID). Over the last 20 years, CTAHR participated in the Title XII Strengthening Grant Program and contributed to three of the major Collaborative Research Support Programs (CRSPs)

College faculty have also managed numerous USAID-funded research and institution building programs including the Benchmark Soils (BSP) program [1979-1982], the Nitrogen Fixation by Tropical Agriculture Legumes (NifTal) Project [1975-1994], the International Benchmark Sites network for Agriculture Technology Transfer (IBSNAT) Program [1982-1993], the South Pacific Region Agricultural Development (SPRAD) program [1980-1993], Soil Management in the Humid Tropics (TROPSOILS) project [1982-1994] and the Asian component of the Forestry Fuelwood Research and Development (F/FRED) project [1985-1990]. The College is also an active partner in the Agricultural Development in the American Pacific (ADAP) project [1993-1998] funded by the U. S. Department of Agriculture. As a result of these efforts, in 1984 the University of Hawaii was ranked fourth in the nation in total level of contracts and grants from USAID.

The number of contracts and grants with USAID and other international donor agencies is only one indicator of CTAHR’s involvement in global development. Since 1990, Over 150 faculty have traveled to more than 45 countries on short-term training, research or consulting assignments. Over the last ten years, 40 faculty have taken sabbatical assignments overseas in more than 20 different countries. Two distinguished CTAHR faculty assumed key roles in the International Agricultural Researcher Center (IARC) system and five faculty now serve on international advisory panels or as officers in international professional societies.

In addition to providing an international base for our research and instruction program, overseas activities has a direct benefit to the economy of Hawaii. One USAID agriculture officer in Manila recently commented that for every dollar the U. S. Government spends in support of training and technical assistance provided by a single UH faculty member to the Philippine ornamental industry, the State of Hawaii receives at least $5.00 from the purchase of agricultural goods and services. In addition to the return to the agricultural economy of our state, international training and technical assistance activities also play an important role in helping our faculty keep abreast of important research and technological advances in their respective fields.
Adjusting to Changing Resources and Demands

Since the mid-1980s, U. S. government support for international research and training in agriculture has declined. USAID underwent a series of internal reorganizations and developed new program thrusts that focused heavily on “democratization,” involvement of the private sector, and transition from central demand to market driven economies. Although support for U. S. university involvement in international development decreased, CTAHR remained among the top 15 most heavily involved land-grant colleges going into the 1990s.

CTAHR, like other UH Manoa colleges and schools, is no longer able to support a full-time coordinator and a separate International Programs Office, however, it is no less committed to the importance of maintaining international linkages in support of our research, instruction and outreach programs. Although the environment and mechanisms for participation in overseas development are changing, CTAHR will continue to play an aggressive role in international agriculture research and information exchange.

In spite of continuing budget reductions and programmatic adjustments, faculty support of CTAHR’s important contribution to international agriculture development has not wavered. An indication of this commitment is that “Improving access to international resources” is listed among the eight goals in the new CTAHR Strategic Plan.

Our Current Activities

The following projects are important components of our continuing involvement in international research and training activities.

NiFTAL

The Nitrogen Fixation by Tropical Agricultural Legumes Program (NiFTAL) program began with a single USAID contract in 1975. Over the last 20 years it has grown to become a world renown leader in the area of nitrogen fixation technology and a permanent fixture of the Maui landscape. NiFTAL’s goal is to increase agricultural productivity in the tropics by promoting the use of nitrogen-fixing legumes and providing technical assistance to institutions and individuals using legume supplemented systems. A major part of the program deals with the utilization of *Rhizobium* bacteria which live in a symbiotic association within the roots of the legume utilizing energy from the plant to fix nitrogen from the air. The NiFTAL project supports research in *Rhizobium* technology for the third world, developing techniques for the preparation of inoculant in small unsophisticated laboratories. This work has not only benefited farmers in developing countries. Recently, NiFTAL joined forces with a Maui firm, Innovative Technology Associates/BNF Industries, to develop and produce a commercial version of its fermentor and legume inoculant production system. ITA improved upon the initial NiFTAL design and has produced and sold many fermentors and inoculant production systems around the world.

IBSNAT

Over a ten year period, (1983-1993) the U. S. Agency for International Development provided $9.7 million in support of the CTAHR managed International Benchmark Sites Network for Agrotechnology Transfer (IBSNAT). This cooperative agreement between UH, USAID and collaborating institutions around the world, focused on the applications of systems analysis and simulation to problems faced by resource-poor farmers in the tropics and sub-tropics, specifically in the area of evaluating new and untried agricultural technologies. Out
puts from the project include a portable decision support system, DSSAT, the minimum data set necessary to drive the system and an collaborative network composed of an international, interdisciplinary team of scientists from more than 25 countries. Network members joined together to develop, assemble and test the most widely used decision support systems in the world today. The decision support system products enable users to match the biological requirements of crops to the physical characteristics of land to provide them with management options for improved land use decisions. Currently, a self-supporting activity of this program is the support and distribution of the DSSAT software by the University of Hawaii. Another annual and self-supporting activity is a training course on the use and application of DSSAT.

**SM CRSP**

The University of Hawaii was elected to become the new Management Entity of the USAID-funded Collaborative Research Support Program on Soil Management (SM CRSP) in 1996. This program began in 1981 with North Carolina State University was the Management Entity and UH serving as the lead institution for the humid tropics portion of the program in Indonesia. This program was restructured in 1996 to respond to USAID’s global strategy to improve agroecosystem performance and to enhance food security globally through the rectification of soil nitrogen, soil phosphorous, soil acidity, soil water, and soil degradation constraints using an integrated nutrient management systems approach. Within the CRSP, University of Hawaii and five subgrantee institutions (Cornell University, Montana State University, North Carolina State University, Texas A&M University and the University of Florida) are collaborating with institutions and researchers in Mali, Senegal, Malawi, Cape Verde, Gambia, Uganda, South Africa, Kenya, Costa Rica, Ecuador, Peru, Honduras, Nicaragua, Haiti, India, Bangladesh, Nepal, Philippines, Indonesia, and Thailand.

**ADAP**

In 1988, the five Land Grant institutions in the Pacific formed the Agricultural Development in the American Pacific (ADAP) project with funding from the U. S. Department of Agriculture. ADAP is a collaborative partnership that provides a means for the research, extension, and instruction programs of American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam and University of Hawaii to collaborate in addressing issues of common concern. The project focuses on region-wide, client-based issues while maintaining cultural, social, economic and environmental integrity. The project administrative office is located at CTAHR and provides overall support services for the project. The program has focused on staff development, crop protection, communication and database development, marketing, and agroforestry/environmental education. USDA has invested over $2.8 million in this unique partnership over the last five years. The current funding level is $535,000 annually. With additional funds from a federal SARE (Sustainable Agriculture Research and Education) grant, ADAP was able to conduct a 3-year study of study of traditional and current taro production systems with a focus on pest and soil fertility management. This effort resulted in the development of strategies for the control of taro blight which is a serious problem in America Samoa and throughout the Pacific.

**NIFS**

With support from a U. S. Department of Agriculture Higher Education Challenge Grant, CTAHR launched the Hawai‘i International Program (HIP) in 1991. HIP was an intensive education program designed to engage participants in learning about the global aspects of food and fiber production, processing, and marketing systems. The emphasis from 1991 -
1996 was on agricultural production and textile processing in Asia and the Pacific. During this period the program was held in China at the South China Agricultural University in Wushan, Guanzhou, an area heavily involved in the production and export of agricultural commodities and textiles to Hong Kong and other world markets. In 1994 and 1995, the program was held in Indonesia through a cooperative agreement between CTAHR and the Institut Pertanian Bogor. In 1996 the program was hosted by colleagues from Soong Sil University in South Korea. In 1997, the focus turned more worldwide and was renamed the National/International Field Study (NIFS) to include both national and international venues. The summer 1997 venue was New York and Washington, DC which provided participants with greater knowledge and understanding of the national textiles and apparel industry. Next year the focus is likely to be on Japan. Since its inception, 131 students and faculty have benefited from participation in HIP and NIFS.

**STURGEON**

Perhaps the most unusual of our current international activities is a collaborative effort between the CTAHR Cooperative Extension Program, the UH Sea Grant Program, UH-Hilo College of Agriculture and the Fisheries Committee of the Russian Federation to save the world famous Caspian Sea sturgeon from extinction. The Caspian Sea which once supplied up to 80 percent of the world’s catch of sturgeon, and 90 percent of the worldwide demand for caviar, now suffers from overfishing, pollution and habitat destruction. In a bold move to save the sturgeon, Russia turned to Hawaii for help. Here they found clean freshwater of an appropriate temperature, no native species that would be adversely impacted, a history of viable aquaculture, and a favorable regulatory environment. The goal is not only to determine if the Russian sturgeon can be successfully cultured in Hawaii, but also to create the first sturgeon gene bank to preserve the species. The Russians collected 40,000 fertilized sturgeon eggs, packed them in ice and flew them from Astrakhan to Moscow to Anchorage to San Francisco, to Honolulu and then to Hilo. At the UH-Hilo Aquaculture Facility, they were incubated in a spring-fed pond and hatched. More than two years later, the sturgeon now average 35 inches in length and weight as much as 16 pounds.

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**International Exchange Agreements**

| South China University of Tropical Agriculture | Hainan Island, PRC |
| South China Agricultural University | Guandong |
| Academia Sinica Kunming Institute of Botany | Kunming |
| Academia Sinica Yunnan Institute of Botany | Yunnan |
| Academia Sinica South China Institute of Botany | Guandong |
| Beijing Agricultural University | Beijing, PRC |
| Chinese Academy of Fishery Sciences | Beijing, PRC |
| Zhejiang Agricultural University | Zhejiang, PRC |
| Asian Vegetable Research and Development Center (AVRDC) | Taipei, Taiwan |
| Council of Agriculture | Taipei, Taiwan |
| Bogor Agricultural University | Bogor, Indonesia |
| University of Agriculture & Forestry | HoChi Minh City, Vietnam |