

**Academic Review**  
**College of Tropical Agriculture and Human Resources**

**Report to: Dr. Linda Johnsrud, Interim Vice Chancellor  
for Academic Affairs**

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## **Academic Review Process**

The academic review of the College of Tropical Agriculture and Human Resources (CTAHR) was organized in three distinct phases. In Phase I, programs were asked to develop self-study documents describing curricula, students, research, staff support and facilities, and other important elements of their program. Where possible, documents from other reviews (e.g., professional accreditations) were used as proxies for these reports. Reports were provided by five academic departments, three degree programs, and one center. In Phase II, one or two members of the interview review team were assigned to each program and asked to carefully review his/her assigned program and develop a short (3 - 5 page) summary of strengths, weakness, and possible recommendations. Internal reviewers also conducted student interviews, toured facilities, interviewed faculty and administrators, and reviewed supplemental information. All of the self studies and internal review reports, as well as supplemental data were forwarded to the external reviewer. Phase III of the process involved a three-day site visit where the external reviewer and members of the internal review team met with faculty, students, staff, stakeholders, and administrators and conducted open-ended interviews regarding the strengths, weaknesses, and suggestions for the future of CTAHR.

In the pages that follow, findings in the format requested by the Office of the Vice-Chancellor for Academic Affairs will be presented. Following a brief overview of the current situation facing CTAHR and its academic programs, sections are included to address issues related to faculty, curricula, and students, respectively. Each of these sections comprises a set of overarching issues facing the college and followed by a brief discussion of strengths, weaknesses, and challenges facing each program. Sections addressing research, extension, funding and facilities, and centers and institutes follow. Finally, some general conclusions and recommendations are summarized, although many of these can also be found in the relevant sections of the report.

### **I. Overview**

The College of Tropical Agriculture and Human Resources (CTAHR) is one of the broadest colleges at the University of Hawaii (UH), ranging from the molecular biological sciences to design disciplines. The college is the oldest in the university; rooted in the Land-Grant mission; and committed to its tripartite mission of teaching, research, and extension. Without question, CTAHR is the most engaged college with its stakeholders. These stakeholders have significant expectations of the college to deliver educational programs in support of the agricultural and natural resource industries of the state, as well as programs that support social services directed toward youth and families. This breadth of subject matter and mission creates an added complexity when assessing the academic programs of the college, as it is virtually impossible to separate the instructional, extension, and research activities of the college. Therefore, while this report principally focuses on the CTAHR's academic mission, it also addresses the college's research and extension programs.

It is quite clear that two major events have dramatically affected the College of Tropical Agriculture and Human Resources over the past decade: (1) implementation of the academic program reorganization plan at the turn of the century, and (2) the significant budget rescissions experienced during the 1990s. Beyond a doubt, the reorganization of CTAHR is the most

comprehensive of any college of agriculture or human sciences at a Land-Grant institution in recent memory. Not only was the reorganization comprehensive, but the process employed was quite unique and potentially disruptive. As described by the CTAHR Administration, six units were defined and faculty were allowed to self-select into the unit of their choice. County faculty were also moved into department appointments during the reorganization. It is clear, and expected, that this reorganization has resulted in considerable anxiety and both foreseen and unforeseen consequences. While the composition of the units formed by implementing the plan generally makes programmatic sense, a couple of situations prevailed where the defined department units may not necessarily represent an obvious, nor necessarily harmonious, merger of disciplines.

As a whole, the college appears to be gaining momentum following the disruptions of the reorganization, and benefits are beginning to be realized. Both the CTAHR Administration and faculty are to be commended for their efforts in making the plan work. Seven years is a relatively short period of time to assess the merits of the reorganization, but it is clear that the college is well positioned to move forward into an era of higher productivity and more efficient use of resources.

A second major influence on the college that continues to be significantly felt is the budget reductions that occurred through much of the 1990s, and the fact that few faculty were hired during this period. This phenomenon has created a large gap in the faculty ranks of most CTAHR departments, and many units consist of a large cadre of senior faculty, few mid-career faculty, and a group of junior faculty. Faculty hired in the 1990s would now be tenured and at the peak of their career in terms of research productivity, and their absence is observable in the research, extension, and teaching programs of all six departments. An additional problem looming in the horizon is an anticipated leadership vacuum following the retirement of senior faculty in upcoming years.

### *CTAHR's Greatest Challenge*

Perhaps the greatest challenge facing the college is finding the appropriate balance of depth versus breadth within key disciplines and across its three functions of teaching, research, and extension. On one hand, CTAHR has a significant public mandate to provide teaching, research, and outreach programs covering a wide array of topics and issues. On the other hand, the college faces significant resource limitations which have severely limited faculty hiring, operating resources, and facility development and renovation. This balancing act is typical of most colleges of agriculture and/or human sciences; however it is likely more acute at UH because of the severity of the resource limitations. CTAHR cannot be all things to all people, and it is important that areas of excellence be identified and nurtured at both the college level and within departments.

The other dimension of the aforementioned "balancing act" occurs across teaching, research, and extension. It is clear, and routinely stated in the self-study documents, that the teaching mission of the college is severely limiting research output in several units. While the undergraduate and graduate curricula have been streamlined following the reorganization, it is questionable whether the current number of academic programs and courses can be sustained without an infusion of

new resources. Without this infusion of new faculty, a decision to retain the current level of academic programs will almost certainly translate to reduced research output.

#### *College Administration*

CTAHR is a well-managed college. The current administration is to be commended for their successful leadership in navigating the complexities associated with a comprehensive college reorganization. Decisions are guided by a strategic plan which includes a detailed implementation plan. The strategic plan connects well to the university mission, and unit-level plans are well-aligned with college goals.

#### *Relationship with University Administration*

An observation from the site visit was the apparent lack of understanding of CTAHR's tripartite mission and stakeholder engagement on the part of some members of the UH Administration. Clearly, the CTAHR Administration must do a better job of communicating their mission and successes to the upper administration. Some university administrators seemed pleased, but surprised, with the level of the stakeholders' commitment to the college and reliance on its program. University administrators also seemed to lack an appreciation for the complexity of CTAHR's operation, particularly the component that lies outside of Manoa (i.e., county offices and experiment stations). In an era where many universities have identified engagement as a strategic priority, perhaps the university should look to CTAHR for leadership in this area.

## **II. Faculty**

At the heart of any academic institution is its faculty, and CTAHR is fortunate to have a dedicated and productive faculty. The number and quality of senior faculty who have dedicated their professional lives to UH are impressive. Many of the faculty comprising the college's six units are recognized scholars in their fields and disciplines, have published books and articles in premier journals, and are sought after as speakers in major conferences and symposia nationally and internationally. Their standing in their respective professions is also evident from the leadership positions many hold or have held in national and international organizations, as well as awards and recognitions earned.

CTAHR faculty are also recognized across the university for their teaching prowess and several have won recognitions for excellence in teaching and advising. A definite strength of the college is its use of tenure-track faculty in a substantial percentage of its courses and in student advising. Teaching evaluations, student responses, and other indicators serve as evidence of high quality instruction and a student-centric environment within most programs in the college.

### Overarching Issues

#### *Faculty Size*

The size of the faculty in CTAHR is small relative to the size and scope of its mission. This small faculty size is a major limitation in attempting to compete, particularly in research and graduate training, with larger agriculture and human science programs in the Midwest, Plains, and Southeast regions of the U.S. Faculty numbers most closely resemble those of the Land-Grant

universities in the Mountain States. A pervasive theme in the self-studies is a call for infusion of new faculty and staff positions. CTAHR is approximately 75% of its size in 1993; however, many colleges of agriculture and/or human sciences are operating under significantly lower staffing levels than one to two decades ago, and the likelihood of returning to staffing levels of the early 1990s is remote, at best. Nonetheless, the atrophy of faculty positions in CTAHR cannot continue without significantly compromising the capability of the college to deliver on its tripartite mission.

#### *Faculty Demographics*

As a result of the hiatus of hiring during much of the 1990's, CTAHR's faculty is characterized by a bimodal distribution of faculty based upon seniority. On the whole, the CTAHR faculty members are of diverse backgrounds, by gender and by ethnicity. It was not clear whether a college-level diversity plan has been developed; however, if one is not in place, it should be developed to guide faculty and staff hiring, retention activities, and student recruiting.

#### *Strategic Hiring*

The CTAHR Administration, in association with the unit leaders, has developed and implemented a staffing plan resulting in the hiring of 40 priority positions in departments and county extension units. Hiring of new faculty has not been evenly distributed across units or across teaching, research and extension; this is a positive observation, indicating that strategic criteria are being employed.

Due to the demographic composition of the faculty and the completion of the recent three-year commitment to salary increases, a large exodus of senior faculty is expected to occur in coming years. The Dean's report indicates that fiscal constraints will allow the college to fill only one-third of the positions that are deemed important to the success of the college. In addition, there is active discussion that a likely policy to be implemented will require that one of every two positions vacated via retirement will be returned to the Chancellor's Office for university-level reallocation. If CTAHR is not able to compete well for these positions, the resulting net loss in positions will be devastating. Given this situation, it is critical to continue the process of strategic hiring. A critical question to address in executing this strategic hiring plan is, "what factors will be utilized to identify positions to be filled?" The staffing plan must be developed using a long-run (e.g., ten years) planning horizon to assure that the appropriate faculty composition (by department, by academic rank, etc.) is in place in 10 years. The plan must also factor in the cost of start-up packages which are anticipated to continue to increase over the next decade.

#### *Faculty Salaries*

As in most units at UH, faculty salaries in CTAHR are far below salaries at peer institutions. Surprisingly, few people commented about salaries except to note that UH salaries tend to be on the low side and not commensurate with the high cost of living on the island. The "salary issue" almost seems to be an accepted fact among CTAHR faculty. Nonetheless, this remains a significant issue, and UH is a well-known location for larger, better-funded institutions to "cherry pick" quality faculty. The recent three-year salary program has narrowed the gap between UH and peer institutions nominally, but the CTAHR Administration must continue to work on this issue. The faculty group in particular risk is the junior faculty hired in the current decade.

## Family and Consumer Sciences

The faculty within FCS have done a remarkable job of delivering a high-quality undergraduate experience to its students, despite some difficult situations. Senior faculty acknowledge that they have become adept at “making do” with limited staffing and resources. The typical load for tenure-track faculty is three courses per semester, and most faculty carry a significant advising responsibility (30-45 students). Clearly, these demands have adversely affected the faculty’s collective ability to conduct research, publish in scholarly journals and undertake juried creative activities. In response to this situation, three new tenure-track instructional faculty members (one in FAMR and two in APDM) were hired in 2004-2007 and four limited contract, non-tenure track instructional faculty were hired in 2004 to teach eight courses per year, two in APDM and two in FAMR. Nonetheless, there is still a heavy reliance on lecturers, and the students interviewed noted this as a continuing issue.

The use of temporary faculty to support the instructional mission in FAMR and APDM is a necessary strategy. Several of these temporary faculty are hired repeatedly and are well integrated into the department. It is critical that temporary faculty understand the program’s learning outcomes, course guidelines, and how the courses they are teaching fit into the overall curricula.

In addition to instruction, one faculty member is responsible for assigning and supervising 35 to 40 internships per semester. This responsibility is a heavy burden to place on a single faculty member. Nonetheless, the internship program provides an important educational experience for the students as well as a service to the many programs, agencies and offices that receive the attention and assistance of the student interns.

Despite heavy teaching loads, the FCS faculty aspire to a comprehensive research program. In addition to their teaching, the faculty carry out basic and applied research in human development, family development, aging, and family services. Although the self-study report mentions high levels of scholarship, the research statistics for the unit (e.g., number of refereed publications) over the last seven years are not impressive. Also, although FCS faculty generated more than \$11 million in grants during this time period, almost \$8 million of the \$11 million came from grants that the chair, B. Yee, received prior to coming to UH. While it remains to be seen whether this level of success in grant procurement can be duplicated in Hawaii, it is clear that the department’s ability to secure extramural funding should increase in the future.

Strengthening research within FCS is an important strategic goal of the unit’s 2003 strategic plan. It is likely unrealistic to make significant advancements toward this goal without significant efforts to re-balance the department’s efforts across undergraduate teaching, research, and outreach. Demands from a large undergraduate program impinge upon scholarship in FCS in two important ways: (1) faculty teaching loads are excessive and provide individual faculty members insufficient time to pursue scholarship, and (2) large enrollments in FAMR and APDM have resulted in the employment of a large cadre of non-tenure track instructional faculty with little to no scholarly expectations. Several strategies could be employed to seek this improved balance.

First, the unit could hire new faculty with reduced teaching expectations. Second, some instructor positions could be gradually replaced with tenure-track positions. The proposed M.S. program could also benefit the research program of the FAMR unit through graduate student research and the recruitment and retention of research-oriented faculty.

### Human Nutrition, Food and Animal Sciences

HNFAS is comprised of 32 faculty, including seven agents, seven specialists, nine instructional and nine researchers. Although significant faculty attrition has occurred since 2000, there have also been 16 new appointments since 2000 – seven agents, five instructors, one researcher, and three specialists. This hiring pattern points to a significant potential issue that the department must address as it faces increasing enrollments and anticipated retirements over the next several years – the need to addressing growing teaching loads and the tendency to rectify the situation by hiring instructors, as opposed to tenure-track faculty.

The self-study also points to some concerning issues around faculty morale within the unit, as reflected in a December 2006 survey of faculty and staff members. It is not clear as to the source of this discontent, but two likely contributors are the merging of two distinct disciplines and increasing demands on faculty resulting from increased enrollments and faculty attrition. Comments during the campus visit indicated significant improvement in the mutual acceptance of each group comprising the department had occurred in recent months. This situation needs to be proactively managed by the faculty and the CTAHR Administration.

### Molecular Biosciences and Bioengineering

#### *Bioengineering Program*

Currently, the BE program has only six instructional faculty; therefore, one of greatest challenges facing the long-term sustainability of the program is the commitment of instructional faculty. The program has been hit hard by retirements and the movement of key faculty to administrative assignments. While additional faculty are appointed in MBBE, it is not clear why other members of the unit are not involved in the BE program. Clearly, it will be difficult to reach the 100 student target of their strategic plan without additional faculty investment.

BE faculty have significant research programs and typically have research appointments of 60 percent or more. Aggregate research productivity metrics (e.g., refereed publications and extramural funds per FTE) for the unit are very good. This is also an area where significant competition for faculty currently exists and larger, better-funded institutions are likely to be attracted to several of the faculty working in this area. The College Administration needs to be proactive in taking steps to retain these faculty.

#### *Plant and Environmental Biotechnology Program*

An important strength of the PEB program is the quality of the faculty involved. Faculty teaching and advising students in the program are located across several departments and colleges. Two concerns must be addressed to advance this program to the next level of excellence. The first concern is that of scalability. The program requires intensive research and instructional

experiences, and much of the research direction and advising is conducted by one faculty member. Greater engagement of more faculty will be required if the program is to expand to enrollment numbers desired by the College Administration. The second concern is the dependence of the program's success on the selfless leadership and commitment of Dr. Harry Ako. Dr. Ako carries a great deal of the administrative and student research advising burdens associated with this program. A succession plan is required to assure that the program continues when Dr. Ako decides to leave UH.

### *MBBE Graduate Program*

The graduate faculty with MBBE is comprised of 11 faculty. In addition, these faculty are supplemented with an outstanding cadre of cooperating faculty from a variety of departments and colleges. Within CTAHR, faculty from PEPS and HNFAS advise students in the program. Outside the college, over 30 cooperating faculty from engineering, natural sciences, and biomedical sciences are involved in the program. This rich mix of disciplines is clearly one of the unique and outstanding characteristics of the graduate program in MBBE.

### Natural Resources and Environmental Management

NREM is a very interesting unit and poised to make significant contributions around topics such as environmental management and sustainability by applying an interdisciplinary approach to teaching, research, and extension. Given the breadth of subject matter addressed within the unit, NREM has a small faculty with 14 current members. Disciplinary specializations of NREM faculty include natural resource economics, agricultural economics, soil and water conservation, community resource economics and development, natural resource management and policy, forestry, 4-H youth development, and geospatial analysis. This multidisciplinary composition lends itself to addressing complex environmental and natural resource issues that span across physical, biological, social, and economic dimensions. The potential of this organization is starting to reveal itself in increased undergraduate and graduate enrollments, grants and contracts, and research and outreach opportunities.

NREM faculty are making significant progress in advancing their scholarly achievements since the formation of the department in 2000. Based upon data reported in the self-study, refereed journal article output is increasing, and now exceeds one article per faculty member annually. A large array of grants has been secured, with the total amount of the funds awarded to NREM from 2003 to 2008 approaching \$10 million. Included in these grants are several highly competitive federal awards from the USDA-NRI, NSF, USDA National Water Program, NOAA, USAID, EPA, NASA and the USDA Western SARE Program. The unit's faculty appear poised to make further advancements in procuring extramural support, particularly from state agencies and foundations in need of interdisciplinary solutions to natural resource problems.

NREM faculty are consistently teaching above their allotted instructional time, not including time spent advising students. Undergraduate and graduate student advising is shared by all faculty although some carry a much heavier load than others. As noted above, this heavy teaching commitment has come at a cost of faculty efforts in research and extension. Though faculty understand the demands that contribute to this being necessary for the present, they are looking to



achieve a better balance of instructional time with their other time requirements. Given observed growth in undergraduate and graduate programs, investment in additional faculty positions will be a necessity in this unit.

### Plant and Environmental Protection Sciences

There are currently 27 tenure-track faculty in PEPS, including 20 “academic faculty” and seven county agents. These faculty span across three primary disciplines: entomology, plant pathology, and weed science. Faculty numbers within PEPS (and its predecessor departments) have declined significantly over the past two decades. Since 2000, the unit has lost eight faculty to retirements and resignations and hired five (four academic faculty and one extension agent) tenure-track faculty. As a result, the department has only two assistant professors and faces the imminent retirement of several senior faculty. This attrition has occurred simultaneously with an increase in the diversity of the state’s agricultural industry and an accompanying expansion of demand for applied research and extension. The situation poses a significant threat to the future productivity of the unit and their ability to adequately serve the needs of stakeholders.

The total instructional FTE to deliver PEPS’s five academic programs is 2.10 FTE. Clearly, an imbalance exists between instructional resources and the number of degree programs offered by the unit. Rectifying this situation will require both reducing the number of academic programs and adding instructional FTE.

### Tropical Plant and Soil Sciences

The TPSS faculty is among the most diverse in CTAHR and is comprised of faculty with expertise in crop and landscape management; agribusiness management and marketing; soil, water, and nutrient management; application of biotechnology to tropical crops, genetic improvement, physiological and biochemical analysis of plants; and food science. This diversity is a “double-edged sword,” providing the unit a rich array of expertise to address the myriad of issues facing the state’s agricultural industry, but not allowing for sufficient critical mass in any single area to define a core area of excellence at the national or international level.

By CTAHR standards, the TPSS faculty is relatively large; however, this is not the case when one considers the array of disciplines covered within the department. The department has 39 faculty – 18 research faculty, eight extension specialists, and 13 county extension faculty. As is the case with several other departments, significant concern exists regarding loss of faculty over the past decade and the imminent retirement of senior faculty.

As a result of bringing production horticulture, floriculture, crop production, soil scientists, and agricultural economists together into a single unit, most of the college’s resources dedicated to plant agriculture are located within TPSS. The department has a large and diverse set of industries to serve, and this challenge is becoming even more pronounced with the increased diversification of the state’s agricultural sector. Where to strategically place new resources is a difficult decision, and out of necessity is largely being driven by stakeholder needs. For example, as a result of growth and opportunity in areas surrounding urban horticulture, the department

recently hired extension specialists in turfgrass and landscape horticulture. The department chair noted that they have hired more extension specialists than researchers to address the immediate demands of the industry. This strategy makes sense in the short-run, but he is legitimately concerned that the research capabilities of the department will eventually be eroded.

The distribution of the college's agricultural economics and agribusiness expertise is worthy of mention here. During the restructuring, the Department of Agricultural Economics was eliminated and its faculty distributed over several of the newly formed departments. Several faculty residing in TPSS work in the areas of agricultural production economics and agribusiness. The benefit to this structure is a close connectivity between plant scientists and economists in addressing critical agricultural issues facing the state. The obvious downside is that agricultural economics and agribusiness faculty are fragmented which will inevitably lead to isolation and reduced visibility and reputation within their discipline. Under this organization, it is inevitable that agricultural economics will ultimately be phased out as a scholarly discipline at UH.

The TPSS faculty is productive in terms of most conventional research productivity measures (e.g., refereed publications, extramural funds). At first blush, it appears that TPSS faculty have been exceedingly successful at procuring extramural funds to support their research and outreach efforts. Over the past six years, the department has generated more than \$17 million in extramural funds. Indeed, some faculty have been successful in procuring extramural funds, but more than \$14 million can be attributed to a single faculty member who was awarded and is successfully administering a Collaborative Research Support Program (CRSP) grant from USAID. Faculty should be encouraged and supported to actively pursue extramural funding at the state and federal level, as well as from private firms and foundations.

### **III. Curriculum**

Most of the academic programs within CTAHR have undergone significant curriculum revision in recent years. This restructuring of the curriculum has been a positive and expected outgrowth of the college's wholesale reorganization which occurred at the beginning of the decade. For the most part, this curriculum restructuring has been driven by student demand, industry need, and observed trends within the academy.

An important and overarching theme of this review is that CTAHR may be trying to deliver too many academic programs given its resource base devoted to instructional programs. In several units, too many courses and too diverse of programs are being provided. On one hand, this is commendable because the faculty clearly have a desire to maintain the breadth and depth of current programs, but it is apparent that the teaching mission is cannibalizing research and other scholarly activities in many of these units. Perhaps the college did not shed as many programs as was necessary during the reorganization.

#### Overarching Issues

##### *Interdisciplinary Instruction*

Across most agricultural and human science programs nationwide, there is an acknowledgment of

a greater need for interdisciplinary within a curriculum. CTAHR has some model interdisciplinary programs which seem to be working well. For example, faculty from several units are highly engaged in the Plant and Environmental Biotechnology program. However, there appears to be a tendency for some departments to develop curricula by focusing largely on courses taught within their academic unit. A greater focus on interdisciplinary curriculum development could strengthen academic programs, provide much needed efficiencies, and increases the marketability of some degree programs. One caveat in interpreting this suggestion is that a lack of interdepartmental collaboration does not necessarily imply a lack of interdisciplinarity within these programs. One must remember that most departments in the restructured CTAHR contain two or more academic disciplines, so interdisciplinary programs can exist, even within the confines of a single department.

### *Learning Outcomes*

Learning outcomes and assessment of progress in achieving these outcomes has been an area of emphasis at UH, and CTAHR has embraced this mandate. Each of the academic programs is guided by well-stated learning outcomes. These learning outcomes have guided curriculum development and revision in recent years. In most cases, learning outcomes are well connected to assessment processes, and there exists quantitative and qualitative evidence that these objectives are being met.

### *Assessment*

Assessment of academic programs has received considerable attention at UH in recent years and should be considered a strength of CTAHR. Academic units have been asked to develop assessment protocols for their programs, and in general, faculty within CTAHR have responded well to this challenge. Most academic programs have an assessment coordinator who is committed to the process and carrying the majority of the workload associated with assessment. Faculty buy-in of the importance of assessment and its usefulness in guiding curriculum changes appears mixed, but nonetheless is stronger than in most peer institutions.

Most academic programs in the college have rigorous assessment plans in place. These assessment plans have been developed with sufficient flexibility to allow faculty to develop a process which meets their own discipline and learning outcomes. Of course, the most critical component of any assessment protocol is to implement a process whereby assessment data is used to make proactive changes to the curriculum. For most of the programs, it is too early to determine how well assessment information will be used for systematic program improvement, but this should be the focus of future administrative efforts in the assessment arena.

### *Internships and Experiential Learning*

The college's internship program is a model for all colleges of agriculture and/or human sciences across the nation. All programs require an internship and/or capstone experience, and clearly, this requirement places a significant administrative burden on the faculty and staff of the larger programs such as APDM and FAMR. Stakeholders are very pleased with the quality of the interns, and the program appears well-managed by all units. Internships are typically connected back to on-campus instruction through an internship course. A potential opportunity that has not yet been exploited is to develop an internship program in partnership with Cooperative Extension

to provide students exposure to Extension and provide county offices additional manpower to support educational programming.

### Family and Consumer Sciences

Family and Consumer Sciences (FCS) was reviewed in 2003 for a Cooperative State Research, Education, and Extension Service (CSREES) study. Since that time, recommendations from the CSREES Review have been largely addressed and curricula has been revised to respond to increasing enrollments and continually improve the academic experience of their students. In order to manage continually increasing enrollments, the department has streamlined curricula, reducing the total number of courses by consolidating subject areas, offering web-based distance courses, and adding sections in the summer session of the most popular courses. About 130 courses are taught each year through FCS, serving Apparel Product Design and Merchandising (APDM) and Family Resources (FAMR) majors as well as non-majors from business, nursing, education, speech, etc. Of CTAHR's 567 undergraduate students (2005 headcount enrollment), some 55% (309) are taught in FCS courses. Temporary faculty teach 45-60% of the department's courses.

#### *Apparel, Product Design, and Merchandising*

The APDM curriculum is comprehensive and is consistent with the core competencies identified by the International Textile and Apparel Association, the discipline's international professional organization. The assessment processes utilized in the program are quite thorough with evaluations of both print type work and an oral presentation. Results showed marked improvement over the past five years in critical areas such as textile and apparel quality evaluation, analysis of aesthetic components, understanding of the impact of dress on human behavior, and synthesis of relevant information.

#### *Family Resources*

There are several positive features of the FAMR curriculum, including well thought out educational objectives and learning outcomes assessments, an in-depth treatment of multicultural issues throughout the program, a high-quality internship program required for all majors, high quality instruction (as evidenced by teaching awards, student evaluations, and learning objectives), and a strong offering of GER courses. One area that the department may wish to examine is Family Resource Management. A relatively large number of courses are taught in this area with only a small number of tenure track faculty. While this area has been eliminated or reduced significantly from many human development departments, it is an important topic given current mortgage and credit care crises. Perhaps teaching loads could be reduced by farming this instruction out to another college (e.g., business) as it has at several other institutions.

Faculty in FAMR have envisioned the development of a Master's program and see this program as an important strategy for increasing the research scholarship of the department. While this is a laudable goal, it is unlikely to be achieved without an infusion of faculty resources or a re-balancing of the priorities of the department. Since the former scenario is unlikely to occur, it is imperative that the introduction of a Master's program be accompanied by a reprioritization of unit-level goals, including the possibility of limiting the enrollment of undergraduate students.

Adding Master's students to the demands on an already stretched faculty is unlikely to lead to quality graduate education or research productivity. If a Master's program is added, it should be focused and strategic and guided by a well thought out business plan that includes a needs' assessment and a realistic assessment of enrollment potential.

### Human Nutrition, Food and Animal Sciences

HNFAS offers two undergraduate programs: Food Science and Human Nutrition and Animal Sciences. The department also offers a Master of Science with three specializations: Animal Sciences, Food Science and Nutritional Sciences, and a PhD in Nutrition. HNFAS has engaged in significant curriculum review since the unit's formation eight years ago. For all undergraduate programs, several curriculum changes have occurred and key course content has been upgraded, while redundant courses removed. In addition, the Animal Science curriculum is being reviewed and revised to meet student and industry needs and provide more flexibility to students. For example, several courses and an aquaculture certificate program are being proposed to serve the state's growing aquaculture industry. Eight courses have been added in recent years to expand the breadth and depth of the program, but it was not evident how many courses have been removed. Like most units in CTAHR, the faculty must guard against course proliferation.

Of particular note is the undergraduate dietetics program, the only such program in Hawaii and the Pacific Basin. This program was accredited by the American Dietetic Association (ADA) in July, 2001. Program strengths include the faculty's high standard of excellence; active, ongoing involvement of the faculty in placing students in practicums, internships and jobs; and open and effective communication between/among faculty and students. According to the self-study, "the (ADA) site visitors commented that the UHM dietetics program is one of the best programs in the nation." This is high praise, as ADA accreditations are rigorous and comprehensive. Serious consideration should be given to adding a rigorous professional internship experience to this program.

The HNFAS faculty have long acknowledged the necessity of a doctoral program to enhance its research capabilities, improve linkages with the Medical School and Cancer Research Center, enhance the utilization of graduate students for teaching, and provide PhDs in nutrition to meet professional needs in the State and Pacific region. In November 2007, the department was granted approval by the Board of Regents to establish a PhD in Nutrition and admit students starting Fall 2008. This program represents a significant step forward for the department and is an excellent example of the type of interdisciplinary program needed in several areas of study across the college. Since the doctoral degree needs to be supported by as many faculty as possible; nutrition sciences represents the best nexus between faculty from these two disciplines. The proposed degree is also connected to Medical School programs which will certainly increase visibility and enrollment. Prior to launching such a plan, a well thought out business plan should be developed, which includes realistic enrollment projections.

## Molecular Biosciences and Bioengineering

### *Bioengineering Program*

The Bioengineering (BE) program (to be renamed the Biological Engineering program in Fall 2008), administered by the Department of Molecular Biosciences and Bioengineering (MBBE), began in 1994 as the Biosystems Engineering program in CTAHR. After reorganization of CTAHR, the program was assumed by MBBE and the name of the program was changed to Bioengineering. Bioengineering is an increasingly popular field and offers tremendous potential for growth. The curriculum places a heavy emphasis on the engineering aspects of bioengineering. Students are trained as engineers, guided by practical product design and development. The BE program is accredited by the Accreditation Board for Engineering and Technology (ABET), and was reaccredited in 2003 for a period extending through 2009.

The BE program has had a high attrition rate throughout much of its history. Recently, curriculum modifications were made to address this issue which the faculty attributed to the late introduction of majors to the concepts of bioengineering. Two introductory courses in bioengineering, BE150 and BE191, have been developed and offered. Initial indications (although the number of years of data is too small to draw any definitive conclusions) are that the introduction of these courses has had a positive influence on student retention.

Students in this program are provided with numerous opportunities to work in multi-disciplinary teams on engineering projects. These projects are designed to address natural resources, environmental, and economical issues unique to Hawaii. Some of the recent topics have included biological treatment of wastes, biological sensor systems, biomass for alternative energy, and bioreactor design for high-valued materials. Polls of recent graduates indicate that the BE program is meeting its stated objective of preparing students for biological related engineering careers.

### *Plant and Environmental Biotechnology Program*

The PEB program is a relatively new program at UH, having been established in 2001. Like several majors in CTAHR, the program was spawned following the college's reorganization, and as a result, the curriculum is fresh and contemporary. The PEB program meets state- and nationwide needs for trained professionals in the field of biotechnology and trains successful candidates for medical school through a rigorous curriculum that involves intensive course work and experiential learning. The program includes required undergraduate research and a senior thesis which is presented orally in a manner similar to a Master's thesis. The presentation is scored by faculty using graduate program criteria.

Overall, the college considers the program "highly successful in every respect, except the number of majors." The department and the college should be very proud of this degree, as it does represent a model of the research-intensive science curriculum that universities across the nation are striving for. One major concern with the curriculum is its scalability. While the College Administration would like to see additional enrollment, the college and department should conduct a thorough assessment of what the program's true capacity is given its faculty-intensive nature.

### *MBBE Graduate Program*

The graduate program in MBBE is an interdisciplinary program that involves faculty from CTAHR, natural sciences, engineering, and biomedical sciences. The program offers both M.S. and Ph.D. degrees which are highly enrolled and very successful. This program is clearly the most successful graduate program in the college and is state-of-the-art in its design and delivery. A key characteristic of the program is the flexibility of its curriculum which allows students to customize their program of study to their individual interests.

### Natural Resources and Environmental Management

NREM offers B.S., M.S., and Ph.D. degrees in Natural Resources and Environmental Management, as well as a Resource Management Certificate. These curricula were developed following the development of the unit during the college's reorganization. As a result, the programs are contemporary and reflect a more modern vision of natural resource and environmental management curricula. The curricula include significant experiences focusing on application, synthesis, and integration of material from various disciplines incorporated into the curricula.

The undergraduate and graduate curricula in NREM are guided by well-articulated goals and objectives focused on specific learning outcomes designed to graduate students who will become responsible and productive professionals and who will have acquired the requisite understanding of environmental sciences necessary for applying these methods in the field. NREM uses various approaches in assessment, including obtaining feedback from both students, faculty and supervisors of student internships the results of which are fed back into the curriculum in multiple ways. Because of the relative infancy of these programs, the department has just begun to graduate students, and hence, insufficient data is available to assess their strengths and weaknesses.

NREM's graduate program curriculum has undergone significant changes in recent years. In Spring 2004 a review committee consisting of faculty and graduate students assessed the M.S. and Ph.D. programs and recommended significant changes. The revised curriculum provides greater flexibility by reducing the number of required courses and increasing the number of electives. Given the large number of topic areas covered in this program, this additional flexibility was likely necessary and appears to be embraced by the faculty and students.

Little information was included in the self-study about the curriculum or enrollment of the Resource Management Certificate. Apparently, NREM is one of two CTAHR departments participating in this program, but the department's contributions are limited. Given the unit's self-described over-commitment to academic programs, the certificate might be an area worthy of serious consideration for disinvestment.

## Plant and Environmental Protection Sciences

PEPS offers a B.S. in Plant and Environmental Protection Sciences, M.S. and Ph.D. degrees in Tropical Plant Pathology, and M.S. and Ph.D. degrees in Entomology. Therefore, the department offers more degrees than any other unit in the college, but currently only has 20 faculty (10 with instructional appointments). In addition, the PEPS B.S. program faces significant enrollment challenges. It appears obvious that PEPS will need to evaluate which degree programs and courses are sustainable both from an enrollment and faculty workload perspective.

The B.S. in Plant and Environmental Protection Sciences was developed following the college reorganization in 2000 and is an innovative departure from traditional plant pathology and entomology programs which have been eliminated at many Land-Grant universities. The program has two significant capstone experiences, including undergraduate research experience and an internship with a state, federal, or a private agency. Clearly, this program is providing excellent preparation for graduate school or work with various agencies involved in plant quarantine and protection. Two issues of concern are enrollment and scalability. Because of the small number of students who have graduated since the inception of the program, the availability of assessment information is minimal. Enrollment has been low (6-8 students), and two or fewer students have graduated from the program in each of the last five years. In addition, one must wonder whether sufficient faculty resources exist if the program were able to scale up to desired levels. One strategy to consider is the development of an interdisciplinary plant science degree with TPPS. Such a program could provide a greater critical mass of students, and allow students to specialize in plant protection in the latter portion of the curriculum.

At the graduate level, PEPS offers M.S. and Ph.D. degrees in both Tropical Plant Pathology and Entomology. Both programs have somewhat traditional curricula and place significant emphasis on developing the research skills of the student, publication of scholarship, and participation in professional meetings. Although both thesis and non-thesis options are available, only the thesis option is being actively employed. Students expressed a concern that an insufficient number of graduate-level courses in entomology or tropical plant pathology were being taught each year. It seems likely that such a situation may prevail because of low program enrollments and a small number of faculty responsible for delivering five degree programs. In any case, the department should develop a multi-year plan for course delivery and clearly communicate it to present and potential graduate students.

## Tropical Plant and Soil Sciences

TPPS offers a BS degree in Tropical Plant and Soil Sciences with specializations in Plant Science and Genetics, Plant Production and Management, and Environmental Soil Sciences. These curricula basically includes three core courses, 4-5 courses unique to the specialization, and 4-5 courses of restricted electives. Little overlap seems to exist among the latter two categories of courses, resulting in the necessity to teach a large number of courses to deliver these three specializations. Since the department only has 3.2 FTE dedicated to instruction, strategies such as every-other-year offerings have been employed to deliver the breadth of courses required in these curricula.



The departmental administration believes that additional enrollment would allow for the opportunity to increase course frequency. Given the difficulty in recruiting students to these areas nationwide, it may not be possible to “grow out of this problem.” The department might want to investigate integrating their curricula to better align the number of course offerings with available instructional resources. Enrollments were not provided by option; however, enrollment trends by option should be evaluated to determine whether all three options are viable long-term. Integrating the curriculum with the B.S. in Plant and Environmental Protection Sciences may also serve as a viable strategy for increasing enrollment and streamlining the curriculum.

Educational objectives and learning outcomes are well stated and appropriate for the undergraduate program offered within TPSS. The self-study reports a lengthy set of summary statistics from this process. One criticism is that the process appears to be largely dependent upon numerical ratings assigned by faculty teaching at various points along the curriculum. More exogenous factors (e.g., alumni surveys, employer surveys) could be integrated into the program’s assessment protocols.

The Agribusiness Certificate program is administered by TPSS; however, there were few specifics on the program included in the self-study. The Agribusiness Certificate does provide a practical option for students interested in working in the agribusiness sector to gain some agribusiness training in combination with a production-oriented degree. Given the closing of the Department of Agricultural and Natural Resource Economics and the distribution of these faculty across the college, the long-term sustainability of this program will be a challenge. CTAHR has few faculty resources dedicated to agribusiness and the curriculum is weak relative to respected programs in this area nationwide.

At the graduate level, TPSS offers both M.S. and Ph.D. degrees with options in Plant Science, Horticulture, and Soil Science. These areas were collapsed into a single degree when the combined department was formed. Integration of crop, soil, and horticulture science into a single degree is a nationwide trend and an appropriate strategy at UH. Enrollments were not provided by option; however, enrollment trends by option should be evaluated to determine whether all three options are viable long-term. TPSS has three M.S. plans of study, and students are enrolled in one of three plans (A, B, or C). Plans A or B are selected by the student after discussion with their major advisor with or without a diagnostic examination, while Plan C has special requirements.

#### **IV. Students (Including Advising)**

Enrollment trends in CTAHR’s undergraduate and graduate programs have shown a steady increase over the seven-year period following the academic reorganization. Total college enrollment has grown 40 percent in this period, relative to an overall growth rate of 10 percent on the Manoa campus. This growth has not been uniformly distributed, with the most significant advances occurring in the human sciences. Nonetheless, some of the agriculture and natural resource programs that were reinvented following the reorganization have shown some early promise in recruiting high quality students. This growth is impressive, particularly given national

trends of stagnant or declining enrollment in most agriculture and natural resource programs.

The College Administration has focused on reducing the number of small enrollment courses taught in the college. According to the College Administration, courses falling below minimum enrollment levels have been reduced to less than 5 percent in recent years. This is an impressive outcome, given the presence of several relatively small enrollment programs in the agricultural sciences.

### Overarching Issues

#### *Recruiting*

CTAHR does not have a comprehensive recruiting plan that clearly links department, college, and university recruiting activities. Several traditional and successful recruiting mechanisms are in places such as recruiting brochures, student ambassadors, high school and community college visits, etc. Nonetheless, most students become aware of CTAHR programs through word-of-mouth. This is a positive outcome in that it speaks well for the quality of the student experience; however, it has limited reach in recruiting various demographic groups. Most importantly, CTAHR should allocate resources to develop a more contemporary web presence. This activity will require resources, but should involve more sophisticated web pages incorporating videos, blogs, etc., as well as the use of tools such as social networking sites. This is critical in recruiting international and mainland students, two priority demographic groups identified by advisors.

#### *Advising*

Academic advising appears to be a strength of CTAHR relative to the remainder of Manoa campus. Advising is supported by the college and departmental administrations. The college was one of the first to embrace the STAR system, and there appears to be a high level of satisfaction with this system from both students and faculty advisors.

CTAHR employs an advising model which relies almost exclusively on faculty resources. Given the small size of the faculty and advising loads of the departments, one might question whether this is the best model for all departments. Alternative advising models should be investigated, particularly in large programs such as APDM and FAMR. One possibility would involve hiring a full-time advisor to advise freshmen and sophomores in FCS, and utilize faculty to advise juniors and seniors.

Another issue raised frequently in the self studies and during site visits was enforcement of mandatory advising. Faculty and administrators cited numerous problems resulting from students failure to schedule advising appointments prior to enrolling for the next semester's courses. It is not clear what the college policy is with respect to mandatory advising; however, given significant issues concerning retention and time-to-degree in several programs, enforcement of such a policy might pay great dividends.

An issue within CTAHR, and certainly at most universities, is whether advising is truly rewarded. The Associate Dean for Academic Programs is developing a policy to credit faculty for undergraduate advising. This response appears to be a formula which will be used to correlate

advising loads to instructional FTE. Such a policy should be of assistance to unit leaders in recognizing advising in promotion decisions and annual reviews. It is recommended that a college-wide criteria to be used in assessing quality of advising should also be defined. Few, if any evaluation instruments appear to be used for providing feedback concerning advising quality. Some form of evaluation instrument, perhaps completed by senior students, could be useful in assessing advising performance and providing feedback for improvement.

### *Course Catalog*

Both undergraduate and graduate students interviewed were critical of the fact that course catalogs and web pages included courses that were no longer active. This practice creates unnecessary confusion among current students and is deceptive to potential students. In both the undergraduate and graduate programs, an extensive course audit should be conducted and courses that are no longer active should be removed from the course catalog.

### *Student Satisfaction*

Undergraduate student satisfaction and morale appear relatively high based upon student interviews and surveys administered during the past several years. Perhaps the most significant issue to address appears to be the infrequency of course offerings in several agricultural science programs, which translates to delays in program completion. Conversely, in the human science programs, the most acute issues are related to overcrowding of courses and difficulty in enrolling in courses due to continual enrollment growth.

Graduate student satisfaction within CTAHR appears to be mixed. Within the cadre of graduate students interviewed during the site visit, there were clear indicators of some serious workplace environment issues and a lack of respect for graduate students within some units. Students seem to feel powerless in enacting change to improve their current situation. There also appears to be a lack of clarity of program requirements and policies and procedures within some units. Units should also clarify (and express in writing) the expectation of the magnitude and duration of funding when making graduate assistantship offers.

### *Time-to-degree*

The time required to complete a degree (both undergraduate and graduate) is a pervasive theme across several undergraduate programs. Evidence of this issue is present in some of the statistics provided in self-studies, as well as in comments provided by students. Several unit administrators and advisors were very dismissive of this issue. While there are several factors surrounding this issue, they cannot be all put off on the students. The faculty and college must assume some responsibility and address those factors which they can control. Some departments have responded proactively to this issue, and it is reflected in their time-to-degree statistics. Some steps that have been successfully employed at UH, and may be applied more universally in CTAHR, include:

- evaluating frequency of course offerings;
- better coordinating courses across departments (instances exist where students are not able to access courses because they are offered at the same time as other required courses, prerequisite courses are not available, etc.);
- better coordinating course offerings across colleges (CTAHR students are sometimes not

- provided ready access to courses in other colleges); and
- offering courses in formats other than the traditional three one-hour lectures per week format.

### *Articulation of Transfer Students*

Considerable issues exist surrounding the articulation of transfer students into CTAHR programs. The college should reach out to community colleges within the state and develop straightforward articulation agreements which will lead to graduation in four years. These 2+2 agreements will provide a more uniform transfer student in terms of their course preparation prior to entering UH. They also serve as a useful means of coordinating course content in critical foundation courses taught at community colleges.

### Family and Consumer Sciences

#### *Apparel, Product Design, and Merchandising*

Enrollment in APDM has increased significantly in recent years, almost doubling over the past decade. Managing this enrollment growth is a significant challenge, and will likely be a continued challenge in the future. The APDM Program has strong student recruitment potential as a result of faculty reputation, media attention, and the popular TV show, Project Runway. Students are equally represented coming from local, mainland, international (largely from Japan, Korea, Taiwan, and Southeast Asia), and non-majors groups. Recruiting activities for the APDM program should target improving the quality of the student body, as opposed to increasing student numbers.

Student and alumni satisfaction with the APDM program is high. Approximately 1,600 students have graduated from the APDM since the mid-1960's. A recent survey of alumni indicated that a majority (62-64%) of graduates, working both in and outside of the field, agreed/strongly agreed with the statement, "I would recommend this program to others." Of current students, 79% would recommend the program to others and 88% feel that faculty expect high performance. Students interviewed felt that resource prioritization was necessary in light of competition for space and time with non-majors. Course scheduling conflicts can result in an inability for majors to enroll in needed courses, delaying graduation. Students also felt that classes were too crowded and that access to computer resources was very limiting.

#### *Family Resources*

Enrollment in FAMR has remained strong over the past decade, ranging from 107 to 152 students. Current enrollment stands at 143 students. Courses in the FAMR program generated approximately 36% to 42% of the student semester hours semester averages in CTAHR for this period. The ratio of student to tenure line faculty is 25.7, a figure that exceeds the UHM average ratio of 16 to 1.

The FAMR program is the most prolific program in CTAHR in terms of producing Bachelors' graduates. From Fall 1992 to Spring 2007, 893 students graduated from the FAMR program. Social and community service workers are one of the fastest growing occupations in Hawaii; therefore, most FAMR graduates are successfully placed. Many of the graduates are now

working in human services agencies or in education, or are pursuing graduate degrees in social work, education, or public health. Stakeholders indicated that several factors are contributing to even greater demand for social service workers in the future.

### Human Nutrition, Food and Animal Sciences

Enrollments in HNFAS undergraduate programs are among the strongest in the agricultural sciences. Since the reorganization, enrollments in both the Animal Science and Food Science and Human Nutrition (FSHN) programs have been relatively flat. Animal Science enrollments have ranged from 42 to 64 over the past eight years and currently stand at 57. FSHN enrollments have ranged from 71 to 103, and 97 students are currently enrolled in the program.

Enrollments in the department's graduate programs have been relatively consistent over the past several years. Animal Science M.S. enrollment has ranged between 15 and 21, a level which is appropriate given the number of faculty. Nutritional Science enrollments are also relatively robust, ranging between 11 and 16, while food science enrollments are somewhat lower (4-7 students). Application numbers for all three programs are a concern; however, a relatively high number of students applying are admitted and enter the program. Student quality (as measured by GRE scores and GPAs) is good (but not outstanding).

### Molecular Biosciences and Biosystems Engineering

#### *Bioengineering Program*

Enrollment in the BE program has increased every semester since Spring 2003, from 17 students to about 50 at present. However, since its inception in 1999 the program has only graduated 25 students (15 in the last seven years). Recent enrollment growth is impressive, and with 50 majors, the program should now graduate an increased number of majors, provided the retention rate of the program remains strong. The program appears to be attracting high caliber students. Majors have higher GPAs than in the past, and majors have significantly higher SAT scores than those of the average UH Manoa students. Students interviewed during the site visit were bright, articulate and well motivated.

Attrition has historically been a significant problem facing the BE program, leading to the low number of graduates mentioned above. Attrition rates have been reduced recently and should be monitored closely. Academic advising is conducted by one faculty member, with the justification that this approach ensures consistency and quality. With enrollments rising to 50 students, and hopefully more, this decision needs to be reevaluated. Of those who do graduate, 92% continue in the discipline, either in graduate school or as professional engineers.

In recruiting students to the BE program, recruiters and faculty should better define the content and emphases of the program. Some students interviewed felt that the program would allow them to prepare for a career in biomedical engineering. These students were still very pleased with the program, despite this misalignment of the program's direction and their initial interest.

### *Plant and Environmental Biotechnology Program*

Enrollment in the PEB program currently stands at 18. Students entering the program are ranked at approximately the average of their peers entering UH in terms of GPA and SAT scores. Students' overall satisfaction with the program is high, and students overwhelmingly felt that the hands-on research experience was the highlight of their educational experience. Given student satisfaction and the research-intensive experience, it is surprising that student enrollment and student quality has not increased at a more rapid rate. Excellent students typically hear about these types of programs through word of mouth and seek them out. Students indicated that the name of the program, "Plant and Environmental Biotechnology" is too limiting and does not communicate the breadth of the program. A more appropriate name might be "Biotechnology." Also, the program would benefit significantly from the development and implementation of a recruiting plan aimed at attracting high quality science students from the UH student body, as well as from high schools with a reputation for producing science-oriented graduates.

Students graduating from the program are very employable; however, a majority of the graduates continue their education, with several going on to medical school or doctoral programs. These placements are a great testimony to the quality of the program. The College Administration envisioned this program as one which would supply the state's plant breeding and genetics industry with well-trained technical staff. There is some concern that the students are not entering this industry; however, this outcome may simply be the market at work, and the students are pursuing potentially more lucrative and rewarding careers.

### *MBBE Graduate Program*

Student enrollment in the M.S. and Ph.D. programs in MBBE is extremely strong. The MBBE graduate program has grown from an enrollment of 11 students in 2000 to its current enrollment of 61 students. Students entering the program are high quality and motivated, and the program is clearly competitive with several outstanding programs across the country. Most impressive is the graduate student composition which is comprised of many international students and nearly one-half female students.

### Natural Resources and Environmental Management

Enrollments in NREM's undergraduate and graduate programs have grown at impressive rates over the short time of the program's existence. A total of 56 M.S. students were enrolled in NREM programs, with a retention rate of 88 percent and a graduation rate of 73 percent. This enrollment growth has occurred in spite of national trends of reduced enrollment in natural resource and environmental programs.

Since NREM has only enrolled students (since reorganization) for a relatively short time, the department has only begun to graduate students. Although it is difficult to assess the quality of the program based upon this small sample of graduates, there is some positive feedback indicating that educational objectives are being met. Recent graduates have found employment opportunities in environmental organizations including consulting companies, nonprofit groups, research universities and government agencies. Their employability is an indicator of the quality of NREM's graduate program.

## Plant and Environmental Protection Sciences

PEPS faces significant enrollment challenges in several of its programs. Of greatest concern is the B.S. program which has a current enrollment of eight students and has graduated two or fewer students in each of the last five years. Fortunately, due to the popularity of several courses with students outside the major, most undergraduate courses exceed UH minimum enrollments. The issue of recruiting undergraduate students to plant pathology and entomology programs is not unique to UH, and many undergraduate programs at much larger agricultural schools have been eliminated across the U.S. The self study indicates that the PEPS faculty view the major as “a boutique major, remaining at small size .... but offering a personalized academic experience.” One must question whether CTAHR has the resource base to sustain “boutique” majors.

Given faculty resources, graduate enrollments in PEPS are relatively robust. Both the entomology and plant pathology faculty are making solid contributions to the university’s graduate mission. Time to degree and completion rates are appropriate for both programs. The faculty are to be particularly commended for their investment in doctoral education. Competition for doctoral students in these fields is acute, and the current doctoral enrollment of 18 is commendable, given the size of the faculty.

## Tropical Plant and Soil Sciences

Enrollment in TPSS academic programs are higher than several other agricultural programs in the college, but still lack critical mass to deliver a full array of courses each year. During the 2005-2006 academic year, there were 40 declared undergraduate majors in TPSS, spread across three options. The most popular option is Production Management, although faculty are interested in increasing the enrollment in the Science and Genetics to prepare students for graduate work. There have been several unsuccessful efforts nationwide to increase enrollments in agronomy, horticulture, and crop sciences departments by emphasizing biotechnology and genetics. Needed enrollment gains may be more likely in the Production Management option.

Undergraduates in TPSS are enthusiastic about agriculture and feel they are well prepared to enter their chosen careers. However, a problem with time-to-degree has existed within the department, largely due to the frequency with which some required courses are taught. Some required courses are only taught once every two years, and if a student misses a cycle early in his/her program, graduation is likely delayed. This time-to-degree issue likely explains the fact that only three students from a total enrollment of 40 students graduated in Spring 2006. In response, the department designed a sequence that, if cycled into as soon as a student enters the program, will ensure graduation in four years. This is a positive response, although some issues still remain in effectively executing this strategy. The department should better coordinate with other departments in the college to prevent scheduling conflicts between required courses. Mandatory advising should be enforced, and the advising load should be spread over a greater number of faculty to engage more faculty in the undergraduate program.

Many of the general recruiting strategies for CTAHR's undergraduate program discussed above would also apply to TPSS. One possibility would be to provide a general interest lower-division course that fulfills a General Education requirement to aid in publicizing what TPSS does, and to aid in recruitment of new students. The department should also evaluate ways to better accommodate transfer students and late declaring majors into their program. Also, the departmental website should be revised and regularly updated to communicate the exciting opportunities within the department to prospective students.

The TPSS graduate program has 35 students enrolled (17 PhDs, 14 masters, 4 undecided), and three PhDs and four master's degrees were conferred during the past year. Enrollment trends over recent years have been constant for the doctoral program and slightly increasing for the M.S. program. The graduate student:faculty ratio of 1.75 (i.e., 35/20) is very respectable for a unit of this type and given the resource challenges the unit has faced in recent years.

## **V. Research**

Research contributions within the college are highly diverse, both within and across units. Much of the research conducted by CTAHR faculty is relatively applied and focused on addressing problems facing the state's agricultural and natural resource industries. This orientation is appropriate, given the college's Land-Grant mission and the high dependence of these industries on the college for research-based solutions to emerging issues.

The college has 98 faculty with research appointments, totaling about 53 FTE. These research faculty are not only located on the Manoa campus, but also on experiment stations on neighboring islands. A frustration expressed by stakeholders was the elimination of several research faculty positions on outlying experiment stations. Although not politically popular, restructuring the staffing of these experiment stations and having a smaller percentage of faculty located at these facilities is absolutely the correct decision by the college's administration.

The level of state support provided for agricultural and natural resource focused research through the Agricultural Experiment Station is one of the great challenges facing CTAHR. Federal formula funding allocated through the Hatch and McIntyre-Stennis programs are also quite limited relative to peer institutions.

Overall, the college has been highly successful in expanding its research portfolio over the last decades, including extramural funding. Extramural funding has increased from approximately \$7.5 million in 1998 to nearly \$24 million in 2007. This is an impressive trend and the faculty should be commended for these efforts. One note of caution is that a large portion of this expansion has emanated from the Center on the Family and the USAID CRSP project administered within TPSS. From the review of grant activity, it appears that a small number of units and faculty are competing at the national level in competitive grant programs sponsored by agencies within USDA, DOE, NIH, and NSF.

Another significant issue looming on the horizon is that several units and faculty are highly dependent on federal earmarks (USDA Special Research Grants) to fund their research activities.



Given the precarious nature of earmark funding, this issue must be addressed aggressively and in a proactive manner. In federal FY-07 earmarks for agricultural research were temporarily eliminated, resulting in a loss of more than \$6 million of annual funding within CTAHR. UH was more adversely affected by the loss of USDA Special Grant funding than any other Land-Grant institution, which demonstrates its heavy reliance on this source of funding. The college needs to develop a plan for replacing this source of funding. This objective will be difficult to attain, as USDA Special Research Grants have been used to compensate for relatively low state appropriations to address local production agriculture issues. Most competitive federal grants do not provide funding for this type of applied, issue-based research.

Proactive steps need to be taken to diversify the college's extramural funds portfolio. A first step in addressing this issue is through faculty expectations. The procurement of external funds should have a larger weight on annual reviews, tenure, and promotion. Also, changes should be implemented in how grants are counted. In the self-study reports, faculty and units reported a significant amount of internal grants, and several statements were made that implied that these funds were equivalent to external grants and contracts. In most cases, these awards simply involved moving funds from one account to another, but did not bring new funds to the university.

Discussions during the review sessions resulted in a "mixed review" of pre-awards grants administration within CTAHR. Faculty who are experienced in grantsmanship are less critical than those who are inexperienced and don't know "how to work the system." It appears that moving grants through the system is largely based upon personal relationships, and faculty can encounter significant roadblocks if they do not have these relationships. Better training of faculty and departmental staff, developing clear flow charts of administrative processes, and cross training of staff in grants and contracts administration office in CTAHR are suggestions for possibly improving the situation.

Another issue that revealed itself during the on-site visit was the "creative" routing of funds to eliminate dealings with ORS and RCUH. Cases were cited where funds were routed through off-campus entities and Foundation accounts, presumably to expedite processing and/or avoid paying overhead. While such practices may result in short-run gain to the principal investigator, such practices can have long-run negative implications for the college.

## **VI. Extension**

CTAHR has a rich tradition of Extension programming and reaching out to a variety of stakeholders across the islands. Unlike many land-grant universities, the University of Hawaii has not undergone significant restructuring to broaden its Extension mission; thus, most, if not all, of the university's extension programming resides in CTAHR. Quality Extension programs exist in agriculture, natural resource management, and human sciences (family studies and youth). Stakeholders value the contributions of the college in each of these areas and are generally pleased with the quality of programs being delivered.

When compared to its instructional and research staffing, CTAHR's extension commitment is not small. The Associate Dean for Extension cited a faculty of 35 county agents and 27 extension specialists (defined as a faculty member with an Extension appointment of 50 percent or more). Based upon the self-studies, it appears that county faculty and extension specialists have accounted for their pro rata share, or more, of new positions hired in the last seven years. The Dean indicated that Extension accounted for 28 percent of the college's total budget. A unique feature of Hawaii's Extension model is that county governments invest very little into county educator positions.

Several organizational and programmatic improvements may be feasible to better capitalize on this Extension investment. A recommended area of attention is to better connect county extension programs with ongoing research and extension programs on the Manoa campus, and vice versa. An important step in this direction was executed with the appointment of county faculty in the academic departments. Despite this structure, it appears that this critical connectivity can still be improved. Both county faculty and department chairs indicated that the appointment of county faculty in departments has worked well in some units, and poorly in others. Possible suggestions for strengthening this connection are to:

- hold regular meeting of the chairs and county administrators to discuss programming needs and directions;
- form extension/research teams comprised of researchers, specialists, agents, and perhaps external educators around key thrust areas (e.g., alternative crops, strengthening families, etc.); and
- incentivize teamwork to address priority issues by developing an internal grants program for team-based outreach.

A topic raised by several groups during the site visit was the tenure, promotion, and evaluation of county faculty within the academic departments. This issue is certainly perceived to be of significance to county faculty; however, it was largely dismissed as an issue by some administrators and on-campus faculty. This dichotomy is in and of itself an illustration of the problem. In addition, DPCs and TPRCs have expressed frustration that they do not have appropriate means to evaluate county faculty. Clear and uniform performance expectations and criteria need to be developed for county faculty. These criteria need to be rigorous, measurable, and focus on outcome-based programming. They should form the basis for tenure and promotion evaluation and shared with everyone involved in the evaluation (county administrators, chairs, departmental faculty, DPCs, TPRCs, etc.). Of course, such changes have to be implemented in accordance with faculty union policies.

Several stakeholders expressed frustration in trying to access information and the research base of the college, particularly in agricultural programs. While this area of the college was not a focus of this review, it does appear that this may be a valid criticism and needs to be addressed by the college. Both the college and departments are very understaffed in the area of communications, and the college and departmental web resources reflect this limitation. Some possible recommendations to improve this situation are to:

- invest in the web presence of the college, including a content management system;
- allocate departmental resources to feeding the content management system; and

- reallocate existing resources dedicated to more traditional “hard copy” educational materials to web resources.

## **VII. Funding and Facilities**

CTAHR, like many programs at UH, runs on a very lean operating budget. In eras of deep budget cuts, operating expenses and expenditures for support functions are often eliminated because little flexibility exists in reducing salary and benefits. As the budget picture has improved in recent years, it appears that the majority of available funding was appropriately allocated to fill faculty positions. As budget decisions are made into the future, consideration should be given to re-balancing the ratio of expenditures spent on faculty versus support functions and operating expenses.

### *Faculty Support for Instruction*

Faculty support for instruction is lacking, and it appears CTAHR (and perhaps UH, as a whole) is falling behind in the use of mediated instruction and other technologies for on-campus and distance learning. Access to “high technology” classrooms is limited for some programs. Limited bandwidth is an issue in several college facilities. The college’s information technology unit is limited to two people, which is supplemented by limited resources within some departments. The activities of these hard-working staff are mainly limited to core service such as network maintenance, hardware support, etc. GTA support is also limited, but the resources that are available are fairly distributed by the Associate Dean for Academic Programs based upon enrollment trends.

### *Facilities*

As is the case at most universities, space is a critical issue in CTAHR, both in terms of quality and quantity. The college has reasonable facilities in the Agricultural Sciences Building; however, several of the other agricultural facilities are in desperate need of renovation. The Magoon facility and several greenhouse facilities are some of the most critical areas in need of immediate attention.

Facilities for the human sciences are abysmal. FCS has the least square footage of any department in the College. It is spread across Miller Hall and three portable buildings, some of which have the worst termite damage of any building on the UH campus. Labs and classrooms have been relocated to the ground floor, but there is no ADA compliance for students needing to reach the third floor of Miller Hall. Apparently, a new teaching building is being proposed and this facility may provide an excellent opportunity to address this shortcoming.

A major encumbrance in fully integrating several units formed during the reorganization is that the faculty and staff do not share contiguous space. The College Administration sought to resolve this issue in the early phases of the reorganization, but was unsuccessful. As additional space becomes available across the university, this situation should be revisited.

CTAHR also supports twelve outlying experiment stations where agricultural research is conducted. The facilities present some major maintenance challenges to the college, and it is

often difficult to obtain renovation funding for these facilities as they may be characterized as “out of site, out of mind.” It seems likely that some difficult decisions will have to be made about the continuation of some of these facilities.

#### *Marketing and Communication*

CTAHR must do a better job of telling its story! There are many wonderful things going on in the college, but many of these stories are not reaching the general public or even the college’s stakeholders. Additional resources need to be allocated to marketing and communication, and a comprehensive marketing plan should be developed for the college. This issue shows up in many ways, including recruiting limitations, lack of access to extension information, and low visibility within the university community.

#### *Fund Raising and Development*

Given the limited availability of state funding for agriculture and human sciences, a logical source of new funds is private gifts. CTAHR appears to be in a unique position to serve as a significant fund-raising engine within the university. Most agricultural colleges at Land-Grant universities are one of the top fund-raising units within the university. CTAHR has two advantages which should serve to advance its success in procuring private gifts – a highly engaged set of stakeholders and a well-connected and externally visible dean. The UH Foundation should partner with the CTAHR Administration to advance this objective.

### **VIII. Centers/Institutes**

The only center or institute considered in this review is the Center on the Family (COF). The COF is certainly one of CTAHR’s “crown jewels.” The COF’s mission is to enhance interdisciplinary research, service and education to support and strengthen families, especially Hawaii’s multicultural families. Given the demographics of the state and Hawaii’s prominent social issues this is an appropriate direction for the center. The center is a close-knit group of faculty and staff and under the capable leadership of Sylvia Yuen. The leadership and staff should be complemented for their entrepreneurial spirit, as they have turned a very small operating budget (one staff member and \$6,000 of operating funds) into a multi-million dollar research and extension enterprise. The COF has generated over \$11 million of grants and contracts during the review period, many from competitive national sources such as the federal DHHS and DOE.

The COF is highly valued by its stakeholders. Its activities can be generally divided into three categories: (1) data and information, (2) capacity building, and (3) program evaluation and assessment. The Center has identified and expanded a significant niche in collecting, storing, and disseminating data on the State’s children, families, and communities. This function has provided a natural extension into program and evaluation and assessment, which should be a large growth area as agencies and NGO’s seek to address accountability mandates from the government.

It is difficult to provide many substantive recommendations for the improvement of the COF, given the limited time the on-campus visit focused on the unit and the high level of achievement that already exists in the COF. Three areas to consider for moving a very good center to

preeminence follow.

First, the COF should strive to strengthen its linkage with FAMR. This relationship is truly synergistic, as greater involvement with the FAMR program would provide training opportunities for undergraduate and graduate students, as well as strengthen the research capacity of the Center. Research-oriented faculty within FAMR would benefit greatly from the data and organizational relationships of the COF, and they would bring significant research capabilities that are needed to advance the research extended by the Center.

Second, The COF has excelled at their appointed mission despite very austere physical facilities. The Center has grown well beyond initial expectations without any significant allocation of additional space. The Center's staff operate in very tight quarters, with as many as three staff working in a space suited for one person. Additional space is needed if the Center is to continue to grow the size and scope of its operation.

Centers of this type are often personality driven; that is, they can rise and fall as a result of the hiring and departure of a charismatic leader. The COF may fall under this category, as Sylvia Yuen has done a phenomenal job of leading the Center through an extended period of growth and success. Some of the productive partnerships that have been developed with various NGOs and state agencies are the result of close interpersonal relationships between the director and individuals within these agencies. COF requires a succession plan so that when Dr. Yuen chooses to leave UH, its fine work can continue. Clearly, Dr. Yuen is aware of this need and is working to build the leadership abilities of some of the senior staff.

## **IX. General Conclusions and Recommendations**

Overall, the review team came away impressed with the quality of the programs in CTAHR and the effectiveness with which the college delivers on its tripartite mission with a relatively small resource base. The college is coming out of a period of dramatic reorganization and is poised to make significant gains in efficiency and productivity. The next several years will be a critical period in the history of this college and will largely determine its long-term future. Most importantly, an infusion of new faculty will be required to maintain any semblance of the depth and breadth of programming required to serve the stakeholders of the state.

Listed below are some of the major recommendations included in the body of this report. Unit-specific recommendations are included in the final subsection of the "Faculty," "Curriculum," and "Student" sections of the report.

### General

- Identify areas of excellence within the college and within each department, and allocate resources to advance these priorities.
- Continue efforts to allocate resources based upon the detailed implementation plan included in the CTAHR strategic plan.

- As funds become available, continue to infuse new faculty positions into academic departments using the strategic hiring process employed over the past several years.
- Better communicate the mission and successes of the college to university administration and the university community.
- Wherever possible, partner with other colleges of agriculture to increase the breadth and depth of teaching, research, and extension program offered to the citizens of the state.

### Curriculum

- Evaluate low enrollment programs and courses with the objective of balancing teaching demand with the resources allocated to instructional programs.
- Focus more attention on interdisciplinary curriculum development with the objective of strengthening academic programs and capturing efficiencies.
- Develop protocols to better use assessment information to inform curriculum modifications to address learning outcomes.
- Evaluate the long-term sustainability of the Agribusiness and Resource Management Certificate programs.

### Students

- Develop a comprehensive recruiting plan that links department, college, and university recruiting activities.
- Allocate resources to develop a more contemporary web presence to recruit undergraduate and graduate students.
- Continue efforts aimed at reducing the number of small enrollment courses taught in the college.
- Investigate alternative advising models, such as the use of professional advisors, particularly in large enrollment programs such as APDM and FAMR.
- Require and enforce mandatory advising for undergraduate majors within CTAHR.
- Develop a college-wide criteria to be used in assessing quality of advising in the college.
- Conduct an extensive course audit and remove courses that are no longer active from the course catalog.

- Aggressively address the lengthy time-to-degree in several programs by assuring sufficient frequency of courses, better coordinating course scheduling among departments and colleges, and offering courses in non-traditional formats.
- Develop 2+2 articulation agreements with community colleges which will lead to graduation in four years for transfer students.

### Faculty

- Provide appropriate training and mentoring of temporary faculty in high-enrollment programs to assure they understand the program's learning outcomes, course objectives, and how the course fits within the curriculum.
- Re-balance teaching and research expectations in high enrollment programs to advance research scholarship and creative activity.
- Continue recent activities aimed at narrowing the gap between faculty salaries at UH and peer institutions.

### Research

- Increase the number of units and faculty competing at the national level in competitive grant programs sponsored by agencies within USDA, DOE, NIH, and NSF.
- Develop a plan for replacing current USDA Special Research Grant funding which will likely be reduced or eliminated in the not-too-distant future.
- Improve pre-award processing of grants by better training faculty and departmental staff and cross training of staff in grants and contracts administration office in CTAHR.
- Eliminate alternative routing of research grants and contracts to assure that all extramural funds are appropriately managed and credited to the college and units.

### Extension

- Better connect county extension programs with ongoing research and extension programs on the Manoa campus, and vice versa.
- Develop clear and uniform performance expectations and criteria for county faculty which form the basis for tenure and promotion evaluation, and share these criteria with everyone involved in the tenure and promotion evaluation process.
- Improve extension delivery by investing in the web presence of the college, including a content management system; allocating departmental resources to feeding the content management system; and reallocating resources currently dedicated to more traditional "hard

copy” educational materials to web resources.

### Facilities and Funding

- Improve faculty support for instruction, particularly in areas such as mediated instruction and other technologies for on-campus and distance learning.
- As additional space becomes available across the university, continue efforts to relocate faculty and units with objective of locating all departmental faculty in contiguous space.
- Relocate human sciences faculty currently located in Miller Hall and dilapidated temporary buildings and/or renovate existing space in Miller Hall.
- Prioritize production research facilities at twelve outlying experiment stations and develop a plan for addressing deferred maintenance in high priority facilities.
- Take proactive steps to increase and diversify the college’s extramural funds portfolio by providing incentives to faculty for obtaining competitive grants, expanding contract work and increasing resources allocated to obtaining private gifts.
- Allocate additional resources to the marketing and communication area and develop a comprehensive marketing plan for the college.
- Partner with the UH Foundation to hire additional resources to advance private gift raising to support CTAHR programs.