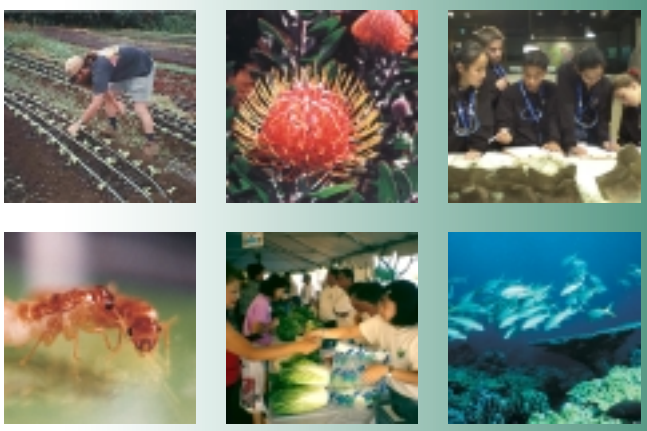
Revitalizing, Sustaining, Strengthening



2000 IMPACT REPORT

Revitalizing, Sustaining, Strengthening

C/T/A/H/R
College of Tropical Agriculture & Human Resources
University of Hawaii at Manoa

VISION

The College of Tropical Agriculture and Human Resources will be the premier resource for tropical agricultural systems and resource management in the Asia-Pacific region.

MISSION

The College of Tropical Agriculture and Human Resources is committed to the preparation of students and all citizens of Hawai'i for life in the global community through research and educational programs supporting tropical agricultural systems that foster viable communities, a diversified economy, and a healthy environment.

INITIATIVES

- Provide an excellent and relevant student-centered learning environment.
- Create new economic opportunities through research.
- Transfer useful knowledge responsively to the community at large.

C/T/A/H/R
College of Tropical Agriculture & Human Resources
University of Hawaii at Manoa

College of Tropical Agriculture and Human Resources—
REVITALIZING, SUSTAINING, STRENGTHENING

"With new leadership, new organization, and a new articulation of our goals, I am confident that CTAHR will make a positive difference for Hawaii."

– Andrew Hashimoto, Dean, CTAHR

Depending on how you calculate it, 2000 was either the first year of the third millenium or the last year of the second—in either case, an auspicious year. It certainly was an auspicious year for the College of Tropical Agriculture and Human Resources. Many positive things happened at CTAHR in 2000, as you will read in this letter and see reflected in the following pages.

At the end of 1999, CTAHR's entire administrative team—dean and three associate deans—were interim office holders. In addition, the college was waiting for approval to proceed with a major consolidation and reorganization. Today, all four interim administrative positions have been permanently filled, and the college's reorganization is well underway. We are in a position to move forward and assert ourselves as a major force in the resurgent Hawaii economy and agriculture industry.

I assumed the post of dean of CTAHR in October 2000. During my interviews for the position, I sought the opportunity to speak to as many community leaders and CTAHR stakeholders as possible. I wanted to hear from them what they expected and hoped for from CTAHR's faculty. Three themes predominated. First, they wanted agriculture to make a significant contribution to Hawaii's economic revitalization, and they believed that could not happen without CTAHR involvement. Second, they wanted CTAHR's help in promoting environmentally responsible, sustainable agriculture and protecting Hawaii's unique and fragile ecosystem. Third, they saw that CTAHR had an important role in strengthening families and communities.

My first action when I came in October was to assign the faculty the task of defining CTAHR's role in these three theme areas. We have decided to build our programs around them and let them guide our research, extension, and instructional efforts.

To reflect the direction we intend to take in the immediate future, we have titled this year's impact report "Revitalizing, Sustaining, Strengthening." The stories in this report, which were selected to represent the wide range of excellent work being done at CTAHR, are arranged according to their contributions to economic revitalization, sustainability, and strengthening communities. For example, you will read of success at creating pest-resistant coffee that will improve yields and help to maintain the quality and economic viability of Kona coffee. In the area of sustainability, CTAHR scientists have performed data analyses that call into question some widely held assumptions about

global warming; their work may play a role in future negotiations between the United States and the European Union. Finally, a community is strengthened when its members are financially empowered—and you will read that financial empowerment is the life work of CTAHR extension specialist Ron Wall.

I am honored and privileged to have been selected dean of CTAHR. For me, this is a homecoming. When the job was offered to me, I saw it as an opportunity to return to Hawaii after an absence of 38 years and make a positive difference for the state of my birth. In the brief time I have been here, I have been impressed by the professionalism of the CTAHR faculty and staff. They have prevailed during difficult times over the past several years. With new leadership, new organization, and a new articulation of our goals, I am confident that CTAHR will make that positive difference for Hawaii.

Aloha,

Andrew G. Hashimoto
Dean and Director

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ECONOMIC REVITALIZATION

Graft Is a Winner in Kona

Grafting is a win-win for Kona coffee growers

Kona coffee growers learned at the Kona Coffee Festival in November 2000 that a little graft can yield big rewards. Grower Kraig Lee won first prize at the Festival's prestigious coffee tasting competition for coffee from a tree he had grafted to avoid damage from tiny, soil-dwelling worms called nematodes. Lee and fellow grower Tom Greenwell have worked for several years with CTAHR personnel, learning how to graft their precious *Coffea arabica* trees onto sturdy, resistant root stock to prevent them from being killed by nematodes. Many growers in the area have resisted converting to grafted trees for fear it would alter the flavor of their highly prized Kona coffee. Lee's win at the Festival helps to demonstrate to the growers that grafting is a win-win for them: they save their trees and they continue to produce the excellent coffee for which Kona is internationally known, thus preserving an important Hawaii economic resource. This is a major step forward for CTAHR's Donald Schmitt, who has labored for about 10 years first to identify the nematode, then to identify resistant root stock, and finally to convince the farmers in the area to try his methods. Over the years, Schmitt has been assisted in the effort by other CTAHR personnel: Mario Serracin, Virginia Easton Smith, Scot Nelson, and Brent Sipes.

Grower Kraig Lee with his first grafts

Nematode-infested coffee trees

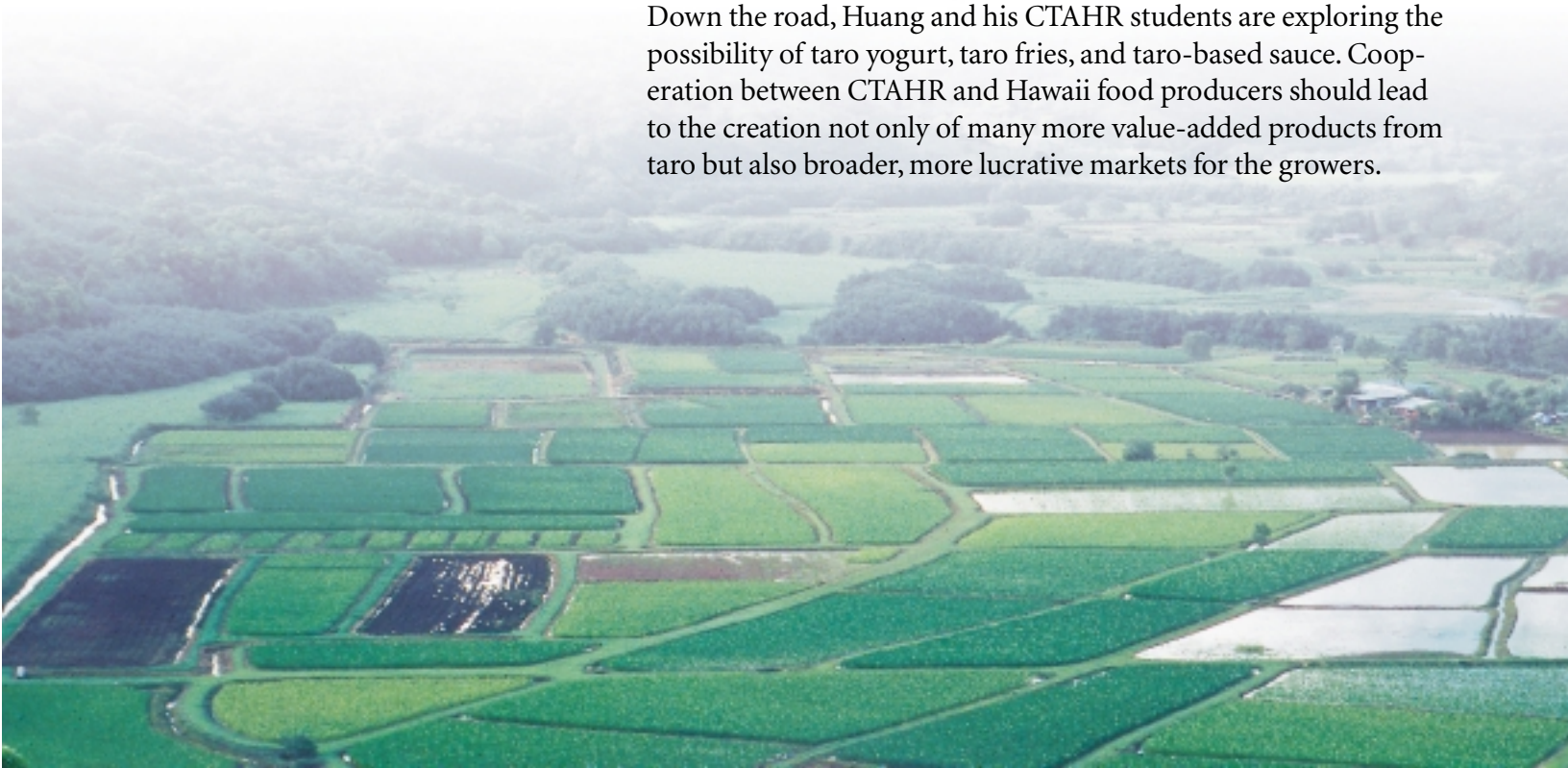
Nematode-resistant grafted coffee trees

ECONOMIC REVITALIZATION

Creating palatable, exportable, affordable products from taro

Adding Value to Taro

Perhaps we can think of poi as the first "value-added" product from taro. Today, people are searching for other value-added products that can be made from the staple. If taro is to contribute significantly to the state's economy, food producers and researchers must find ways to use it that will be palatable, exportable, and affordable. Alvin Huang, associate researcher in CTAHR's Department of Human Nutrition, Food and Animal Science, devotes much of his time to the search and to examination of taro's nutritional and chemical properties. Already, Huang has assisted in the development of the Maui Taro Burger, a product that is selling well in California and can be purchased locally at Zippy's and Nieman Marcus. Soon to be on the market is Taro Dream, a taro-banana puree that appears to be highly digestible. Honolulu Poi Company, working in cooperation with Huang, sells "Taro Pan," a wheat roll filled with sweetened poi. Down the road, Huang and his CTAHR students are exploring the possibility of taro yogurt, taro fries, and taro-based sauce. Cooperation between CTAHR and Hawaii food producers should lead to the creation not only of many more value-added products from taro but also broader, more lucrative markets for the growers.



ECONOMIC REVITALIZATION

Hybrid Beauty with International Impact

CTAHR has made the Hawaii protea industry viable

What does your mind's eye see when you read "protea"— exotic, vividly colored, beautiful flowers, right? Hard to imagine that they could be improved upon, but important work is being done at this moment at CTAHR to hybridize the pincushion protea to make it even more beautiful, to make it flower longer so that Hawaii's growers are competitive for more months of the year, to make it disease resistant, even to make it lighter weight so that it costs less to ship to distant markets. Thanks to variety development work begun in the 1970s and expanded by CTAHR extension specialist Kenneth Leonhardt, Hawaii's protea growers are looking forward with excitement to a bright economic future. Maui protea grower Carver Wilson says, without hesitation, "CTAHR's protea hybridization program has made the Hawaii protea industry viable." Leonhardt and Pamela Shingaki working in close cooperation with David Oka, manager of CTAHR's Kula Research Station, and Hawaii protea growers, have created a hybridization program second to none. Wilson says their work is so impressive that it will be a featured highlight of an international protea conference to be held in Honolulu in the spring of 2001. CTAHR's efforts are helping to build a local industry whose profits will stay at home and contribute to Hawaii's economic resurgence.

Internationally recognized hybrid pincushion protea varieties developed at CTAHR

ECONOMIC REVITALIZATION

A Veggie Tale

Creating an image for "Kamuela Grown" vegetables

Once upon a time, the lives of vegetable farmers in Kamuela were reasonably settled and predictable. They grew their vegetables, primarily cabbage, they sold their vegetables, and life was good. Then, along came the most serious competition they had ever faced, in the form of other farmers who managed to gain about 40 percent of the local vegetable and melon market share. The Kamuela farmers turned to CTAHR extension agent Dwight Sato and CTAHR graduate Reggie Hasegawa, a Hilo agricultural chemicals salesman, who convinced them to band together to find a new niche market for Kamuela vegetables. The Kamuela farmers responded by instituting a promotional campaign to market their outstanding "Kamuela Grown" cabbages and novel crops. An image was born. Spurred on by CTAHR's Sato and working hand in hand with him, with support from their farm bureau chapter, the Kamuela growers have appeared at culinary shows, farm fairs, festivals, and supermarket promotions. They are working to get the "Kamuela Grown" name recognized as a guarantee of quality. They hope soon to attend national meetings to learn more about new marketing and promotional concepts. Our real-life story doesn't have a fairy tale ending, but Kamuela's vegetable farmers are creating a niche market for their produce, and they are quick to say that they could not have done it without assistance from CTAHR.

Kamuela growers selling their wares

SUSTAINABILITY

Extracting Secrets from the Reef

CTAHR research helps in the fight to keep earth's coral reefs alive

Anyone who has spent time swimming and snorkeling in Hawaii's coral reefs knows how beautiful they are—how teeming with marine life. What you may not know is that coral, because it is susceptible to contamination by a wide variety of toxic substances, is also a rich reservoir of information about the extent of pollution of the global marine ecosystem. Environmental scientists around the world need this information. The problem is that coral does not reveal its secrets easily. Ways must be found to tap into the reservoir and extract the data. CTAHR pesticide chemists Qing Li and Xiusheng Miao have successfully done just that. Using an extraction method called accelerated solvent extraction, they have been able to isolate major pollutants from coral, including significant levels of polychlorinated biphenyls, or PCBs. It is the first time PCBs have been isolated from coral. Life on earth may be seriously compromised by the poisoning of our oceans. With the methods perfected by CTAHR chemists, environmental scientists have an additional tool to help in the fight to keep earth's coral reefs and oceans alive.

Photo: Allen Tucholski

Tern Island in French Frigate Shoals in the northwest Hawaiian Island chain, where CTAHR researchers isolated pollutants from the coral reef

Photo: R. Grigg

SUSTAINABILITY

CTAHR research contributes to international controversy

Contributing to the Global Warming Debate

Contrary to widespread belief, decomposition from soil of the floors of forests such as these Big Island eucalyptus may not increase global temperatures

Simply put, the theory says: as global warming increases earth's temperature, it will cause the rate of decomposition of organic carbon in mineral soils to increase, adding more carbon dioxide to earth's atmosphere. Because soils hold three times more carbon than does the atmosphere, such decomposition could further increase global warming—a dangerous cycle. Scientists worldwide subscribe to the theory, despite its being based on short-term laboratory studies and computer models. CTAHR researcher Christian Giardina and Michael Ryan, USDA Forest Service, studied data from 82 sites on five continents and found no support for the popular theory. They concluded, rather, that increased temperature alone will not stimulate the decomposition of forest-derived carbon in mineral soil. Their findings were published in the British journal *Nature* and immediately stirred international controversy. Giardina's and Ryan's work contributes to an environmental and political debate between the United States and the European Union. The debate concerns whether to allow credit for carbon "soaked up" by fields and forests—the United States says yes, the European Union is strongly opposed. If Giardina's and Ryan's calculations hold up to scientific scrutiny, they could have a major impact on how the debate resolves. Work done by CTAHR has environmental implications not only in Hawaii where we have a growing forest industry, but also well beyond Hawaii's borders.

SUSTAINABILITY

Creating Stewards of the Land—in a Hurry

CTAHR will help livestock producers meet regulatory deadlines

If you're a Hawaii producer with a confined livestock operation, the year 2009 is just around the corner. That's the deadline to comply with federal and state clean water regulations regarding the disposal of animal waste. A concerted education effort to acquaint producers with the regulations and compliance has been mounted within the past year by CTAHR Cooperative Extension agents and specialists from all islands. The team includes Michael DuPonte, Glen Fukumoto, and Andrew Kawabata (Big Island), C. N. Lee (Oahu), Lincoln Ching and Kelly Gooding (Kauai), and John Powley (Maui). At the top of their agenda is teaching producers the importance of keeping careful daily records of their operations—something many of them have not traditionally done. Also critical is to teach best management practices and help the producers create plans for managing their animal waste. Last but by no means least, the CTAHR experts want producers to see their animal waste as an opportunity, not a problem. If producers marketed all the nutrient waste as compost, Hawaii would have no waste problem. Furthermore, Hawaii growers would be able to cut importation of expensive fertilizers by up to 20 percent. With the help of CTAHR, livestock producers will meet regulatory deadlines and avoid crippling fines. They may actually improve their bottom line, too.

Livestock producers can eliminate their waste problems if they sell their animal waste as compost to Hawaii growers

An example of on-farm composting being done at a local dairy

SUSTAINABILITY

"Fingerprinting" Termite Families

Termites can't hide from CTAHR DNA 'fingerprinting' research

The kids are eating you out of house and home, literally. You want to know where they came from and how to send them packing. But first, you need to know who and where their parents are. Only then can you lure the family out and get rid of them. The "kids" in this story are the termites nibbling on your lanai supports—and to get rid of them, you must find their nest and eliminate their parents and all their siblings. Both tasks should be easier now thanks to research done by CTAHR entomologists J. Kenneth Grace and Claudia Husseneder. Using state-of-the-art molecular genetics techniques, such as DNA fingerprinting (techniques used to recognize individuals and establish paternity in humans), they can define the boundaries of a termite colony and monitor the spread of toxicants throughout the colony to be sure a bait is working. If the pests should reappear after treatment, Grace and Husseneder can determine if they are a new infestation or remnants of the original colony. Working with Grace, commercial exterminators will be able to use this information to select effective baits and place them where they will do the most good. Termites cause more than $100 million of structural damage annually in Hawaii. The ongoing research by CTAHR entomologists will help contain and perhaps reverse this economic drain.

Photo: Joe Woodrow

Photo: Stephen Saul

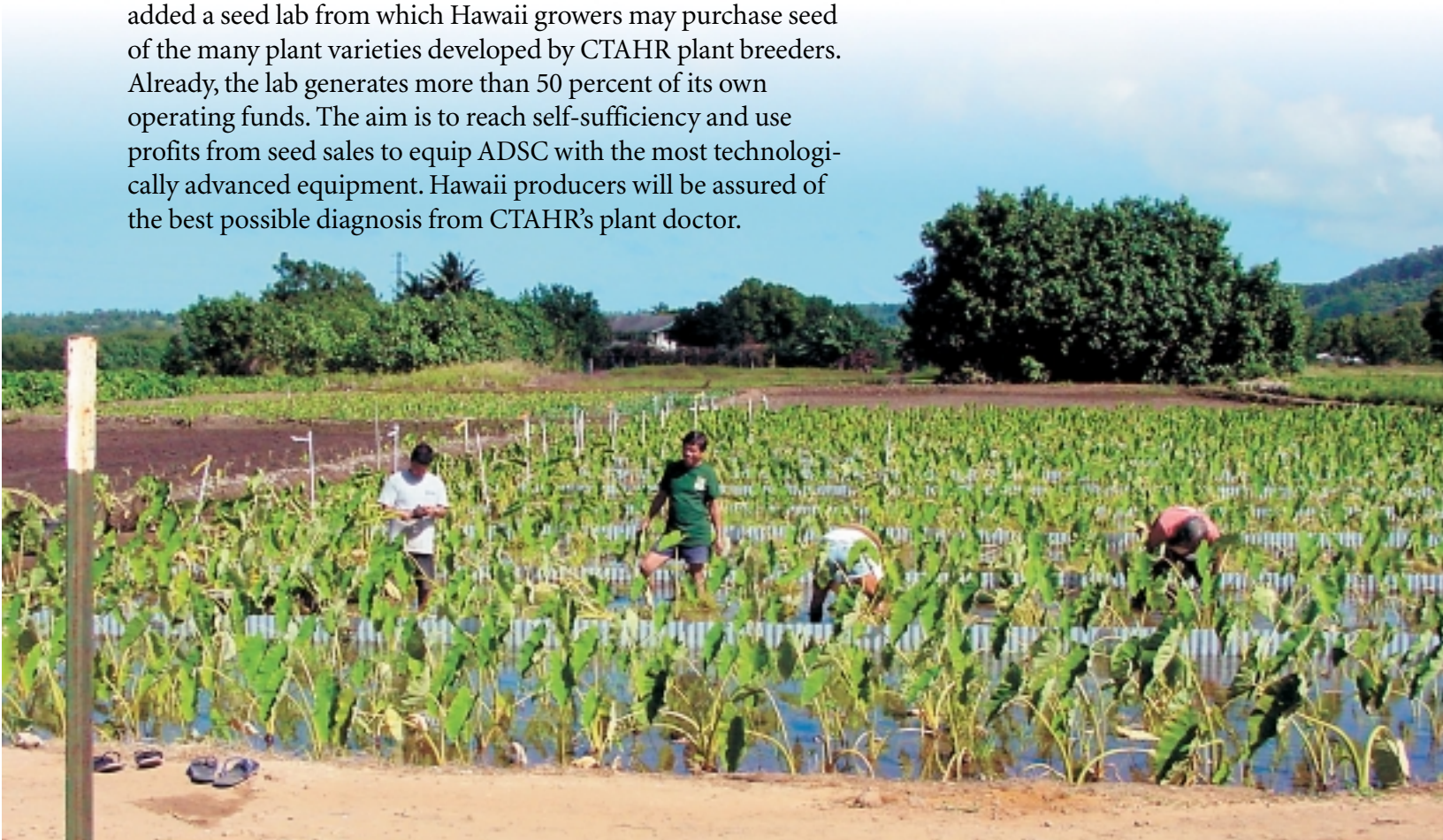
SUSTAINABILITY

The Doctor Is In

For 25 years, CTAHR's ADSC has been Hawaii's "plant doctor"

Doctors are indispensable. If you're sick, you go to a doctor for a diagnosis. If you want to begin a new exercise regime, you check with the doctor first to be sure you're doing the right thing. Growers and livestock producers get the same kind of indispensable advice from CTAHR's Agricultural Diagnostic Service Center (ADSC), the state's only agricultural diagnostic laboratory. ADSC diagnoses sick plants or insect-infested plants; analyzes soils before a grower plants to help the grower make fiscally and environmentally wise fertilizer choices; analyzes animal feeds to be sure livestock producers are meeting their animals' nutrition requirements. Created by state legislative mandate in 1975, for 25 years ADSC has been "the plant doctor" for Hawaii's growers. Ray Uchida, ADSC's director since 1994, has expanded the lab's mission as a step toward making it self-sufficient, rather than dependent on state general funds. He has added a seed lab from which Hawaii growers may purchase seed of the many plant varieties developed by CTAHR plant breeders. Already, the lab generates more than 50 percent of its own operating funds. The aim is to reach self-sufficiency and use profits from seed sales to equip ADSC with the most technologically advanced equipment. Hawaii producers will be assured of the best possible diagnosis from CTAHR's plant doctor.

Ray Uchida, ADSC director, making a plant diagnosis



STRENGTHENING COMMUNITIES

CTAHR's award-winning Linda Arthur is a bargain

Three (or Six) For the Price of One

Linda Arthur is a bargain. Not only does she combine teaching, research, and outreach—the three pillars of a land-grant institution—in one classroom package, she is also a nationally recognized teacher, a costume collection curator, and a prolific author. Dr. Arthur, associate professor in CTAHR's Department of Family and Consumer Sciences, has a 100% time instructional appointment and curates the college's nationally recognized Historic Costume Collection with the other 100% of her time. The prestigious Carnegie Foundation 2000 Hawaii Teacher of the Year award was bestowed on her in November 2000, and in 1996 she was honored with the UH Regents' Medal for Teaching. Teaching is Arthur's passion. She says, "Teaching energizes me. I want to share my enthusiasm with my students and, in the process, stimulate them to always wonder, question, and analyze." Linda Arthur's active learning teaching method involves her students directly in the material she teaches them. She uses the costume collection as a learning laboratory and allows her students to assist her with her research and curatorial responsibilities. The students, in turn, consistently rank Arthur as one of the best teachers in the UH system and the nation. There can be no greater impact in a university setting than that which CTAHR's Linda Arthur has on her fortunate students.

Linda Arthur receives her Carnegie Foundation Hawaii 2000 Professor of the Year award from senior vice president/executive vice chancellor Dean Smith

STRENGTHENING COMMUNITIES

A Young Scientist Gets His Just Reward

CTAHR'S outreach to the community takes many forms

CTAHR mechanical engineer Dan Paquin was one of several people in Hawaii bursting with pride on October 26, 2000, when Maui 14-year-old Jonathan-James Eno won a $3000 scholarship for third place in the Discovery Young Scientist Challenge (DYSC) in Washington, D.C. DYSC targets middle school students to stimulate their natural enthusiasm for mathematics and science before the age when such interest starts to decline. J.J. was one of three national winners from an original field of 1623 youngsters from 23 states. He was brought to the attention of DYSC on the strength of his Hawaii science fair award-winning project, "Phytoremediation of Hydrocarbon Contaminated Soil." J.J.'s original mentor in the project was CTAHR's Paquin, who suggested the topic to J.J. and helped him get it started. In the project, J.J. contaminated soil samples with varying levels of used motor oil and then planted three different grasses to determine if the grasses would help to dissipate the oil. His results suggested that, indeed, the grasses did help. Sadao Yanagi, Hawaii Department of Education science resource person on Maui, also served as mentor to J.J. This year, after his triumph in DYSC, J.J. is again entering the round of local and state science fairs. His new mentor is CTAHR research associate Dr. Traci Silva. CTAHR's outreach to the community takes many forms.

Photo: Discovery Young Scientist Challenge

J.J. Eno, third from left, and other competitors examine fossil remains at the Discovery Young Scientist Challenge in Washington, D.C.

STRENGTHENING COMMUNITIES

Master Gardeners extend CTAHR's knowledge to the community

Master Gardeners Extend CTAHR's Reach

Oahu Master Gardener Mary Takeshita helping in the garden

Maui Master Gardeners learn to graft citrus, avocado, and mango

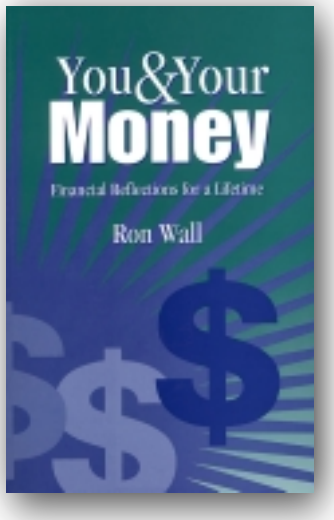
It's a dilemma faced nationwide. As metropolitan areas and the number of home gardeners mushroom, and in the face of hiring restrictions or budget constraints, how does the Cooperative Extension Service keep pace with the public's burgeoning need for information? In 1972, a state of Washington CES agent had a bright idea: create master gardeners. These well-trained volunteers love gardening and are enthusiastic about sharing their expertise. CTAHR offers two master gardener training programs, one on Oahu, run by Jan McEwen, and one on Maui, run by Norman Nagata. Virginia Easton Smith has begun an informal, fledgling program in Kona. Volunteers sign a contract promising to give the college 40 hours of service in return for an intensive 16-20 week course for which they pay a nominal fee. When they have successfully completed the course, the volunteers answer phones, landscape college grounds, work at plant clinics and plant sales, and so forth. CTAHR urban horticulture agents are quick to say that they would not be able to handle their jobs without the assistance of master gardeners. It is a situation that benefits everyone. Agents have the help they need; master gardener volunteers get valuable training and are able to work at the hobby they love; most important, CTAHR extends its knowledge to the community as its mission requires.

STRENGTHENING COMMUNITIES

Helping People Help Themselves

CTAHR's family economics program reaches 476,000 per year

Ron Wall's telephone rings frequently. In one recent call, a 90-year-old woman wanted advice on investments for elderly widows. Dr. Wall is a nationally honored financial counselor and an extension specialist who manages CTAHR's family economics program in the Department of Family and Consumer Sciences. The program aims to help its clients become better informed regarding financial matters; better able to make effective financial decisions; better able to make advantageous use of limited resources; and better able to avoid, prevent, or recover from debilitating losses. In short, Wall is in the business of helping people help themselves by taking charge of their financial lives. He engages in several strategies to reach as many of Hawaii's citizens as possible with his message of responsible money management: he writes a monthly column for the Honolulu Advertiser; he works closely with state and private agencies to train personnel to go into the community and spread his advice; he involves himself in mass media programs; he conducts numerous workshops and consultations; he has just published a book—*You & Your Money.* Because of his energy and effort, CTAHR's family economics program reaches an estimated 476,000 people per year. Even if only a fraction of these individuals follow Wall's money management advice, hundred of thousands of dollars are saved and the individuals are on the road to fiscal responsibility.



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Covering your auto tracks
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Pros and cons of long-term care plans

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