BAEN BIOLOGICAL and AGRICULTURAL ENGINEERING NEWSLETTER

BAEN Students in Cuenca, Ecuador

Left-to-right: Holding the flag: Troy Franklin and Santiago Salazar. Left-to-right: Dr. Andres Alvarado, Clint Tevebaugh, Rector Fabian Carrasco, Esteban Sanchez, Garrett Gunn, and Matthew Mendoza

Scoates Hall is looking great and is filled with students, faculty, and staff who have returned to their daily routines. As usual, we are very proud of their accomplishments. This is an exciting year for BAEN because we are turning 100! In this issue, you will read about the future activities planned to celebrate this event. I hope you can join us for some of them. The picture above shows some BAEN seniors who had the opportunity to work with engineers in Ecuador. This type of activity certainly has great impact on their preparation as global leaders. I hope you enjoy this issue (*see our farewell on the last page of this issue*).

Elena Castell, Editor

Biological & Agricultural Engineering News

Elena Castell .....Editor
Susan Corgiat.....Editorial Coordinator
Rosana Moreira .....Publishing, Graphics & Design
Contributors .....Faculty, Students & Staff

Department Head's Corner

Happy Centennial Anniversary! We have been planning and promoting the centennial activities in the last few newsletters, and 2015 is finally here. The initial activities have been the Centennial Seminar Series, generously sponsored by the Cotton Foundation. Three seminars highlighting the past accomplishments of our faculty and students were scheduled for the spring semester. If you were unable to attend them in person, we are recording them and making them available on our website. Go to baen.tamu.edu and click on the "100 Years" banner to see all of the activities. The presentations are by Professors Hiler, Kunze and Parnell. Please be sure to mark your calendar for Oct. 9-10 when we host the main centennial event on campus.

We were honored and pleased to host a visit by Carlos Rubinstein, Chairman of the Texas Water Development Board, and two of his colleagues. They came to learn more about the water engineering and science programs of Texas A&M. The interaction was great, and Chairman Rubinstein declared it one of the most productive days he had experienced in recent times! By the way, Carlos has agreed to be the keynote speaker at the Centennial banquet on Oct. 9. His topic will be on the water challenges facing the state and the role that the BAEN department has in meeting those challenges. This is just another reason for you to be there.

The Capital Improvement Project is now over, and we are all glad to be back in our normal locations. In addition to the infrastructure modernization that was the core of the project, we were able to incorporate some changes that have made the building more useful, as well as initiate the architectural restoration activities that I told you about in previous columns. Scoates Hall is ready for decades more service for the department and the university. Stop by and take a look. I would love the opportunity to give you a tour.

Steve Searcy, Head

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FACULTY NEWS

The Texas A&M University System Board of Regents has honored two BAEN Professors as Regents Professor or Regents Fellow for 2013-14. **Binayak Mohanty**, BAEN Professor and COALS Chair in Hydrologic Engineering & Sciences, received the Regents Professor Award; **Saqib Mukhtar**, BAEN Professor, Associate Department Head and Extension Program Leader, received the Regents Fellow Service Award. The Board established the Regents Professor Award program in 1996 and Regents Fellow Service Award program in 1998 to recognize employees who have made exemplary contributions to their university or agency and to the citizens of Texas. **Bynayak Mohanty** was also recognized by the College of Engineering as a 2014 TEES Senior Faculty Fellow.

From left to right - Chairman Board, Phil Adams, Binayak Mohanty, and Cliff Thomas, Vice Chairman of the Board

Saqib Mukhtar

Sandun Fernando

Sandun Fernando, BAEN Associate Professor, was awarded a 2014 Vice Chancellor's Award in Excellence in teaching. In his AgriLife Research position, Fernando works on "bio-inspired" design of materials and processes for producing energy and power. In his nomination letter for Fernando, Stephen Searcy, BAEN head, wrote, "Dr. Fernando is a teacher and mentor who facilitates student learning through meticulously structured courses and lectures. His dedication and excitement for learning are contagious! They evoke enthusiasm, inquisitiveness and stimulate his students' desire to learn complex engineering subjects. He ensures students understand the nexus of theory and application, ultimately helping them apply the concepts they are learning in the classroom to solving real-world problems. His lecture modules consistently present an excellent balance of theory and practice."

Raghavan Srinivasan, BAEN Professor, was selected as one of the 2015 Purdue University College of Agriculture Distinguished Agriculture Alumni award winners.

R. Srinivasan

Saqib Mukhtar has accepted the position of Extension Associate Dean and Agriculture Program Leader at the University of Florida's Institute for Food and Agriculture Sciences. In his new position, he will be responsible for leading statewide Extension programs in the horticultural and agricultural sciences. He will start his new job on April 20. We will miss Saqib's leadership and commitment to BAEN, but we wish him the best on this new opportunity. This is a great recognition of his leadership skills.

Alex Thomasson

Alex Thomasson, BAEN Professor, authored a story on the agriculture of the future that was published in The Conversation (http://theconversation.com/farmers-of-the-future-will-utilize-drones-robots-and-gps-37739), a web-based effort to combine academic rigor and journalistic flair in informed news analysis and commentary. Alex was asked by Texas A&M communications personnel to author the piece as a means of putting Aggie faculty in front of the public. The article describes both current state of the art for precision agriculture, UAVs and high throughput phenotyping.

Congratulations to all!

FACULTY NEWS

From left-to-right: William Dugas, Vijay Singh, Alan Sams, SteveSearcy

Vijay P. Singh, Distinguished Professor and Caroline & William N. Lehrer Distinguished Chair in Water, is the recipient of the prestigious Association of Former Students 2015 University-Level Distinguished Achievement Award for Research. This award "recognizes, encourages, and rewards those individuals whose research efforts have been particularly significant and outstanding and are so recognized locally, nationally, and internationally." Singh's scientific achievements have greatly impacted the fields of hydrology, hydraulics, and water resources engineering. He has made seminal contributions in several key areas including watershed modeling, floods and droughts, entropy theory-based modeling, copula-based analysis, risk and reliability analysis, and climate change impacts on water resources. Singh's kinematic wave theory and theory-based techniques are applied in watershed models used for water resources modeling, flood planning and hydrologic design throughout the world. His pioneering work on entropy theory application to infiltration has had tremendous impact on water resources management in Texas and globally. He is the author of more than 700 refereed journal publications, 22 textbooks, 55 edited books and 80 book chapters. Singh has been widely recognized both internationally and nationally with numerous honors and awards including the grade of Fellow in seven professional societies and honorary doctorates from one Italian and two Canadian universities. He currently holds the Caroline and William N. Lehrer Chair in Water Engineering within our department.

Singh also received the Professor Ram J. Garde Lifetime Achievement Award, given by the Indian Society for Hydraulics in December 2014, for his seminal contributions to the advancement of Hydraulics and Hydraulic Engineering. He gave the inaugural address at the 19th International Conference HYDRO 2014 on Hydraulics, Water, Resources, Coastal and Environmental Engineering, held December 18-20, 2014, at National Institute of Technology, Bhopal, India. He also chaired a session and presented a keynote paper on "Water, Environment, Energy and Food (WEEF) Nexus: Role of Hydrology" at the conference at the conference. Dr. Singh gave the inaugural address at the International Conference on Decision Support Systems for Disasters and Their Mitigation, held December 28-30, 2014, at National Institute of Technology Durgapur, India. He presented a keynote paper "Entropy Theory for Frequency Analysis of Hydrometeorological Extremes" and chaired two sessions at this conference. He gave two invited lectures at National Institute of Technology Surat, India, December 10-11, 2014. He also presented a Keynote paper on "Frequency Analysis of Hydrometeorological Disasters" at the International Conference on Hydrometeorological Extremes, held November 11-15, 2014, at the University of the Americas, Puebla-Cholula, Mexico.

EXTENSION NEWS

Guy Fipps

The Texas A&M School of Irrigations Certified Texas Landscape Irrigation Auditor program is the first program to receive accreditation from the US EPA WaterSense Program. In 2013, the USEPA WaterSense Program was reorganized and changed its procedures for the certification of products and professionals under the WaterSense Label. This required all organizations to reapply for watersense accreditation under newer and more stringent guidelines.

Charles

The School of Irrigation program under the direction of BAEN Extension Agriculture Engineer **Guy Fipps** and Extension Program Specialist **Charles Swanson** began the process of reorganizing and modifying their program in the Summer of 2014 to reapply. This required creation of an independent oversight committee containing members from utility, industry, and professionals along with extension and producing certification standards under ISO 17025:9001. Effective as of the new year, the Texas A&M Agrilife Extension Service through the School of Irrigation Program has been recognized as a Professional Certifying Organization for the US EPA WaterSense program to provide Texas Certified Landscape Irrigation Auditor Program with the WaterSense Label. This program is currently the only Texas based organization to achieve this accreditation. The landscape irrigation auditing program since being started by Dr. Guy Fipps in 1995 has certified over 1500 irrigation professionals, including over 200 which have received the WaterSense Professional label.

HIGH IMPACT LEARNING ACTIVITIES

Cuenca-Ecuador

Four BAEN Seniors, **Garrett Gunn**, **Troy Franklin, Matt Mendoza**, and **Clint Tevebaugh**, traveled to Ecuador over spring break, to join their teammates, **Esteban Sanchez** and **Santiago Salazar**, Civil Engineering students from the University of Cuenca, and to jointly present the work accomplished for their senior capstone project (BAEN 479/480). The team, co-advised by BAEN Professor **Clyde Munster** and **Anish Jantrania** (A&M) and **Andres Alvarado** (UC) were tasked with offering improved designs for a wastewater treatment facility in the Churuguzo region near Cuenca. The team worked via Skype and Facebook during the semester. Says team member Troy Franklin: "Collaboration with the Universidad de Cuenca has been an incredible experience, offering an unprecedented opportunity to grow and learn, both academically and personally." The Aggie team was hosted for 7 days by their UC counterparts. The team enjoyed gracious hospitality and learned a lot about Ecuador's culture and heritage.

A highlight was the trip to Ingapirca with Santiago's father, Esteban's father and grandmother. We visited an ancient Incan site about an hour and a half from Cuenca. Santiago's father was a terrific guide and we learned about the placement of its stones, why they were placed and shaped exactly as they were, its water drainage system, and community framework, the Incan calendar, and the acoustics in the Sun Temple, among many more details. A special treat included a brief encounter with an indigenous woman, who was spinning alpaca thread into yarn.

We also explored contemporary Cuenca. By bus and on foot, the Aggies visited streets, markets, and a beautiful Cathedral. We awoke early one morning, took a bus to the base of a mountain, and spent about 4 hours ascending 500 meters through knee-high grass and forests. Once on top, we enjoyed the "best tuna sandwiches ever" and an hour's nap on the summit, before straying off course and getting lost on the way down. Fortunately, someone's GPS worked and it only took 2 more hours to find the bus to town!

There was work to be done: we met with the ETAPA workers (equivalent of our EPA) at the project site in Churuguzo, which 'suffers' from over-full septic tanks, grasses filling the wetland, and too much water – we made videos to capture all that we saw. Then the team continued to and spent most of the day at Ecuador's largest wastewater treatment system. Here we presented our design recommendations, and enjoyed an interactive session with two ETAPA employees, who seemed impressed with our recommendation of a free water surface wetland. Next, we had a tour of the facility, where a single pipe delivers most of the wastewater generated by the city of Cuenca. The wastewater is pretreated then flows into two huge basins, then into two more basins, for further treatment. The Cuenca plant is the largest of its kind in Ecuador. Later, we made the same presentation again, to the Dean of Engineering, who expressed his appreciation of our work. After this, we also met with UC Rector, Fabian Carrasco and had an opportunity to chat with him about our project and recommendations.

We were very ready to relax the next day, and travelled to a nearby volcanic hot springs for an extremely relaxing, awesome opportunity. After this delightful morning, the team travelled back to the UC campus, to meet with Dr. Alvarado's civil engineering students. This gave us the opportunity to share the Aggie spirit with our new friends in Ecuador. We spoke about the project, shared some facts about A&M, sang the Aggie War Hymn (our singing may not have been the best), and tried to motivate the Cuenca engineers to also seek education abroad, such as that made possible Cuenca's hospitality.

By week's end, we were calling ourselves "los seis hermanos" (the six brothers). We had a couple of momentous occasions - with delicious food prepared by the families of Esteban and Santiago - barbequed steak, chicken, and pork sausage. We then enjoyed a local favorite - delicious cuy (guinea pig) – with Dr. Andres Alvarado and his wife. The next day, we had a good time and a cold beer with Belgian expat and fellow engineer, Dr. Jan Feyen after which, we managed to get tickets to the Alejandro Fernandez concert with the help of Esteban's cousins.

Garrett Gunn (left), Matt Mendoza, Troy Franklin, Clint Tevebaugh, and Santiago Salazar with new friends in Ingapirca, Ecuador

It was time to pack the bags, now laden with bags of local candies and bottles of Ecuadorian beer. We said goodbye to the families of Esteban and Santiago, who brought us to the airport for check in and then took us out for one last beer. We flew to Quito, capitol city of Ecuador, where, during the nine-hour layover, we decided to go see the equator monument: an awesome experience in itself, standing on the equator!

We were able to do something that others in our class at Texas A&M University have not: we experienced a new culture, and. It was exciting and humbling. We definitely encourage opportunities like this to continue for other students as it benefits everyone involved.

MISCELLANEOUS NEWS

Carmen Gomes

Carmen Gomes, BAEN Assistant Professor, was awarded a 3 year $340,000 grant by the NSF, CBET-nanobiosensing program on Nanoengineering biomimetic nanobrushes for pathogen sensing. Her Co-PI is Eric McLamore from the University of Florida

Welcome! Mary Schweitzer is Program Manager of the WEF Nexus team (www.wefnexustamu.edu). She came to Texas A&M from Purdue University's Global Engineering Program where she worked with Rabi Mohtar, BAEN Professor and TEES Endowed Professor, to develop opportunities for international experiences in engagement, learning and research. With Mohtar, she helped develop global service learning opportunities in Africa, the Middle East, and Latin America. The Ecuador trip is an example of Senior Capstone projects combined with global service learning. These Global Design Teams (GDT),will continue to be offered as Senior Capstone opportunities at A&M. 2016 Global Design Team/Capstone projects are planned for in India, Jordan, Mexico and Ecuador as well as in several locations in Texas. To learn more, including how to join or sponsor a team, contact marysch@tamu.edu or wefnexus@tamu.edu

Mary Schweitzer

Steve Searcy with Carlos Rubinstein (closest to banner), Chairman of the Texas Water Development Board and Robert Mace

BAEN hosts TWDB Chairman

Carlos Rubinstein, Chairman of the Texas Water Development Board, and his colleagues Robert Mace and Cameron Turner visited the department on Feb. 9, 2015 to learn about BAEN water programs and those of other university groups that work on water topics. BAEN faculty presented ongoing research and Extension programs on irrigation, drought modeling/climate variability, hydrologic

2015 Annual BAEN Capstone Event - May 6th @ 2: 30 pm - AGLS Center

Students in BAEN and AGSM have worked hard on yearlong senior design projects and now it is time to show off that hard work! - Heavy refreshments provided. Questions: Stormy Kretzschmar stormyk@tamu.edu

STUDENT NEWS

Congratulations to those graduating in December 2014!

AGSM
Don, Bode
Hayden, Boos
Daniel, Clark
Lawton, Duncan
Brooks, Fruge
Thomas, Johnson
Colton, Mehrens
Clayton, Phillips
Nicholas , Polak
Sheldon, Shelly
Tres, Summerlin
Tyler, Wellborn
BAEN
Jared, Daly
Kevin, Edwards
Javier, Esquivel
David, Grant
Tyler, Green
Andrew, Harkey
Taylor, Holt
Tyler, Kimbriel
Megan, McLemore
Marisa, Powell
Mical, Stephenson

AGSM Students

BAEN Students

FORMER STUDENT NEWS

Matthew Cantu, BAEN '12 BS,'14 MS, has been working for a startup company in Bryan by the name of Earth Energy Renewables. Serving with a small team as a lab technician on research, they have been working on anaerobic reactors for acid production. They are looking to expand to full-scale operations in the near future, but for now are gathering results from pilot-scale production.

Matthew Cantu

STUDENT NEWS


Maheshwari Neelam

BAEN student selected for the ANRP internships in Washington, DC
Cameron Dorsett, BAEN student, was selected by COALS for the Agricultural and Natural Resources Policy (ANRP) Internship Program in Washington DC. Among other things, Cameron attributes his success to his experience with the departmental Study Abroad Program in Belgium. In Cameron's own words," I was asked several questions about my experience in Belgium during the final round of interviews proving again that it was an extremely valuable trip." Cameron is the second student from this program to be selected. The other one is Samantha Melito, a Bioenvironmental Sciences (BEC) major.

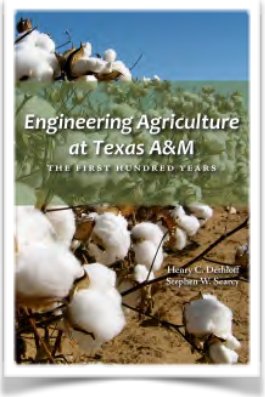
Maheshwari Neelam, BAEN Ph.D. student working with Binayak Mohanty, is the recipient of a 2015-2016 Faculty for the Future Fellowship . The Faculty for the Future Community has now grown to reach a total of 560 talented women. The fellowships are awarded by the Schlumberg Foundation . She will be working on improving soil moisture retrieval using NASA's soil moisture active passive (SMAP) satellite

RECRUITING ACTIVITIES

BAEN students, faculty and staff participated in the First Year Engineering Seminars for ENGR 111/112 on March 24. An introductory video was shown to the students and then Rosana Moreira, BAEN Professor, coordinated the Q&A session where students became more familiar with our department, what we do, and where our graduates are heading. Along with Moreira, participants included undergraduate student Taylor Holt; graduate students Jose Batz, William Carter, Jecori Jonhson and Paulo Da Silva, faculty members Zivko Nikolov, BAEN Professor and Associate Head, and Sergio Capareda, BAEN Associate Professor, and Academic Advisor I Stormy Kretzschmar,


Leet-To-Right: Stormy Kretzschmar, Rosana Moreira, Zivko Nikolov, Jose Batz, Willian Carter, Taylor Holt, Jecori Jonhson, Sergio Capareda.

CENTENNIAL EVENTS



Departmental History Book now available

Are you familiar with the Texas State Cotton Harvester? How about the Texas State Committee on Relations of Electricity to Agriculture? Do you know when an external review team recommended the elimination of the department and why that recommendation was never followed? The answers to these and many other questions are to be found in the department's history. *Engineering Agriculture at Texas A&M* by Henry C. Dethloff and Stephen W. Searcy, BAEN Professor and Head, is now published as part of the Texas A&M AgriLife Series, and is available through the Texas A&M Press and on-line.

You can order the book at the following web sites or visit the TAMU Press if you are on campus.

- **Texas A&M Press**: Use code 2A to get a 20% discount for the Hardcover version
- **Amazon:** Can purchase either Hardcover or Kindle versions
- **Barnes and Noble:** Can purchase either Hardcover or Nook versions

Editor's Notes

Elena Castell-Perez

On behalf of the Newsletter team, I want to thank those of you who have sent great feedback regarding the BAEN newsletter. This will be our last issue under my direction. For 7 years (our first edition was in Feb/2008) our team worked hard to put together a publication that provided important news and accomplishments of our faculty, students, and staff. It has been a real pleasure to serve the BAEN department!

Regards and best wishes

Elena

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