



**California/Nevada Section
Bimonthly Update
January 2019
Seventy-Eighth Edition**

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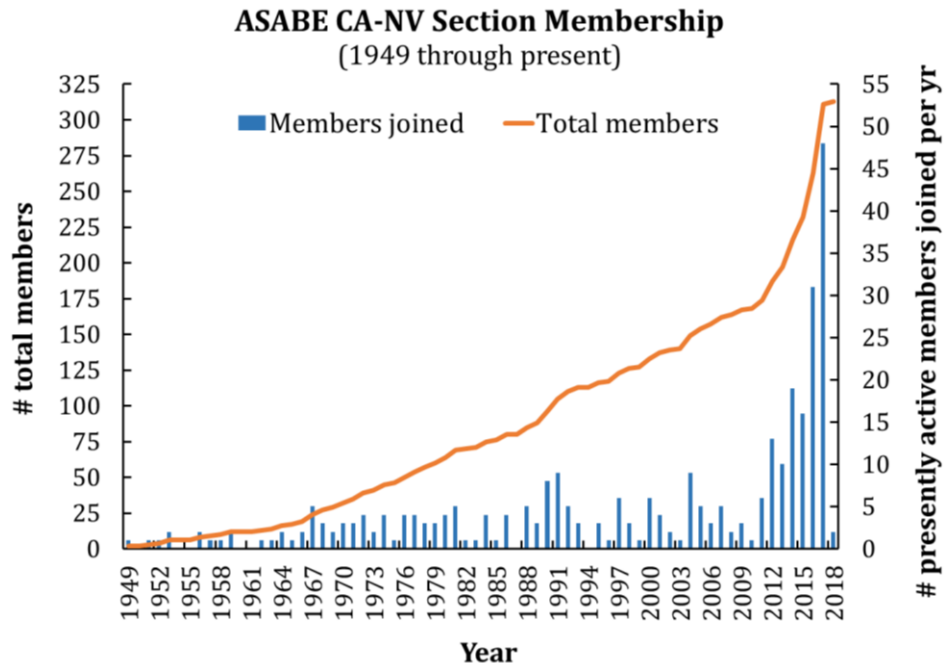
End of the year membership and financial update

As of January 2019, the section has 313 registered members. The section has added 2 member thus far in 2019. Section membership grew by 48 active members in 2018, 30 active members in 2017, and 17 active members in 2016.

Note that this data reflects active members, members who have joined and have continued their membership through the present.

Total membership is reflected by the gold line and number of presently active members joined in each year is represented by blue bars.

In terms of section finances, as of the end of the year, the ASABE CA-NV section has \$5,449.57.



❖ 2019 Annual ASABE CA-NV Section Meeting Announcement

American Society of Agricultural and Biological Engineers California-Nevada Section

www.asabecanv.org

ANNUAL MEETING

Date: Wednesday – February 13th, 2019 (during the World Ag Expo)
Time: 5:00 – 8:30 pm
Location: 4175 South Laspina (across from the World Ag Expo)
Tulare, California 93274
Ticket Cost: \$35 for members/guests, \$12 for students

AGENDA

5:00 PM **Poster Competition and Reception**
6:00 PM **Dinner**
6:30 PM **Business Meeting**
7:00 PM **Featured Speaker:**

‘CLAAS’ Farming 4.0 and a Global Perspective on International Agribusiness
Mauri Saltz (President, ASABE and CLAAS Omaha, Inc.)
Detailed biography and speech information on following page

8:10 PM **Closing Comments**
8:15 PM **Adjourn**

STUDENT POSTER COMPETITION

The student poster competition will begin promptly at 5PM. Guests will have time to view posters for 30 mins after which, voting will determine the winners. We will be awarding prizes for first place (\$250) and second place (\$100) in both the undergraduate and graduate student categories. Winners must be present to receive their award. **Please limit your tri-fold poster size to 36”Hx48”W or flat posters to 34”Hx44”W. Tables will be available. If your poster requires an easel, or backing for stability, please provide it.** Thank you to our student dinner sponsors. To become a student sponsor, please contact Hossein Edalati (530-220-2489 or ahedalati@gmail.com).

Please RSVP to Traeger Cotten (contact info below) by mail or email no later than February 6th. Payments will be accepted at the door. Please make check payable to “ASABE CA/NV Section.”

Traeger Cotten
2425 South Blackstone Street
Tulare, CA 93274
Mobile: (559) 331-9715
Email: Traeger.cotten@sce.com

Dinner: “Mexican Fiesta” includes beef Enchiladas, Chili Verde, Steak Ranchera, chicken oregatino, Green Salad, refried beans, Spanish rice, tortillas, salsa, dessert, and beverages.

Keynote Address: **‘CLAAS’ Farming 4.0 and
A Global Perspective on International Agribusiness**



Mauri Salz

Brief Biography

Maury Salz is the president of CLAAS Omaha, Inc., the manufacturer of the LEXION combine and headers for North America located in Omaha, NE.

He has worked for CLAAS 18 years and responsible for CLAAS’ NA Production Operations which include R&D, Purchasing, Quality, Logistics and Manufacturing.

Maury is also the current President for the American Society of Agricultural and Biological Engineers.

Maury grew up on a family farm in Northwest Iowa and still participates with his family in its corn and soybean farming operations. He graduated from Iowa State University with a Bachelor’s Degree in Agricultural Engineering and has an MBA from St. Ambrose University.

Description of Address

Learn about CLAAS and its path toward Farming 4.0 Worldwide. Learn how this family based international agricultural product company thinks and how it sees the complexity of doing agricultural business worldwide. Maury will provide insights into CLAAS’ thinking about precision farming, big data and the worldwide relationships that are needed to develop products and processes to support the complex farming operations of the future. And learn more about some of the international differences that we as Agricultural and Biological Engineers need to be aware of in the future.

Maury will also give an update on how ASABE is working to support 5 major goals which support Agricultural and Biological Engineers into the future.

❖ Request for Annual Meeting Sponsors

The annual ASABE CA-NV Section meeting would not be possible without the support and donations of its meetings sponsors, which contribute directly to cover the cost of dinner, the subsidized cost of attendance for students, and the awards prizes.

Thank you again to our 2018 Sponsors: Ag Industrial Manufacturing, Berendsen Fluid Power, Provost & Pritchard, TechnoFlo Systems, and Valley Irrigation Services.

To sponsor this year's meeting please contact Section Secretary/Treasurer Bo Liu (bliu17@calpoly.edu) or Vice Chair Hossein Edalati (ahedalati@gmail.com). Sponsorship is suggested at \$400 per table; however, we welcome whatever sponsorship level is appropriate for your organization. Checks should be made out to 'ASABE CA/NV Section,' and can be either brought directly to the meeting or mailed to the Section Treasurer at the following address:

Dr. Bo Liu,
8-106, 1 Grand Ave.
BioResource and Agricultural Engineering Department
California Polytechnic State University
San Luis Obispo, CA, 93407
Office Phone: [805-756-2384](tel:805-756-2384)

❖ Accepting Nominations: 2019 ASABE CA/NV Engineer of the Year Award

Do you know someone who has made amazing contributions to Agricultural Engineering? Someone who has done something to help the public welfare and/or humankind for the better? You should nominate them. Nominations are now open for Engineer of the year ASABE CA/NV Section award. For more information please contact Balaji Seth (559-321-6826 or balajis@csufresno.edu). Forward all nominations to Awards Chair, Nick Simonian (nsimonian559@gmail.com).

❖ Accepting Nominations: 2019 ASABE CA/NV Officer Positions

Do you have a desire to get more involved with ASABE? Do you have ideas for Agricultural Engineering Activities? Do you like sharing about the ASABE? If you answered yes to any of the questions, NOW is the time to become an ASABE officer! E-mail Balaji Seth (balajis@csufresno.edu) or call him at (559) 321-6826.

❖ Job Announcements

This section is new to the newsletter updates. Going forward job postings and career opportunities will be listed under this section. If your organization or company is looking for new talent or if you have heard of new jobs or internship opportunities that our members may want to read about, please email them to, Hossein Edalati (ASABE CA-NV Vice Chair, ahedalati@gmail.com) and/or Tyler Barzee (ASABE CA-NV Public Relations Officer, tjbarzee@ucdavis.edu).

GOVERNMENT: ONE USDA Pathways internships (2 Engineering Student Trainee Vacancies)

ONE USDA pathways announcements are now live! These announcement encompass all USDA agencies and are being managed by OPM. Not all position vacancies have been listed. The vacancy below applies to the 2 engineering student positions for Yreka and Vacaville. The announcement will stay open until 1/18/19, however, **the first referral of candidates will be made from applications received by 11:59 EST on December 9th**. Entrance on duty dates are being determined as **May 26, 2019; June 09, 2019; June 23, 2019; or July 7, 2019**. Positions are also being advertised as Not To Exceed (NTE) 6 months. However, extensions of appointment can be approved. Please disseminate the vacancy below as appropriate.

Student Trainee (Engineering)

<https://www.usajobs.gov/GetJob/ViewDetails/518360400#>

Locations:

- Yreka
- Vacaville

ACADEMIA: Assistant Professor in Agribusiness at Cal Poly Pomona

Advertisement for Publications



California State Polytechnic University, Pomona

Agribusiness & Food Industry Management

The Agribusiness & Food Industry Management - Agricultural Science Department in the College of Agriculture at California State Polytechnic University, Pomona (Cal Poly Pomona) invites applications for a tenure-track position at the rank of Assistant Professor to begin Fall 2019. Candidates with specializations in Agribusiness, Agricultural Economics, Business, or closely related fields are invited to apply. **Salary and appointment at the Assistant Professor level will be commensurate with qualifications and experience.**

Minimum Qualifications for the position are:

- Doctorate in Agribusiness, Agricultural Economics, Business, or closely related field from an accredited university by August, 2019.
- Demonstrated ability to contribute to the diversity and excellence of the academic community through research, teaching, and/or service work as well as experience working in an inclusive environment.

Refer to: <http://apply.interfolio.com/55328> for full description.

Applications are due January 18, 2019. For questions please contact Ms. Jenifer Cazares, Agribusiness Management Major Administrative Coordinator [email: jcazares@cpp.edu]

California State Polytechnic University, Pomona is an Equal Opportunity, Affirmative Action Employer.

As required by the Clery Disclosure Act, the university's annual security report is available at <http://www.cpp.edu/~police/annual-security-report.shtml>. A background check (including a criminal records check) must be completed satisfactorily before any candidate can be offered a position with the CSU. Failure to satisfactorily complete the background check may affect the application status of applicants or continued employment of current CSU employees who apply for the position.

GOVERNMENT: Environmental Scientist (Hydrologist) at the Dept of Pesticide Regulation**ENVIRONMENTAL SCIENTIST (Hydrologist)**

Environmental Monitoring Branch
 Department of Pesticide Regulation
 CAL-EPA
 Sacramento, CA USA

\$3,668.00 - \$7,013.00
 (Pension, major health benefits, self-directed 401K)

Duties may include:**Lower Range**

Gather data on public health, environmental, agricultural productivity, and natural resource management issues; perform preliminary environmental analysis, research, surveys, investigations, and studies of less difficulty; prepare preliminary drafts of reports; prepare drafts of routine correspondence; answer questions of a routine and minor nature from the public; prepare regulatory and compliance documents. Work relies on detailed instructions and assistance from lead persons and supervisors in the application of proven techniques and methodologies to assigned work.

Upper Range

Independently perform public health, environmental, agricultural productivity, and natural resource management analysis, research, surveys, investigations, and studies; write final reports; prepare regulatory and compliance documents; enforce environmental law and regulations; prepare non-routine correspondence and answer non-routine questions from the public. Incumbents may provide consultative advice to various governmental entities and agencies. Independent development and use of techniques and methodologies, and may provide lead responsibility for a specific project.

Minimum Qualifications:

Possession of a bachelor's or advanced degree with a major in a biological, chemical, physical, or environmental science, soil science, water science, **hydrology**, agronomy, natural resource science, environmental or public health, physical geography, or a closely related scientific discipline. (Admission to a masters or doctoral degree program in the scientific discipline meet these education qualifications.)

Registration as a senior in a recognized institution will admit applicants to the examination, but they must produce evidence of a degree before they can be considered eligible for appointment.

Contact:

Kean S. Goh, PhD Kean.goh@cdpr.ca.gov

Surface Water Protection Program <https://www.cdpr.ca.gov/docs/emon/surfwtr/index.htm>

Ground Water Protection Program <https://www.cdpr.ca.gov/docs/emon/grndwtr/index.htm>

ACADEMIA: Assistant Professor in Smart Production Systems Engr at McGill University



McGill

Faculty of
Agricultural and
Environmental Sciences

Faculté des
sciences de l'agriculture et
de l'environnement

Tenure-Track Position in Smart Production Systems Engineering

The Department of Bioresource Engineering of McGill University invites applications for a tenure-track, 12-months position as Assistant Professor in Smart Production Systems Engineering. This position is focused on the development, evaluation and adoption of new methods of animal and crop production in the field and in controlled environments. The successful candidate should have a bachelor's degree in engineering and a Ph.D. in a field associated with agricultural production. The suitable individual will teach courses related to the use of electricity, electronics and signal processing for bioresource engineering students as well as graduate students across multiple disciplines who are engaged in data-rich experimentations and advanced computer learning technologies. Special emphasis shall be given to machine vision, artificial intelligence, deep learning and other emerging technologies pertaining to phenotyping (plant and/or animal), animal well-being, food quality assessment, and other relevant applications. The ideal candidate should have a strong background in electronics, mechatronics, electrical engineering, software engineering, agricultural engineering, data science and/or related fields. The ideal candidate should be eligible to register as a professional engineer in Canada. Ability to communicate in French and prior experience with the Canadian agricultural and agri-food industry are highly beneficial. If eligible for the Canada Research Chair (CRC) program, the candidate may be supported by the University in the nomination for a Tier II CRC in Smart Production Systems Engineering, which provides protected time for research within a full-time academic appointment.

The Department of Bioresource Engineering is part of the Faculty of Agricultural and Environmental Sciences; it is located on the Macdonald Campus, 35 km west of Montreal's city center and the downtown Campus. The Macdonald campus farm and horticulture center are incubation sites which may be used as applied laboratories to generate ideas, build and test experiments, and apply the research related to modern biological and agricultural production systems and operations with the capacity to expand outreach to farming communities and certificate programs. Our emphasis in this area will increase the ties with farming communities and bring forward cutting-edge McGill research programs in data collection and artificial intelligence.

Firmly committed to equity and inclusion, McGill welcomes applicants from diverse identities and backgrounds and considers equitably the impact of leaves that may contribute to interruptions/slowdowns in one's career path. All qualified applicants are encouraged to apply; however, in accordance with Canadian immigration requirements, Canadians and permanent residents will be given priority. The complete position description can be accessed at:

- https://www.mcgill.ca/bioeng/files/bioeng/smartageng_mcgill_en.pdf (in English)
- https://www.mcgill.ca/bioeng/files/bioeng/smartageng_mcgill_fr.pdf (in French)

The application, including curriculum vitae, statements of teaching and research interests as well as the names of three references, willing to provide letters of recommendation, should be submitted by e-mail to Dr. Mark Lefsrud (mark.lefsrud@mcgill.ca), chair of the search committee. The closing date for applications is March 1, 2019, or until the position is filled.

Viacheslav Adamchuk, Ph.D., P.Eng., P.E.
Associate Professor and Chair

Department of Bioresource Engineering
McGill University, Macdonald Campus
21,111 Lakeshore
Ste-Anne-de-Bellevue, Quebec, Canada H9X 3V9

Département de génie des bioressources
Université McGill, Campus Macdonald
21,111 Lakeshore
Ste-Anne-de-Bellevue (Québec) Canada H9X 3V9 www.mcgill.ca/bioeng

❖ Industry Updates

Industry updates is a new section to the bimonthly newsletters. To keep it going we need relevant and interesting stories about developments in Agricultural and Biological Engineering. If your company has an exciting new development or invention you think is important or if there is an event or industry related topic that you think is noteworthy, please contact Hossein Edalati (ASABE CA-NV Vice Chair, ahedalati@gmail.com) and/or Tyler Barzee (ASABE CA-NV Public Relations Officer, tjbarzee@ucdavis.edu).

Traeger Cotton Presents at 1st California Dairy Sustainability Summit



Traeger Cotton, Field Engineer with Southern California Edison and ASABE Program Chair, recently presented at the inaugural California Dairy Sustainability Summit in Sacramento during a breakout session entitled “Take Control of Your Energy Destiny: Manage Rising Costs through Efficiency and Renewable Energy.” Representatives from major utilities, and providers of renewable technology, highlighted opportunities for dairy farmers to combat rising energy costs through energy efficiency and on-site energy technologies.

Traeger Cotten

The Summit, in its first year, took place this past November 27th & 28th. More than 650 dairy industry stakeholders, including 201 dairy farmers, convened at the Summit, co-hosted by Dairy Cares, the California Milk Advisory Board, the Dairy Council of California, the California Dairy Quality Assurance Program, and the California Dairy Research Foundation. Through robust panels and discussions, attendees explored new ways for dairy farmers to continue improving environmental sustainability, develop new business opportunities, and reduce on-farm costs.

The theme at the summit was clear—California’s dairy families have demonstrated incredible progress in improving operational efficiency, reducing emissions, conserving water, setting high standards for animal health, and driving sustainable business practices. For more information about the Summit please refer to web addresses for the event and its agenda below:

California Dairy Sustainability Summit
<https://www.cadairysummit.com/#about>

CA Dairy Sustainability Summit Agenda
https://cdn.cadairysummit.com/pdfs/2018/cdss_2018_agenda.pdf



❖ Butte College

Agriculture & Environmental Sciences Instructional Program Update

Reported by Butte Faculty Member Bruce Enyeart

Butte College’s Heavy Equipment students have worked on 3 projects during the spring and fall semesters since we saw everyone last at the annual meeting in Tulare (Feb 2018).

Spring 2018 saw completion of an improvement project at the center of campus. A paved gathering area replaced grass under our solar panels, with a gas line and electrical outlets for convenience during

campus events. Our students removed the turf, trenched for gas and electrical lines, and prepared the ground for concrete and landscaping, and installed forms for two curved walls for raised planters.



Paved gather area completed by Butte College Heavy Equipment Students

In fall our Tractors and Crawlers labs worked on the new hammer throw/shot put facility for our sports complex. This required bringing about 3000 cubic yards of material from one of our fields, filling and grading of a 1.25 acre area, and installation concrete for ADA access sidewalks and pads for the hammer throw and shot put areas. We also installed built new batting cage and bullpen backstops for the baseball facilities, working with the Welding department on installing poles and bridgework.



BC Sports Complex improvement project done by Tractors and Crawlers lab students

We completed a project underway for 12 years, installing the weirs and flumes in the Biological Wetland Educational Living Laboratory (BWELL). This project remediates runoff from 5 acres of hardscape and channels it to our creeks in a much cleaner condition, using plants to filter and consume hydrocarbons on the way. This collaboration between our Heavy Equipment students, Butte College Biology Department, and Chico State University's Engineering Department and Concrete Management Institute will provide students from both colleges to study and measure storm runoff. Weirs and flumes provide

a running record electronically of flows entering and leaving the structure, allowing recording of infiltration rates, water condition, and much more.



Students from Butte College and Chico State complete 12 yr project building experimental station, Biological Wetland Educational Living Laboratory (BWELL)

❖ **Cal Poly San Luis Obispo BioResource and Agricultural Engineering (BRAE) Department Update**

Cal Poly Quarterscale Competition

The Quarterscale team has been working hard to finish up the design for the tractor for this year's competition. The team decided to purchase a transmission, instead of fabricating one, for competition, as it often takes too much time throughout the build. The team is looking to go with a bit of a simpler design for the competition this year. Most of the tractor has been designed and fabrication has begun. The tractor will hopefully be done in the next couple of months to allow for testing and preparing for competition.

Precision Agriculture & Automation Club (PAAC)

PAAC/AgBot have spent the past few months converting one of the BRAE department tractors into a semi-autonomous vehicle. The John Deere Tractor was donated by Wonderful Citrus and the autonomous system was donated by Topcon. The team used the Topcon unit to make the John Deere tractor into a self-driving vehicle. The team hopes to get a system that will allow the tractor to also brake and power the tractor, but the current system only allows steering of the vehicle. AgBot has written up their proposal for the challenge in May and plans to begin building over winter break. The team will be competing in the weed-and-feed portion of the competition. The design will be focused around the

specifications of determining which plants are weeds and which plants are corn. The system will then spray herbicide on the weeds and spray fertilizer on the corn plants.

Cal Poly Tractor Pull

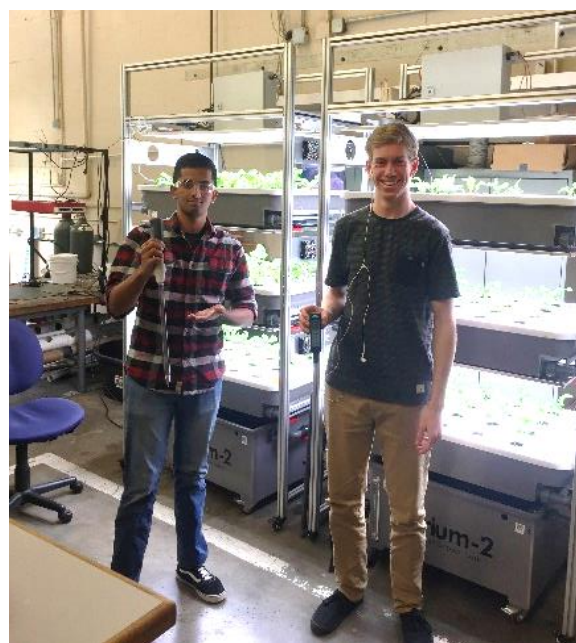
The Cal Poly Tractor Pull Team has had a fairly calm past couple of months with the season coming to an end in October at Modesto Junior College. The team has spent the past couple of months cleaning the tractors up and getting ready for the season to once again start in February. One of Poly Thunder's engines is still being rebuilt after a backfire, but should hopefully be back for next season. The team recently brought the tractor to Farm City Night in downtown San Luis Obispo to show off the club and educate the public about tractor pulling. Although the team hasn't been too busy, the Tractor Pull Club is hard at work planning for its event in April on open house weekend. The club puts on a pull every year to promote the club as well as use money fundraised to provide scholarships to students in the club and BRAE department. The club has picked committee leaders who will be in charge of many aspects of the pull, ranging from a donor committee to the barbeque committee. The club is beginning to send out requests from donors that will help to put on the event and provide more scholarships. The club is also getting ready for the annual San Luis Obispo Christmas Parade, where the tractors are showcased on a flat-bed semi-truck, covered in Christmas Lights.



Cal Poly Tractor Pull Team

Grow Crew

A more recent addition to the BRAE department club list is Grow Crew. The team's main focus is around the BioResource side of the department, mainly including hydroponics and aquaponics. The club was started at the beginning of the school year to help encompass all parts of the BRAE department into clubs. The team is currently working on some aeroponics units growing arugula and different kinds of lettuce. They are also maintaining/modifying a large aquaponics system that has catfish, sturgeon, and bass for the fish, as well as many different vegetables. The main objective of this club will be to run different tests and experiments on the current systems as well as design and build new systems. The team hopes to get a good following of students interested in running experiments on new ideas in agriculture.



2 members of the Grow Crew

❖ California State University Bakersfield Update

2nd Annual NSME Resume Workshop

The second annual Natural Sciences, Mathematics, and Engineering (NSME) Resume Workshop was hosted by the ASABE Student Branch at CSUB alongside the Global Medical Brigades, Chemistry Club, and the Center for Career Education & Community Engagement (CECE). Students had the opportunity to listen and discuss with our three professional panelist on what is expected, from a professional point of view, when it comes to a resume. The three panelist were Marcos Perez, Professional Engineer with the United States Department of Agriculture NRCS, Dr. Jasmeet Kaur Bains physician, and John Virrey from A-C Electric. Once the panel session concluded our professionals gave students one on one help on their resume. Thanks to the continuous collaborative efforts at CSUB we managed to provide students with valuable insight on what employers look for once they graduate.



(Left) Professionals from the community discussing resumes, and (right) professionals helping students with their resume

❖ University of California, Davis Biological & Agricultural Engineering (BAE) Department Update

Three-Day Joint Workshop with Technical University of Munich, UC San Diego, and UC Davis

The Biological and Agricultural Engineering department at UC Davis welcomed guests from the [Technical University of Munich \(TUM\)](#) and UC San Diego during a two day workshop October 16th-17th made possible by funding from the Global Incentive Fund (GIF). The joint workshop was an opportunity to learn more about the current trends in gasification, biofuels, and synthesis gas (syngas). On October 16th, Associate Vice Chancellor for Research Dr. Paul Dodd of UC Davis gave a key note address. Dr. Dodd was followed by BAE alumnus Dr. Rizaldo Aldas, of the [California Energy Commission](#) (CEC), and Dr. Matthew Summers Chief Operations Officer of [West Biofuels](#).

The workshop on October 17th culminated in a seminar, “[Gasification of Biomass and Syngas Utilization Pathways](#).” Lead by speakers [Sebastian Fendt, Dipl.-Ing](#); [Felix Fischer, M.Sc.](#); and [Philipp](#)

[Johne, M.Sc.](#) from TUM. The seminar was a part of BAE's ongoing Fall Quarter Seminar series with an interested audience that left standing room only.

The collaboration among TUM, UC San Diego, and UC Davis is part of a three-year effort. "It's great to learn about the capabilities of UC Davis, UC San Diego, and Technical University of Munich," said [Dr. Reinhard Seiser](#) of UC San Diego. Working at the [Woodland Biomass Research Center](#), Dr. Seiser researches gasification and biomass combustion.

Both Li Wang and Michael Long, UC Davis BAE graduate students, were not only present during the meetings but active participants in the overall collaboration. Michael Long acts as the main coordinator at UC Davis for the joint venture and works in concert with Felix Fischer, the coordinator at TUM. About the workshop, Philippe Johne said that he is excited to continue working on the collaboration to see "more sophisticated research projects using the expertise of both continents."

"International collaborations such as this have been immensely beneficial for all parties involved. Our experience working with TUM has been a pleasure and we look forward to future developments within this collaboration," said graduate student Michael Long.



Collaborators from Technical University Munich, UC San Diego, and UC Davis prepare for the upcoming seminar. From left to right, Philipp Johne (TUM); Sebastian Fendt (TUM); Li Wang (UCD); Richard Nowak Delgado (TUM); Bryan Jenkins (UCD); Michael Long (UCD); Felix Fischer (TUM); and Reinhart Seiser (UCSD)

The collaborative efforts of the institutions involved goes back even farther than this workshop. Dr. Reinhard Seiser, Michael Long, Felix Fischer, and Sebastian Fendt worked together to win the funding from the [Bavaria California Technology Center](#) (BaCaTec) to facilitate a student exchange. In this exchange program students from UC Davis were able to travel to TUM and students from TUM were able to travel to UC Davis. The students then participated in summer school sessions that broadened their understanding within their field while at the same time deepening their understanding of another culture.

Graduate students Irving Rabasa and Chang Chen were also in attendance during the seminar along with over 30 others. Mr. Rabasa said that it was a great opportunity “to see new developments.” He was also glad to see familiar faces. Mr. Rabasa, along with a group of other graduate students, previously toured TUM as part the above mentioned student exchange.

Of the seminar, Mr. Chen remarked that he felt it was a nice “introduction of the research process and technologies” and “presented some interesting areas of improvements and further research.”

The strong working relationship between the collaborators lead to excellent discussions surrounding gasification and biofuels. By bringing together academics from across the globe, the conversation surrounding gasification and biofuels can take meaningful steps forward. Additionally, by continuing to focus on collaboration, the efforts of everyone involved can be rewarded and supported.

Recent Graduate Spotlight: Lauren Jabusch

Lauren Jabusch has been passionate about sustainability and outreach since her early days as a freshman at UC Davis. Nearly a decade later, she has earned a bachelor’s, master’s and, most recently, a doctoral degree in biosystems engineering, all from the UC Davis Department of Biological and Agricultural Engineering.

Collaborating with biological and agricultural engineering professor and biofuels expert, Jean VanderGheynst and biotechnology partners, Heliae Development, LLC and Lawrence Livermore and Sandia National Labs, Lauren worked to determine the impact of algae grazers and a probiotic treatment to thwart algae grazers on algae production. Her research also explored biomass pretreatment for biofuel production using native microbes and enzymes, the composition of algae cell wall for the potential conversion to biofuels and the use of silica-degrading enzymes for reducing wear-and-tear on rice equipment. Now a postdoctoral researcher at Lawrence Berkeley National Laboratory, Lauren investigates the interactions between soil microbes and plants.



**Lauren Jabusch with
Dr. Jean VanderGheynst**

While at UC Davis, Lauren became known not only for her research in biofuels and sustainability but for her environmental activism and mentoring efforts. She served as a graduate fellow for a local, K-12 educational outreach program funded by the National Science Foundation. During her time as a Renewable Energy Systems Opportunity for Unified Research, Collaboration and Education (RESOURCE) fellow, Lauren translated her research on biofuels derived from algae into the Sacramento Region’s sixth-grade science curriculum. She also made contributions to the Sacramento Elementary Math Engineering Science Achievement program and to a local STEM for Girls program.

Deepening her efforts in sustainability, in 2015 Lauren was named a Carbon Neutrality Initiative Communications and Engagement Fellow by the University of California’s Office of the President, where she promoted broader student participation in climate work, including sharing best practices and tracking the progress of student-aimed sustainability programs at all ten UC campuses. Lauren continues

to support the initiative, which aims to support the UC system’s goal to produce zero-net greenhouse gas emissions by 2025.

As a graduate student, Lauren also served on the Board of Directors for the Power Shift Network (PSN), where she helped develop PSN’s Frontlines to Power program, which continues to train young people of color to run for political office. Lauren was also heavily involved with the California Student Sustainability Coalition (CSSC) at UC Davis, a network of university student organizations that promote sustainability. As Chair, Lauren helped organize coalition conferences, coordinates campus workshops on sustainability and helped create student-led public lectures. Her work earned her a UC Davis Chancellor’s Award for Diversity and Community in 2015 and a UC President’s Award for Outstanding Student Leadership in 2016.

Recent Graduate Spotlight: Kelley Drechsler and Her Research on Almond Orchard Irrigation by Benjamin Dally

Graduate student Kelley Drechsler research on Almond Orchard Irrigation has received much attention this year. This past summer Drechsler was awarded \$250 for her poster and presentation at ASABE’s Annual International Meeting in Detroit, MI. Her poster titled, “A Comprehensive Stress Indicator for Evaluating Plant Water Status in Almond Trees to Aid in Irrigation Scheduling” won 7th place in the National Resources and Environmental System (NRES) community.



BAE graduate student Kelley Drechsler

Only a month later, in a September 19th article by Ruby Larson, Kelley Drechsler’s work surrounding differential watering of almond varieties at [Nickles Soil Lab](#) in Arbutle, California was featured again in the [Appeal-Democrat](#). And then again, in December in industry magazine, [West Coast Nut’s December 2018 edition](#) in an article written by Julie R. Johnson.

While there are three main varieties of almonds, most growers only water for the most commonly edible variety, the nonpareil. Drechsler is quoted in the article as saying, “Most growers irrigate for the nonpareil...I’ve interfaced the irrigation so I can independently irrigate each variety.” This approach will provide research into whether or not different watering patterns affect crop yield.

Drechsler has been working on the project with Dr. Isaya Kisekka, Assistant Professor at UC Davis and Dr. Franz Niederholzer, Pomologist at Nickels Soil Lab.

“Her research seems to be generating a lot of interest among almond growers due to its potential benefits,” said Assistant Professor Kisekka. Kisekka and Dr. Franz Niederholzer, Pomologist at Nickels Soil Lab help support Kelley’s research.

Her research could potentially help increase crop yield while decreasing water usage. Drechsler is using a more targeted irrigation approach where specific varieties are watered differently rather than all watered the same.

Traditionally, almonds are all watered on one irrigation system and the watering is best suited for only one variety, the Nonpareil, as it is the variety that is the most commercially viable. However, by researching whether or not crop yield is affected by different watering patterns for different varieties, she hopes to generate data that will support almond growers' decisions about their irrigation practices. The results from Drechsler's research will really only become apparent at next year's harvest. It seems without a doubt that there will be many people anxiously awaiting her results.

Tyler Barzee Awarded 1st BAE Dept William and Nongkarn Chancellor Graduate Fellow Award

BAE department graduate student and ASABE CA/NV Public Relations Chair Tyler Barzee was awarded the first ever William and Nongkarn Chancellor Graduate Fellowship. Barzee, who is specializing in the fields of Bioenvironmental Engineering and Environmental Biotechnology received this \$4,000 award in support of his research. He is interested in bioprocessing technologies that can be applied to reduce the environmental footprint of humanity, especially by harnessing the energy and nutrients embodied in organic wastes. He has worked on projects relating to the processing of anaerobic digestates for production of liquid and solid biofertilizers and has tested their use in large scale experiments for growing specialty crops and microalgae. He hopes that his research will aid the development of technologies designed to derive value from materials otherwise viewed as wastes.



Tyler Barzee leading a tour of the campus biodigester (Photo by Rebeka Ramangamihanta)

The fellowship was made possible by generous donations from the late Professor William J. Chancellor and his wife Nongkarn, the Chancellor family, and many of his former students. It was established in honor of the outstanding contributions made to the field of biological and agricultural engineering by the Professor Chancellor and his deep regard for and commitment to his students. Please refer to ASABE CA/NV newsletter issues [65](#) and [67](#) for more information about Dr. Chancellor.

Tyler stated in response to the award announcement, "I am extremely grateful, honored, and humbled to be chosen for this award. I will do my best to honor Professor Chancellor's memory and spirit and work in a way that would make him proud."

Congratulations to Tyler!



Professor William J. Chancellor

Team Cenozoic Brings Home Gold for UC Davis at iGEM by Benjamin Dally



Team Cenozoic at the 2018 iGEM competition in Boston, Mass. From left to right: Achala Rao, Ares Torres, Jolee Nieberding-Swanberg, Daniel Graves, and Jacob Lang

The 2018 [International Genetically Engineered Machine \(iGEM\)](#) competition [results](#) are in and Cenozoic, a team made up of members from the departments of [Biological and Agricultural Engineering](#) and [Molecular and Cellular Biology](#), was one of only seven undergraduate teams in the United States to win a gold medal. In addition, the team won “Best Measurement” award and were nominated for “Best Presentation” in the undergraduate division.

Team Cenozoic member and fourth-year Biological Systems Engineering major, Achala Rao, described the iGEM competition as the “world’s premier international synthetic biology competition.”

This year, over 4000 students competing in 340 teams, traveled to Boston, Massachusetts to showcase the work their team did over the previous summer in designing, building, and testing a genetic device that attempts to solve a real world or research based problem using synthetic biology.

The competition also required the use of [integrated human practices](#) to analyze how a team’s “device or idea could be used, or implemented, in the real world by determining how others, outside of the synthetic biology community, might react to their proposed solutions,” according to Achala.

Achala Rao and fellow team members Ares Torres, Jolee Nieberding-Swanberg, Daniel Graves, and Jacob Lang form Cenozoic. They hail from two departments, Biological and Agricultural Engineering and Molecular and Cellular Biology, and are involved in three different majors: Biological Systems Engineering, Genetics and Genomics, and Biochemistry and Molecular Biology.

The interdisciplinary collaboration between engineers and biologists served the team well as they combined different perspectives, expertise, and backgrounds throughout the project.

Achala described team [Cenozoic's gold medal winning device](#) as a “mammalian cell-based bioassay for environmental toxicology which measures the potential effect of chemicals on mammalian cell stress.”

The device draws inspiration from a Northern Californian Native American tribe who have recently experienced increased instances of cancer, miscarriages and other illnesses.

The bioassay created by Cenozoic is a proof-of-concept design to give researchers better insight as to whether or not specific stress pathways have been activated in response to either environmental or cytotoxicological relevant concentrations of chemicals, or both. This will, in turn, help researchers and scientists gather valuable information about the environment of the tribe and the potential effect that chemicals may be having on the people and the environment.

Congratulations to Cenozoic not only for winning gold at this prestigious event but also helping to, according to the iGEM site, “push the boundaries of synthetic biology by tackling everyday issues facing the world.”

Edit: Genome Center faculty Marc Facciotti (Dept. of Biomedical Engineering) and Justin Siegel (Dept. of Chemistry) and engineer Andrew Yao (Dept. of Biomedical Engineering) were the team's primary advisors. The team worked out of the TEAM Molecular Prototyping and BioInnovation Lab.

BAE Student Lisa Illes Becomes University Innovation Fellow: Building Programs and Promoting Collaboration

Lisa Illes, fourth-year Biological Systems Engineering major, is working with Michaela Poblete (Computer Science), Julia Morris (Science and Technology Studies), and Livia Morris (Science and Technology Studies /Cognitive Science) as [University Innovation Fellows](#). They have been working with the Office of the Provost and several departments on campus to build programs promoting interdisciplinary and industry collaborations on campus.

The University Innovation Fellows program is a 6-week in-depth look into the campus ecosystem. Fellows are given tools to help them innovate, collaborate, create, organize, and much more. According to the website, one goal of the program is to help students become leaders on campus who "create new opportunities that help their peers develop an entrepreneurial mindset, build creative confidence, seize opportunities, define problems and address global challenges."

Lisa is applying what she's learned from the University Innovation Fellowship program to her role as President of [BioInnovation Group at UC Davis](#) (BIG at UC Davis). BioInnovation Group is an undergraduate research group operating out of the TEAM Molecular Prototyping and BioInnovation Laboratory on campus.

Using a onetime \$7000 grant from the organization Venturewell, Lisa and several other students were able to create 5 independent research projects involving 60 students across 10 different majors. Lisa is hoping to use her time as a Fellow to develop a sustainable organizational structure and funding source for BioInnovation Group. As part of this effort, she is participating in the Community of Practice around

experiential learning in the Biological Sciences, an effort directly supported by the Dean of the College of Biological Sciences.

Michaela is applying what she learned from the Fellowship to [SacHacks](#), the Sacramento intercollegiate hackathon she founded last year. SacHacks is designed to teach coding skills to people who would have otherwise not been exposed to it. This includes non-STEM majors and traditionally underrepresented groups.

Julia and Livia are working together to make all types industry opportunities more visible and accessible to undergraduates. They have started a new Science and Technology Studies student organization and plan to create a unique speaker-series format where an academic and someone working in industry are interviewed by students and each other.

UC Davis project video for the University Innovation Fellows program, submitted by Julia Morris, Livia Morris, Lisa Illes, and Michaela Poblete is available at the following web address:

<https://bae.engineering.ucdavis.edu/blog/bae-student-becomes-university-innovation-fellow-building-programs-and-promoting-collaboration/>

SAUNA Food Waste Nutrition Conversion System Wins AE50 Award Using Technology Developed by BAE Faculty Member, Dr. Zhongli Pan by Benjamin Dally

Earlier this month, ASABE announced the winners for this year's [2019 AE50 awards](#). Among them is the [SAUNA Food Waste Nutrition Conversion System](#) produced by [Treasure8](#) of San Francisco. Sponsored by [ASABE's Resource Magazine](#), the AE50 awards are given to top innovative products sold in the previous year.

The technology used in the system is based on Novel Infrared Blanching and Infrared Drying Technologies for Food Processing developed in [Dr. Zhongli Pan's Lab](#) in the [Department of Biological and Agricultural Engineering](#).



**SAUNA Food Waste Nutrition Conversion System
Developed by Treasure8**

After licensing and commercializing the technology, Treasure8 developed a completely new drying system.

“The system produces fruit and vegetable based healthy, crispy snacks. It uses up to 72.6% less energy than frying and up to 82.5% less energy than freeze drying,” said Dr. Pan.

According to Treasure8's website, “Our main, of three, food drying systems, is a novel and new form of dehydration that is energy and time efficient, naturally preserves practically all micronutrients, flavors

and color of fruits, vegetables, tubers and fungi and shrinks them into nutritionally dense food stuffs—within one hour.” Additionally, the system uses upcycled, imperfect produce and preserves more micronutrients than other forms of dehydration.

The SAUNA Food Waste Nutrition Conversion System will also be featured in an upcoming Resource magazine. The award ceremony will take place on February 12th, 2019 at the [ASABE Agricultural Equipment Technology Conference](#).

Congratulations to all the AE50 award winners, especially Treasure8’s SAUNA Food Waste Nutrition Conversion System and Dr. Pan.

Ken D. Giles Honored as Fellow by the National Academy of Inventors by Benjamin Dally

Ken D. Giles, professor and Vice Chair for the Department of Biological and Agricultural Engineering, has been recognized as a Fellow by the [National Academy of Inventors](#) (NAI).

The [NAI Fellows Program](#) was founded to honor inventors from around the world who have made a significant and tangible impact on “quality of life, economic development and the welfare of society.” “I’m very grateful to be honored by the NAI and appreciative for the collaborators and students that make my work so enjoyable,” said Dr. Giles. “I’m also pleased to know agricultural engineering and the contributions we make are recognized.”



Professor and Vice Chair of BAE Department, Ken D. Giles

Dr. Giles is considered a global leader in agricultural chemical application. His research into spray applications such as pesticide spraying and industrial spray coatings have been highly influential in the

field. Additionally, he has researched the reduction of “spray drift” and environmental contamination from chemical applications.

One of his recent major accomplishments is new technology used for mobile spraying systems. His pulse-width modulated, solenoid-actuated spray nozzles revolutionized the chemical application process. These nozzles make it possible to deliver the correct amount of spray on a site-specific basis thereby maximizing efficacy and minimizing off-site impact.

Another notable invention of Dr. Giles can sometimes be seen by looking up. As one of only a few researchers to receive FFA clearance, Dr. Giles and his fellow researchers developed a remote controlled helicopter, about the size of a motorcycle that collects valuable data about spray applications in California. The data collected will help inform decisions about the effectiveness of future unmanned flying remote-vehicles using spray applications in California agriculture.

Dr. Giles joins a prestigious group of 912 current Fellows from over 250 organizations worldwide. Of the Fellows inducted up to 2017, “Collectively, the Fellows hold more than 32,000 issued U.S. patents, which have generated over 9,400 licensed technologies and companies, and created more than 1.3 million jobs.”

The induction ceremony in April 2019 will take place at the [Space Center Houston](#) in Houston, TX. Congratulations to Dr. Giles on this recent achievement in a prolific career.

Assistant Professor Isaya Kisekka Receives Recognition as ASABE Associate Editor by Ben Dally



**Assistant Professor
Isaya Kisekka**

In the latest issue of [Inside ASABE](#), delivered November 27th, 2018, Department of Biological and Agricultural Engineering [Assistant Professor Isaya Kisekka](#) has been recognized for his outstanding contributions to the organization.

Kisekka, along with a group of other Associate Editors, was recognized as meeting or exceeding “best practices while handling at least four manuscripts during the year,” according to the e-newsletter.

“Associate editors are key to achieving our goals of a quality peer review in a timely manner” – Inside ASABE

Inside ASABE is a monthly e-newsletter produced by the American Society of Biological and Agricultural Engineers.

Congratulations to Dr. Kisekka and all the November 2018 recognized Associate Editors.

[Click here to read the November 2018 Inside ASABE](#)

BAE Fall Quarter Seminar Series Features Enlightening Talks by Benjamin Dally

The BAE department’s Fall Quarter seminar series featured exciting weekly talks given by well-seasoned researchers from industry and academia, PhD candidates from UC Berkeley, and young

graduate students within our very own department. A brief description of select talks and links to more information about them is provided below.

<https://bae.engineering.ucdavis.edu/blog/fall-seminar-series-continues-with-dr-kalur-and-detective-work/>

Dr. Gokul Kalur, Calibration Manager at Genentech presented his talk, “All about Solving Problems: How We Do It In MSAT,” discussing problem solving skills involved in Manufacturing & Science Technology (MSAT). In his talk, Dr. Kalur explained the necessity of problem solving skills within MSAT when products move through the manufacturing process.

<https://bae.engineering.ucdavis.edu/blog/nicholas-bowden-discusses-bringing-solar-power-to-rural-rwanda/>

[Nicholas Bowden](#), a UC Davis Ph.D candidate currently working in the [Energy and Graduate Group](#), presented his recent work on the Rural Rwanda Solar System Initiative. In a room filled to capacity, Nicholas stated that the initiative’s goal is to help bring electricity to rural Rwandans who live without access to electricity. Approximately 60% of the population live without reliable access to electricity.

<https://bae.engineering.ucdavis.edu/blog/jerome-carman-talks-about-californias-forests/>

Jerome Carman, Senior Research Engineer for the [Schatz Energy Research Center](#), discussed the research and methodologies the [California Biopower Impact](#) (CBI) Project is taking to contribute to the solution. The three-year project is funded by a \$1,000,000 grant from the [California Energy Commission](#) and led by Dr. Kevin Fingerman of the Humboldt State University College of Natural Resources and Sciences who is a faculty research associate with the Schatz Center.

<https://bae.engineering.ucdavis.edu/blog/carmen-tubbesing-and-jose-daniel-lara-present-research-on-the-feasibility-of-biomass-utilization-in-californias-forests/>

Carmen Tubbesing and Jose Daniel Lara, both PhD Candidates at UC Berkeley, presented their research on the potential for generating energy from forest biomass. The research takes an in-depth look at where in the state biomass exists, how much is available for conversion, and how cost effective the conversion might be. They hope that their findings will help decision makers, such as Governor Brown, make informed choices about using forest biomass to generate electricity.

<https://bae.engineering.ucdavis.edu/blog/ferisca-putri-presents-research-on-improving-soilless-plant-growth/>

On December 6th, 2018, Ferisca Putri, M.S. candidate in the Department of Biological and Agricultural Engineering and Industry/Student Liaison Chair of ASABE CA-NV, presented her research on soilless growth optimization and water treatment.

<https://bae.engineering.ucdavis.edu/blog/matthew-paddock-discusses-treating-wastewater-with-microalgae/>

The last seminar of the quarter was presented by BAE Department Master’s Candidate, Matthew Paddock who discussed his research conducted on treating wastewater with microalgae.

❖ Do You Feel A Calling?

Would you like to get more involved with ASABE and our Section? Do you have ideas for Agricultural and Biological Engineering activities?

We have several opportunities to work on various committees: planning for the new annual section student rally, working with the Vice Chair and Treasurer to contact sponsors for February's annual business meeting, and organizing the annual business meeting. If you would like to get more involved, want some exposure to people in industry, or have some interesting new ideas or ways to improve our section please contact Hossein Edalati: ahedalati@ucdavis.edu or (530) 220-2489.

- For previous editions of the Update, please visit www.asabecanv.org.
- If you have questions or comments, feel free to contact Hossein Edalati (contact info above)
- If you have ideas for update items or would like to get involved in the leadership team, please let us know!