

## **I. Introduction and Overview**

### **1.1. Overview, Mission, and Vision**

The College of Agricultural, Human, and Natural Resources Sciences (CAHNRS) is an essential component of Washington State University, and through efforts of its students, faculty, and staff, is a critical contributor to the economic vitality of Washington State. With its roots in agriculture and human science programs, the College has over a 100-year legacy of embracing the tripartite mission of the land-grant university – teaching, research, and outreach.

CAHNRS is an expansive and diverse college that includes 14 academic departments, four research and extension centers, and several subject matter centers and institutes. Formed in 1982 through the merger of the former College of Agriculture and the College of Home Economics, CAHNRS is the largest and most diverse college at WSU. Its programs range from design-oriented curriculum such as Interior Design to the Institute of Biological Chemistry, arguably the most basic-research focused and scientifically prestigious unit on the Pullman campus. This diversity of perspective and scholarship creates a platform for the College which the most complex of society's problems can be addressed.

Two cornerstone organizational entities within WSU are actively engaged in the research and outreach missions of the College. The Agricultural Research Center (ARC) is administratively located within CAHNRS, but also partners with other colleges across the university to address issues of critical importance to the state's food and agriculture industry. Faculty members associated with the ARC conduct both basic and applied research in multidisciplinary teams using the most sophisticated laboratory and field technologies to accomplish mission-oriented goals. WSU Extension makes major investments in CAHNRS with the objective of translating the College's scientific and problem-solving resources in the agricultural, human, and natural resource sciences for public good.

Recognizing its unique land-grant research and education mission to the people of Washington and the state's expanding involvement in global issues, CAHNRS provides leadership in discovering, accessing, and disseminating knowledge through high quality research, instruction and extension programs that contribute to a safe, abundant food and fiber supply; promote the well-being of individuals, families, and communities; enhance sustainability of agricultural and economic systems; and promote stewardship of natural resources and ecological systems. (See **Exhibits/CAHNRS Strategic Plan** for complete mission and vision statements).

### **1.2 Role within the University – Contributions to the Strategic Plan**

CAHNRS makes major contributions to all four strategic goals of the WSU Strategic Plan.

#### *1. Offer the best undergraduate experience in a research university.*

The College of Agricultural, Human, and Natural Resource Sciences has a tradition of excellence in teaching and advising. The College offers 23 undergraduate majors through the Pullman campus, each of the three regional campuses, as well as through WSU's distance learning programs. Current undergraduate enrollment is 2022 students. Due to a relatively low student to

faculty ratio, an intensive research focus, and extensive connectivity to industry, the College provides undergraduate students with a wide array of transformational learning opportunities including participation in student research and outreach programs, industry sponsored-internships at the local, regional, national and international levels, study abroad programs, and student clubs and organizations.

*2. Nurture a world-class environment for research, scholarship, graduate education, the arts, and engagement.*

Through its research and extension programs, CAHNRS is committed to making major contributions to advancing Washington's food, agriculture, and natural resource industries, as well as making significant contributions to improving society through its human science programs. WSU has a rich history of excellence in food and agricultural programs. In a recent study conducted by Academic Analytics and published in the *Chronicle of Higher Education*, five of the eight WSU programs rated in the top-10 nationally are housed in CAHNRS including the general area of plant sciences, which was ranked second nationally. These results agree with results from similar previous studies ranking agricultural programs across the nation. CAHNRS faculty make significant contributions to the development of intellectual property and procurement of extramural funds, leading the university in both of these categories each year (WSU Office of Grant and Research Development, WSU Research Foundation data)

CAHNRS offers 4 masters of arts, 13 masters of science, and 13 doctor of philosophy degrees. Current graduate enrollment is 445 students, divided equally between Master's and doctoral programs. Based on enrollment averages over the last 4 years, approximately 13% of doctoral students enrolled at WSU are in CAHNRS programs. Consistent with the University's objectives, CAHNRS intends to advance its graduate programs by building upon the positive elements and strength of expertise of its current programs and developing programs that provide a contemporary academic experience, particularly those involving interdisciplinary training, that are in high demand by prospective students. Specific graduate program goals can be found in **Exhibits/CAHNRS Benchmark**.

*3. Create an environment of trust and respect in all we do.*

The breadth of the College of Agricultural, Human, and Natural Resource Sciences contributes to a diverse environment in a variety of dimensions – e.g., academic discipline, gender, ethnicity, and geographical location. Goals and progress toward achieving ethnic and gender diversity benchmarks can be found in **Exhibits/CAHNRS Benchmark Measurement**. The College strives to promote this diversity through strategic hiring and recruitment efforts to enrich the academic and work experience of its students, faculty, and staff. A host of communication activities are in place to assure that input is collected and decisions are made in the most transparent manner possible. Regular communication methods to faculty and staff include bi-weekly newsletters to faculty and staff, open forums, a Dean's blog, and CAHNRS Update (a quarterly web broadcast). In addition, every faculty and AP staff person employed by CAHNRS is required to establish and monitor diversity goals and commitment to creating an environment of respect and regard during the annual review process. This environment of openness and

respect not only exists internally, but extends to our principal stakeholders in the private and public sectors.

*4. Develop a culture of shared commitment to quality in all of our activities.*

CAHNRS is committed to continuous improvement of its students, faculty, staff, and programs. Several of the College's programs have national standing and are indicative of our long-term commitment to quality and improvement. Strategic planning and resource allocation decisions are made with a commitment to quality, excellence and accountability. Effective and efficient collaboration occurs both within the University, as well as with external partners (state and federal agencies, business and industry, and educational partners).

## **II. Where the College is Heading**

### **2.1. Strengths and Opportunities.**

CAHNRS has historically been a university leader in research productivity, and much of the University's outreach and economic development activities have emanated from the College. CAHNRS's strategic intent is to continue to promote excellence in the College's research and outreach leadership role within the university, while expanding its reputation globally in key programmatic areas.

As noted above, WSU has long-standing strength in research and extension programs supporting plant and animal aspects of agriculture. The College takes its role of the research and development arm of Washington's highly complex and diverse food and agriculture sector very seriously, and we expect continue to be regional and national leaders in these arenas. Research and extension activities in genetics, management, physiology, and agricultural systems have all contributed to advances in the productivity and sustainability of this industry. State and federal budget reduction have hindered the ability of the College and WSU-Extension to serve its traditional stakeholders through applied research and outreach activities at optimal levels. Recent and projected investments have focused on enhancing our ability to serve these industries at acceptable levels to sustain viability and promote growth.

WSU's new president, Dr. Elson S. Floyd, has identified agriculture as the highest priority program to advance in coming years. As the Land Grant University in Washington State, it is our responsibility to be world leaders in agricultural, human and nature resource sciences. To accomplish our goals, the College has invested in developing significant research and education partnerships with industry and government agencies. These commitments should translate to significant new resources and opportunities to expand our research and outreach efforts, which in turn will enhance the impact of our results on society. In recent years, the College and its units have focused on maintaining its strength in many of the traditional areas of agricultural production while broadening its focus to include important emerging areas (e.g., organic production, viticulture and enology, biofuels, bioinformatics, etc.).

Natural resource and environmental studies are receiving considerable attention across the university due to the enhanced visibility of environmental issues across the state, nation, and the

world (e.g., global warming, sustainability, water availability). Much of the university's resource base in the areas of natural resource and environmental studies lies within CAHNRS. The College is positioned to make significant contributions in these areas, with particular focus on sustainability, water management, biofuels and bioproducts, and human dimensions of natural resource and environmental issues.

Outreach and engagement, with the ultimate goal of contributing to the economic development of the state, has been a recently identified by the university as a high priority focus area. CAHNRS serves as a university leader in these arenas, with its outreach programs dedicated to assuring that research in the agricultural, human, and natural resource sciences is extended to the citizens of the state. The importance of the agricultural and natural resource industries to the state's economy and the quality of life of its citizenry contributes to the significance and visibility of these programs. The College's four research and extension centers distributed across the state serve as critical outreach resources that serve as bridges between the Pullman campus and these communities. These centers serve as outstanding research and extension partners from a information dissemination and generation perspective, and are highly supportive of translating research results to the citizens of the state.

CAHNRS is in position to make significant contributions in its core strength of food and agriculture education, through the recently developed Agricultural and Food Systems (AFS) degree program. In response to a well established worldwide trend in declining enrollments in traditional, disciplinary-focused degree programs (e.g., crop science, agribusiness, agricultural education, etc.) the College made significant curriculum changes, replacing these antiquated programs with interdisciplinary programs aimed at training students in a broader, systems context. The program is designed to access synergies among faculty with complimentary expertise to provide students with a broad-based perspective of the highly complex issues surrounding agriculture and food production. Students are exposed to a diverse array of scientific and social issues that influence the production and marketing of food, fiber and feed crops. The new AFS degree is unique among land-grant universities, and its Organic Agricultural Systems major was the first organic major in the nation. Organic food production is the most rapidly expanding area of interest in agriculture production, and this program is designed to expose students to the factors that influence the success of these systems. Similarly, the recently developed interdisciplinary-based Viticulture and Enology major positions WSU as a national leader in training undergraduates in grape and wine production.

Graduate education, particularly in the food and agricultural sciences, represents a historical strength of the College. Graduate curriculum changes are focusing on the replacement of smaller, disciplinary-focused degrees with interdisciplinary degrees. A successful interdisciplinary training program that was developed in 2004 is the doctorate in Molecular Plant Sciences, which attracts students from several different plant science-related disciplines including Crop Science, Horticulture, Plant Physiology, Molecular Genetics and Plant Biochemistry. A similar degree will likely be developed in applied plant sciences, and a current faculty-led initiative involves developing a program intended to establish WSU as a global leader in doctoral training of students interested in careers in plant breeding and genetics. The M.S. in

Agriculture, a distance learning degree program targeted to professionals in the food and agriculture sector, currently is being redesigned to develop a solid core of content rich courses to serve as a base for the program and to enroll faculty from a broader array of CAHNRS disciplines to develop course work and to serve as academic advisors. The goal is to develop a robust yet flexible distance degree program design to meet the needs of a broader range of place bound, time bound professionals who are interested in graduate training.

Graduate programs in the human sciences have traditionally been relatively small, as the majority of these units have focused resources on servicing large undergraduate degree programs. The lone exception is the School of Economic Sciences (SES) which, in addition to having a large undergraduate program, also has grown to become one of the largest doctoral degree programs at WSU. Since its creation in 2004, SES has quickly become a leader in the College in developing balanced, robust undergraduate and graduate training programs. Increased emphasis has recently been placed on expanding the research and graduate program activities of other units with large undergraduate degree programs including Human Development, Interior Design, and Apparels, Merchandising, Design and Textiles. Strategic planning activities for managing enrollment while improving the quality of these undergraduate programs are underway to create more time for faculty to build stronger research programs. Increased grant acquisition support will increase graduate student numbers in these programs to critical mass. The College's strategic intent is to build M.S. programs in the human sciences to sustainable, efficient enrollment levels that provide stimulating education communities that facilitate learning.

Through the College's recent strategic planning activities, four programmatic themes were identified, which will encompass future research and outreach endeavors of the college: (1) agricultural production and post-harvest systems, (2) food system plant and animal biotechnology, (3) natural resource and environmental sustainability, and (4) human sciences and design (See **Exhibits/CAHNRS Strategic Plan**). Employing similar criteria used to identify university areas of preeminence, the following areas of preeminence were identified within the college: (1) basic plant sciences and genomics, (2) horticultural production and processing systems, (3) dryland production systems, and (4) sustainable and organic agriculture. These programs represent core strengths of the College – a foundation that must remain strong if we are to successfully build new capacity and achieve higher levels of excellence in agricultural, human, and natural resource sciences. Other areas identified as emerging or desired areas of preeminence include: (1) biofuels and bioproducts, (2) early childhood and youth development, (3) water resource management and policy, (4) health, obesity, and food safety policy and economics, and (5) food technology focused on health and nutrition. The College's areas of preeminence and emerging areas have a close correspondence with the six areas identified at the university-level. (See **Exhibits/Areas of Preeminence Mapping**)

## **2.2. Major Issues Impacting Effectiveness and How College is Addressing These Issues**

Major issues facing the College can be categorized into three areas: (1) infrastructure to support interdisciplinary and distance delivery programs, (2) facilities, (3) funding, and (4) resource allocation. Details of these issues and how the college is addressing these issues can be found in the CAHNRS Strategic Plan. (See **Exhibits/CAHNRS Strategic Plan**)

*Infrastructure.* The future success of the College depends upon the development of effective support and acknowledgment strategies for interdisciplinary programs, and to create reliable, flexible venues for delivering high quality courses through various distance delivery methods. To gain efficiency and access synergy among personnel with complimentary expertise, CAHNRS will continue to invest in and develop premiere interdisciplinary undergraduate and graduate programs designed to attract high quality students and to graduate the next generation of leaders in agricultural, human and natural resource sciences. Support and acknowledgment strategies must be developed for these programs to ensure success. CAHNRS has provided a director and a support person for the MPS program, which has greatly enhanced program efficiency and impact. That level of coordination is essential if these interdisciplinary programs are to be successful. A director was hired in 2006 for the AFS program, and a program director was identified for AFS and the MS in Agriculture programs in fall 2007. CAHNRS intends to invest in a director for the MS in Agriculture in 2008 to promote the success of this program.

A major challenge facing the expansion of academic program in CAHNRS involves difficulties associated with delivering high quality distance courses among campuses, research and extension centers, and learning centers. Approximately 20 percent of CAHNRS agricultural faculty (and over half in three departments) are not housed at the Pullman campus, and distance delivery methods are required for them to deliver course to campus and for off-station graduate to participate in course work. CAHNRS is committed to working with university personnel to develop a flexible distance education system that allows the delivery of synchronous and asynchronous courses among campuses and centers as needed to expand access of CAHNRS courses to students and instructors. Issues surrounding band-width capacities at research and extension centers, as well as access to equipment and facilities required to deliver and receive these courses in all venues, must be addressed.

*Facilities.* CAHNRS is responsible for developing and maintaining several facilities located across the state, including four research and extension centers, three research field stations, and agricultural research facilities in Pullman. The continual improvement of these facilities to enable world-class research, creative activities, and instruction is a significant challenge. Of particular concern are the four research and extension centers, which are all over 60 years old and have considerable deferred maintenance of infrastructure. While the majority of these challenges concern off-campus agriculture facilities, significant facility challenges exist on campus, as well. The College's highest priority facility is identifying a permanent home for the Departments of Interior Design and Apparels, Merchandising, Design, and Textiles. Current teaching and research facilities utilized by these programs do not meet acceptable standards, which has hampered our ability to attract high quality students and faculty into these programs. The availability of laboratory space to house the College's growing faculty in the basic plant and animal sciences also represents a significant limitation to expanding research and teaching efforts in these areas.

*Funding.* Like all units, CAHNRS faces significant challenges in securing sufficient funds to effectively operate its programs. The College has historically employed a variety of sources to

fund its teaching, research, and outreach activities. Over the past two decades, traditional "hard dollar" support from both federal and state sources has declined precipitously. The College is aggressively seeking new support through directed initiatives focused on issues of priority to state and federal agencies. One example is a successful partnership with the state's agricultural industry which brought \$8 million of new state funding to the College for agriculture and biofuels research in the 2007 biennial budget. The College's future success will be significantly influenced by its ability to diversify its revenue stream. An increasing share of the college's research expenditures must come from "soft funds," including extramural grants, gifts, service fees, and revenue earned from the sale or licensing of intellectual property. Over the past two years, the college has more than doubled its development staff with the objective of increasing private grants and gifts. The College's fund raising goal of \$120 million for the university's recently announced development campaign is the highest of any academic unit. Additional resources are being allocated to increase extramural funding and foster commercialization of intellectual property.

*Resource Allocation.* Due to a series of budget recessions, the allocation of the CAHNRS budget has gravitated toward salary and benefits, leaving few funds available for operating expenditures. The College has been working to re-balance the distribution of its budget between salaries/benefits and operating funds.

### **2.3. How Strategic Goals Have Influenced Budget Allocations, Hiring, and Program Decisions**

Over the past three years, the College has implemented several changes to assure the successful implementation of strategic priorities. Again, specific discussion of these current and future changes can be found in the CAHNRS Strategic Plan. (See **Exhibits/CAHNRS Strategic Plan**).

*Organizational Structure.* CAHNRS offers a wide array of academic programs and serves a variety of external stakeholders. The principal challenge facing the College is to pare down the number of academic programs and administrative units to enable investment in traditionally strong areas of excellence, as well as emerging areas. Recent organizational changes have included the formation of the School of Economic Sciences, relocation of the dietetics faculty to the Division of Health Sciences, and formation of the bi-state School of Food Science.

The School of Economic Sciences was formed four years ago through the merger of the former Department of Economics (College of Business) and the Department of Agricultural and Resource Economics (CAHNRS). This merger has consolidated all of the resources at WSU in a single unit located in one college (CAHNRS). The merger has provided the opportunity to amass a critical mass of faculty to developed defined areas of excellence within economics.

Considerable academic and fiscal efficiencies have also resulted from the merger. Similarly, the relocation of dietetics faculty previously located in the Department of Food Science and Human Nutrition has allowed for all dietetics faculty and programs at WSU to be integrated into a single unit. The bi-state School of Food Science is a novel concept involving the merger of Food Science units from WSU and the University of Idaho. This structure allows us to take advantage

of the unique feature of having two land-grant institutions within six miles of one another. We believe this is the first attempt to develop a single academic unit that spans across two states.

Currently, three additional reorganization opportunities are under discussion, including the formation of a School of Biological and Chemical Engineering through a merger of Biosystems Engineering and Chemical and Environmental Engineering, a School of the Environment involving the merger of at least two units from CAHNRS and one unit from the College of Sciences, and a School of Design involving various units across three colleges. Additional organizational scenarios will be continually sought and evaluated.

*Hiring.* Hiring processes have been modified to assure allocation to college-level priorities. Prior to 2006, all positions that came open due to retirement or resignations remained in the academic unit. In 2006, this policy was changed and all positions were returned to the College. Positions to be filled are identified as a result of an annual hiring plan developed by the College Administration in collaboration with unit leaders. Criteria by which positions are identified for hiring include contribution to departmental/CAHNRS benchmarks; focus on strategic areas of excellence within the department, college, and/or university; contribution to undergraduate and graduate programs; potential to generate extramural funds; and future contributions to interdisciplinary initiatives across the college and university. This policy has allowed us to redirect resources to strategic priorities and high enrollment areas.

*Budget Allocations.* Recent budget decisions have focused on the development of internal competitive grant pools to direct funds to high priorities and catalyze the development of interdisciplinary teams. In 2007, \$1 million was allocated for this purpose. An additional competitive pool of \$300,000 was allocated to foster extension activities. Academic program resources have also been redirected to fund interdisciplinary programs described above.

### **III. Assessment**

#### **3.1. College Benchmarks**

The College of Agricultural, Human, and Natural Resource Sciences maintains an active and aggressive set of benchmarks that provide quantitative assessment of progress toward objectives in seven general areas: undergraduate and graduate programs, external funding, research scholarship, outreach and technology transfer, constituency and public support, international activities, and diversity. Thirteen benchmarks were developed:

1. Number of (a) certified undergraduate majors enrolled in the agricultural and natural resource sciences, and (b) high-achieving undergraduates in the College of Agricultural, Human, and Natural Resource Sciences (CAHNRS).
2. Number of student credit hours from service courses for non-majors.
3. Undergraduates and high-school student participation in programs of research/scholarship.

4. Number of graduate students enrolled in CAHNRS degree programs and/or supported on extramural grants.
5. Ratio of doctoral:masters graduate students enrolled in CAHNRS degree programs.
6. Federal and other extramural funds for sponsored research and other scholarship.
7. Constituency and public support for research and extension.
8. Foster inquiry, learning, and the application of research through outreach and technology transfer.
9. Interdisciplinary and multidisciplinary research and scholarship.
10. International projects and collaborations.
11. Scholarly publications and juried designs.
12. Diversity of faculty, staff, and students.
13. Gift and endowment funding.

The benchmarks are multidimensional in that several quantitative measures are incorporated to assess progress in each of these areas. In total, 27 different metrics are estimated and updated annually. The benchmarks are multidimensional in that several quantitative measures are incorporated to assess progress in each of these areas. A total of 27 different metrics are updated annually and compared to annual and five-year goals. See **Exhibits/CAHNRS Benchmark** for a comprehensive outline of each benchmarks definition, target levels, and measurement detail.

Current CAHNRS benchmarks were developed in 2005. Annual progress toward meeting five- and 10-year goals are provided in graphical form in **Exhibits/CAHNRS Benchmark Measurement**.

### **3.2. College Assessment of Student Learning Outcomes.**

In 2004, an assessment committee was established by CAHNRS to gain college wide compliance on assessment procedures. This committee partnered with the Center for Teaching, Learning and Technology (CTLT) and the Office of Undergraduate education to develop a student evaluation and outcome assessment strategy for the College. Each department within CAHNRS asked to develop an assessment plan that addressed each of the following questions: 1) What are the departmental learning outcomes and how do you plan to assess them?; 2) What were the results of the assessment?; 3) What changes or adjustments to teaching and learning were made as a result of the assessment results? 4) What adjustments are planned for the assessment process as a result of the assessment results? Departmental reports were submitted annually for the two years, and many of the outcome assessment protocols listed in the Academic Unit Self-Study reports resulted from these efforts. A description of the process, the result generated from these efforts and future intentions for assessment are described below.

#### **Student Evaluations**

A CAHNRS committee working in collaboration with CTLT developed an innovative student evaluation instrument based upon Chickering and Gamson's widely accepted and fully researched based principles of good practice:

<http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/7princip.htm>

The instrument has been extensively reviewed by CAHNRS and other WSU faculty. In addition, factor analyses have been conducted on the instrument and ongoing monitoring and validation is being conducted by CTLT in collaboration with leadership in CAHNRS. The instrument focuses on four sub-constructs—student profile (who are the students), learning environment (teaching fundamentals or course design), critical engagement (how well learning is facilitated by the faculty member), and skills development (fostering extensible learning.)

In addition, the CAHNRS evaluation has been delivered online, affording the college to conduct student evaluations in a more efficient manner. In Fall 2007, 437 sections and 10,582 student evaluations were delivered with a response rate at an acceptable 50.35%. Though the transition to the online distribution has not been without challenges, CAHNRS has done much to advance the field, tracking and assessing the impact of response rates on evaluations and publishing the results in international journals, contributing the scholarship of teaching and learning <http://innovateonline.info/index.php?view=article&id=301>.

The fall 2008 iteration will introduce matrix survey designs. The system will afford the college the opportunity to deliver a set of validated questions and then programs and individual faculty will be able to develop and select additional questions focused on disciplinary issues and individual teaching innovations as illustrated below:

### **Student Learning Outcomes**

CAHNRS has been a leader in developing and implementing systematic outcomes assessment, most notably in Food Science; Crop & Soil Sciences; Community Rural Sociology; Apparel Merchandizing, Design and Textiles; and Interior Design. More than bringing faculty together to develop a shared set of outcomes, these programs have all, with various degrees of success, implemented the assessment and made subsequent modifications. The model that these programs have adopted is roughly outlined below. Participating faculty working at the program level have:

1. Identified one or two key activities in which students in the program engage. Students' **artifacts**—posters, papers, speeches—are **formally observed**. At least two or more observers assess the activity. The focus, consistent with Ewell's recommendation, is on the objectifiable or concrete evidence students provide rather than on abstraction goals.
2. Collaborated within departments as well as with assessment experts who work with faculty to validate the assessment instrument and process.
3. Closed the loop by both modifying the assessment process to align assignments with criteria as well as begin to identify the various learning opportunities and pedagogies that evince desirable outcomes.
4. Repeated and sustained the process. Programs in CAHNRS are moving forward, however haltingly. They have recognized that outcomes assessment is not an event, but a process for improving teaching and learning.

Finally, evidence of the efficacy of this process is the endorsement by accreditors in the case of WSU & University of Idaho's joint program in which the IFT and USDA reported great

enthusiasm, identifying the approach as “a model” for other programs. Further, faculty in Crops and Soil Sciences in collaboration with CTLT have published the methods and results in the NACTA Journal.

### **Future Plans**

The CAHNRS planned approach is to establish an integrated assessment plan that uses multiple methods consistent with recommendations from Peter Ewell, Senior Fellow of the National Center for Higher Education Management Systems (NCHEMS, <http://www.nchems.org/>). In addition to pioneering online evaluations for WSU and plans to deepen that collaboration with CTLT by exploring more sophisticated and useful matrix surveys that are more responsive to individual course variations, CAHNRS is committed to collaborating with CTLT to develop assessment strategies that use the fundamental measures—student evaluations, student learning outcomes, and peer reviews and student focus groups—to continue to cross validate the measures and the processes and complement that assessment with professional development derived from and informed by the assessment.

## **IV. Summary of Academic Unit Self Studies**

### **Academic Departments**

#### **Department of Animal Sciences**

*[see Academic Unit Self-Study Workspace/Animal Sciences]*

The Department of Animal Sciences has a long tradition of serving Washington's diverse livestock and allied industries and society through its teaching, research and outreach activities. The Department plays a critical role in CAHNRS, as it is the College's only unit which focuses on animal agriculture.

Following a protracted period of downsizing due to a series of budget recisions, new investment of faculty positions in the Department of Animal Sciences has commenced. In addition, several recent and imminent retirements will result in further opportunities to refocus the department through faculty hiring. Because of the department's small size relative to many of its peers, it is important that the department focus on a small set of areas that build on its traditional areas of strength and address areas of importance to our stakeholders. Areas of emphasis identified for strategic investment include sustainable animal systems, reproductive biology, and meat science and muscle biology. New faculty hires in these areas will contribute to needed critical mass and add cutting-edge research expertise to WSU's animal agriculture programs.

Animal Science continues to be the most popular undergraduate agriculture major in CAHNRS. Student's attraction to the degree reflects high-quality teaching and a strong focus on experiential learning. The department has been very responsive with modifying its curriculum to reflect changes in student interests and demographics. Animal science majors are increasingly coming from more urban backgrounds with less initial interest in traditional animal production. Core courses have been modified to include increased focus on companion and laboratory animals, as

opposed to animals for food production. In addition, several traditional production-focused courses have been replaced with courses focusing on companion animals and animal biotechnology. Experiential learning is emphasized in the undergraduate curriculum, as demonstrated by three highly successful programs: the Cooperative University Dairy Students (CUDS) program, the Student Swine Cooperative, and the Cougar Cattle Feeders program.

The department offers both M.S. and Ph.D. degrees in Animal Sciences. Both of these programs have been characterized by relatively low enrollment in recent years, and the unit is focusing on strategic initiatives to address this issue.

### **Department of Apparels, Merchandising, Design, and Textiles**

*[see Academic Unit Self-Study Workspace/Apparel Merchandising Design and Textiles]*

The Department of Apparels, Merchandising, Design, and Textiles (AMDT) has undergone significant transformation and targeted investment in the last three years. As a result of extremely strong growth in undergraduate enrollment over the past decade, past faculty and resource commitments have been primarily focused on serving the undergraduate program. The focus of recent investment and activities has been on re-balancing the department to enable enhanced research scholarship and growth in the graduate program. Our goal is to make WSU the preferred destination for students in the western U.S. interested in careers in the apparel industry and the most valued educational resource of the region's growing apparel industry.

Significant investment in faculty resources has accompanied changes in expectations for the department and its faculty. The addition of a new department chair and an additional faculty line, as well as the replacement of three other faculty, have created a unique opportunity to transform the department. Included in these personnel changes was the conversion of an instructor position to a senior, tenure-track faculty member. When two ongoing searches are completed, over 50 percent of the faculty will have been hired in the last two years. The research scholarship capability of recent hires is outstanding, and will certainly lead to immediate leaps in research productivity.

Growth in the undergraduate program is reflective of both student enthusiasm for the program quality and a fast growing industry demand for qualified graduates. The department offers students a number of unique opportunities to enhance their undergraduate experience through the curricula including faculty led study tours at the national and international levels, internship experiences, working one-on-one with faculty on research projects, and interactions with industry professionals through campus speaking engagements. One of the greatest challenges facing the department is managing undergraduate enrollment growth. AMDT faculty have implemented procedures to manage overall enrollment, and limit enrollment in the faculty-intensive design option. Careful evaluation of the curriculum and the frequency of course offerings also have been completed to streamline the curriculum while continuing to provide a program of excellence.

The AMDT graduate program consists of a small M.S. program and requires additional investment of faculty time and resources for expansion. Curriculum changes and recruiting strategies are needed to attract students from the apparels merchandising and design disciplines, as well as those with business, art, science and theater backgrounds. In addition, the visibility of the department must be improved in the region, nationally and internationally through more broad-based marketing and recruitment strategies, participating of undergraduates, graduates in faculty in regional and national meetings, juried shows and research conferences. Enhanced research productivity should translate to additional extramural funding to finance graduate assistantships.

A final and important challenge facing AMDT concerns physical facilities. For some time the department has been housed in a converted dormitory. The facilities are inadequate to meet the program needs on all levels as the building was not designed or built to house an academic program with classroom, laboratory, apparel design studio, and office space needs. The lack of adequate facilities proposes obstacles in delivering academic programs of excellence, utilizing current available technology, attracting high caliber graduate students, and in the recruiting and retaining top-notch faculty. Plans are in place to address this limitation.

### **Department of Biological System Engineering**

*[see Academic Unit Self-Study Workspace/Biological Systems Engineering]*

The Department of Biological Systems Engineering (BSE) is administered jointly by CAHNRS and the College of Engineering and Architecture. Beginning in 2005, the department has focused its mission exclusively on graduate education, research, and outreach. The unit plans to continue this focus and build on its extraordinary accomplishments in research productivity and graduate education.

BSE is one of the most productive research units in CAHNRS. Despite its modest faculty size, the unit publishes an impressive number of refereed publications and receives over \$2 million of extramural support each year. The unit's areas of research emphasis include bio-energy and bio-products, food engineering, and land-air-water resources and environmental engineering. Since these areas closely correspond to several of the College's strategic priorities, some growth in faculty numbers is likely to occur in the coming years.

Academic programs offered by the Department of Biological Systems Engineering have changed significantly in recent years. The Department offers no undergraduate degrees. The department discontinued the BS degree in Biological Systems Engineering in 2003. B.S. programs in Agricultural Technology Management, Agricultural Education and Agricultural Communications were administered by BSE until 2005, but were subsumed by the interdisciplinary Agricultural and Food Systems degree. Currently, the unit offers both M.S. and Ph.D. degrees in Biological and Agricultural Engineering, which are offered through the College of Engineering and Architecture. The department has a vibrant graduate program which has been characterized by significant enrollment growth over the last decade. Faculty-student ratios, is the BSE graduate

program are among the highest in the University, reflecting the faculty's extraordinary commitment to graduate education. Expansion in the number of faculty positions should provide opportunity for small increases in future graduate student enrollment.

## **Department of Crop and Soil Sciences**

*[see Academic Unit Self-Study Workspace/Crops and Soils]*

The Department of Crop and Soil Sciences (CSS) is the largest department in the College of Agricultural, Human and Natural Resource Sciences. CSS is a major contributor to WSU's national stature in plant science research, and a recent study published in the *Chronicle of Higher Education* ranked WSU 7<sup>th</sup> in agronomy/crop sciences. The department offers nationally recognized programs in undergraduate education, graduate education, fundamental and applied plant and soil research, and extension and engagement. The unit is highly engaged in meeting the needs of its stakeholders through research and educational programs that ensure that the state's agriculture and green space industries remain competitive, productive, and profitable.

The CSS faculty is of sufficient size to deliver the array of programs offered through the department, and additional faculty resources have been added as the College has invested in strategic priorities (e.g., biofuels, organic agriculture). In recent years, the department has continued to build its strategic areas of excellence in crop breeding and genetics, genomics, dryland cropping systems, and organic agriculture. A key for the department is to continue to replace resources and faculty positions allocated to traditional areas with those oriented toward more contemporary issues and priorities.

CSS currently offers undergraduate degree programs in Crop Science and Soil Science. In addition, the department has been the principal leader in the administration of a college-wide Agriculture and Food Systems (AFS) degree. The department is well connected to industry and factors their input into curriculum decisions. The AFS degree and recent changes to departmental curricula reflect significant changes in response to industry and societal needs. Excellent research and experiential learning opportunities exist for CSS students, and graduates typically have several employment opportunities. The principal challenge facing CSS undergraduate programs is enrollment. Enrollment in the turf grass production option remains strong; however, more traditional curricula (e.g., crop science, soil science) have failed to attract a sustainable number of students. Further degree consolidation, more active recruitment, and additional curriculum changes are being contemplated to address this situation.

CSS has the resources and reputation to be a national player in graduate education within several areas of plant and soil sciences. Recently, the M.S. and Ph.D. enrollments in the department have grown, and significant growth potential remains. A key to success in meeting both the undergraduate graduate program objectives of the unit will involve participation in interdisciplinary programs. Faculty in CSS have taken a leadership role in the development and implementation of interdisciplinary programs such as the B.S. in Agricultural and Food Systems

and the M.S. in Agriculture. The advancement of these programs, as well as development of additional interdisciplinary programs in the plant sciences is a future priority.

### **Department of Community and Rural Sociology**

*[see Academic Unit Self-Study Workspace/Community and Rural Sociology]*

The Department of Community and Rural Sociology contributes to WSU's mission through an integrated program of research, teaching and outreach that is focused on generating and disseminating knowledge about the human role in promoting the sustainable use of natural resources in a manner that promotes integrated community development. The department has established the Human Dimensions of Sustainability as the core area of its programmatic excellence for the future. This focus should integrate very well with sustainability initiatives being advanced by the university, CAHNRS, and WSU Extension.

Although CRS does not administer its own undergraduate or graduate degree programs, it does offer courses at the undergraduate and graduate level and its faculty actively work with graduate students from several departments both inside and outside CAHNRS. These courses are well taught, address contemporary issues, and are well received by students. A critical element to the future success of the unit is to better, and more formally, integrate these courses into current and future curricula both within and outside the College. An improved understanding of the social dimensions of agriculture and natural resource issues is critical to our graduates, and CRS can play a critical role in addressing this need. Another important goal is for CRS faculty to gain better access to M.S. and Ph.D. programs so that they can be more significant contributors to the university's graduate education mission.

### **School of Economic Sciences**

*[see Academic Unit Self-Study Workspace/Economic Sciences]*

The School of Economic Sciences (SES) is a relatively new unit, having been formed through the merger of Economics and Agricultural and Resource Economics in 2004. Since its formation, the unit has made tremendous strides on all major fronts – undergraduate programs, graduate programs, research, and outreach. The faculty and College Administration have lofty goals for the unit – to become top 40 in general economics and top 5 in agricultural and resource economics. Achieving these goals will require strategic investment which will enable the unit to continue to push forward and build on the strong positive momentum of the past three years.

While SES has benefited from the hiring of an unprecedented number of new faculty (14 new hires in the last two years), the number of faculty remains inadequate to fully meet its charge in teaching, research, and outreach. This situation resulted from a long-term divestment of faculty resources when Economics resided in the College of Business. The unit has demonstrated an ability to attract some of the best young talent in the country from some of the most prestigious economics programs. The task today is to rebuild its faculty numbers, which will not only

require continuing to replace retirements and resignations, but also infusing new faculty positions into the unit.

As the only economics unit at WSU, SES has a large and diverse responsibility in the area of undergraduate education. In 2006, the unit completed a comprehensive restructuring of its undergraduate degrees and course offerings, which is already translating to significant increases in course enrollment and the number of SES majors. The unit also has the largest teaching load of service courses in the College. This role includes delivering its principles courses to the majority of the undergraduate student body, as well as delivering more advanced courses to majors in business and the agricultural and natural resource sciences. SES likely has the most sophisticated means of assessing student learning and instructional quality of any unit within the College.

At the graduate level, SES also has completed a radical restructuring of its degree programs. The SES PhD program is one of the largest and most vital at WSU, and is also substantially larger than what was offered by the two predecessor departments. At the M.S. level, the School eliminated three degrees and cooperates with the University of Idaho to offer a new M.A. in Applied Economics. The decision to focus the graduate program on doctoral education is consistent with WSU's objective of increasing doctoral enrollment and has already had a transformational impact on the unit.

### **Department of Entomology**

*[see Academic Unit Self-Study Workspace/ Entomology]*

The Department of Entomology is a strong department, and is integral to the College's quest for continued advancement of its national reputation in agriculture sciences and service to its stakeholders. The department has active programs in graduate education, basic and applied research, and outreach. The size of the Department of Entomology faculty is adequate to address its multi-dimensional mission and is on par with peer institutions. The faculty is more geographically distributed than any unit within CAHNRS and has faculty located in Pullman, at four research and extension centers (Mt. Vernon, Prosser, Puyallup, and Wenatchee) and at the Tri-Cities campus. This dispersion of the faculty provides great connectivity to stakeholders, but poses a challenge in terms of engaging faculty in undergraduate and graduate education.

The department does not offer an undergraduate degree program, although the Agriculture and Food Systems degree and the Biology degree with an emphasis in Entomology provide students an opportunity to focus their study on entomology. The department's own B.S. program was discontinued in 2002. Undergraduate courses offered in the department serve a variety of plant and animal science degree programs within CAHNRS. The department also offers two highly successful service courses that meet the science general education requirement and one that meets the science requirement. These course offerings are rigorous, extremely well-received by students, and introduce entomology to a large and diverse university audience. The significant

changes in curricula over the past five years indicate that the unit is attentive to the changing needs of society and willing to modify its offerings accordingly.

The Department of Entomology has a well-respected and productive graduate program. Graduates are competitive in the professional job market and many hold prestigious positions both nationally and internationally. The department is in the process of critically evaluating its academic offerings and it is likely that substantial changes to the program will occur. The expectation is that these changes, as well as an expanded commitment to graduate education, will result in increased M.S. and Ph.D. enrollment.

**Department of Food Science and Human Nutrition (Bi-State School of Food Science)**  
*[see Academic Unit Self-Study Workspace/Food Science]*

The Department of Food Science and Human Nutrition is in the midst of significant organizational restructuring. In Fall 2007, the human nutrition and dietetics faculty were moved to the Division of Health Sciences. This paved the way for the proposed formation of the bi-state School of Food Science which merges the food science faculty and programs from the WSU Department of Food Science and Human Nutrition with the food science faculty and programs from the University of Idaho (UI) Department of Food Science and Toxicology into one unit jointly administered by the Washington State University (WSU) College of Agricultural, Human and Natural Resource Sciences and the University of Idaho College of Agriculture and Life Sciences. The merger is now in the final stages of approval.

The bi-state School of Food Science is unique in the nation and provides immediate national impact and recognition. With this merger, it is expected that the School of Food Science teaching, research, and extension programs will advance into the top tier of universities with food science programs in the United States based on faculty numbers, undergraduate and graduate student enrollment, degrees granted, research productivity, and extension programming.

Food science programs have a strong tradition of excellence in research and outreach. WSU food scientists ranked sixth nationally in the *Chronicle of Higher Education's* Top Research Universities Faculty Scholarly Productivity Index recently completed by Academic Analytics. Areas of emphasis within food science are focused on improving: (1) food safety and quality; (2) health promoting, nutritional, and economic value of foods, food constituents, and bio-products produced in the Pacific Northwest; and (3) environmental quality and energy conservation in the preservation and packaging of foods.

The undergraduate curriculum in the department leads to a Bachelor of Science in Food Science. The BS in Food Science is reviewed and approved every five years by the Institute of Food Technologists and the Society for Food Science and Technology. The curriculum is routinely evaluated and modified in response to recommendations made in these reviews. The department offers a host of experiential learning opportunities including departmental clubs, the Food

Product Development team, undergraduate research, and employment in the WSU Creamery, pilot plant, sensory lab, and other departmental facilities.

The department offers both a M.S. and Ph.D. in Food Science, with total enrollment averaging around 25 students. With added visibility and projected increases in faculty size and extramural support emanating from the proposed merger, it is expected that graduate enrollment in the department will increase significantly in the coming years.

### **Department of Horticulture and Landscape Architecture**

*[see Academic Unit Self-Study Workspace/Horticulture and Landscape Architecture]*

The Department of Horticulture and Landscape Architecture (HLA) is a diverse unit with a highly complex mission. The department's research and outreach programs serve Washington State's large and diverse horticultural industry which includes tree fruit, vegetable crops, wine grapes, and ornamental crops. The department's faculty is quite diverse, with terminal degrees from 16 different disciplines, and its faculty are located at three WSU campuses and four research and extension centers. Significant investment in faculty resources have occurred recently particularly in the emerging areas of horticultural genomics and viticulture.

Research and outreach programs conducted by faculty in HLA range from the very applied to the very basic. Several scientists work at the molecular and physiological level in study of factors that influence plant response to environmental conditions. Others work on matters related to production and management in a variety of fruit and vegetable crops. A core of scientists is working on issues related to the applications of biochemical, engineering, and physiological knowledge to post harvest, storage, and processing of fruits and vegetables.

HLA provides teaching programs to a very large and diverse clientele. The department offers a B.S. degree in Horticulture, a Bachelor of Landscape Architecture (BLA), a M.S. in Horticulture, a Master of Science in Landscape Architecture (MSLA) and a Ph.D. in Horticulture. Several important curriculum modifications are currently being implemented to improve these degree offerings. At the undergraduate level, the current curriculum which includes one degree (B.S. in Horticulture) with four options is being modified such that there will be one degree with three majors: Viticulture & Enology, Horticultural Science, and Environmental Horticulture. Along with these modifications will be the creation of new curriculum options in Breeding, Genetics, and Genomics and Landscape Design and Implementation. Operating resources and faculty to support the delivery of these new instructional programs will largely come through reallocation of existing resources.

An important change at the graduate level involves refocusing the MSLA degree. It has become apparent that the majority of the demand for the program is from students who wish to pursue a first professional degree at the master's level. Hence, a new curriculum is being developed and will soon be submitted for accreditation by the American Society of Landscape Architects which

will target students without a professional landscape architecture degree, a change that will clearly make the degree more responsive to student demand.

### **Department of Human Development**

*[see Academic Unit Self-Study Workspace/ Human Development]*

The Department of Human Development (HD) has long been known for its strength in undergraduate education; however, in the last seven years, the department has made major strides in building a foundation for future success in research and graduate education. The overarching goal for the department is to continue this trajectory of growth in research and graduate education, while maintaining its strong record of accomplishment in undergraduate education and outreach.

Central to the department's success in building its research and graduate education capabilities has been a significant infusion of new faculty into its ranks over the past seven years. The department is beginning to develop a national reputation in the areas of early childhood and parent-child relationships, with a particular emphasis on prevention science. One of the driving forces of Human Development's growth in faculty numbers has been the growth of its programs at WSU-Vancouver. Due to its tremendous undergraduate enrollment growth, HD has the highest percentage of non-tenure track instructional faculty of any unit within CAHNRS. As the unit continues to re-balance itself across its teaching, research, and outreach missions, one would expect that tenure-track, permanent faculty will comprise a larger share of the total faculty.

Human Development has developed a progressive undergraduate curriculum that continues to attract undergraduate students. Through coursework, service learning, research, and a required internship, HD students integrate theory, research, and practice. The department continues to manage the University's most successful distance learning program, which adheres to the same high quality standards as on-campus programs. The recent introduction of an Early Learning major to their distance learning programs demonstrates a responsiveness to societal demand and should result in continued enrollment growth in the DDP program.

The department's graduate program consists of a relatively small M.S. program. Recent personnel and resource allocation decisions have focused on growing this program, in concert with the department's research program. A resource that is currently limiting and needed to grow this program is funding for graduate research assistantships. A natural by-product of the faculty's advancement in research scholarship is increased extramural funding, which should provide additional funding for graduate assistantships.

### **Department of Interior Design**

*[see Academic Unit Self-Study Workspace/Interior Design]*

Interior Design is co-located between the Pullman and Spokane campuses. The Interior Design program at WSU has been deemed one of the top 10 programs in the nation, and the goal to be ranked as one of the top three programs in the nation continues to drive the faculty's efforts. The faculty is relatively small, but highly productive and engaged. The undergraduate curriculum is delivered by seven core faculty – three in Pullman and four in Spokane. Two additional faculty members with administrative appointments aid in the delivery of the graduate program.

Interior Design, as a discipline, has yet to become heavily invested in research. As a relatively young discipline, it is in the early stages of defining its body of knowledge and creating a culture of research. Nonetheless, the interior design faculty at WSU have whole-heartedly engaged research and integrated it into their teaching. ID faculty are making significant contributions to their discipline in the form of research publications, juried competitions, and other creative activities.

The undergraduate program in Interior Design is highly competitive, involves active engagement with faculty, and incorporates a significant number of experiential learning opportunities. Students spend their first two years in Pullman, and at the end of their sophomore year, apply for certification into the major. A competitive portfolio review has been a long standing tradition in order to maintain educational standards. The two locations offer equally important experiences. While Pullman provides an opportunity to build community and relationships in a traditional college setting, Spokane's urban context offers greater access to the profession and real-world projects. Contemporary assessment processes are in place throughout the curriculum.

The department has offered a three-year, first-professional degree masters program for the last six years. The Master of Arts in Interior Design is a popular avenue for individuals with an existing bachelor's degree in another discipline who desire to change careers. While relatively small in enrollment, the M.A. program has significant potential for enrollment growth and could be synergistic with departmental research goals. ID faculty also make significant contributions to the Ph.D. program in Interdisciplinary Design offered through the Interdisciplinary Design Institute.

### **Department of Natural Resource Sciences**

*[see Academic Unit Self-Study Workspace/ Natural Resource Sciences]*

The Department of Natural Resource Sciences (NRS) provides natural resources education, research, and extension programs to a large and diverse clientele. The department is the focal point of natural resource programming within CAHNRS; however, natural resource programs exist in several other units, as well.

The principal challenge facing the Department of Natural Resource Sciences is to focus its relatively small resource base to a small number of areas of excellence. The department's current research foci are wildlife nutrition and behavior of selected mammalian species, human dimension of natural resources, and water resources. The adequacy of the department's faculty varies by disciplinary emphasis. The department's greatest concentrations of faculty expertise

are in the areas of wildlife ecology and forestry/landscape analysis. No single aspect of the department is particularly large when viewed solely from a disciplinary perspective; however, the department does have some strong individual programs in these areas. The department's greatest potential lies in becoming a strong multidisciplinary unit with a limited number of emphasis areas.

At the undergraduate level, the department offers a B.S. in Natural Resource Sciences with majors in Forestry, Wildlife Ecology, and Natural Resources. The department has undergone significant curriculum modifications over the past five years, including phasing out two undergraduate majors (wildland recreation and range management) as part of on-going efforts to refocus the department on a smaller set of sub-disciplines within the broad scope of natural resource sciences. The B.S. in Natural Resource Sciences, Forestry Major is accredited by the Society of American Foresters and the curriculum is routinely modified in response to national accreditation standards.

At the graduate level, the department offers a M.S. in Natural Resource Sciences and collaborates with the WSU program in Environmental Science and Regional Planning to offer the joint, interdepartmental PhD in Environmental and Natural Resource Sciences. Enrollments in both of these programs are relatively small, reflecting the small faculty size and a limited availability of funding for graduate assistantships.

### **Department of Plant Pathology**

#### ***[see Academic Unit Self-Study Workspace/ Plant Pathology]***

The Department of Plant Pathology has a strong record of performance in the areas of research, outreach and graduate education. The department's research and outreach programs support the agricultural, forestry, horticultural, seed, and nursery enterprises of the state, nation, and world. Departmental research focuses on three areas: (1) biology and molecular biology of plant pathogens, (2) ecology and epidemiology of plant diseases, and (3) detection of plant pathogens and control of plant diseases. Future objectives of the department focus on advancing the scholarly productivity in terms of peer-reviewed publications and receipt of extramural funds, especially competitive federal grants.

The faculty of Department of Plant Pathology is of sufficient size to move WSU toward its goals of distinguished research and production of outstanding M.S. and Ph.D. graduates. Faculty FTE within the department are comparable to peer departments, and all permanent faculty are in tenure-track, 12-month positions. The department also employs an impressive cadre of affiliate and adjunct faculty that assist in research and outreach program delivery.

As a department with no undergraduate degree program, Plant Pathology's instructional goals emphasize increasing enrollment in the graduate program (with an emphasis on Ph.D. candidates) and graduate courses. Enrollments in the M.S. and Ph.D. programs in Plant Pathology have been stable, but not outstanding. Like the Crop and Soil Science programs, a

key to success in meeting the unit's graduate program objectives will involve participation in the development and delivery of interdisciplinary programs.

### **Department of Statistics**

*[see Academic Unit Self-Study Workspace/Statistics]*

The Department of Statistics is a relatively small unit which resides in CAHNRS and the College of Sciences. The mission of the department is comprised of four components: (1) to provide a broad array of service courses in both theoretical and applied statistics; (2) to train graduate students pursuing graduate degrees in statistics; (3) to conduct research in both theoretical and applied statistical sciences, and (4) to provide statistical consulting to faculty and graduate student researchers.

Statistics does not offer an undergraduate degree; however, the department does have an important role in undergraduate education through its service courses offered by the department. These undergraduate service courses provide the basic quantitative background required for many students to succeed in their majors. In addition, several of the department's undergraduate courses help students satisfy the WSU math numeracy general education requirement. Graduate service courses provide the basic statistical training required by graduates from many fields to carry out their M.S. and Ph.D. research.

The department currently offers a M.S. degree in Statistics which graduates 5 - 10 students per year. Several of these students receive the M.S. degree while concurrently pursuing a doctorate in a related field (e.g., Economics). Numerous changes in the M.S. curriculum, including the introduction of laboratories into existing courses and the development of courses to address emerging topics, have been implemented in recent years in response to changing needs of students. Recently, the department proposed a Ph.D. in Statistical Science which was to be jointly administered by the University of Idaho. This proposal was ultimately not advanced through the university's approval system.

### **Interdisciplinary Degree Programs**

In addition to disciplinary degree programs offered through academic units, CAHNRS administers three interdisciplinary degree programs at the college level: the B.S. in Agricultural and Food Systems, the M.S. in Agriculture, and the Ph.D. in Molecular Plant Sciences. As noted above, these programs are critical to the long-term growth of the College's undergraduate and graduate enrollment in areas related to food and agriculture.

### **Agricultural and Food Systems Degree Program**

*[see Academic Unit Self-Study Workspace/Agricultural and Food Systems]*

The interdisciplinary, cross-departmental Agricultural and Food Systems Bachelor of Science degree program was approved by the Washington State Higher Education Coordinating Board in May of 2006, and the first students enrolled Fall Semester 2006. The development and implementation of this interdisciplinary program marked a new direction in CAHNRS undergraduate teaching efforts. The degree is visionary in its concept and curriculum, focusing on the broader context of the food system, as opposed to disciplinary foci. In its inception, the AFS degree replaced five separate degrees with a single degree with five separate majors which share a common core of classes. It is envisioned that additional small disciplinary degree programs will be subsumed by the AFS degree.

Faculty support for the AFS degree comes from a host of CAHNRS departments. However, broader engagement from faculty within these units is critical if the program is to continue to expand in enrollment and scope. One of the most exciting opportunities for the AFS degree involves current activities directed at developing courses for distance delivery such that the program can ultimately be offered to place bound students. Curriculum development and the development of outcomes-based assessment tools have been an ongoing focus of the program's faculty and administration. Since the program was truly developed "from the ground up" (as opposed to an alternation of an existing program), the curriculum is well linked to learning outcomes.

Recent change in the administrative structure of the program will contribute to future success. In its early stages, the program's administration rested in the Department of Crop and Soil Sciences. The program's academic director now reports directly to Associate Dean for Academic Programs within CAHNRS. This structure will promote broader engagement from faculty outside of Crop and Soil Sciences. A program coordinator also has been hired and additional resources will be allocated to facilitate program administration, recruiting, experiential learning opportunities, and advising.

### **Master of Science in Agriculture Degree Program**

*[see Academic Unit Self-Study Workspace/Masters of Science in Agriculture]*

The Master of Science in Agriculture (MS AG) is a significant departure from any graduate program offered within the College of Agricultural, Human, and Natural Resource Sciences. First, as noted above, it is interdisciplinary in scope and administered at the college level. Second, it is delivered via distance learning technologies and targets the agricultural professional, practitioner, and educator.

Since its inception in 1998, this program has been highly successful in attracting working professionals with agriculture, science, technology management, environmental, and education backgrounds. The success of the program has been remarkable, given the relatively low level of resources committed to the program and the limited number of faculty actively engaged in the program. The College's intent is to expand the scope of this program to serve a broader constituency and engage a greater percentage of the faculty involved in food and agriculture

programs. Two factors limiting growth of graduate enrollment in the college have been funding for graduate assistantships and engaging a larger share of the faculty in graduate education. Because this program targets working professionals, assistantship funding is not required to attract students. A recently announced expectation of all tenure-track faculty in CAHNRS is that they will be actively engaged in advisement of graduate students. This program provides advisement opportunities for faculty without funds available for assistantship support. It also provides an added opportunity for the engagement of faculty at off-campus research and extension centers.

An internal review of the MS AG program was completed in 2006 and provided several important recommendations for the improvement and expansion of the program. Several important curriculum and administrative changes were recommended. Some administrative changes have been implemented, with the administrative oversight of the program now coming from the College's Academic Programs Office, as opposed to being nested within a department. Additional support staff resources have also been added to administer the program. Curriculum changes are currently being discussed, but will almost certainly involve the establishment of a core curriculum that will be required of all students completing the MS AG degree.

### **Molecular Plant Sciences Doctoral Program**

*[see Academic Unit Self-Study Workspace/Molecular Plant Science]*

The Molecular Plant Sciences (MPS) doctoral program is arguably the most successful interdisciplinary graduate program at WSU, consistently ranking in the top ten of such programs in the U.S. While the program is university-wide, it is administered within CAHNRS, and the majority of its students are advised by College faculty. The goal of the program faculty and the administration is to build upon current strengths and to make MPS the #1 plant sciences program in the nation.

Most of the challenges facing the MPS program are administrative in nature and involve coordination and management of an interdisciplinary program involving faculty from no fewer than seven academic units. The program has recently received several infusions of new funding from both competitive and non-competitive sources which will provide additional funding to recruit high quality students. The program does require additional permanent funding to support its administrative activities.

The MPS faculty and administration have developed a unique "area of strength" concept to further advance the program and broaden faculty involvement. This approach allows faculty to define unique program foci which will require the development of a graduate certificate so that students will be recognized for the educational focus.