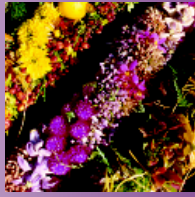


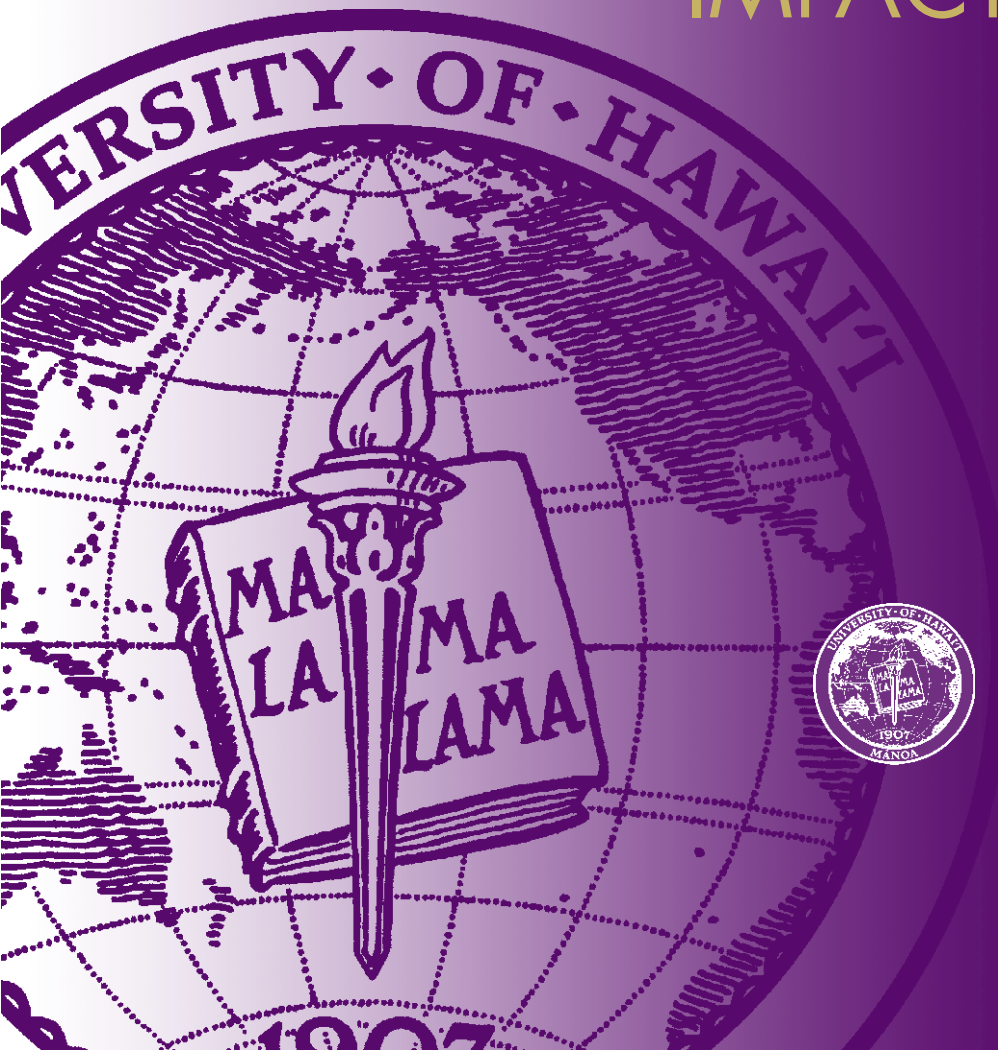
Revitalizing, Sustaining, Strengthening



2002

IMPACT REPORT

Moving Forward



**College of Tropical Agriculture
and Human Resources**
University of Hawai'i at Mānoa



VISION

CTAHR will actively help Hawai'i diversify its economy, ensure a sustainable environment, and strengthen its communities and 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.

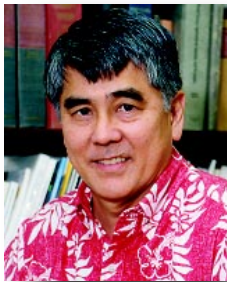
INITIATIVES

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



**College of Tropical Agriculture
and Human Resources**
University of Hawai'i at Mānoa

College of Tropical Agriculture and Human Resources— MOVING FORWARD IN DIFFICULT TIMES



"CTAHR moves forward only through the dedicated work of its faculty and staff."

— Andrew Hashimoto,
Dean, CTAHR

When 2002 began, uncertainty was the predominant mood in the state of Hawai'i. We knew the fallout from the terrorist attacks of September 2001 was serious, but how serious? Tourism and tax revenues were down, but by how much and for how long? The legislature convened in January knowing it would be difficult to maintain existing programs and nearly impossible to fund new ones. The prevailing uncertainty extended to every unit of state government, and the College of Tropical Agriculture and Human Resources (CTAHR) was not immune.

It's a year later, and we find to our relief that we survived. Regrettably, prospects for the future continue to be uncertain. On the one hand, a new governor was recently inaugurated and a new legislature is in place. On the other hand, tax revenues are not keeping pace with predictions. As were their predecessors, the new governor and the new legislature may again be constrained by unpleasant fiscal reality. It remains to be seen what impact that reality will have on our college.

It is easy to become paralyzed in a climate of uncertainty. I am pleased to report that paralysis did not afflict CTAHR in 2002. On the contrary, the college moved forward on several fronts, confident that better times lie ahead and determined to help the agriculture and human resource communities to take advantage of them.

After years of budget cuts and resulting faculty reductions, the college finally began hiring new faculty members during the 2002 academic year.

For the first time in many years, CTAHR held a college-wide conference in April to air concerns, examine priorities, and set goals for the coming years.

We continued to facilitate the work of the Agriculture Coalition, an informal consortium of growers and landowners formed to find solutions to Hawai'i's land use challenges.

We took the Hawai'i Manufacturing Extension Program under our wing. A U.S. Department of Commerce-sponsored outreach effort, the Hawai'i MEP has an excellent record of assisting existing small businesses to improve their operations and their bottom line. It provides a nucleus for CTAHR's interest in creating agribusiness incubators to help agriculture entrepreneurs get a successful start.

The college's Center on the Family, in partnership with the Hawai'i Community Foundation and Hawaiian Islands Ministries, is expanding

its outreach to build the capacity of faith-based and community organizations. Technical assistance will include grants, training, and fellowships to enable the organizations to better meet the needs of Hawai'i's poor and vulnerable. The initiative is funded through a three-year \$1.8 million grant from the federal Department of Health and Human Services.

Amidst all this activity, CTAHR's faculty also moved forward with its fine record of research and outreach, some of which you will read about in this report. For the third year, we report notable progress made in the college's three goal areas: revitalizing the economy, sustaining the environment, and strengthening Hawai'i's communities. Learn about research to cool off hot cows and increase their milk production. Read of efforts to use microbes to consume sludge in Hawai'i's waterways and thereby avoid expensive dredging projects in the future. Discover a multi-pronged approach to encourage native Hawaiian students to major in food and agricultural science.

CTAHR moves forward only through the dedicated work of its faculty and staff. They amply demonstrated in 2002, as they do every year, their commitment to the people of this state. I am proud to work with them, and I thank them all for their unstinting efforts.



Aloha,
Andrew G. Hashimoto
Dean and Director

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ECONOMIC REVITALIZATION

A Woman of Taste

There's more to food production than meets the eye—there's also that that pleases the nose and the mouth. Eating food is an experience that engages all our senses. The farmer who succeeds is the one who sells the best tasting, best smelling, best looking, longest lasting food. Catherine Cavaletto has spent her 40-year career at CTAHR helping Hawai'i's growers discover which varieties of their crops meet those criteria.

Not many on the UH faculty become members of the 40-year club. When Cavaletto arrived on the Mānoa campus in 1962 to work as a technician in a CTAHR food science laboratory, she did not necessarily have a plan to stay. But stay she did. For 25 years, she helped macadamia nut growers improve their product by determining which varieties were tastiest, which had the longest shelf life, and how best to process, package, and store them. In 2001, the grateful industry association acknowledged her contributions by naming her an honorary member.

Over the past 15 years, she has made similar contributions to the coffee industry. She actively helped Kona coffee attain its current mystique as one of the world's most prized specialty coffees. Cavaletto's long and distinguished career not only with macadamia and coffee but with a host of tropical crops exemplifies CTAHR's dedication to the diversification of Hawai'i's agriculture industry.

Catherine Cavaletto has spent her 40-year career at CTAHR helping Hawai'i agriculture.



The macadamia nut and coffee industries have benefited greatly from Cavaletto's work.

ECONOMIC REVITALIZATION



The partnership is just one of the ways CTAHR intends to have an impact on the expansion of Hawai'i's agriculture industry.

Linking Arms to Encourage Agricultural Development

When CTAHR Dean Andy Hashimoto came on the Hawai'i scene in 2000, it didn't take him long to realize that Hawai'i's economy had to be diversified, that a strengthened agriculture industry must be a component of that diversification, and that strengthening the industry, in turn, would require cooperation from many sectors. These convictions were the genesis of a partnership to develop agribusiness and communities. The partnership will encourage and nurture entrepreneurial ventures in agriculture, either helping them become established or, if they are already established, improving their chances of long-term success.

CTAHR is committed to developing the necessary liaisons among an array of commodity groups, other UH units, private businesses, state and federal government agencies, other research institutions, lending institutions, and interested parties that will make the partnership a force for positive economic change in Hawai'i. The partnership's mission statement says it will "foster . . . businesses that make profitable, sustainable use of Hawai'i's land and resources, protect and preserve Hawai'i's environment and life style, and contribute significantly to the economic health and prosperity of the state and its people."

At the heart of the partnership will be CTAHR's statewide network of extension agents and specialists, who work at the grass roots level with individual producers in various fields and know the leaders and innovators among them. The partnership is just one of the ways CTAHR intends to have an impact on the expansion of Hawai'i's agriculture industry.

ECONOMIC REVITALIZATION

Facilitating the Conversation

Producers and landowners must work together to identify ways to make agriculture profitable.

If people on opposite sides of a contentious issue can talk to each other, they often come to realize that their similarities are stronger than their differences. The necessary ingredient to reach this realization is an effective and neutral facilitator who can arrange a conversation and help the participants acknowledge those similarities. Since fall 2001, at the request of the participants, CTAHR's Donna Ching and Andy Hashimoto have filled such a facilitating role in a dialogue between Hawai'i's agricultural producers and landowners.

The two groups have from time to time been notoriously at odds with each other, but they have now joined with others to form the Agricultural Coalition, with the aim of furthering the growth of the agricultural industry in Hawai'i. One of the coalition's greatest challenges is developing mutually acceptable solutions to Hawai'i's difficult land use problems.

The Agricultural Coalition has worked as hoped: producers and landowners have gained trust and come to understand that each has a strong stake in making agriculture work in Hawai'i. To preserve Hawai'i's unique lifestyle and put thousands of fallow acres of prime agricultural land to productive use, all must work together to identify ways to make agriculture profitable. With CTAHR's help, the parties have begun formulating policy proposals that will benefit Hawai'i by strengthening agriculture and assuring landowners of a fair return on their assets.



ECONOMIC REVITALIZATION

Heat stress in dairy cattle can cause a 25% drop in milk production.

A Cool Cow Is A Happy Cow

When does a cow produce milk? If you said, “when she has a calf,” treat yourself to some milk and cookies. But milk cows are mostly temperate-climate creatures, and in Hawai‘i’s subtropical environment, they may not get pregnant or carry calves to term during the hottest eight months of the year. No calves, no milk.

What’s a Hawai‘i dairy farmer to do? Heat stress in dairy cattle can cause a 25% drop in milk production, meaning short supplies for Hawai‘i and slimmer profits for the farmer. The animals can be kept cool with water, but they and the ground they lie on also must be kept dry to prevent udder infections. How to solve this riddle?

Relief is at hand from CTAHR dairy specialist C.N. Lee. After more than 10 years of experimentation, working with Hawai‘i’s dairy farmers, he hit upon the right combination of two of nature’s basic elements, wind and water. Using Lee’s combination of sprinklers, foggers, misters, drenchers, and lots and lots of fans, Waianae dairy farmer David Wong, Jr., has seen dramatic progress in the past year, with calving and milk production nearing expected levels. Wong believes that “without a solution to this problem, there can be no dairy industry in Hawai‘i.” Lee’s work, he says, has changed the dynamics of the dairy marketplace and can make Hawai‘i competitive with Mainland bulk shippers.



Oscillating fans with misters.



Cows being sprayed with water (drenchers) at the feed mangers.

ECONOMIC REVITALIZATION

Boys Will Be ... Girls?

Imagine a world populated solely by females whose “fathers” were females converted to males! Sounds vaguely X-rated and more than a little weird, doesn’t it? Believe it or not, it’s the world CTAHR’s Spencer Malecha has been working to create—with shrimp.

For years, shrimp farmers have sought ways to maximize their production of females, which are plumper and faster growing than males. If it were possible to produce only females, farmers could increase their production—and their profits—by as much as 30 percent. Malecha and his co-workers have shown that if the male shrimp reproductive gland is transplanted into a female, she produces a hormone that makes her male—but only for reproductive purposes. This “neomale” parent can then fertilize eggs of a normal genetic female, but because the “father” is genetically female, the offspring are all female.

The surgical technique, in reality, is cumbersome and expensive, but Malecha is now investigating ways to produce the hormone synthetically and feed it to females to achieve the same result as the surgical procedure. Work is progressing well and should be complete within the next two to three years. Shrimp recently replaced tuna as the world’s most-consumed seafood, with worldwide sales around \$6 billion. Through Malecha’s work, Hawai‘i will have a good opportunity to garner a sizeable share of those sales, especially as a producer of lucrative brood stock.

For years, shrimp farmers have sought ways to maximize their production of females, which are plumper and faster growing than males.



Shrimp recently replaced tuna as the world’s most-consumed seafood, with worldwide sales around \$6 billion.

ECONOMIC REVITALIZATION

If diversified agriculture is to succeed in Hawai'i, fruit flies must be suppressed.



CTAHR technicians monitoring for fruit fly infestation.



Squashing Bugs

Any farmer knows that fruit flies are pesky critters. But that's not even half the story. They are downright expensive. Not only do they inflict millions of dollars of losses, they also prevent Hawai'i farmers from exporting their produce to lucrative overseas markets because those markets don't want to run the risk of importing the tiny marauders. If diversified agriculture is to succeed in Hawai'i, fruit flies must be suppressed. And if fruit flies are to be suppressed, all the farmers in an infested area must cooperate.

A test of such an area-wide suppression is underway. The U.S. Department of Agriculture, CTAHR (led by entomologist Ronald Mau), the Hawai'i Department of Agriculture, and local farmers are cooperating to suppress Hawai'i's fruit fly populations. They are using techniques that are both environmentally friendly and readily manageable by farmers after the researchers have packed up and gone home.

Preliminary results are promising. Using the tactics promoted by the program, participating farmers in the Big Island's Waimea area reduced their melon fly population to practically zero in about three months. Melon growers on O'ahu have seen a noticeable decline in the number of flies attacking their fruit. With educational materials prepared by CTAHR, the experience gained in this study, and the will to continue cooperating, farmers will have the expertise to control fruit fly populations and increase their profits.

SUSTAINABILITY

CTAHR's Most HAPPI Fella

Evensen's work focuses heavily on the quality of Hawai'i's rivers and streams.

Carl Evensen is a cheerful sort, which is why it is so fitting that he leads CTAHR's HAPPI (Hawai'i Pollution Prevention Information) program. The program, funded by the U.S. Environmental Protection Agency under the Clean Water Act, developed materials specifically designed for a local audience to teach farmers and homeowners to identify pollution risks (especially water pollution) and the actions they can take to reduce those risks.

Among farmers especially there is an urgent need for the program. Many new farmers on former sugarcane lands have limited knowledge of pollution risks and government anti-pollution regulations. They urgently need education in both areas. The HAPPI materials provide a good introduction to the issues.

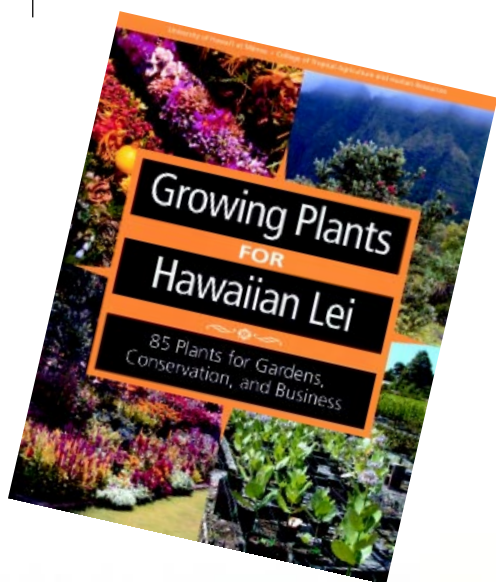
HAPPI is but one of Evensen's many responsibilities as CTAHR's extension specialist in natural resource and environmental management—a CTAHR mandate that is not as well known as some of the college's other programs, but no less important. Evensen's work focuses heavily on the quality of Hawai'i's rivers and streams. He serves as the state's water quality extension coordinator, meaning that he has responsibility for teaching the community about water quality. He heads a research group that is assisting livestock producers to put livestock waste to work in ways that will be environmentally safe. Carl Evensen works tirelessly for the state of Hawai'i. His work is emblematic of the dedication of CTAHR's extension faculty.



Evenson (right) serves as the state's water quality extension coordinator.

SUSTAINABILITY

They met to brainstorm ways to provide lei materials and reduce damage to the environment.



Lei-ing the Groundwork

It didn't take long for a February 1996 Honolulu Advertiser article, "Leimakers' foraging may be laying waste to isle ecology," to generate action from CTAHR. Led by CTAHR's Jim Hollyer, Luisa Castro and Margaret Parks, a group of concerned CTAHR faculty and colleagues beyond CTAHR met to brainstorm ways to provide needed lei materials to hula halau, lei makers, and other lei-plant consumers so that damage to the environment could be reduced. "Teach people how to grow their own," was the consensus.

That goal proved not to be as easy, however. Literally dozens of people around the state were needed to contribute growing, harvesting, and handling information on 85 different plants used in lei making. A small core group collated the information sent in by others and set about to take color photographs of each plant. The result of all this effort is a beautiful new book, *Growing Plants for Hawaiian Lei: 85 Plants for Gardens, Conservation, and Business*, published by CTAHR, which will be available in early 2003. The full-color book provides detailed information for each plant, as well as a section on Hawaiian gathering traditions and native ecosystems, one on general horticulture, and one on the business of growing and selling lei materials.

With the information in the book, both private gardeners and commercial growers can grow lei materials, and thus limit gathering and its damage to Hawai'i's forests.

SUSTAINABILITY

The Cleanup Crew

More than 20 years of sediment containing petroleum, chlorinated compounds, and other chemical contaminants is being dredged from the Ala Wai Canal at great expense in dollars, time, and inconvenience. What if the dredged material from this and other Hawai'i waterways could be cleaned naturally—or, the materials could be made to clean themselves?

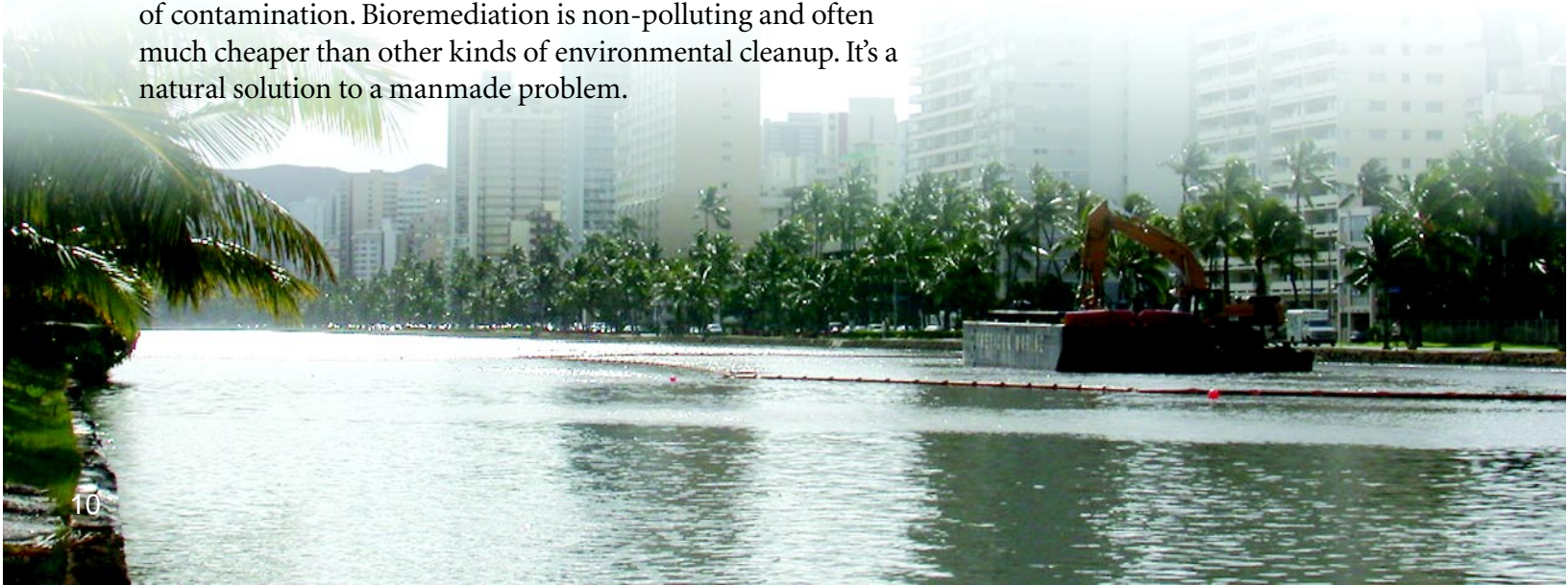
This idea is not science fiction but the plausible goal of CTAHR researchers Charles Kinoshita and Traci Sylva. The canal sediment is inhabited by microscopic organisms that actually eat and break down many of the organic contaminants into harmless substances. The trouble is, these microbes don't always have the environment they need, and they can't keep up with the speed at which the contaminated sediment is deposited. Kinoshita, Sylva, and their colleagues are working to find the treatments and conditions that will stimulate the microbes to devour the sediment contaminants faster. With that information, the dredged sediment can be cleaned, and biofilters can be installed in the canal that could prevent the buildup from ever again getting as bad as it was.

Using microbes to break down undesirable substances is called bioremediation. CTAHR is cooperating on bioremediating sites all over O'ahu, using microorganisms and plants to clean up petroleum, chemical residues, and other kinds of contamination. Bioremediation is non-polluting and often much cheaper than other kinds of environmental cleanup. It's a natural solution to a manmade problem.

Bioremediation is non-polluting and often much cheaper than other kinds of environmental cleanup.



"Cleanup Crew" (left to right), Rowena Romano, Traci Sylva, Renee Harada and Marisa Toma display their bioreactors and measurement system.



STRENGTHENING COMMUNITIES

New for the summer 2003 FAST Track will be in-depth training courses for high school teachers.

A Multi-lane FAST Track for Native Hawaiian Students



CTAHR grad student Jon Awaya (left) instructs Na Pua No'eau students.

Enterprising native Hawaiian high school students have an opportunity to get on a FAST Track to excellence in food and agricultural sciences thanks to a generous grant from the U.S. Department of Agriculture. Cooperating in the grant are CTAHR and Na Pua No'eau, the center for gifted and talented native Hawaiian children. The track has several lanes (FAST stands for food and agricultural sciences, and technology), all designed to engage the students' interest in vital areas of study in which Hawaiians are underrepresented.

Marlene Hapai, CTAHR associate dean for academic and student affairs, and Allene Chun, student services specialist, have created an innovative package of options, beginning with a Student Ambassador Program and an ongoing distance learning project, to capture the students' imagination. Those interested may attend a two-week residential summer study course, during which they are immersed in a relevant topic and encouraged to fit what they learn into the values of their Hawaiian culture. Seniors in the summer program are eligible for \$5,000 scholarships if they agree to enroll in a CTAHR major. Five such students are majoring in CTAHR programs this year.

New for the summer 2003 FAST Track will be in-depth training courses for high school teachers. Thanks to the program, many more Hawaiian students will pursue higher education majoring in CTAHR programs.

STRENGTHENING COMMUNITIES

“Sticks and Stones May Break My Bones ...

... **b**ut falls will never hurt me.” That altered version of the old nursery rhyme could be the theme for Adequate Calcium Today, a nationwide project that aims to teach early adolescents the importance of having enough calcium in the diet growing up to prevent osteoporosis in later life.

Osteoporosis affects 35 million Americans at an annual healthcare cost of nearly \$14 billion. Asians and Caucasians are at greater risk for osteoporosis than other ethnic groups. A study focusing on girls of Asian ancestry by CTAHR’s Rachel Novotny and others at UH-Mānoa is testing the effectiveness of a sixth-grade health curriculum especially designed to increase calcium consumption among adolescent girls. Why sixth graders? They are young and impressionable enough to have a chance of changing their eating behavior before age 17, when they have attained 95 percent of their bone mass and their attitudes are harder to change.

Armed with data from previous studies on what motivates 11- and 12-year-olds (information we all could use!), curriculum designers at UH have created an interactive, multimedia DVD/CD-ROM that will be used here and at five other cooperating Mainland universities with Asian, Caucasian, and Hispanic ethnic groups. The hope is that the curriculum will help youngsters change their exercise and eating habits to become adults who avoid the debilitating, often crippling, effects of an expensive but preventable disease.

*Osteoporosis affects
35 million Americans
at an annual
healthcare cost of
nearly \$14 billion.*



ACT Study Coordinator Jane Yakuma examines an Asian adolescent girl for bone density at the Kapiolani Clinical Research Center

STRENGTHENING COMMUNITIES

More than 1,500 Hawai'i students have already participated in Project WET (Water Education for Teachers).



The Keiki Water Festival provides many irresistible learning experiences for Hawai'i keiki.

Keiki and Water Go Together Like Fish and Poi

Besides fish and poi, what could be a more winning combination than keiki and water? And when can you have the biggest impact on children if you want to teach them the vital importance of water to human health and the environment—and to life? Catch them when they're young, when they still have a child's sense of fun and adventure. Catch them when they're fifth graders. That's the philosophy behind the Keiki Water Festivals held each of the past three years on O'ahu and once so far on Moloka'i.

CTAHR Extension agent Maryknoll Spotkoeff and education specialist Jody Smith brought the national program to Hawai'i and organized the O'ahu festivals. The events aim to teach the keiki lessons about water stewardship that will stay with them over the years. The whole idea is to teach using innovative, interdisciplinary, interactive projects that will engage the youngsters' natural curiosity.

A festival in September 2002 had 19 "learning stations," each designed to teach students facts about water and how to conserve that precious resource. A special feature of the Hawai'i festivals has been an emphasis on the importance of water in traditional Hawaiian culture.

The program, part of a national education initiative called Project WET (Water Education for Teachers) sponsored by The Perrier Group, has proved very popular. More than 1,500 Hawai'i students have already participated, and more festivals are planned.

STRENGTHENING COMMUNITIES

Telling It Like It Is

We live in a brave new technological world that is changing rapidly in ways we don't always fully understand. Lacking broad understanding and agreement, society sometimes finds these changes controversial. A case in point is agricultural biotechnology, which holds great promise as a means to feed people and improve nutrition throughout the world. But biotechnology also arouses opposition and fear, in some because it is poorly understood.

Providing information about agricultural biotechnology to allay public concerns is an explicit part of the outreach mission of any U.S. land-grant institution. In Hawai'i, that responsibility falls to CTAHR. Ania Wiczorek, assistant specialist in the college's Department of Tropical Plant and Soil Sciences, has taken on the task of educating the public about the benefits and risks of agricultural biotechnology. She travels throughout the state organizing public forums where citizens can hear balanced analyses and move toward their own conclusions about the new technologies.

Wiczorek also serves as a resource person for anyone in the state who has questions about biotechnology's feasibility. If public officials, for example, need information to provide to concerned constituents, she can meet that need.

Agricultural biotechnology is an exciting, controversial, evolving part of science. It requires daily vigilance to keep up with its developments and ensure that information about it is presented to the public accurately, dispassionately, and with an even hand. CTAHR maintains that vigilance through Ania Wiczorek's work. For more on the subject of biotechnology, see CTAHR's Web site at www.ctahr.hawaii.edu/ctahr2001/pio/freepubs.asp.

Agricultural biotechnology is an exciting, controversial, evolving part of science.



Ania Wiczorek has taken on the task of educating the public about the benefits and risks of agricultural biotechnology.

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