



Marketing & Communications

In Q4 of 2018, CAHNRS Marketing & Communications published **76** online articles that highlight accomplishments in academics, research, and Extension. CAHNRS and Extension websites received **981,871** total page views and garnered **504,101** new site visitors. We consistently increased our audience size and engagement on social media, and our web team completed upgrades of various websites and site platforms.

SOCIAL MEDIA UPDATE

<u>Facebook</u>	54	4,073	82,104	3,454
	Posts	Likes	Reached	Fans (+1.02%)
Top Post: <u>"Washington Red Raspberry Commission presents check for endowed chair"</u>				
<u>Twitter</u>	338	308,008	6,601	4,788
	Tweets	Impressions	Engagements	Followers (+1.1%)

OTHER NOTEWORTHY PROJECTS

- Wine Science Center virtual tour
- Prosser IAREC website launch
- Washington SNAP-ED website launch

TOP NEWS STORIES

- "Fungus provides powerful medicine in fighting honey bee viruses"—By **Scott Weybright** | Published Oct. 4, 2018 in Wired, Science Daily, Innovation Toronto, Lewiston Tribune, The UK Independent, A Future with Bees, others
- "Emotional suppression has negative outcomes on children"—By **Scott Weybright** | Published Nov. 26, 2018 in Lifestacker, HuffPost UK, MSN, Reddit, The London Times, The Sun (UK), Daily Mail, Day Nurseries, Romper, Before It's News, Prevent Disease, others
- "New Postharvest Endowed Chair Carolina Torres to help growers solve challenges, bloom to table"—By **Seth Truscott** | Published Dec. 12, 2018 In Capital Press, Good Fruit Grower, Basin Business Journal, Yakima Herald, Seattle Daily Journal of Commerce, WSU News

Faculty Highlights

- **Kenneth Casavant** (Emeritus, SES) received the 'Lifetime Achievement Award' from the Pacific Northwest Transportation Consortium.
- **Bin Yang** (BSE) was selected for the 'Fulbright Distinguished Chair Award' at Aalto University in Finland.
- **Kate Evans** (Wenatchee TFREC, Hort.) and **Bruce Barritt** (Emeritus, Wenatchee TFREC, Hort.) received the 'Technology with Impactful Contribution to Society Award' for their 20-year effort to release COSMIC CRISP.
- **Stefano Musacchi** (Wenatchee TFREC, Hort) was named 'Chair of the Pear Working Group' of the International Society for Horticultural Science.
- **Juming Tang's** (BSE) MATS technology was featured in an article in the Harvard Business Review, "The Grocery Industry Confronts a New Problem: Only 10% of Americans Love Cooking."
- **Manoj Karkee** (BSE/CPAAS) was named a 2019 'Pioneer in AI and IOT' by Connected World.
- **David Granatstein** (Wenatchee TFREC, CSANR) gave an invited presentation on "Agroecology – a strategy for greater orchard sustainability" at the 8th International Pear Symposium in Montevideo, Uruguay on Dec. 7.

- **Per McCord** (IAREC, Hort.) gave an invited presentation “Vision for the re-launched stone fruit breeding program” at the Agriculture and Agri Food Canada conference in Summerland, British Columbia on Oct. 3.
- **Dennis Johnson** (PP) was presented with the ‘Lifetime Achievement Award’ from the Washington Mint Growers Association.
- **R. James Cook** (Emeritus, PP) was awarded an honorary doctorate at the 2018 WSU Fall Commencement in recognition of over 40 years of research on soil-borne pathogens and his service to WSU.
- **Qin Zhang** (BSE, CPAAS) gave an invited talk on ‘Smart Agriculture’ at the 27th Modern Engineering & Technologies Seminar in Taipei on Oct. 21-25.

Grant Funding

CAHNRS Office of Research faculty received **\$9.5M** in extramural support in the form of new/ongoing grants, contracts, agreements and services rendered. A selection of awards (with award total) is given below:

New Grants Include:

- **Benjamin Cowan** (SES) was awarded a \$197K Robert Wood Johnson Foundation program to study community colleges and adult health.
- **Zhiwu Zhang** (CSS) was awarded a \$295K AFRP grant from USDA to develop 200 inbred alfalfa lines toward high yield production.
- **Manoj Karkee** (BSE/CPAAS) was awarded a \$691K CPS grant from USDA for big data approaches to accurate water stress detection and precision irrigation in fruit crops.
- **Lav Khot** (BSE/CPAAS) was awarded a \$300K grant from the Foundation for Food and Agriculture to investigate production of residue-free healthy fruit crops.
- **John Peters** (IBC) was awarded a \$1.2M BES grant from DOE for biological electron transfer and catalysis.
- **Phil Bates** (IBC) was awarded a \$301K PGR grant from NSF for discovering new metabolic constraints and regulatory nodes in oilseeds engineered for enhanced fatty acid synthesis and seed oil.
- **Jenifer McIntyre** (SOE) received a \$316K Fish and Wildlife grant from DOI to study the longevity of bioretention depths for preventing acute toxicity from urban stormwater runoff.
- **Per McCord** (IAREC/Hort.) received a \$407K grant from the Washington Tree Fruit Research Commission/Oregon Sweet Cherry Commission to supporting a robust Pacific Northwest sweet cherry breeding and genetics program (2019-2021)

Large Grants that Received Yearly Renewals Include:

- **John Peters** (IBC), Engineering synthetic symbiosis between plant and bacteria to deliver nitrogen to crops, NSF-IOS, \$1.0M
- **Michael Kahn** (IBC), Characterizing a novel Sinorhizobium activity that increases legume nodulation, NSF-IOS, \$100K
- **Michael Pumphrey** (CSS), Validation, characterization and deployment of QTL for grain yield components in wheat, USDA-AFRI (UC Davis-lead), \$118K

Publications

CAHNRS faculty published **147** articles in peer-reviewed journals and conference proceeding: these are catalogued in our Weekly Published Research Archive ([available here](#)). A selection of these publications, which appeared in journals that rank in at least the 90th percentile in their respective fields, as determined by Thomson Reuters InCites, is provided below with their 5-year impact factor.

DISCOVERY

- **André-Denis Girard Wright** (Dean), “Cultivation and sequencing of rumen microbiome members from the Hungate1000 collection,” NATURE BIOTECHNOLOGY – Impact Factor 43.3 – 99th percentile in Biotechnology & Applied Microbiology
- **Marc Kramer** (SOE), “Climate-driven thresholds in reactive mineral retention of soil carbon at the global scale.” NATURE CLIMATE CHANGE – Impact Factor 22.4 – 99th percentile in Environmental Studies
- **David Gang** (IBC), “Biomolecular archaeology reveals ancient origins of indigenous tobacco smoking in North American Plateau,” PNAS USA – Impact Factor 10.4 – 93rd percentile in Multidisciplinary Sciences
- **Thomas Okita** (IBC), “RNA-Binding Protein RBP-P Is Required for Glutelin and Prolamine mRNA Localization in Rice Endosperm Cells,” PLANT CELL – Impact Factor 9.4 – 97th percentile in Plant Sciences
- **Sammy Perone** (HD), “Age-related change in brain rhythms from early to middle childhood: Links to executive function,” DEVELOPMENTAL SCIENCE – Impact Factor 4.9 – 96th percentile in Experimental Psychology
- **Alexander Fremier** (SOE), “Stream metabolism increases with drainage area and peaks asynchronously across a stream network,” AQUATIC SCIENCES – Impact Factor 3.3 – 93rd percentile in Limnology
- **Maren Friesen** (CSS/PP), “Soil microbial communities alter conspecific and congeneric competition consistent with patterns of field coexistence in three *Trifolium* congeners,” JOURNAL OF ECOLOGY – Impact Factor 6.5 – 91st percentile in Ecology
- **Maren Friesen** (CSS/PP), “Effect of nitrogen fertilization on the abundance of nitrogen cycling genes in agricultural soils: A meta-analysis of field studies,” SOIL BIOLOGY & BIOCHEMISTRY – Impact Factor 5.4 – 96th percentile in Soil Science
- **Mei-Jun Zhu** (SFS), **Martin Maquivar**, **Jan Busboom**, **Mark Nelson** and **Min Du** (AS), “Neonatal vitamin A injection promotes cattle muscle growth and increases oxidative muscle fibers” JOURNAL OF ANIMAL SCIENCE AND BIOTECHNOLOGY – Impact Factor 3.2 – 96th percentile in Dairy & Animal Science
- **Min Du** (AS), “Label-free quantitative proteomic analysis of milk fat globule membrane proteins of yak and cow and identification of proteins associated with glucose and lipid metabolism,” FOOD CHEMISTRY – Impact Factor 4.9 – 95th percentile in Food Science & Technology
- **Karen Sanguinet** (CSS), “*SECONDARY WALL ASSOCIATED MYB1* is a positive regulator of secondary cell wall thickening in *Brachypodium distachyon* and is not found in the Brassicaceae,” PLANT JOURNAL – Impact Factor 6.1 – 95th percentile in Plant Science
- **Thomas Okita** (IBC), “Selective sets of mRNAs localize to extracellular paramural bodies in a rice *glup6* mutant,” JOURNAL OF EXPERIMENTAL BOTANY – Impact Factor 6.0 – 94th percentile in Plant Science
- **Jeff Vervoort** (SOE), “Constraints on the timing and duration of orogenic events by combined Lu–Hf and Sm–Nd geochronology: An example from the Grenville orogeny,” EARTH AND PLANETARY SCIENCE LETTERS – Impact Factor 5.1 – 91st percentile in Geochemistry & Geophysics
- **Thomas Power** (HD), “Authoritative parent feeding style is associated with better child dietary quality at dinner among low-income minority families,” AMERICAN JOURNAL OF CLINICAL NUTRITION – Impact Factor 7.7 – 96th percentile in Nutrition & Dietetics
- **Lisa Shipley** (SOE), “Intensity of red deer browsing on young rowans differs between freshly-felled and standing individuals,” FOREST ECOLOGY AND MANAGEMENT – Impact Factor 3.5 – 95th percentile in Forestry

- **David Crowder** (Ent.), “Genotype-specific fitness cost of resistance to Bt toxin Cry1Ac in pink bollworm,” PEST MANAGEMENT SCIENCE – Impact Factor 3.4 – 93rd percentile in Entomology
- **Charles Edwards** (SFS), “Growth and metabolism of non-*Saccharomyces* yeasts isolated from Washington state vineyards in media and high sugar grape musts,” FOOD MICROBIOLOGY – Impact Factor 4.4 – 94th percentile in Food Science and Technology
- **Jeff Vervoort** (SOE), “Generation of I-type granitic rocks by melting of heterogeneous lower crust,” GEOLOGY – Impact Factor 5.5 – 99th percentile in Geology
- **Jenifer McIntyre** (SOE), “Using High-Resolution Mass Spectrometry to Identify Organic Contaminants Linked to Urban Stormwater Mortality Syndrome in Coho Salmon,” ENVIRONMENTAL SCIENCE & TECHNOLOGY – Impact Factor 7.3 – 96th percentile in Environmental Sciences
- **Markus Keller** (Hort./VE), “Thermal history parameters drive changes in physiology and cold hardiness of young grapevine plants during winter,” AGRICULTURAL AND FOREST METEOROLOGY – Impact Factor 5.0 – 99th percentile in Forestry

TRANSLATIONAL

- **Shaojin Wang** (BSE), “Effect of heating rates on thermal destruction kinetics of *Escherichia coli* ATCC25922 in mashed potato and the associated changes in product color,” FOOD CONTROL – Impact Factor 3.9 – 91st percentile in Food Science & Technology
- **Hang Liu** (AMDT) and **Jinwen Zhang** (CMEC) “Eco-friendly post-consumer cotton waste recycling for regenerated cellulose fibers,” CARBOHYDRATE POLYMERS – Impact Factor 3.9 – 98th percentile in Applied Chemistry
- **Jean-Sabin McEwen** (BSE), “Dissolution of CoCu catalyst step defects by Co subcarbonyl formation,” JOURNAL OF CATALYSIS – Impact Factor 6.3 – 95th percentile in Chemical Engineering
- **Junming Tang** (BSE), “Microwave pasteurization for ready-to-eat meals,” CURRENT OPINION IN FOOD SCIENCE – Impact Factor 3.7 – 92nd percentile in Food Science & Technology
- **Girish Ganjyal** (SFS), “Reduction of ochratoxin A in direct steam injected oat-based infant cereals with baking soda,” FOOD CONTROL – Impact Factor 3.9 – 91st percentile in Food Science & Technology
- **Barbara Rasco** (SFS), “Bactericidal activity of neutral electrolyzed water against *Bacillus cereus* and *Clostridium perfringens* cell suspensions and artificially inoculated onto the surface of selected fresh produce and polypropylene cutting boards,” FOOD CONTROL – Impact Factor 3.9 – 91st percentile in Food Science & Technology
- **Deepti Singh** (SOE), “California Winter Precipitation Predictability: Insights From the Anomalous 2015–2016 and 2016–2017 Seasons,” GEOPHYSICAL RESEARCH LETTERS – Impact Factor 4.1 – 95th percentile in Multidisciplinary Geosciences
- **Melba Salazar-Gutiérrez**, **Markus Keller** and **Gerrit Hoogenboom** (BSE), “Time-to-event analysis to evaluate dormancy status of single-bud cuttings: an example for grapevines,” PLANT METHODS – Impact Factor 4.5 – 93rd percentile in Plant Science
- **Michael Wolcott** (CMEC) and **Girish Ganjyal** (SFS), “Pretreatment with lower feed moisture and lower extrusion temperatures aids in the increase in the fermentable sugar yields from fine-milled Douglas-fir,” BIORESOURCE TECHNOLOGY – Impact Factor 5.9 – 96th percentile in Agricultural Engineering
- **Hanwu Lei** (BSE), “Improving hydrocarbon yield *via* catalytic fast co-pyrolysis of biomass and plastic over ceria and HZSM-5: An analytical pyrolyzer analysis,” BIORESOURCE TECHNOLOGY – Impact Factor 5.9 – 96th percentile in Agricultural Engineering

REVIEWS/BOOKS

- **John Peters** (IBC), “Energy Transduction in Nitrogenase,” ACCOUNTS OF CHEMICAL RESEARCH – Impact Factor 22.4 – 97th percentile in Multidisciplinary Chemistry
- **Stephen Ficklin** and **Doreen Main** (Hort.), “Growing and cultivating the forest genomics database, TreeGenes,” DATABASE – THE JOURNAL OF BIOLOGICAL DATABASES AND CURATION – Impact Factor 3.8 – 94th percentile in Computational Biology
- **Jessica Goldberger** (CSS), “2018 AFHVS presidential address,” AGRICULTURE AND HUMAN VALUES – Impact Factor 3.4 – 99th percentile in History and & Philosophy of Science
- **Bin Yang** (BSE), “From lignin to valuable products—strategies, challenges, and prospects,” BIORESOURCE TECHNOLOGY – Impact Factor 5.9 – 96th percentile in Agricultural Engineering
- **Qin Zhang** (BSE), “Chapter 9. Intelligent machinery for precision agriculture”, in John Stafford (ed.), Precision Agriculture for Sustainability, by Burleigh Dodds Science Publishing (October 2018, ISBN: 978-1-78676-204-7).

Research & Extension Events

- As part of the ‘Next Generation Tree Fruit Network’, a recurring event organized by **Tianna DuPont** (Wenatchee TFREC, ANR), fifteen participants met on Oct. 24 for a discussion of tree fruit economics. DuPont also organized a Pear IPM discussion for 20 participants on Nov. 1 in Cashmere WA.
- This quarter, SFS offered short courses in: ‘FSMA Produce Safety’, ‘FSMA Preventive Controls for Human Foods’, ‘Aquaponics and Intensive Hydroponics’, and ‘Quality Assurance for Seafood Processing’.
- The annual ‘Food Safety and Sanitation Workshop’ held Nov. 6-7 in Portland was sold out with 450+ attendees.

WSU Extension Highlights

FACULTY HIGHLIGHTS

- **Gwen Hoheisel** (ANR) was awarded the ‘Walter J. Clore Award’ from the Washington State Grape Society for her overall contributions to the industry.

PUBLICATIONS

- **Don Llewellyn** (ANR), “Case Study: Intake and apparent digestibility by beef calves of Alamo and Cave-in-Rock switchgrass cultivars harvested as hay at 3 different maturities” – THE PROFESSIONAL ANIMAL SCIENTIST
- **Don McMoran** and **Ben Diehl** (ANR), “Pest: A Method for Quickly Detecting Invasive Insects Introduced into an Area” JOURNAL OF EXTENSION, DEC 2018
- **Stephanie Smith** (YFP), “Bactericidal activity of neutral electrolyzed water against *Bacillus cereus* and *Clostridium perfringens* cell suspensions and artificially inoculated onto the surface of selected fresh produce and polypropylene cutting boards,” FOOD CONTROL – Impact Factor 3.9 – 91st percentile in Food Science & Technology

GRANT FUNDING – CAHNRS Extension faculty received **\$7.4*M** in extramural support in the form of new/ongoing grants, contracts, agreements and services rendered. A selection of awards (with award total) is given below:

New Grants Include:

- **Christopher Blodgett** (CFRU) was awarded a \$589K Substance Abuse and Mental Health Services grant from HHS for the CLEAR Trauma-informed schools network.

- **Shannon Neibergs** (Western Center RME) was awarded a \$1.1M ARMECGP grand from USDA for the Western Extension Risk Management Education Center, 2018-2021.
- **Stephanie Smith** (YFP) was awarded a \$150K Food Safety Outreach grant from USDA for a primer to the produce safety rule for small and very small farms in Washington State.

Large Grants that Received Yearly Renewals Include:

- **Gary Grove** (AWN), NOAA National Mesonet Program Task Order S2017-0118 Amendment 2, DOC NOAA, \$205K
- **Lee Anne Riddle** (Director SNAP-ED), Supplemental Nutrition Assistance Program (SNAP-ed) in Washington State, USDA, \$3.1M
- **Steve Norberg** (ANR), “Developing Practical Phosphorus and Potassium Tissue Test Recommendations and Utilizing Struvite in Modern Alfalfa Systems,” USDA AFRP, \$50K
- **Todd Murray, Chris Benedict** (ANR) and **Rachel Bomberger** (PP), Building Capacity and Awareness of Invasive Species in the Columbia River Gorge and Beyond - A Multiregional, Multinational Approach, Washington State Recreation and Conservation Office, \$40K

Extension Events

- **Don Llewellyn** (ANR) co-hosted a Regional Stockmanship & Stewardship event at the TRAC Center in Pasco, WA on Oct. 13-14. The event was supported by industry partners as well as the National Beef Quality Assurance (BQA) Program. More than 100 cattle producers, industry professionals, and students were in attendance to learn about low-stress cattle handling, animal health, nutrition, and range and pasture management techniques. The participants also had the opportunity to become certified in BQA.

Student News

- **Santosh Bhusal** won the 2018 ‘Outstanding Graduate Student Award’ from the International Society of Precision Agriculture.
- **Kapil Khanal** won the 2018 ‘ASABE Boyd-Scott Graduate Research Award’ for his research titled “Red Raspberry Bundling and Taping Mechanism.”
- Three Biological Systems Engineering Students have been selected for the 2018 PNNL-WSU Distinguished Graduate Research Program. **Zhangyang Xu, Xiaolu Li, and Fnu Fitria**.
- **Pavitra Krishna Kumar** won second place at the 2018 Institute of Food Technologists (IFT) Graduate Student Poster Competition. Her presentation was entered in the Refrigerated and Frozen Foods Division.
- **Moneim Mohamed**, won the 2018 ‘Graduate Student Award’ in the Soil and Water Management and Conservation (SAWMAC) Division of the Soil Science Society of America. Moneim has also been selected as an Irrigation E3 winner by the Irrigation Foundation.

Facilities, Infrastructure & Programmatic

- The Washington Red Raspberry Commission committed to a \$1.5M endowment for Raspberry Industry Development. This would create an Endowed Chair for the raspberry breeding program historically located at Puyallup but proposed to move to Mount Vernon. (Contact: **Chad Kruger**)

Continued – Facilities, Infrastructure & Programmatic

- Center Director **Jim McFerson** (Wenatchee TFREC, Hort) was featured in a recent You-Tube video “Unveiling The Bridge Research & Innovation District.” The Center is a key partner in the District, an outcome of the “Our Valley, Our Future” community initiative. The district comprises a community campus of research, education and enterprise spanning both sides of the Columbia River and includes the co-located USDA-ARS Tree Fruit Research Laboratory.
- The **WSU Wenatchee Research & Extension Center** was designated in the FY2019 state budget for a \$75,000 proviso submitted by State Senator Brad Hawkins (District 12) “to create a plan for expansion of graduate research in the greater Wenatchee Valley.” The investment will directly benefit the Center and the Bridge Research & Innovation District.