May/June 2014

RESOURCE

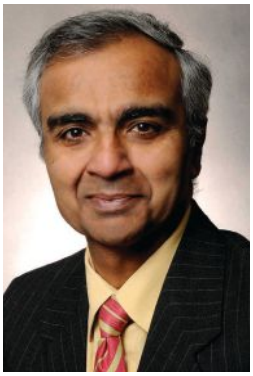
engineering and technology for a sustainable world

GIVING BACK

MAKING A DIFFERENCE

PUBLISHED BY AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS

The Future of Ag and Bio Engineering



The membership has spoken: The proposed reconfiguration of ASABE's technical divisions was approved by 88% of the voting members in the recent election. The Board of Trustees will now pursue this reconfiguration, along with development and execution of a strategic marketing plan. Communicating what ASABE offers will help us increase our membership and promote the value that we offer to the larger world. Watch for more developments on this effort in the coming months.

With the membership in mind, the MVP (Membership Value is Priority) agenda of my term is now being pursued through five task groups: the Agricultural and Biological Engineering P.E. Exam (led by Jay Harmon), Biological Engineering (led by Mark Riley), Global Challenges (led by Ajit Srivastava), Marketing ASABE (led by Leon Schumacher), and Students to Professionals (led by Naomi Bernstein). Each of these task groups is off to a good start and making progress.

We are also pursuing strategic partnerships with allied organizations. Serving as your president has allowed me to represent ASABE to our counterparts in Japan, Korea, China, and India. Professional organizations in these countries have a great desire to work more closely with ASABE. In February, we participated in the first-ever Global Forum for Innovations in Agriculture (GFIA) sponsored by the Abu Dhabi Food Control Authority (see Joel Cuello's article in this issue), which highlighted the grand challenges that we face in achieving sustainable food, water, and energy. Our profession is critically important to addressing these challenges.

That said, though, our profession is not yet achieving its potential, as measured by membership growth in our Society. We are working on this, and we will continue to work on it. There is also a need to address the role and scope of advocacy in ASABE, and the Board of Trustees will explore these topics in its next meeting at ASABE Headquarters. Our goal remains to provide compelling value to prospective members, so that they will join with us, their fellow ag and bio engineering professionals, to help the people of the world by addressing the grand challenges that we face. These challenges are very real, but I remain optimistic that the future will be a better place, both for ASABE and for the world.

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events calendar

ASABE CONFERENCES AND INTERNATIONAL MEETINGS

To receive more information about ASABE conferences and meetings, call ASABE at (800) 371-2723 or e-mail mtgs@asabe.org.

2014

July 12-13	**2014 Applications of Computer Image Analysis and Spectroscopy in Agriculture**. Montreal, Québec, Canada.
July 13-16	**ASABE and CSBE/SCGAB Annual International Meeting.** Montreal, Québec, Canada.

2015

July 26-29	**ASABE Annual International Meeting.** New Orleans, Louisiana, USA.

2016

July 17-20	**ASABE Annual International Meeting.** Orlando, Florida, USA.

ASABE ENDORSED EVENTS

2014

May 19-24	**DSSAT 2014.** Griffin Campus of The University of Georgia, Griffin, USA.
July 16-18	**4th International Symposium on Soil Water Measurement, Using Capacitance, Impedance, and Time Domain Transmission.** Macdonald Campus of McGill University, Ste-Anne-de-Bellevue, Québec, Canada.
Sept. 16-1	**CIGR 2014.** Beijing, China.
Nov. 1-7	**2014 21st Century Watershed Technology Conference and Workshop.** University of Waikato, Hamilton, New Zealand.

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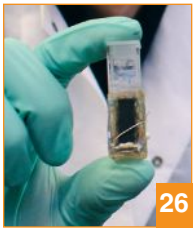
FEATURES

UPDATE



DEPARTMENTS

Technique allows more frequent and detailed water quality monitoring

In Brief: Researchers at North Carolina (NC) State University have developed a new technique that uses existing technology to help researchers and natural resource managers collect significantly more information on water quality to better inform policy decisions.

Right now, incomplete or infrequent water quality data can give people an inaccurate picture of what's happening, and making decisions based on inaccurate data can be risky," says **ASABE member François Birgand**, an assistant professor of biological and agricultural engineering at NC State and co-author of a paper describing the work. "Our approach will help people get more detailed data more often, giving them the whole story and allowing them to make informed decisions."

In addition to its utility for natural resource managers, the technique will allow researchers to develop more sophisticated models that address water quality questions. For example, the researchers at NC State are using data they collected with the new technique to determine the extent to which fertilizer runoff contributes to water pollution in specific water bodies and the role of wetlands in mitigating the effect of the runoff.

The researchers used UV-Vis spectrometers, which measure the ultraviolet and visible wavelengths of the light absorbed by water, to collect water quality data. The upside to these devices is that they can collect data as often as every 15 seconds, and over long periods of time. This is far more frequent than is possible with conventional water sampling and laboratory analysis techniques. The downside is that they are designed to monitor only a handful of key water quality parameters: nitrates, dissolved organic carbon, and turbidity.

The NC State research team developed a technique that uses a suite of algorithms to significantly expand the amount of information that can be retrieved from the spectroscopic data collected by the UV-Vis devices. Specifically, the new technique allows researchers to get information on the levels of organic nitrogen, phosphates, total phosphorus, and salinity of the water. This additional water quality data can offer insights into a host of questions, including questions about nutrient pollution.

The researchers tested the new technique in a restored brackish marsh that experiences approximately 70 cm (28 in.) of tidal variation, along with salinity that can vary from freshwater to saltwater within minutes when the tide turns. "We found that the results obtained with our automated technique were comparable to the results we obtained by testing water samples in the lab," Birgand says. "So we gain a lot in terms of monitoring frequency, without sacrificing accuracy."

For more information, contact Matt Shipman, matt_shipman@ncsu.edu, or François Birgand, francois_birgand@ncsu.edu.

Researchers have developed a new technique for collecting more (and more accurate) water quality data. The technique was tested in this brackish marsh. ***Photo by François Birgand.***