

NABC NEWS

Spring 2012 No. 44

*Providing an open forum
for exploring issues in
agricultural biotechnology*



NABC'S PRINCIPAL OBJECTIVES ARE TO:

- provide an open forum for persons with different interests and concerns to come together to speak, to listen, to learn, and to participate in meaningful dialogue and evaluation of the potential impacts of agricultural biotechnology
- define issues and public policy options related to biotechnology in the food, agricultural, biobased industrial product, and environmental areas
- promote increased understanding of the scientific, economic, legislative, and social issues associated with agricultural biotechnology by compiling and disseminating information to interested people
- facilitate active communication among researchers, administrators, policymakers, practitioners, and other concerned people to ensure that all viewpoints contribute to the safe, efficacious and equitable development of biotechnology for the benefit of society
- sponsor meetings and workshops and publish and distribute reports that provide a foundation for addressing issues.

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Letter from the President...

On March 5, President Obama announced his intention to appoint Sonny Ramaswamy as director of the National Institute of Food and Agriculture at USDA. Congratulations, Sonny, on your appointment to this key organization in federal support of US agricultural research.

Sonny is planning to move to Washington shortly, and has indicated that he will be unable to continue his role as 2011–2012 chair of NABC. Sonny: we appreciate your active role as NABC chair since last June.

Chair-elect Graham Scoles of the University of Saskatchewan has agreed to assume the chair for the balance of Sonny's tenure.

The NABC Futures Committee, chaired by David Stern—with members Nancy Cox, Steven Lommel, Graham Scoles, Gary Thompson, Michael Trevan and Gregory Weidemann—has been working hard; they will provide their report/recommendations at the council meeting at Fayetteville, Arkansas, in June, and we hope that all members will have representatives at that meeting for this most important discussion.

In 2010, NABC produced a white paper on agriculture and water, *Agricultural Water Security: Research and Development Prescription for Improving Water Use Efficiency, Availability and Quality*. As a rule of thumb, 1–2 liters of water are required to produce each calorie of food. Agriculture has a huge footprint in water, using 70% to 80% of withdrawn fresh water. Some areas are already challenged by water limitations. Future needs for additional food/feed production for 3 billion more humans, increased consumption of meat in emerging economies, the expanding

use of agricultural products for energy, chemicals and materials, and the necessity of reversing negative impacts on water quality emphasize the importance of achieving water sustainability in agriculture.

NABC's 24th annual conference, *Water Sustainability in Agriculture*, will be hosted by the University of Arkansas, from 1 PM, Monday, June 11 to 1 PM, Wednesday, June 13, at the University of Arkansas Global Campus in Fayetteville. Ken Korth and his committee have produced a superb list of speakers addressing adaptation, management, policy, environmental aspects, conservation and future challenges.

The speakers come from diverse organizations appropriate to discussing this topic with broad impact: agricultural-input industries, processing industries, academe, farmer-growers, and environmental and international organizations. I urge you to attend this conference and to encourage professionals in your organization to attend. This year we will inaugurate a poster session at which students and professionals will present relevant research data. We plan to include the poster abstracts in the proceedings volume and CD, which will be available in early 2013.

Crops modified by traditional or molecular methods to better withstand periods of water stress are entering the market place. A moisture-stress-tolerant GM corn hybrid has been deregulated and large-scale field tests are planned for 2012.

In 2011, GM crops were grown on almost 400 million acres—an annual increase of 8%—by 16.7 million farmers. The major areas of GM crops

Water Sustainability in Agriculture

24th Annual Meeting of the National Agricultural Biotechnology Council Fayetteville, Arkansas, June 11–13, 2012

Ken Korth and Rick Bennett
University of Arkansas

We at the University of Arkansas are pleased to be hosting NABC's 24th annual conference, *Water Sustainability in Agriculture*, in Fayetteville, Arkansas, June 11–13, 2012. Water-related issues are central to many themes in agriculture, including efficient water use, coping with drought, water rights, and environmental impacts. These and other issues will be explored via discussions led by experts in biotechnology, sustainability, water use in plant crops, and water-agriculture environmental and social issues.

Agriculture is by far the largest consumer of fresh water on the planet, and is fully dependent on a sustainable supply of quality water. It is critical that agricultural researchers, food and fiber producers, and agriculture-related industries are fully aware of how the many facets of their activities impact water sustainability.

The meeting will be divided into sessions focusing on major issues of water use in agriculture. We are excited to announce an outstanding lineup of sessions and speakers, including:

Agricultural Adaptations to Water Needs

- International perspectives on issues – **Hank Venema**, International Institute for Sustainable Development
- Breeding for drought resistance – **Dave Warner**, Pioneer Hi-Bred
- Perennial crops and sustainable agriculture – **Wes Jackson**, The Land Institute
- Transgenic approaches to drought tolerance – **Randy Allen**, Oklahoma State University
- Global challenges and solutions – **Bob Zeigler**, International Rice Research Institute

Water Management and Policy

- Consumer responses and programs – **Richard Moore**, The Ohio State University
- Watershed protection programs – **Deanna Osmond**, North Carolina State University
- Agriculture nutrient cycling – **Helen Jarvie**, Centre for Ecology & Hydrology, Wallingford, UK
- Water quality and farmer programs – **Andrew Sharpley**, University of Arkansas
- Perspectives of a rice farmer – **Ray Vester**, Arkansas rice grower

Agriculture's Role in Environmental and Consumer Issues

- Corporate movements toward sustainability – **Sarah Lewis**, University of Arkansas
- Environmental impacts of agriculture – **Suzy Friedman**, Environmental Defense Fund
- Water sustainability in the poultry industry – **Kevin Igli**, Tyson Foods

Preparing for Future Challenges

- Economics of resource protection – **David Zilberman**, University of California-Berkeley
- Optimizing water delivery – **Reagan Waskom**, Colorado State University
- National efforts in sustainability – **Molly Jahn**, University of Wisconsin

At the conclusion of each session, speakers will form a panel to lead discussion and take questions from the audience. As is traditional at NABC meetings, attendees will have additional opportunities for discussion during a breakout session on Wednesday, June 13. And NABC 24 will also provide the opportunity for attendees to present their own research work in a poster session.

The conference will convene at 1:00 pm on Monday, June 11 at the University of Arkansas Global Campus facility in downtown Fayetteville, AR, and will close after lunch on Wednesday, June 13.

Registration

To take advantage of the special early-bird rate of \$250, participants should register for NABC 24 online at the conference website (<http://nabc24.uark.edu>) by May 15, 2012. After May 15, the full registration fee of \$350 will go into effect. Students will enjoy the reduced rate of \$150 until May 15; thereafter the student rate will be \$200. The registration fee will cover the welcome reception, refreshment breaks, lunches on June 12 and 13, and the dinner banquet. Please see the conference website for cancellation and confirmation policies.

The Student Voice

As is customary, graduate students at each of the NABC-member institutions are urged to apply for Student Voice grants in order to help defray the cost of attending the

<http://nabc24.uark.edu>

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NABC 24 Plenary Speakers



Randy Allen, professor of biochemistry and molecular biology at Oklahoma State University, moved his research program from Texas Tech University to assume the directorship of the Institute for Agricultural Biosciences located adjacent to the Samuel Roberts Noble Foundation in Ardmore, Oklahoma. He earned a PhD at Texas A&M University and worked as a postdoctoral associate at Washington University in St. Louis. His research interests include the analysis of the regulatory mechanisms that control the expression of genes in response to environmental signals, especially those involved in stress tolerance. Recent research in Dr. Allen’s laboratory has focused on functional analysis of transcription factors, ubiquitin ligases and other agents involved in controlling cellular signaling pathways that mediate plant development and the acclimation of plants to harsh environments.



Suzy Friedman leads Environmental Defense Fund’s work to advance economically viable initiatives to improve water quality and ecosystem resilience through collaboration with agriculture. EDF’s strategy focuses on advancing economically viable improved input management through adaptive management and strategic placement of wetlands and other natural filters, while minimizing land removed from productive agriculture. Ms. Friedman serves on multiple national committees of interest to the agricultural community, including: member, EPA’s Farm, Ranch, and Rural Communities Advisory Committee; member, Field to Market; member, Chesapeake Bay Program Agricultural Nutrient and Sediment Reduction Workgroup; and member, National Resources Conservation Service State Technical Committees of Virginia, Maryland, and Pennsylvania. She earned her MS in environmental science and policy from Johns Hopkins University and her BA in history and environmental studies from Princeton University. She has worked in the Washington, DC, office of EDF since January 2001.



Wes Jackson earned a BA in biology from Kansas Wesleyan, an MA in botany from the University of Kansas, and a PhD in genetics from North Carolina State University. He established and served as chair of one of the country’s first environmental studies programs at California State University-Sacramento and then returned to his native Kansas to found The Land Institute in 1976. *LIFE* magazine named him as one of eighteen individuals they predict would be among the 100 “important Americans of the 20th century.” In 2005, *Smithsonian* named him one of “35 Who Made a Difference,” and in 2009 he was included in *Rolling Stone’s* “100 Agents of Change.” Work of The Land Institute has been featured extensively in the popular media, including *The Atlantic Monthly*, *Audubon*, *National Geographic*, *Time Magazine*, *The MacNeil-Lehrer News Hour*, and *All Things Considered* on National Public Radio. Dr. Jackson is a recipient of the Pew Conservation Scholars award (1990), a MacArthur Fellowship (1992), a Right Livelihood Award (Stockholm), known as the “Alternative Nobel Prize” (2000), and the Louis Bromfield Award (2010). His writings include the recent works, *Nature as Measure* (2011) and *Consulting the Genius of the Place: An Ecological Approach to a New Agriculture* (2010).



Kevin Igli is the senior vice president and chief environmental, health and safety (EHS) officer for Tyson Foods, Inc., leading more than 180 EHS professionals. He oversees the company’s sustainability initiatives and EHS-compliance and risk-management processes to assess, prioritize and manage all aspects of the company’s EHS stewardship efforts. He coordinates activities with all business-operating units as well as with food safety and quality assurance, engineering, legal and other professionals throughout the company. Mr. Igli has served as vice president for environmental affairs for Willamette Industries, Inc., a forest and paper company based in Portland, Oregon. He was director of environment, health and safety for Packaging Corporation of America and served as vice president of environment, health and safety for

Chemical Waste Management, Inc. A graduate of Malone University with a BA in biological sciences, he serves on the board of the University of Arkansas Applied Sustainability Center, on the advisory council to the recently formed Sustainability Consortium (co-administered by the University of Arkansas and Arizona State University), on the External Advisory Council for the Iowa State University Department of Agricultural and Biosystems Engineering, and is affiliated with other professional and trade organizations.



Molly Jahn has served as special advisor to the provost of the University of Wisconsin for sustainability sciences. Her research career in plant genetics, genomics and plant breeding of vegetable crops focused on molecular genetics of disease resistance and quality traits, producing crop varieties now grown commercially and for subsistence on six continents. She has also worked in developing countries to link crop breeding with improved human nutrition and welfare. From 2006 to 2011, she served as dean of the UW Madison College of Agricultural and Life Sciences and director of the Wisconsin Agricultural Experiment Station. In 2009–2010, she served as deputy and acting under secretary of Research, Education and Economics at USDA. In 2011, she was selected to represent the United States on a high-level International Commission for Sustainable Agriculture and Climate Change. She serves on the NRC Board on Agriculture and Natural Resources and chairs the DOE Oak Ridge National Laboratory’s Energy and Environmental Sciences Directorate’s Scientific Advisory Committee. She founded the Collaborative Working Group on Actuarial Sciences and Sustainability, the Wisconsin Animal Agriculture Sustainability Initiative, and staffs the National Initiative for Sustainable Agriculture. She holds a BA from Swarthmore, and graduate degrees from MIT and Cornell.



Helen Jarvie is a visiting distinguished professor in the Department of Crop Soil and Environmental Sciences at the University of Arkansas. Dr. Jarvie is visiting Arkansas from the United Kingdom, where she is a principal scientist in Environmental Chemistry at the UK Centre for Ecology and Hydrology in Wallingford. Her research addresses the need to protect water resources from excessive nutrients (nitrogen and phosphorus) that can cause nuisance algal growth and degradation in water quality. She has been awarded a Fulbright Fellowship and an OECD Fellowship to undertake a 12-month sabbatical at the University of Arkansas. Her research project investigates the retention, cycling and legacy of phosphorus and nitrogen in watersheds and the implications for water-quality management and aquatic ecosystem sustainability.



Sarah Lewis holds a PhD in environmental dynamics and an MA in French from the University of Arkansas. She received her BS in biology and French secondary education from the University of Nebraska at Lincoln. Dr. Lewis is passionate about identifying and working through challenges at the interface of humans and the environment. Her work with The Sustainability Consortium at the University of Arkansas, Fayetteville, focuses on managing research projects and member relationships within the food, beverage, and agricultural industries in order to develop the Sustainability Measurement and Reporting System. An award-winning educator, she is an adjunct professor of environmental sociology at the University of Arkansas at Little Rock, and is the founder and president of EcoExplicue, a consultancy focused on educating communities about ecological economics. An active member of her community, she serves as an elected official on the Fayetteville City Council.



Richard Moore is the executive director of Interdisciplinary Environmental Sciences at The Ohio State University and lead author of the Alpine Nutrient Trading Plan and Muskingum Water Quality Trading Plans. These plans are based on water-quality trading in upstream areas with maximum ecological benefit and cost-savings for small communities and industries with high wastewater facility-upgrade costs. He is president of the Culture and Agriculture Section of the American Anthropological Association. Dr. Moore’s specialty is social organization and rural communities in Ohio and Japan. His dissertation work focused on upstream-downstream social relations in the rice belt of Japan. He is presently a principal investigator on a number of NSF, USDA, and EPA grants that focus on water quality and climate change. He also serves as assistant director of the School of Environment and Natural Resources and is involved in transdisciplinary programs at the Ohio Agricultural Research and Development Center (OARDC).



THE STUDENT VOICE AT NABC

Travel stipend and free registration to attend NABC 24
for one graduate student from each NABC member institution

<http://nabc.cals.cornell.edu/studentvoice/index.cfm>



Deanna Osmond works at the interface of nutrient management and water quality as both a researcher and an extension specialist at the state and national levels. For the past 20 years, Dr. Osmond has worked at NC State University, first with the Water Quality Group of Biological and Agricultural Engineering and then in the Soil Science Department. She received her bachelor's degree from Kansas State in agronomy and anthropology. After working on a dairy farm, she received her master's degree from NC State University in soil science. For several years she worked in Africa as an international project officer for the US Agency for International Development. Her PhD was awarded from Cornell.



Andrew Sharpley is a professor in the Department of Crop, Soil and Environmental Sciences, Division of Agriculture University of Arkansas in Fayetteville. He received degrees from the University of North Wales, and Massey University, New Zealand. His research investigates the fate of phosphorus in soil-plant-water systems in relation to soil productivity and the effects of agricultural management on water quality. He also evaluates the role of stream and river sediments in modifying phosphorus transport and response of receiving lakes and reservoirs. Dr. Sharpley developed decision-making tools for agricultural field staff to identify sensitive areas of the landscape and to target management alternatives and remedial measures that have reduced the risk of nutrient loss from farms. He works closely with producers, farmers, and action agencies, stressing the dissemination and application of his research findings. He is director of the multi-stakeholder Arkansas Discovery Farm Program to document and demonstrate the benefits of farm conservation measures that protect water quality and promote sustainability. In 2008 he was inducted into the USDA-ARS Hall of Fame and in 2011 received the Hugh Hammond Bennett Award from the Soil and Water Conservation Society.



Henry David (Hank) Venema directs the Water Innovation Centre and Natural and Social Capital Program at the International Institute for Sustainable Development (IISD). He is an engineer with a diverse background. Since 2004, he has led IISD's research on water and agricultural issues in pioneering the application of Natural Capital principles to water-management challenges in Western Canada. In 2009, he led the creation of IISD's Water Innovation Centre with an initial mandate to build a strategic vision for Lake Winnipeg Basin management based on leading-edge policy, management and technological concepts. The Water Innovation Centre builds upon Lake Winnipeg Basin research work that he has directed at IISD including ecological goods and service valuation, payments for ecosystem services, decision-support systems for ecosystem investments, water-quality trading, large-scale nutrient capture through ecosystem restoration and watershed management, and innovative governance models for basin management. In 2010, Dr. Venema launched the Lake Winnipeg Bioeconomy Project reframing the issue of lake eutrophication as a regional innovation and economic development opportunity based on the insight that phosphorus—the element regarded as the noxious pollutant responsible for fouling Lake Winnipeg—is, in fact, a scarce and strategic resource that can be captured, recycled and transformed into high-value biomaterial.



Ray Vester is a fourth-generation rice farmer on the Grand Prairie of Arkansas near the town of Stuttgart. He attended the University of Arkansas, Fayetteville, majoring in accounting. He is active in other aspects of agriculture, including as a member of the USA Rice Federation as chairman of their environmental regulatory subcommittee. He also serves on the Federation biotechnology task force and the sustainability task force. Recently, he completed a two-year term on the Farm Ranch and Rural Community committee, which advises the EPA. He has served the state of Arkansas on the Arkansas State Plant Board for the past 14 years as rice-producer representative. He is also a member of the Arkansas Department of Agriculture advisory board. Mr. Vester is active in his community. He has served for 24 years on the board of directors of Producers Rice Mill, Inc., a farmer-owned cooperative comprising 2,500 members. And he is a member of the board of directors of the Farmers and Merchants Bank, a community bank serving the Grand Prairie. He is married to Debra, has two grown children, a daughter Jennifer and a son Cody, and two grandsons.



Dave Warner is currently Agronomic Traits program leader within the Agricultural Biotechnology Division of Pioneer Hi-Bred International. He is responsible for cross-functional program management and research strategy for all Pioneer drought-tolerance and nitrogen-use efficiency technology programs. He joined Pioneer in May 2010 with extensive experience in maize drought-stress tolerance, crop physiology, genetics and remote sensing. Prior to joining Pioneer, he held various research leadership positions within Monsanto and Dekalb Genetics, most recently as a science fellow. His work led to the discovery and development of several transgenic and native-trait technology solutions to water sustainability in maize production.

Warner, who holds degrees from the University of Massachusetts and the University of Illinois, is an inventor on several patents, and an author of many publications and presentations on drought-tolerance and remote-sensing technologies. He has worked with academic, industry and NGO collaborators in North and South America, India and Africa.



Reagan Waskom serves as the director of the Colorado Water Institute and as director of the Colorado State University Water Center. He is a member of the Department of Soil & Crop Sciences faculty with a joint appointment in the Department of Civil and Environmental Engineering at CSU. In addition, Dr. Waskom serves as the regional director of the USDA-NIFA Integrated Water Program and supervises the CSU Extension Water Outreach program and personnel. His recent research and outreach projects include: Colorado River basin ag sustainability; irrigation water optimization in water-limited environments; evaluation of alternatives to ag water transfer; evaluation of Western households' perceptions and preferences for water use and acquisition; evaluation of municipal water-conservation programs; and development of best management practices for crop production. He received his BS and MS degrees from Texas A&M University and his PhD from Colorado State University in environmental soil science.



Plant pathologist Bob Zeigler has more than 30 years of experience in agricultural research in the developing world. He became director general of the International Rice Research Institute (IRRI) in 2005. After completing undergraduate work in 1972, he joined the Peace Corps and spent 2 years as a science teacher in the Democratic Republic of Congo. He later joined the International Center for Tropical Agriculture (CIAT) in Colombia as a visiting research associate to work on cassava diseases. Starting in 1982, he spent 3 years in Burundi to work as a technical adviser for that African nation's maize program at the Institut des Sciences Agronomiques du Burundi. He then returned to CIAT, eventually becoming head of the Rice Program. He became professor and head of the Department of

Plant Pathology and director of the Plant Biotechnology Center at Kansas State University in 1999. He has served as an expert resource person (quoted or broadcast) for major television networks, on various international radio programs, and in major international print media (the *Economist*, *New York Times*, *Financial Times*, *Newsweek*, *Time*, *National Geographic*). He has (co)authored over 100 refereed journal articles, reports, and scientific papers and has delivered numerous invited lectures worldwide.



David Zilberman's areas of expertise include agricultural and environmental policy, marketing, risk management, the economics of innovation, natural resources, water, biotechnology, and biofuels. He is a fellow of the Agricultural & Applied Economics Association (AAEA) and of the Association of Environmental and Resource Economists. He is the recipient of the AAEA Outstanding Journal Article Award (2011), the AAEA Publication of Enduring Quality Award (2005, 2010), and the UNESCO International Cannes Prize for Water and the Economy (2000). He has published 250 refereed articles in *Science*, the *American Economic Review*, *Econometrica*, the *American Journal of Agricultural Economics*, the *Journal of Environmental Economics and Management*, among others,

and has edited 13 books. He has served as a consultant to the EPA, USDA, the World Bank, the Food and Agriculture Organization of the United Nations, and the Organisation for Economic Co-operation and Development. He received his BA in economics and statistics from Tel Aviv University, Israel, and his PhD from the University of California at Berkeley.

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conference. One student from each member institution will receive up to \$750 (US) from NABC—to meet travel and lodging costs—as well as complimentary registration. Student Voice grantees will be expected to attend the plenary and breakout sessions, and meet to discuss the issues and themes that have emerged at the conference. They will summarize their findings at lunch on Wednesday, June 13. Application forms will be available online in the coming weeks.

Accommodations

NABC-24 attendees can take advantage of special conference rates at the Homewood Suites by Hilton in Fayetteville. The NABC room rate will

be \$89 (+ tax) per night. Make your reservation soon as this rate will expire on May 11, 2012. Reservation details can be found at the NABC 24 website. Free transportation from the hotel to the meeting site in downtown Fayetteville will be provided throughout each day of the meeting.

Sponsorship

The organizers of NABC 24 welcome financial sponsorship from those wishing to show their support of the meeting's important focal area. Organizations that sponsor meeting events will be publicized in promotional materials and websites. Those organizations looking to increase their visibility and benefit from face-to-face interaction with our diverse group

of attendees are encouraged to send representatives to the meeting.

Speakers

University of Arkansas staff will handle hotel reservations and conference registrations for the speakers. Please contact Cindy Morley for more information.

Questions, comments and suggestions may be directed to:

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NABC Will Participate in BIO's *World Congress on Industrial Biotechnology and Bioprocessing*

Orlando, Florida, April 29–May 2, 2012

The *World Congress*—initiated in 2004 by the Biotechnology Industry Organization (BIO), the American Chemical Society and NABC—has become the world's largest conference on industrial biotechnology and the leading event for business leaders and policymakers in biofuels, biobased products, and renewable chemicals.

NABC will have “supporting organization” status at the ninth *World Congress*.

The 2012 plenary program will include leaders from industry, academia and government with emphasis on driving commercialization and innovation in biobased industrial products and processes, including developments in the United States, Europe, and Canada. The plenary presentations and breakout sessions will comprise a variety of categories, most of which are relevant to agriculture:

- Advanced Biofuel Technology
- Feedstock Crops and Algae
- Renewable Chemical Platforms and Biobased Materials
- Specialty Chemicals, Pharmaceutical Intermediates, Food Ingredients
- Synthetic Biology and Metabolic Engineering

More information on the program and registration and lodging details, *etc.*, are available at <http://www.bio.org/worldcongress>.

NATIONAL AGRICULTURAL BIOTECHNOLOGY COUNCIL

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were in North and South America, India and China. Europe continues to be out of step with both the developed and the developing worlds. A recent statement by Bill Gates at the Gates

Foundation to the Associated Press spoke to the critics of GM crops: many of the people who disapprove of genetic engineering in plant breeding live in rich nations that he believes are responsible for global climate change

which will lead to more starvation and malnutrition for the poor.

See you in Fayetteville.

Ralph W. F. Hardy
President, NABC

RWF

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