Oregon State University
College of Agricultural Sciences

College of Agricultural Sciences
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AgSci Academic Report 2016-2017

Introduction

The College of Agricultural Sciences (AgSci) connects people and the environment, helping communities and industries thrive by finding real-world solutions that are both economically and ecologically sustainable. With over 2600 students, 250 professorial faculty, $500,000 in scholarships, and $90 million in research grants and contracts, AgSci is integral to OSU's standing as a top-tier land-grant university and its international ranking for agriculture and forestry.

The Student Experience

AgSci provides a transformational educational experience for all learners by:

Enhancing the learning environment to raise and equalize student success:

- Fisheries & Wildlife created a new graduate course, *Psychology of Environmental Decisions*, which covers social foundations for managers and the general public to make decisions regarding the use of natural resources.
- Applied Economics instituted a new departmental seminar series, *Taking Time for Teaching,* to share pedagogy research and strategies among AEC faculty. Graduate students also participated as a one-credit seminar.
- The Job Market Preparation Program for PhD candidates in Applied Economics is a year-long, faculty-led program that provides PhD candidates with job skills: application writing, presenting research, interviewing, and web presence.
- Applied Economics created the Second Year Paper program for PhD students that culminates in writing and presenting a research paper, in order to learn how to communicate research ideas in publishable written form.

Making high-impact learning a hallmark of undergraduate education:

- Statistics faculty Lan Xue, Duo Jiang, Yuan Jiang, and Tom Sharpton received a Research Experiences for Undergraduates grant from the American Statistical Association to support undergrad research in microbiome informatics.
- Fisheries & Wildlife created a new required course, *Communication Skills for Fisheries and Wildlife Professionals*, to engage undergraduates in applying their communication skills across diverse audiences.
- The Eastern Oregon Agriculture and Natural Resource Program expanded its class offerings, as well as collaborative work experiences for undergraduates.

Advancing learning through course design, assessment, and faculty development:

- Agricultural Education & General Agriculture developed an integrated Curriculum for Agricultural Science Education (CASE) course for agricultural science teacher preparation.
- Frank Chaplen in Biological & Ecological Engineering created a hybrid course design for Advanced Food Processing geared for Food Science & Technology majors and degree requirements for IFT program certification.
- Jeff Anderson in Botany & Plant Pathology designed and delivered a capstone course for the new Biological Data Science graduate minor, which provides grad students with hands-on experience in life science research.

Growing online education and exploring new pedagogical models:

- Agricultural Education & General Agriculture developed a new university-wide leadership minor that is now offered through Ecampus.
- Bernadine Strik in Horticulture developed a course in Blueberry Physiology, Production Systems, and Management for non-credit audiences through Professional and Continuing Education (PACE).
- Andrew Millison in Horticulture expanded credit and non-credit permaculture courses by delivering a Massive Open Online Course (MOOC), complimented by an open textbook, reaching nearly 35,000 students.
- Horticulture expanded their offering of a Bacc Core course (Plagues, Pests, and Politics) through Ecampus, now serving about 600 students per year, improving access for both working and distance students.
- Statistics developed five new online courses and two new online programs: Graduate Certificate in Data Analysis and MS in Data Analytics: both programs are multidisciplinary, in collaboration with EECS.
- Animal & Rangeland Sciences pioneered a new online degree program in Rangeland Science, which is the first and only of its kind in the nation.

Helping ensure the success of international students

- Food Science & Technology (FST) partnered with INTO to connect INTO Pathway students to FST early in their studies. Students meet with an advisor and receive orientation to offerings tailored to their needs.

Developing global leaders through engagement with other countries:

- Brian Sidlauskas (Fisheries & Wildlife) led an expedition to Gabon, where he worked with The Nature Conservancy and six Gabonese scientists to assess potential impacts on fish biodiversity of three proposed hydroelectric dams. The expedition yielded 5,000 new specimens and genetic samples for the OSU Ichthyology Collection.
- AquaFish supported and mentored nearly 120 undergraduate and graduate students in nine countries, and trained 294 people during 10 short-term training events in seven countries, covering a variety of topics about aquaculture.
- PhD Student Pablo Fierro, accepted as a visiting Scholar in Fisheries & Wildlife from University of Concepcion (Chile), developed ecological indicators of water quality in streams of Chile physiographically similar to PNW streams.
- Matthew Martin, a graduate student in Botany & Plant Pathology, was selected to attend the rice production course in International Rice Research Institute in the Philippines.

Expanding strategies to recruit diverse and high-achieving students:

- Klamath Basin Research & Extension Center continued the Degree Completion Program with Klamath Community College and graduated five students with four-year degrees.
- Undergraduate student Ben Rietmann was selected by the American Society of Animal Science to serve as a summer 2017 Science Policy Intern in Washington, working for USDA's NIFA on the Farm Bill and other issues in Congress.
- The USDA Agricultural Outlook Student Diversity Program chose an AgSci student for the 4th year in a row. Joshua Harms, an Ag Business Management major, was selected for the competitive program in Washington, DC.
- The AgSci Leadership Academy paired 27 students, many from underrepresented groups, with faculty mentors for yearlong leadership development.
- Agricultural Education & General Agriculture received over $36,000 to directly fund underrepresented and high achieving graduate students.
- Five OSU Fermentation Science students received Jack Joyce Scholarships totaling $70,000. The scholarships were created by Columbia Distributing and Rogue Brewing as a tribute to Rogue founder Jack Joyce.
- Valerian Dolja in Botany & Plant Pathology participated in the international conference 'Bioresources and Viruses', in Kyiv, Ukraine, where he held a Q&A session with 100+ Ukrainian students on US education & research careers.
- Jeff Anderson in Botany & Plant Pathology developed workshops and laboratory activities on "DNA Biology and Bioinformatics" as part of two separate OSU STEM academy summer camps for 24 high school students.
- Javier Rojo joined Statistics and brought his Research for Undergraduates Summer Institute program to OSU, which focuses on recruiting, training, and guiding underrepresented minorities and economically disadvantaged students.

Creating programs that support lifelong learning:

- The Oregon Master Beekeeper Program, in collaboration with the Oregon State Beekeepers Association, has delivered accredited education to more than 1,000 beekeepers to date. There is already a long wait list for 2018.
- Nearly 3,000 Master Gardeners completed 82,000+ hours of training to provide high quality service to over 105,000 Oregonians and donated 214,000 hours of their time, at a value of $4.9 million and 103 FTE.
- Gail Langellotto and the OSU Community Horticulture Team hosted the 2017 International Master Gardener Conference in Portland, which drew over 1,300 attendees from the US and Canada.

Enhancing experiential learning:

- Fisheries and Wildlife developed a new experiential learning course, *Ecology and Conservation of Hawaiian Coral Reefs*.
- The Food Innovation Center provided 3 Branch Experiment Station (BES) internships, 2 high-school internships, 4 OHSU dietician rotations, 1 international internship (Chile), and employed 5 undergrads in Sensory and Consumer Evaluation.
- The Exploring World Agriculture faculty-led course took 14 Applied Economics students to France to study the French food system, from point-of-production to retail sales.
- Applied Economics developed AgBiz Logic, a suite of farm-scale economic, financial, and environmental decision tools for businesses that grow, harvest, package, add value, and sell agricultural products.
- Eastern Oregon Agricultural Research Center provided 5 BES internships, 7 international internships in Brazil, and employed 18 undergrads as summer technicians.
- The OSU Leadership Minor, offered through AgSci, had 43 students from seven different colleges participating in leadership development internships.
- New experiential learning opportunities in marine ornithology were incorporated into a three-course progression through Fisheries and Wildlife; significant future growth is anticipated as part of OSU's Marine Studies Initiative.
- Students in the Turf Management program interned at various golf courses around the country. Alec Kowalewski in Horticulture visited each intern, to help students get the most benefit from their internships.
- Horticulture coursework promotes community engagement in projects such as restoring Oak Creek, building a garden complex in McNary East, and installing a green roof and landscaping at the Corvallis Fire Station.
- The Oregon Flora Project offers engaged 32 students with hands-on experience in restoration project design, planting, and native seed collection, through paid positions, volunteerism, and internships.
- Environmental and Molecular Toxicology students Michael Garland and Mitra Geier were jointly awarded an Externship Award at the Pacific Northwest National Laboratory to study regeneration in zebrafish.

Leaders in Research and Innovation

AgSci integrates scholarship, creativity, and collaboration throughout learning and discovery by:

Attracting and retaining high-quality faculty:

- Chris Mundt in Botany & Plant Pathology identified a wheat variety that alters the soil microbiome to suppress a highly important root disease called “take-all”.
- Southern Oregon Research and Extension Center hired two new tenure track faculty: Achala KC in Plant Pathology and Alex Levin in Viticulture, as well as Agricultural Extension Asst. Professor of Practice Gordon Jones.
- Hillary Egna at AquaFish served as a panelist at the SeaWeb Seafood Summit, offering perspectives on developing new approaches for sustainable seafood systems; and at a USAID meeting in Senegal, West Africa, discussing key agriculture and nutrition research priorities.
- Food Science & Technology hired four new tenure-track faculty: Christopher Curtin (brewing microbiologist), Jovana Kovacevic (food safety), Jung Kwon (seafood innovation), and Si-Hong Park (food safety).
- Juyun Lim in Food Science & Technology had her research highlighted in national and international publications and in *Think Out Loud* on National Public Radio.

- Horticulture hired two new tenure-track faculty on campus: Andony Melathopoulos (Extension pollinator health), and Marcelo Moretti (weed science).
- Horticulture hired off-campus faculty, including Jeff Choate (Horticulture in Linn County), Greg O'Neill (Minor Crop Pesticide Registration Program at NWREC), Alexander Levin (Viticulture at SOREC), Scott Lucas (Horticulture at HAREC), and Nicole Sanchez (Horticulture at Klamath County and area).
- Kim Anderson in Environmental & Molecular Toxicology had her chemical detector wristbands featured by several media outlets, including BBC News, KPTV News in Portland, and ACS Chemical Engineering & News.
- Staci Simonich in Environmental & Molecular Toxicology had her research on the cancer risks of air-pollutants published in several media outlets, including the Proceedings of the National Academy of Sciences.

Increasing the quality, capacity, and impact of graduate programs:

- Agricultural Education & General Agriculture now offers two graduate Leadership (LEAD) elective courses with the College of Education MS program and the Graduate Certificate in College and University Teaching.
- Food Science & Technology graduate students organized a highly successful *Taste of Research Day* including invited speakers and 29 "speed presentations" to capsulize the research across the department.
- Jennifer Field in Environmental & Molecular Toxicology received the 2016 Excellence in Graduate Mentoring Award from OSU.
- Predoctoral trainee Gloria Garcia in Environmental & Molecular Toxicology was awarded the 2017 Eric A. Andreasen Memorial Graduate Student Award for Excellence in Research and Scholarship.
- Stacey Harper and Susan Tilton in Environmental & Molecular Toxicology organized The Pacific Northwest Association of Toxicologists Work Shadow Event.
- The Human-Animal Interaction Lab, directed by Monique Udell in Animal and Rangeland Sciences, had research on canine genetics featured by several media outlets, including BBC, National Geographic, and Smithsonian.
- Graduate student groups are active in collaborative outreach and research, for example:
  - Team-Tox, (Environmental & Molecular Toxicology) provides professional development beyond the EMT curriculum, and were recently awarded $3500 from the ER Jackman Friends & Alumni Club.
  - Fisheries and Wildlife Graduate Student Association actively engages online F&W students with campus-based colleagues in activities, symposia, and professional development opportunities.
  - BUDS (Bolstering Undergraduate Development and Success), Botany and Plant Pathology graduate students mentor undergraduates to strengthen academic excellence.

Expanding high-profile programs in the arts and humanities:

- Art About Agriculture has connected urban and rural culture for 40 years. Space within the remodeled Strand Ag Hall now serves as a rotating gallery for this 250-piece art collection, which was recently appraised at more than $300,000 and purchased exclusively with private funds, gifts, sponsors, and grants.

Cultivating transdisciplinary research to advance the science of sustainable earth ecosystems:

- Michael Behrenfeld's research team in Botany and Plant Pathology continues the North Atlantic Aerosol and Marine Ecosystems project to study phytoplankton annual biomass cycles and atmospheric aerosols in the North Atlantic.
- Tom Sharpton (Microbiology and Statistics) is leading the OSU Microbiome Initiative, supported by NSF and OSU, which explores new scientific and environmental applications of microbiome science. Sharpton represented OSU at a White House announcement of the $121 million National Microbiome Initiative by the Office of Science and Technology.
- Applied Economics faculty are involved in a multidisciplinary program that studies Columbia River water allocation across competing uses in a secure decision support system for coordination of adaptation planning.
- John Antle in Applied Economics was the lead guest editor of a special issue of *Agricultural Systems Journal*, which focused on promoting transdisciplinary collaboration among the agricultural science community.
- Larry Lev in Applied Economics was a guest co-editor of a special issue of the journal *Agriculture*, which developed a multidisciplinary discussion of local and regional agri-food systems as alternatives to existing conventional ones.

- Nadia A. Streletskaya started the Applied Economics Experimental Lab and received a Teaching Innovation grant for the purchase of Microsoft Surface Pro tablets to use in teaching and research.
- An Applied Economics team led the socioeconomic modeling and analysis for an NSF-funded multidisciplinary research project on "water, sustainability and climate" in the Willamette Basin.
- Steven Dundas in Applied Economics helped run a workshop to develop new transdisciplinary ideas focused on marine and coastal issues, on behalf of the Research Steering committee for the Marine Studies Initiative.
- Fritzi Grevstad in Botany & Plant Pathology is developing a new publicly accessible geo-climatic phenology modelling platform and biological control program for invasive knotweeds, with partners in Canada and the UK.
- Scott Baker in Fisheries & Wildlife is collaborating with the Ocean Alliance in using an Unmanned Aerial Vehicle, called SnotBot, to collect and extract DNA from the blow of whales.
- Alix Gitelman in Statistics is co-PI on a 5-year, $3M multidisciplinary NSF Research Traineeship program to advance graduate education training in STEM fields.
- Chad Higgins in Biological & Ecological Engineering represented OSU at a Northwest summit with researchers from Washington and Idaho to address food, water, and energy challenges as regional, interconnected issues.
- AgSci researchers discovered that climate change is disrupting Kodiak bear feeding cycles, luring them away from salmon in favor of earlier-blooming elderberries, which could have profound ecological implications.
- Fisheries and Wildlife researchers have linked a rapid decline in Alaskan seabird populations to disappearing prey, such as krill and herring, which has largely been fueled by changing ocean conditions.
- Researchers at the Sinnhuber Aquatic Research Lab found that the effects of benzopyrene exposure in zebrafish are hereditary, indicating that human embryonic exposure can change the genome for future generations.

Strengthening Impact Throughout Oregon and Beyond

Positioning OSU's outreach and engagement programs as learning laboratories that:

Promote high-impact learning and effectively utilize university research:

- AquaFish researchers in Ghana and Uganda increased the utility of mobile phones for aquaculture by providing market data and information on best farming practices through text-based systems and applications.
- Luisa Santamaria in Botany & Plant Pathology is conducting food safety workshops for berry farm owners, managers, and others who are responsible for ensuring that good agricultural practices are observed.
- The Oregon Flora Project conducted 11 workshops in the effective use of native plants for over 400 gardeners and landscapers, and created a webpage to present the commercial availability of native plants.
- Yanyun Zhao in Food Science & Technology and her research team have developed a water-resistant, antimicrobial edible wrap for food preservation, which could replace synthetic wraps currently used for meats.
- Researchers in the Center for Genome Research and Biocomputing mapped the genome sequence of the North American beaver, which will yield insights into beaver populations and their evolutionary origins.

Support regional-based problem-solving with research-based alternatives:

- Researchers at Southern Oregon Research & Extension Center have developed a team approach to address serious commercial winegrape issues, including the new disease "red blotch."
- Applied Economics successfully launched a new research initiative with the Oregon Wine Research Institute to examine economic and market issues facing the Oregon wine industry.
- The OSU Organic Extension Program was launched in a partnership between Oregon Tilth and the OSU Center for Small Farms & Community Food Systems to develop organic agriculture, Oregon's fastest-growing farm sector.
- The OSU Extension Small Farms Program initiated the Dry Farming Collaborative, which consists of farmers, extension educators, plant breeders, and others partnering to increase knowledge and awareness of dry farming.
- The OSU Plant Clinic, housed in Botany & Plant Pathology, provided information and diagnoses to nearly 800 companies serving over 1,200 clients across the US. Correct identification of problems reduces unnecessary treatments which mitigates environmental impact and maximizes resources.

Grow rural and urban regional centers to advance social progress:

- The Klamath County Extension Service District that was passed by voters in May of 2015 contributed close to $180,000 in the 2016 fiscal year.
- Klamath Basin Research & Extension Center (KBREC) continues to work with the Basin Partners Internship Program to bring job skills training to the Klamath Basin. It provided 19 internships last year, and will increase to 35-40 in 2017.

Drive economic development:

- The Tri-State Potato Breeding and Variety Development team that several AgSci faculty participate in has released potato varieties that contribute more than $500M in value to various economies in the Pacific Northwest.
- Christine Brekken, Mallory Rahe, and Larry Lev in Applied Economics worked on a set of efforts to investigate the economic, social, and environmental impacts of local food systems in Oregon.
- Stuart Reitz and Clint Shock at the Malheur Experiment Station, along with Joy Waite-Cusic in Food Science & Technology, worked with onion growers to ensure the highest food safety and quality during growing and harvesting, with a special emphasis on irrigation water quality.
- Clint Shock at Malheur Experiment Station and Maziar Kandelous in Crop & Soil Science are working together with several OSU faculty and Smart Vineyards to optimize grape production and reduce the use of irrigation water.
- Plant breeders are developing new varieties of hops and barley to provide Northwest brewers with a full range of flavors and aromas, helping to drive innovation for Oregon's $4.5B craft beer industry.
- The new Spirits Teaching and Innovative Libations Lab (STILLab) is exploring new products and processes, including the use of native juniper berries for distilling gin, to help grow Oregon's distilling industry.
- Researchers at the Food Innovation Center collaborated with Oregon Dept. of Ag to present the Crop-Up Dinner Series, which helped increase awareness of the bountiful diversity Oregon Specialty Crops.

Increase study abroad and strategic international research partnerships:

- The North American Association of Fisheries Economists, housed in Applied Economics, organized a research conference in La Paz, Mexico, to enhance collaboration among economists working on aquaculture.
- AquaFish continued to partner with institutions worldwide to develop and transfer innovative technologies and management practices in aquaculture and fisheries. Highlights from the past year include:
  - In Nepal, successfully breeding and growing an economically important cool-water fish, Sahar, in warmer water, expanding the potential for aquaculture and replenishing declining natural stocks.
  - In Cambodia, playing a critical role in lifting the government ban on snakehead aquaculture, and informing the design and implementation of a successful and sustainable snakehead policy.
  - In Tanzania, formulating fish feed using high quality protein from invertebrates, which can reduce overhead costs and improve the sustainability of smallholder aquaculture systems.
- Dawn Moyer and Misty Lambert in Agricultural Education & General Agriculture led a Farm, Fork, & Glass Innovation Tour in England.
- Rob Suryan and the Seabird Oceanography Lab, in collaboration with US and Japanese agencies, documented the first successes of their endangered-species reintroduction efforts in a recent publication in *Animal Conservation*.
- Tom Shellhammer in Food Science & Technology organized and hosted the 2017 International Brewers Symposium on Hop Flavor and Aroma in Beer at OSU, which drew 190 participants.
- Cindy Ocamb in Botany & Plant Pathology participated in an evaluation and outreach on black Sigatoka in the Dominican Republic and engaged with the banana industry in the Dominican Republic.
- Hillary Egna at AquaFish organized and chaired an all-day technical session at the World Aquaculture 2017 conference, which was attended by approximately 1,500 people from 100 countries, and also served on the awards committee at the Association for International Agriculture & Rural Development 53rd Annual Conference.

Engage alumni and other external partners to advance our goals:

- With the Eastern Oregon University Alumni Office, the Ag & Natural Resource program at EOU is organizing the first OSU@EOU alumni reunion which will occur at EOU's homecoming game in October.
- The Eastern Oregon Agricultural Research Center nominated the Union Station Red Barn as a 2018 Oregon's Most Endangered Places. If accepted, this status will help engage external partners with future restoration projects.
- The Eastern Oregon Agricultural Research Center continues to host the Summer Agriculture Institute Session II that provides hands-on pedagogical experience in agriculture and natural resources to Oregon educators (K-12).
- Agricultural Education & General Agriculture conducted 10 teacher professional development workshops in conjunction with the Oregon Agriculture Teachers Association.
- The AgSci Leadership Academy brought in over 20 industry speakers to provide leadership development training for AgSci students.
- Agricultural Education & General Agriculture organized and conducted statewide workshops engaging over 120 high school agriculture and STEM teachers.

Build community networks for two-way engagement:

- Steven Dundas in Applied Economics is co-PI (with other OSU faculty) for a 2017 Oregon Sea Grant SEED project to develop coastal community networks to improve resilience and adaptation to acute and chronic coastal hazards.
- Agricultural Education & General Agriculture hosted the Oregon FFA Career Development Event days which allowed over 1,000 high school students to engage in STEM related activities throughout AgSci.
- The OSU Center for Small Farms & Community Food Systems is one of two backbone organizations supporting the work of the Oregon Community Food Systems Network, a collaboration of 40 nonprofit organizations across Oregon dedicated to strengthening local and regional food systems.

Essential Commitments of OSU

Enhancing Diversity

Increasing diversity of faculty, staff, and students:

- David Lewis and Steven Dundas in Applied Economics were co-mentors for an undergraduate researcher from an underrepresented group through the Regional Approaches to Climate Change (REACCH) program.
- The International Institute for Fisheries Economics and Trade (Applied Economics) applied economic analysis to gender issues in fisheries and aquaculture sectors by hosting a special conference session, by developing a new "best paper" prize to encourage future work, and by supporting the development of the new global "Genderaquafish" network.
- The STEM summer camp for DNA Biology and Bioinformatics, co-organized by Pankaj Jaiswal in Botany & Plant Pathology, provided financial support to 36 underrepresented and low-income students for the 2-week camp.
- Aquaculture Without Frontiers honored Hillary Egna at AquaFish for her commitment and achievements toward increasing capacity and sustainability for people and institutions in developing countries for almost 3 decades.
- Hillary Egna at AquaFish published a chapter in a book that identifies shortcomings in gender integration in disaster management in fishing and aquaculture communities as well as mitigation solutions that are underway.
- Agricultural Education & General Agriculture received NIFA funding specifically allocated to recruit and retain underrepresented graduate students.
- Ivan Arismendi in Fisheries & Wildlife was the lead author of an article published in *Bioscience* about diversity and inclusion in fisheries sciences, which was recognized as a Point of Pride by OSU's Office of Institutional Diversity.

Stewardship of Resources

Enhancing resources through private philanthropy by:

Promoting sustainable built and natural environments:

- John Antle in Applied Economics co-leads the Ag Model Intercomparison and Improvement Project, an international organization promoting collaboration among ag sciences to improve the use of quantitative tools for decision making.
- Applied Economics offers a class, *Conservation on Private Land*, with presentations by the Greenbelt Land Trust, Rocky Mountain Elk Foundation, and Wetlands Conservancy; and includes field trips to properties undergoing extensive restoration of wetlands, upland prairie, and riparian vegetation.
- Renewed funding of approximately $6 million dollars over 7 years has been obtained by Carl Schreck and David Noakes in Fisheries & Wildlife from the US Army Corps of Engineers to continue research on development of captive reared, wild fish "surrogates" to study fish passage behavior and survival through Willamette Reservoirs.
- Clint Shock at the Malheur Experiment Station is working on native plant seed production, an integral part of the multi-institutional Great Basin Native Plant Project to provide plant materials for rangeland restoration.
- The Oregon Flora Project website has drawn over 6,700 page views per month, and is an important botanical resource for natural resource managers, citizen science initiatives, and the native plant gardening industry.
- The Food Innovation Center remodeled an under-utilized lab to be a modern food safety/microbiology lab for work on important public health pathogens**,** installed three new pollinator gardens in the front plaza in coordination with the OSU Master Gardener Program, and launched a new website to promote its services.
- Lesley Morris received an internal grant to develop the history of Union Station's Hall Ranch. This research will be used as a baseline for future classes, management of OSU's resources on the Hall Ranch and extension activities in the Catherine Creek watershed.
- Chad Higgins in Biological & Ecological Engineering found that planting crops directly beneath solar panels can boost photovoltaic efficiency, as noted by the Sierra Club in their ranking of OSU as a "Cool School."

Balancing economic and environmental improvements in the region:

- Fundraising and industry partnerships for the Oregon Quality Food & Beverage Products Initiative are focused on a new pilot processing facility for beer, wine, and cheese innovation. Tillamook County Creamery pledged a $1.5 million gift for the dairy pilot plant.
- Joel Felix at the Malheur Experiment Station is working on methods to manage yellow nutsedge in row crops, especially onion. Yellow nutsedge causes substantial loss to onion production and is increasingly problematic.
- Patty Skinkis in Horticulture has been researching yield management of winegrapes through multiple projects, and their findings have led the industry to increase yield targets by 0.5 to 1 ton per acre.
- Andony Melathopoulos in Horticulture created an Extension course that teaches growers how to apply pesticides with minimal impact to pollinators. This has been delivered to approximately 1,200 licensed pesticide applicators for Oregon Department of Agriculture recertification credits across a total of nine different sessions.
- Ramesh Sagili in Horticulture leads the honey bee research and extension program, which promotes sustainable apiculture and pollination in Oregon and has an annual estimated economic impact of $9 million.
- Ryan Contreras in Horticulture is supporting economic growth and ecological sustainability of nursery crops. Maple nursery sales have declined to 10% of what they were 10 years ago due to their invasive nature. He is developing sterile maples for the current $174 million national market for maple trees.
- Nik Wiman and Vaughn Walton in Horticulture developed a new mating disruption product for filbert worm. This contributes to a 70% reduction in the use of pesticides for the control of filbert worm.
- Vaughn Walton in Horticulture determined the insect vector responsible for spreading a new viral disease that causes red blotch in wine grapes, which can seriously reduce sugar content in grapes.

Technology as a Strategic Asset

Sharing relevant information to make effective decisions:

- Melodie Putnam in Botany & Plant Pathology is helping develop and beta-test hand-held diagnostic equipment for on-site diagnostics; and is working with faculty in Pharmacy to develop an effective biocontrol for *Agrobacterium* and *Rhodococcus*.

Equity, Inclusion, and Civil Discourse

- Rob Suryan and the Seabird Oceanography Lab have hosted Environment for the Americas summer interns for the past 5 years to assist with field studies and provide environmental education outreach to Hispanic students.
- AquaFish supported the 6th Global Symposium on Gender in Aquaculture and Fisheries and the creation of the Asian Fishery Society's Gender in Aquaculture and Fisheries Section.
- In partnership with the World Aquaculture Society, AquaFish launched the World Aquaculture Society African Professional Fellowship in support of collaboration and network building at World Aquaculture 2017.
- Statistics hosted over 200 statisticians on campus for the International Indian Statistical Association Meetings.

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Appendix

Several AgSci faculty received grants of $500,000 or more:

- Jeff Anderson in Botany & Plant Pathology received an NSF Integrative Organismal Systems award for $646,724. Title: "Regulation of Pseudomonas syringae Virulence by Plant-Derived Chemical Signals"
- Stephen Giovannoni in Microbiology received an NSF Dimensions of Biodiversity award for $799,590. Title: "Dimensions: Collaborative Research: Functional and genomic diversity in vitamin B1 metabolism and impacts on plankton networks and productivity"
- Christian Hagen in Fisheries & Wildlife received funds (non-competitive) form the USDA Natural Resources Conservation Service for $701,040. Title: "Science Advisor for Lesser Prairie Chicken Initiative"
- Shawn Mehlenbacher in Horticulture received a USDA Specialty Crop Research Initiative award for $3,112,410 Title: "Genomic Tools, Genetic Resources, and Outreach to Expand Commercial U.S. Hazelnut Production"
- Tom Sharpton in Statistics received a 3-year $752K NSF grant to develop analytical methods to examine the evolutionary ecological distribution of microorganisms.
- Katie Dugger in Fisheries & Wildlife received $1.2M in funding from the USDA Forest Service to continue studies of the demography of northern spotted owls in Oregon and Washington.
- Pankaj Jaiswal in Botany & Plant Pathology received a Common Reference Ontologies and Applications for Plant Biology, from the National Science Foundation for $1,327,215.
- Yuan Jiang in Statistics is co-PI on a 5-year $4 million collaborative grant from NSF for a project on genetically engineered crops.
- Hillary Egna of AquaFish received $3.6M from the United States Agency for International Development (USAID) for FY17 to address global issues in food security and aquaculture by cultivating international multidisciplinary partnerships that advance science, research, education, and outreach.

Faculty Awards:

- Sarah Emerson in Statistics received the 2017 Loyd Carter Award for Outstanding and Inspirational Teaching in Science for her graduate teaching.
- Juliann Moore in Statistics received the 2017 Loyd Carter Award for Outstanding and Inspirational Teaching in Science for her undergraduate teaching.
- Kim Anderson in Environmental & Molecular Toxicology was awarded the 2016 OSU Alumni Association Distinguished Professor Award.
- Jonathan Velez in Agricultural Education & General Agriculture was awarded the Outstanding Research Paper at the American Association for Agricultural Education Research Conference.
- Clint Shock at Malheur Experiment Station received the Distinguished Service Award, National Onion Association, Recognition of Service from the Nyssa-Nampa Sugarbeet Growers Association, and Volunteer of the Year award from the Treasure Valley Community College Foundation.
- Bruce McCune in Botany & Plant Pathology received the prestigious Archarius Medal for Lifetime Achievement in Lichenology – the highest international honor for a lichenologist.
- Joyce Loper in Botany & Plant Pathology was awarded the prestigious honor to be inducted into the United States Department of Agriculture, Agricultural Research Service (USDA-ARS) Hall of Fame, September 2016.
- Molly Megraw in Botany & Plant Pathology received the 2017 OSU Promising Scholar Award, and the 2017 OSU Phi Kappa Phi Emerging Scholar Award.
- Chris Mundt in Botany & Plant Pathology received the Distinguished Service Award from the Oregon Wheat Growers Committee.
- Jay Pscheidt in Botany & Plant Pathology received the American Phytopathological Pacific Division Distinguished Service Award
- Gar Rothwell in Botany & Plant Pathology received the 2017 Lifetime Achievement Award, Paleobotanical Section, form the Botanical Society of America
- Alexandra Weisberg in Botany & Plant Pathology received the Postdoctoral Fellowship Award, Characterizing Competitiveness and Persistence of Agrobacteria in the Crown Gall Disease Niche, USDA NIFA

- Reinaldo Cooke in Animal & Rangeland Sciences received the 2017 Extension Award from the Western Section of the American Society of Animal Science.
- Reinaldo Cooke in Animal & Rangeland Sciences received was honored with the F.E. Price/Agricultural Research Foundation Award for Excellence in Research. The award recognizes outstanding contributions to agriculture.
- David Bohnert in Animal & Rangeland Sciences was honored with the Briskey Award for Faculty Excellence - Recognizing faculty achievement within the College of Agricultural Sciences.
- Ann Colonna, program manager for the Sensory and Consumer Evaluation Program at the Food Innovation Center, was honored with this year's OSU Outstanding Faculty Research Award.
- Kelly Biedenweg in Fisheries and Wildlife received an EPA STAR Early Career Award.
- Yanyun Zhao's research group in Food Science & Technology received the 2017 Tanner Award from the Institute of Food Technologists for a highly cited paper published in the *Journal of Food Science*.
- Ron Wrolstad, Distinguished Professor Emeritus in Food Science & Technology, received the 2017 Jim Joseph Award at the Berry Health Benefits Symposium.
- Ron Wrolstad also received the 2017 American Chemical Society Advancement of the Application of Agricultural & Food Chemistry Award.
- Yanyun Zhao in Food Science & Technology received the 2016 Agricultural Research Foundation Distinguished Faculty Award.

Graduate Student Awards:

- Stephanie Ichien in Environmental Science received a travel award from the Food and Ag Organization to attend *FishAdapt: Global Conference on Climate Change Adaptation for Fisheries and Aquaculture* in Bangkok, Thailand.
- Rodrigo Marques in Animal & Rangeland Sciences received the Young Scholar Ph.D. student Award from the Western Section of the American Society of Animal Science.
- Ivan Titaley in Environmental & Molecular Toxicology won the 2016 Graduate Student Paper Award from The Division of Environmental Chemistry of the American Chemical Society.
- Kelsey Schubach in Animal Sciences received the Young Scholar M.S. student Award from the Western Section of the American Society of Animal Science.
- Josh Stewart in Agricultural Education & General Agriculture received the NACTA Graduate Student Teaching Award at the Annual Conference of the North American Colleges and Teachers of Agriculture.
- Javier Tabima Restrepo in Botany & Plant Pathology was awarded the 2017 Savery Outstanding Doctoral Award, and the Lenore Bayley Fellowship.
- Abby Glauser in Botany & Plant Pathology was awarded the Savery Outstanding Master's Student Award, Pregon Lottery Graduate Scholarship (McCune Lab)
- Holly Dixon in Environmental & Molecular Toxicology was awarded an International Society for Exposure Science Travel Grant to attend the 2017 International Society of Exposure Science conference.
- Jamie Minick in Environmental & Molecular Toxicology received the 1st Place Student Platform Presentation Award at the 2017 Pacific NW Chapter of the Society of Environmental Toxicology and Chemistry Meeting.
- Matthew Geniza in Botany & Plant Pathology was awarded the Oregon Biosciences Internship at the Legacy Research Institute in Portland, Oregon.
- Ryan Lenz in Botany & Plant Pathology received a 2016-2017 Provost's Distinguished Graduate Fellowship.
- Lauri Lutes in Botany & Plant Pathology received Hardman Foundation Award from the American Phytopathological Society.
- Catie Wram in Botany & Plant Pathology received the Malcolm and Catherine Quigley Student Travel Award.
- Wyatt Dillon Blankenship (BPP) received the Portland Garden Club Fellowship.
- Kristen Finch (BPP) received OSU Graduate Student Travel Award, Bob Anderson Memorial Student Scholarship (Jones Lab), Oregon Lottery Graduate student Scholarship
- Matthew Brown (BPP) received a NASA Earth and Space Science Fellowship. His project is focused on understanding phytoplankton photoacclimation.
- Patrick Bennett (BPP) received the Cascade Mycological Society and the Oregon Mycological Society Scholarships.
- Zachary Foster (BPP) received best "Lightning talk" at CGRB Conference and received Best Poster at the OMBI Microbiome Research Forum.

- Katarina Lunde (BPP) received a Hardman Foundation Award.
- Melinda Guzman (BPP) received a USFWS Conservation Careers Scholarship.
- Edward Barge (BPP) received a Mycological Society of America Student Spotlight.
- Kai Li in Statistics received a travel award to attend the 2016 IBS/WNAR conference in Victoria, BC, Canada.
- Chuan Tian in Statistics received a travel award to attend the Summer Institute in Statistics for Big Data at University of Washington in Seattle, WA.
- Heather Kitada in Statistics received a travel award to attend the 2017 American Association for Public Opinion Research Conference in New Orleans, LA.

Undergraduate Awards:

- Ashley Miller (BPP) was awarded a Charles and Helen Fulton Memorial Scholarship.
- Sabrina Edwards (EMT) was awarded a CAS Undergraduate Research Award for her project titled:
- Colette Lambert (BPP) was awarded a Kori May Memorial Scholarship.
- Chandler Sprueill (BPP) was awarded a Thomas C. Moore Memorial Scholarship.
- Megan Seslar (BPP) was awarded the Bill & La Rea Johnston Outstanding Senior Award.
- Quinn Rasmussen (BPP) was awarded a Charles and Helen Fulton Memorial Scholarship.
- Tyler Hardy (BPP) was awarded a Charles and Helen Fulton Memorial Scholarship.
- Wyatt Johnston (BPP) was awarded a Thomas C. Moore Memorial Scholarship
- Amy Kessler (BPP) was awarded a Thomas C. Moore Memorial Scholarship.
- Elena Dupen (BPP) was awarded a Jean Siddall Memorial Scholarship.

Oregon State University

College of Agricultural Sciences

PART 1

Annual Academic Program Review 2016-17

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	% Change '15 - '17
Faculty FTE																
Professorial	229.4	200.9	195.8	206.8	211.6	204.1	222.1	204.6	201.7	224.3	225.6	236.8	241.1	242.2	248.4	3.0%
Non-Professorial	301.5	321.0	301.3	305.1	296.7	306.4	298.4	301.8	319.6	333.1	344.8	345.1	346.7	342.0	351.3	1.3%
Total Faculty FTE	**530.9**	**521.9**	**497.1**	**511.9**	**508.3**	**510.5**	**520.5**	**506.4**	**521.3**	**557.4**	**570.4**	**581.9**	**587.8**	**584.2**	**599.7**	**2.0%**
E&G Tenured/Tenure Track	41.5	36.0	31.1	40.4	36.8	39.5	31.6	36.2	36.5	45.8	47.2	49.3	48.2	50.7	48.9	1.5%
Faculty Headcount																
Professorial	242	218	214	224	233	222	251	225	222	249	253	274	271	273	286	5.5%
Non-Professorial	335	365	336	338	331	339	329	347	366	379	386	382	379	378	383	1.1%
Total Faculty Headcount	**577**	**583**	**550**	**562**	**564**	**561**	**580**	**572**	**588**	**628**	**639**	**656**	**650**	**651**	**669**	**2.9%**
E&G Tenured/Tenure Track																
0% E&G Funded	57	54	55	52	63	61	64	61	50	47	33	34	34	39	38	11.8%
1%-33% E&G Funded	86	70	63	60	66	62	63	62	64	67	81	79	76	75	68	-10.5%
34%-66% E&G Funded	29	28	21	30	24	25	23	27	29	30	33	31	30	35	45	50.0%
67%-99% E&G Funded	13	12	13	14	12	15	9	11	9	13	12	15	17	16	18	5.9%
100% E&G Funded	4	2	3	7	7	8	4	6	6	13	12	10	9	8	2	-77.8%
Total Tenured/Tenure Track	**189**	**166**	**155**	**163**	**172**	**171**	**163**	**167**	**158**	**170**	**171**	**169**	**166**	**173**	**171**	**3.0%**
SCH (Academic Year)																
Undergraduate	24607	25340	25246	25342	24529	23833	24741	27220	28479	33983	34677	37275	36943	35859	36047	-2.4%
Lower Division	6362	6870	7735	7634	7731	7327	8659	8912	8596	11277	11460	12348	12534	11780	13489	7.6%
Upper Division	18245	18470	17511	17708	16798	16506	16082	18308	19883	22706	23217	24927	24409	24079	22558	-7.6%
Graduate	10274	10277	10571	9907	9213	8685	9809	9599	10267	11404	12295	12359	11493	11511	10657	-7.3%
First Professional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
TOTAL SCH	**34881**	**35617**	**35817**	**35249**	**33742**	**32518**	**34550**	**36819**	**38746**	**45387**	**46972**	**49634**	**48436**	**47370**	**46704**	-3.6%
Duplicated Major Count																
Undergraduate Graduate	1158	1123	1140	1129	1141	1061	1104	1209	1496	1793	2019	2226	2266	2337	2241	-1.1%
First Professional	331	328	339	320	289	280	266	251	253	328	352	366	415	417	413	-0.5%
TOTAL Major Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	1489	**1451**	**1479**	**1449**	**1430**	**1341**	**1370**	**1460**	**1749**	**2121**	**2371**	**2592**	**2681**	**2754**	**2654**	-1.0%

Oregon State University

College of Agricultural Sciences

PART 1

STRATEGIC PLANNING METRICS 2016-17

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Goal 1. Provide a Transformative Educational Experience for all Learners.															
1.3 First Year Retention Rate (College/University)	73.5/ 85.8	71.4/ 84.4	74.1/ 84.4	76.3/ 82.7	71.1/ 81.7	72.4/ 82.7	70.5/ 83.6	71.4/ 81.0	71.5/ 82.1	73.2/ 83.9	70.9/ 83.1	71.4/ 83.4	70.2/ 81.9	73.9/ 86.3	60.4/ 74.4
1.4 6-Year Graduation Rate (College/University)	43.1/ 61.8	51.3/ 70.7	58.2/ 67.7	46.2/ 62.6	50.9/ 64.8	53.1/ 73.5	53.7/ 70.7	57.0/ 68.9	53.2/ 69.2	43.7/ 59.2	44.2/ 57.7	51.4/ 67.8	49.0/ 65.3	53.0/ 66.2	54.9/ 71.1
1.5 Junior Transfer 4-Year Graduation Rate (College/University)	81.3/ 84.4	79.3/ 84.8	70.0/ 74.3	72.3/ 73.8	67.2/ 67.2	62.0/ 72.2	74.0/ 80.0	61.8/ 67.6	68.3/ 76.7	69.1/ 69.1	73.5/ 73.5	62.5/ 61.1	48.2/ 55.3	53.2/ 57.8	50.0/ 52.4
1.6 % US Minority Students	5.4%	5.8%	6.2%	6.5%	7.0%	7.2%	8.7%	9.4%	12.0%	14.2%	14.4%	14.3%	14.5%	16.4%	18.5%
1.7 % International Students	9.0%	10.0%	8.0%	8.0%	7.0%	8.0%	7.0%	6.0%	5.0%	4.0%	4.0%	5.0%	5.0%	5.1%	4.9%
1.8 % High Achieving Oregon High School Graduates	-	36.7%	35.5%	40.0%	37.1%	28.6%	33.1%	31.5%	38.1%	35.4%	44.5%	43.4%	44.0%	39.2%	52.8%

Goal 3. Strengthen Oregon State's Impact and Reach throughout the state and beyond.															
3.2 Invention Disclosures	13	6	9	13	10	15	6	13	14	12	14	17	16	17	14

Oregon State University

College of Agricultural Sciences

Annual Academic Program Review 2016-17

PART 2

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	% Change '15 - '17
Resources (Fiscal Year)																
E&G - Ending Budget ($)	7,087,597	7,759,353	9,636,296	10,263,244	10,676,052	11,911,205	12,846,972	13,196,406	17,322,152	20,122,981	23,842,697	26,887,872	27,311,988	28,101,168	29,114,299	6.6%
Total R&D Expenditures ($)	**62,647,329**					**70,084,034**	**81,050,466**	**81,687,349**	**89,526,889**	**92,423,017**	**89,955,398**	**88,675,532**	**87,712,386**	**95,790,661**	**FEB 2018**	-
Awards from Grants and Contracts* (#)	555	668	614	669	608	475	427	560	517	492	417	404	539	531	417	-22.6%
Awards from Grants and Contracts ($)	29,368,256	35,834,483	35,891,976	37,982,268	34,185,285	37,600,692	44,463,817	55,039,078	59,751,760	53,872,819	53,138,070	45,446,585	50,416,935	52,865,167	46,392,574	-8.0%
Private Giving ($)	**1,168,796**	**1,827,412**	**2,246,571**	**5,618,015**	**8,630,223**	**9,460,980**	**4,399,905**	**10,466,936**	**5,311,623**	**11,443,406**	**9,080,308**	**10,157,419**	**11,461,399**	**7,826,682**	**8,362,630**	**-27.0%**

Strategic Planning Metrics 2016-17

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Goal 2. Demonstrate Leadership in Research, Scholarship and Creativity while enhancing preeminence in the three signature areas of distinction															
2.1 Total R&D Expenditures	**see APR data above**														

Goal 3. Strengthen Oregon State's Impact and Reach throughout the state and beyond.															
3.4 Dollars Leveraged per Appropriated Dollar for SWPS Research (AES)	1.29	1.41	1.51	1.51	1.45	1.30	1.54	1.63	2.50	2.50	2.30	2.10	2.16	1.90	1.79
3.5 Annual Private Giving	**see APR data above**														

*** From 2000-01 to 2007-08, the number of grant/contract awards is based on the accounting transactions from the College's award index, rather than the actual number of awards received by the college.**

Before 2005-06, awards affiliated with both a campus department and OSU Extension Service were reported under the department's college.

Starting in 2005-06 these were considered part of Extension Service and are not reported in the department's college.

College of Agricultural Sciences award metrics include Agriculture Experiment Station (AES)