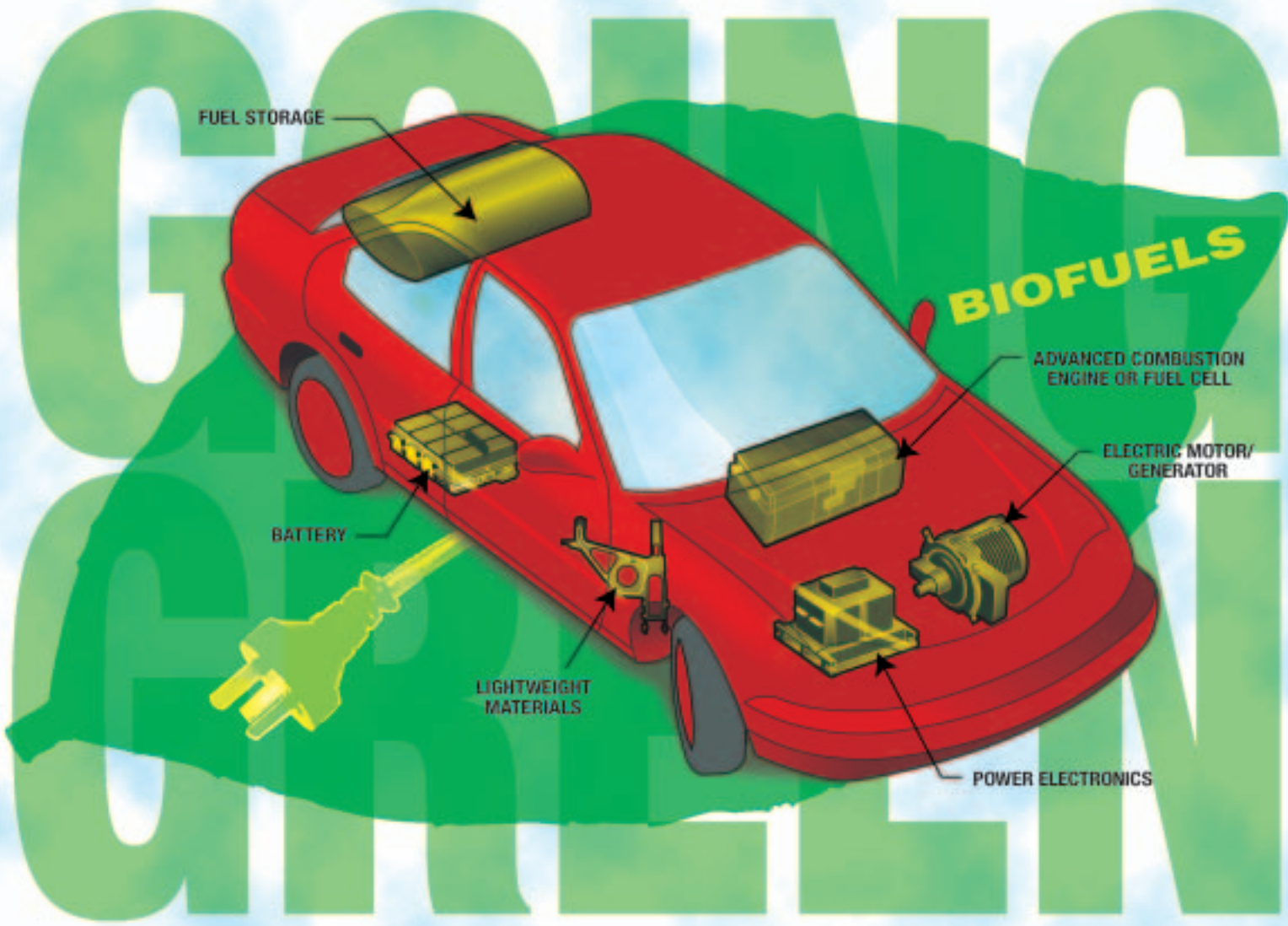


Resource



Engineering & Technology for a Sustainable World

Alternative Fuels, New
Engine Technologies

Status Symbol Conservation

Candidates for ASABE's
2007 Election

Events Calendar

ASABE Conferences and International Meetings

To receive more information about ASABE conferences and meetings, contact ASABE at 800-371-2723 or mcknight@asabe.org. For the complete list, see www.asabe.org/resource/asabevents.html.

2007

Jan. 21-24 **International Conference on Agriculture, Food and Biological Engineering and Post Harvest Production Technology.** Khon Kaen, Thailand.

Feb. 11-13 **Joint Agricultural Equipment Technology Conference and Third International Conference on Crop Harvesting and Processing.** Louisville, Kentucky, USA.

March 11-13 **Fourth Conference on Watershed Management to Meet Water Quality Standards and Emerging TMDL.** San Antonio, Texas, USA.

June 15-17 **Biological Sensors: Critical Technologies for Future Biosystems Conference.** Minneapolis, Minnesota, USA.

June 16-18 **Sixth International Dairy Housing Conference.** Minneapolis, Minnesota, USA.

June 17-20 **ASABE Annual International Meeting.** Minneapolis, Minnesota, USA.

Sept. 15-19 **International Symposium on Air Quality and Waste Management for Agriculture.** Broomfield, Colorado, USA.

Oct. 20-24 **11th National Symposium on Individual and Small Community Sewage Systems.** Warwick, Rhode Island, USA.

2008

June 29-July 2 **ASABE Annual International Meeting.** Providence, Rhode Island, USA.

ASABE Section and Community Events

For more information, contact the person identified in each listing. For the complete list, see www.asabe.org/resource/community.html.

2007

Jan. 23 **Quad Cities Section Winter Meeting.** Viking Club, Moline, Illinois, USA. Contact Dennis Roe, RoeDennisM@JohnDeere.com.

Feb. 14 **California-Nevada Section.** AgTAC Center, Tulare, California, USA. Coincides with the World Ag Expo/Tulare Farm Show, www.worldagexpo.com. Contact Victor Duraj, vduraj@ucdavis.edu or Carolyn Jones at carolyn.jones@ca.usda.gov.

March. 27 **Quad Cities Section Annual Meeting.** Moline, Illinois, USA. Contact Dennis Roe, RoeDennisM@JohnDeere.com.

May 24 **Puerto Rico Section Silver Jubilee.** San Juan, Puerto Rico. Contact Megh Goyal, mgoyal@uprm.edu.

July 29-Aug. 1 **NABEC Annual Meeting.** The Ohio State University, Columbus, Ohio, USA. Contact Rebecca Lowry, rebecca.lowry@oh.usda.gov.



The centennial is a once-in-a-lifetime opportunity to showcase our profession to the world. Additional funds are needed to fully exploit the opportunities that the centennial provides. Below is a pledge form so you can invest in our centennial promotion.

The ASABE Foundation Centennial Campaign

Centennial Campaign Pledge

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Street Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Member #: _____

Yes, I wish to support the Centennial Campaign.

Please record my pledge or gift of \$ _____ as follows:

My Contribution of \$ _____

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Please bill me: monthly quarterly yearly (**circle one**)

Initial payment of \$ _____ is attached. Bill month _____ (**yearly pledges only**)

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This is a Centennial Gift designated to the following fund(s): _____

Please include my spouse's name in the recognition for this gift.

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I prefer to remain anonymous.

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Credit Card _____

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Signature: _____ Date: _____

Please return to:
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Fax: (269) 429-3852

Resource

Engineering and Technology for a Sustainable World

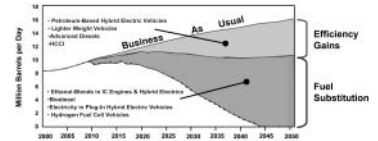
Vol. 13 No. 10

December 2006

FEATURES

5 New Directions for Vehicles

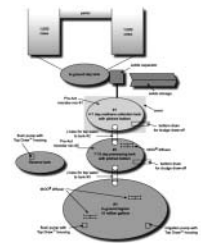
“U.S. petroleum imports and transportation-linked emissions could be substantially decreased with reductions in vehicle weight, changes in vehicle fuels, and more efficient engines,” assert Jim Fischer, Brian Lavoie, and Janine Finnell in the seventh installment in the series on energy topics. Down the road, better fuel economy depends on exciting new technologies.



page 5

7 Ideal Dairy Manure System

In a follow-up to “Tackling One \$melly Problem” (March 2006), Chuzhao Lin and Bill Campion present the “ideal” in dairy manure systems. A remedy for overloaded lagoons, the manure system presented has the potential to turn manure wastes into useful methane gas, reduce odor, liquefy solids, aid nutrient-management programs, and build a time-released, gentle fertilizer.



page 7

9 The Greenest Green Possible

What do Allen Zimmerman and Kermit the Frog have in common? A keen interest in green! Zimmerman aspires to and suggests that a more sustainable economy is possible but depends on reducing energy consumption, and not surprising – “It’s up to us ... Living green should become the new status symbol of society, for the sake of current and future generations.”



page 11

11 Here Today, Ghana Tomorrow

In the growing ranks and admirable tradition of ASABE Marco Polos, David Parker recounts his first journey to Ghana. Parker discovered grasscutter soup, reaffirmed his appetite for hamburgers, and saw multiple opportunities for agricultural and biological engineers. “... with just a little bit of education and a supply of seeds, a world of difference could be made ... ”

DEPARTMENTS

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ON THE COVER



We can’t control the price of gas, but “green” innovation will reduce the need. The cover graphic, adapted from the DOE’s *Driving Technology: A Transition to Enhance Energy Security*, highlights the FreedomCAR and Vehicle Technologies Program’s advanced vehicle of today. It will enable tomorrow’s hybrid fuel cell car by optimizing performance and lowering costs of four of the six “core” technologies required.



Candidates for ASABE’s 2007 Election

13 ASABE’s Nominating Committee has put together a platform of highly qualified individuals for ASABE’s 2007 election. This issue provides candidates’ position statements and other background information.

Reader Forum

The secret of success: stability

I just received the latest issue of *Resource* and much enjoyed reading Jimmy Butt's article, "Why St. Joseph?" – an excellent history of the establishment and growth of the organization!

One reason for the success of the Society has been the leadership of the executive vice presidents. There have not been **many** of these folks, and I believe *this* has been the secret of our success: **stability!** I have long admired Jimmy's leadership within this organization – which I truly love – as it has been a key part of my professional career. I note, via the *Member Roster*, that Jimmy has been a member for more than 60 years. He has truly seen the evolution of agriculture and "agricultural engineering" during his lifetime.

Jim Gilley

Texas A&M University, jgilley@tamu.edu

Request to readers: More on being green?

Resource and Allen Zimmerman invite ASABE members from all divisions to respond – with just a few paragraphs or up to two pages in feature length – to Zimmerman's article, "The Greenest Green Possible," found on pages 9 and 10 of this issue.

Inform the Society's readership/membership about innovative energy and resource conservation – sustainable products and practices – in *your* area of expertise. Companies and universities: share the details of your programs to conserve energy and resources, reduce CO₂ emissions, etc. Please send your "green" thoughts and news to mitro@asabe.org.

How are you contributing to a more sustainable world?

One good thing leads to another

I received an interesting response to "One Size Fits All" (Last Word, October 2006):

Long-time ASABE member/retiree Don Kuska, who lives just a few miles from our home in Moline, Ill., called me to say he had read the column. And, apparently, he liked it. He asked me to make a presentation about standards to his Masonic group ... what standards are, why/how they are developed, and what they accomplish. So, I have a bit of work to do in preparing an informal presentation to an audience that includes just a few engineers. It should be fun. And, of course, Don and I will both tell the other old timers about our experiences with ASAE/ASABE standards ... way back when.

Page Bellinger

bellinger@netexpress.net

Reactions? Opinions? Comments?

Please share! *Resource* is continually seeking reader/member input and response to magazine content ... your timely, thought-provoking opinions for "Last Word," in "Reader Forum," as well as potential two-page features on cutting-edge ideas, hot topics, and Marco Polo sagas for the ongoing travel series.

Please contact Features Editor Sue Mitrovich, 2950 Niles Road, St. Joseph, MI 49085-9659, mitro@asabe.org, with your rough drafts/potential submissions.

And thanks for reading *Resource*!

Resource

Engineering & Technology for a Sustainable World
VOL. 13 NO. 10

Resource: Engineering & Technology for a Sustainable World (ISSN 1076-3333) (USPS 009-560) is the membership publication of the American Society of Agricultural and Biological Engineers (ASABE). The Society is a not-for-profit professional and technical organization of members worldwide interested in engineering knowledge and technology for food and agriculture, associated industries, and related resources. The magazine maintains executive, editorial, subscription, and advertising offices at ASABE headquarters, 2950 Niles Road, St. Joseph, MI 49085-9659, USA; 269-429-0300, fax 269-429-3852, hq@asabe.org.

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A subscription to *Resource: Engineering & Technology for a Sustainable World* is included in the annual ASABE membership dues. Annual nonmember subscription rates are \$86 including postage in the United States. Add \$25 for postage outside the United States. Overseas airmail rates available on request. Single issues are available for \$5.50 for members, \$7.50 for nonmembers.

Contact ASABE order department, 269-428-6325. An application for membership can be obtained by contacting ASABE.

Change of address: Send recent mailing label and address with ZIP code. Allow four weeks for change to become effective.

Postmaster: Send address changes to *Resource*, 2950 Niles Road, St. Joseph, MI 49085-9659, USA. Periodical postage is paid at St. Joseph, MI, USA, and additional post offices.

Permission to reprint articles available on request. Reprints, in black and white or color, can be ordered in large quantities for a fee. Contact Donna Hull, 269-428-6326. Electrostatic reprints of individual articles, issues, or entire volumes may be purchased from University Microfilms, Box 1346, Ann Arbor, MI 48106, USA; 800-521-0600.

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Soilless sod has worldwide appeal

John Holmes dreams of one day shipping entire golf courses from Georgia to anywhere in the world. Holmes, global sales manager for Phillip Jennings Turf Farm in Soperton, Ga., may see his dream become a reality thanks to a product developed at Mississippi State University (MSU).

The product, developed by MSU, is a soilless sod that never touches dirt until it is put into place on lawns, golf courses, sports fields, or other locations. It is grown from sprigs using cotton mats and nutrient-enriched water.

Jennings's overseas customers include golf courses and other upscale developments in the Middle East, the Caribbean, and Asia. The overseas customers, Holmes explains, are willing to pay additional costs, which include the cost of removing all the soil, to get the quality turf his company can provide.

The removal of the soil is necessary because of international restrictions on soil shipments and the cost of shipping tons of dirt.

MSU's development of a process to grow sod without soil began 10 years ago based on former graduate student Kevin Hensler's research using kenaf-based

fiber mats to grow turfgrass. The process has since been refined, and mats produced from cotton byproducts have replaced the more expensive kenaf mats.

According to Brian Baldwin, associate professor of plant and soil sciences, "sprigs of bermuda or a similar grass are placed between two layers of mats and are grown using hydroponics, which replaces the soil with a solution of water and nutrients," he says. "The mats are placed on a plastic sheet that the roots can't penetrate, so they remain inside the mat."

The mats are completely covered in grass in 30 to 45 days and degrade in

about 120 to 150 days, leaving only clean, healthy sod.

"The conventional process for growing sod in outdoor fields produces just one crop a year," Baldwin says. "The soilless sod process can produce three crops in about the same length of time, and the grass does not go through shock because the roots are never cut the way they are during a conventional sod harvest."

Soilless sod also weighs significantly less than its conventional counterpart. For Holmes, weight is an important factor in his company's plans for soilless sod.

For more information, contact Baldwin, 662-325-8862.

New technology turns food leftovers into electricity, vehicle fuels

Tons of table scraps from California Bay Area's finest restaurants are being turned into clean, renewable energy at a new University of California (UC) Davis research and technology demonstration facility. If all goes well, each ton of broccoli spears, cantaloupe rinds, and fish bones will produce enough energy to provide electricity to power 10 average California homes for one day.

The Biogas Energy Project is the first large-scale demonstration in the United States of a new technology developed in the past eight years by ASABE member Ruihong Zhang, a UC Davis professor of biological and agricultural engineering. The technology, called an "anaerobic phased solids digester," has been licensed from the university and adapted for commercial use by Onsite Power Systems Inc.

The goal of this innovative public-private alliance is to divert organic matter – stuff made from plants and animals, such as food waste and yard clippings – away from landfills and into the energy grid. That reduces greenhouse gas emis-

sions from landfills and turns trash into a substantial source of clean energy.

Zhang's system differs from other anaerobic digesters – most of which are in use on municipal wastewater treatment plants and livestock farms – in three key ways:

- It processes a wider variety of wastes – both solid and liquid – including food scraps, yard trimmings, animal manure, and rice straw.
- It works faster, turning waste into energy in half the time of other digesters.
- It produces two clean energy gases – hydrogen and methane. Other digesters produce only methane. The gases can be burned to produce electricity and heat or to propel cars, trucks, and buses.

Zhang has proved in the laboratory on a small scale that, in anaerobic or oxygen-free conditions, naturally occurring bacteria can quickly convert food and green wastes into hydrogen and methane gases. Now the challenge is to make the gases in consistently high quality and large volumes over the long term – a challenge Zhang believes can be accomplished.

For more information, contact Zhang, 530-754-9530, rhzhang@ucdavis.edu.



UC Davis Professor Ruihong Zhang shovels fresh table scraps from San Francisco restaurants into the biogas energy plant. (Photo courtesy of Karin Higgins/UC Davis)

Device helps ensure efficacy of New Orleans levees

A device developed by the Agricultural Research Service (ARS) that tests how well soil resists being eroded by water is helping ensure the efficacy of levees around New Orleans.

The Jet Test Apparatus, designed by ASABE member Gregory Hanson, research leader at the ARS



ASABE member Gregory Hanson uses the jet test apparatus he designed at a Mississippi site. (Photo courtesy of Hanson)

Hydraulic Engineering Research Unit, Stillwater, Okla., uses a water jet pumping at various flow rates to give a rapid determination of the erodibility of soil used in structures like levees.

While the device was originally designed to help evaluate the potential for soil erosion in stream beds and banks, Hanson and U.S. Army Corps of

Engineers research civil engineer Johannes Wibowo saw the possibility of using the equipment to test new and existing levees. Levees in New Orleans that survived Hurricane Katrina intact, as well as those repaired after failing, provided the perfect place to test their idea.

The ARS National Sedimentation Laboratory in Oxford, Miss., which has also been using the Jet Test Apparatus in stream erosion and sedimentation studies, provided the device and training to help the Corps of Engineers with the initial testing of the levees. Levees that successfully held during Katrina provided a baseline for acceptable erodibility. Newly repaired levees were matched against that standard.

Measuring the ability of the repaired levees to resist water erosion is especially important because the soil being used to rebuild the levees is from a number of locations around Louisiana and Mississippi. The soil's resistance to erodibility, once placed and compacted, may not be known. In the past, there has not been an objective way to measure erodibility, so resistance to erosion has not been included in levee specifications. A report now being finalized by Wibowo may change that, enhancing the future safety of levees and dikes.

For more information, contact Hanson, 405-624-4135, greg.hanson@ars.usda.gov.

Initiative launched to keep farm children safer

The Childhood Agricultural Safety Network (CASN) is a newly formed coalition of health and safety organizations across the nation. They have combined their efforts to bring a unified safety message to agricultural communities geared toward protecting children from preventable injuries. The first year of the program is centered on tractor safety.

Agriculture consistently ranks among the four deadliest jobs in the United States, along with mining, transportation, and construction. According to the National Safety Council's most recent report (2005), agriculture had the highest rate of worker deaths compared to an average across all jobs. Agricultural workers also suffered 90,000 disabling injuries that same year. Nearly all those deaths and injuries are preventable.

One of the main differences between agriculture and other industries is the presence of children on the worksite. Farming is typically a family business where children are raised on the farm and participate in farming activities beginning at young ages. Annually, more than 100 children are killed and 26,000 seriously injured in farm-related events in the United States.

CASN looked at safety messages with year-long themes and a three-year overall plan. The first year

is dedicated to tractor safety – the number one cause of childhood deaths on the farm. The second year is planned to launch a marketing program based on all-terrain vehicles safety. The third-year theme has not yet been confirmed.

The message selected for the tractor initiative may create some controversy within the farming communities. CASN takes a “tough love” approach, stating that it is never okay for a child younger than 12 years old to be on a tractor. The group advocates that the earliest that children should be on a tractor is when they are old enough to take and pass tractor safety educational classes.

CASN is taking the position of advocate for the child on the farm. Safety advocates acknowledge that the message that children should never be on or near tractors may be unpopular.

Although advocating safety for children, the marketing message is meant for adults. The main advertising components will carry the headline, *It's Easier to Bury a Tradition than a Child*. Talking directly to the farming community, the goal is to change behaviors. CASN is hoping that the message – to keep children off tractors – will make people think of the consequences and realize that it is in the child's best interests to follow this simple rule.

According to the CASN, no one wants to bury a child.

For more information, visit www.childsafety.org.

New Directions for Vehicles

Better fuel economy will be fueled by new technologies

James R. Fischer, Brian D. Lavoie, and Janine A. Finnell

Significant opportunities exist to break America's addiction to oil and increase energy, economic, and environmental security. U.S. petroleum imports and transportation-linked emissions could be substantially decreased with reductions in vehicle weight, changes in vehicle fuels, and more efficient engines.

Reduce the load

Reducing vehicle weight, while retaining or improving comfort, durability, and safety, is one of the most direct ways to improve fuel economy. Research to develop and apply lightweight materials for vehicles promises to reduce the work engines have to do, which will reduce fuel use. Examples of promising materials include carbon fiber and carbon-fiber-reinforced polymer matrix composites.

Change the fuel mix

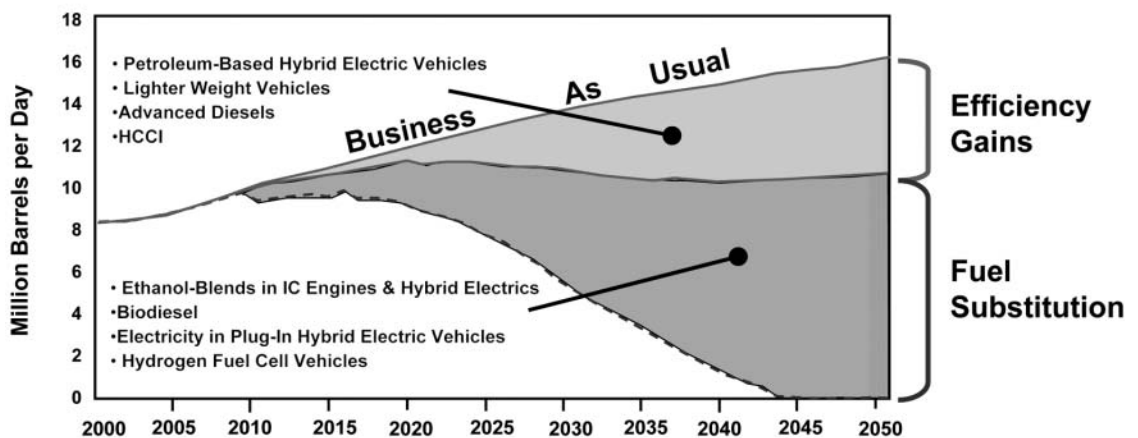
An important strategy to reduce petroleum consumption is to diversify our fuels. One way to do this is to trade off some gasoline for diesel fuel, as is done in Europe, with a larger share of diesel engines. Diesels can convert as much as 45 percent of fuel energy into work, compared to about 30 percent efficiency for gasoline engines. Higher efficiency would mean less fuel, if consumers opted for diesels' reduced acceleration and other differences from gasoline engines. Recent Environmental Protection Agency (EPA) rules for diesel engines and fuels, for both highway and nonroad vehicles, will reduce by 90 percent nitrogen oxide (NOx) and particulate (PM) emissions from new diesel vehicles. With technological advances, future diesels might be even more efficient and less polluting.

Going further, renewable alternative fuels can be direct substitutes for petroleum. Ethanol production has increased

markedly, and now supplies nearly 2 percent of the fuel for U.S. light-duty vehicles. Most often blended at 10 percent or less with gasoline (E10), ethanol is also sold as E85, a mixture of mostly ethanol with some gasoline to help with engine starts. E85 pumps are available in many parts of the country, especially in the Midwest. Millions of vehicles on the road today are already "flex fuel vehicles" that can run on any combination of gasoline and E85 without any action required by the driver. These cars and trucks, versions of common models, are sold by domestic and foreign manufacturers. New biomass technologies could enable the use of plant cellulose as a feedstock for ethanol, making it possible to dramatically expand production volumes. Biodiesel, derived from waste cooking oils, soybeans, and other oilseed crops, can supplement fossil-based diesel at blends of up to 20 percent (B20) without engine modifications. Alternative, non-renewable domestic fuels can also replace oil. Notably, abundant U.S. coal resources could be converted to liquid fuels to power vehicles.

Improve our engines

In addition to a fuels strategy, recent advances show promise of increasing engine efficiency. Hybrid electric drive in cars like the Toyota Prius can enhance power and performance while decreasing fuel use by as much as a quarter or more. This is achieved through regenerative braking and storage of energy in a battery – capturing some of the energy normally lost in braking and coasting –



How to break an oil addiction: shown above are the potential light-duty vehicle oil savings. Source: Adapted from the Department of Energy FreedomCAR and Vehicle Technology Program information.

and use of electric power to replace or enhance fuel use. Hybrids are commercially available in a wide variety of automobiles, both domestic and foreign, and are even becoming commonplace. Most often used with gasoline engines in cars and light trucks, hybrid technology can be used with already more-efficient diesels and in larger vehicles like trucks and buses. Hybrids could also be fueled by ethanol or other alternatives.

“Plug-in” hybrid vehicles could extend the use of electricity. With enhanced batteries and power electronics, cars could run solely on electricity or liquid fuel or on both in



New generation vehicles “plug in” to green transportation.

combination. They could be recharged from a home electrical connection or even a car-top solar panel. Plug-in hybrids could save 40 to 80 percent more petroleum compared to conventional hybrids (EPRI, 2004). Petroleum savings and emissions reductions compared to gasoline-only vehicles are potentially quite large, although emissions from power plants producing the electricity must be taken into account.

Ongoing engine research promises more efficiency gains. In the next decade, advanced combustion engines could improve on the efficiency of traditional engines, extracting more energy from fuels. One promising approach is the homogeneous charge compression ignition (HCCI) engine, an advanced, low-temperature combustion regime. In HCCI engines, fuel is combined with air in a lean (high air) ratio before being drawn into a combustion cylinder, as in traditional, spark-ignited engines. However, ignition is achieved through compression, as in diesel engines. The result is an engine that has near-diesel efficiency, extracting about 40 percent of the energy contained in fuel. At the same time, the lower engine temperatures help eliminate NOx and PM emissions problems associated with diesels. Both traditional and alternative fuels could be used with HCCI. Technical problems remain, but HCCI technology holds promise for very efficient, clean-burning engines for automobiles, trucks, buses, and even ships and stand-by power generators. In addition, no major infrastructure changes would be required nor new fuels developed.

Looking further into the future, fuel cells powered by hydrogen could replace the internal combustion engine altogether. Hydrogen can be an effective carrier of energy, although it is not an energy source itself. It can be produced with renewable energy, such as biomass, or traditional energy sources. Fuel cells produce electricity, capturing

energy released when hydrogen and oxygen combine to form water. They can be up to 80 percent efficient in idealized operation, and the only waste products are water and heat. Fuel economy for a hydrogen-powered fuel cell vehicle (FCV) could be a 100 percent improvement over conventional gasoline vehicles and 50 percent better than currently available

hybrids. High efficiency and very low environmental emissions will make this power system very successful, when costs can be reduced sufficiently and performance requirements satisfied. Automakers such as GM and Honda have major FCV development programs.

As technologies are developed and deployed, perhaps some of the most dramatic results could be achieved by combining two approaches – using alternative fuels to power advanced engines. For example, a plug-in hybrid that could travel 97 km (60 miles) for each 3.78 L (1 gal) of gasoline burned in the car might run on E85 instead of gasoline. The car could then travel more than 241 km (150 miles) for every gallon of fossil fuel it used. Other approaches, such as conservation and mass transit, should play a role in addressing America’s transportation dilemma, but alternative fuels and new engine technologies will play a pivotal role. **R**

For further reference, see:

- Electric Power Research Institute (EPRI), Plug-In Hybrid Electric Vehicles, Report No. 1101064, August, 2004.
- Department of Energy vehicles program: www.eere.energy.gov/vehiclesandfuels/
- Lawrence Livermore National Laboratory research update on HCCI engine technology: www.llnl.gov/str/April04/Aceves.html
- Department of Energy Biomass Program (cellulosic ethanol research): www1.eere.energy.gov/biomass/



Pumping biofuels: the future is now.

ASABE member James R. Fischer is a senior technical advisor – academe on the Board of Directors with the Office of Energy Efficiency and Renewable Energy at the U.S. Department of Energy, Washington D.C.; 202-586-1394, fax 202-586-2096, James.Fischer@ee.doe.gov. Brian D. Lavoie is an associate with Technology & Management Services, Inc., Washington, D.C., 202-554-5161, blavoie@tms-hq.com. Janine A. Finnell is a senior associate with Technology & Management Services, Inc., Washington, D.C., 202-554-4636, fax 202-554-4676, jafinnell@yahoo.com.

Ideal Dairy Manure System

Continuing to tackle a smelly problem

Chuzhao Lin and William Campion

In the March 2006 issue of *Resource*, “Tackling One Smelly Problem” explains in detail how Pro-Act Microbial’s manure lagoon treatment system works by creating a three-stage digester that liquifies solids, reduces odor, and more. In this second installment of a continuing saga, an ideal dairy manure system is presented based on the Pro-Act Microbial manure lagoon treatment system and experiences gained working with 80-plus farms.

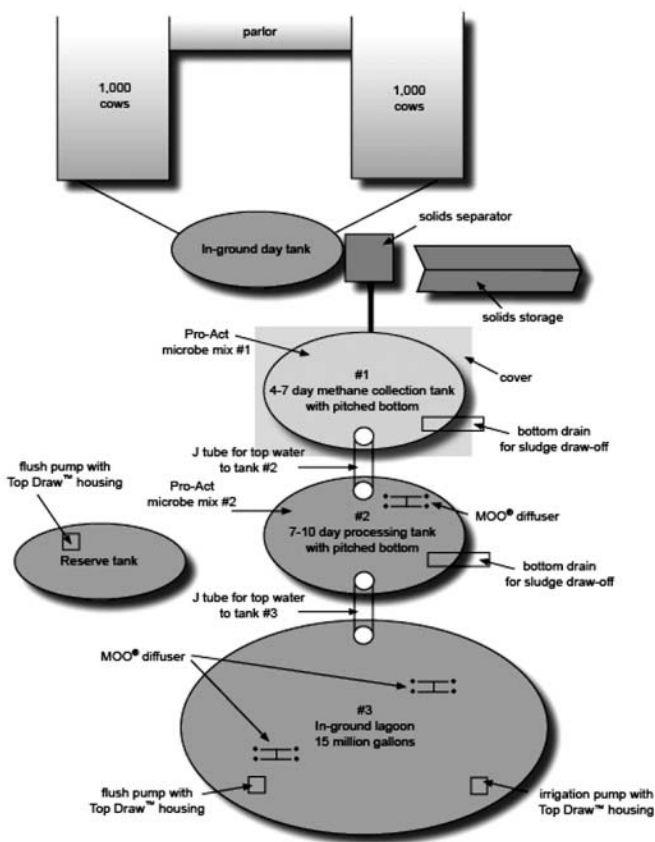
The remedy for stressed lagoons

Many dairies with concentrated animal feeding operations (CAFO) have less storage volume than they need, leading to stressed lagoons. Stressed lagoons often accumulate solids, costing thousands of dollars to agitate and pump. They can give off offensive odors and gases, endangering the goodwill of neighbors. In addition, there are often more nutrients in the manure than the available land can accept to meet the nutrient management requirements. This excess of nutrients can lead to expensive disposal problems. It is fair to say that proper manure waste management is an ongoing and frequently expensive problem for dairymen. However, if properly designed and built, a manure system has the potential to turn manure wastes to useful methane gas while reducing odor, liquifying solids, helping with (phosphorus-based) nutrient management programs, and building a gentle, time-released fertilizer. An ideal manure system provides all the benefits mentioned.

In search of the “ideal”

The ideal manure treatment system requires 757 L (200 gal) per cow of recycled water from the manure storage (i.e., lagoon). There must be two processing tanks (one of which will be covered for methane recovery) and a lagoon. Manure treatment takes place in both the processing tanks as well as the lagoon. The manure treatment system consists of proprietary microbes, growth factors, and surface diffuser(s). Manure solids will first be digested to smaller fragments then to monomers (sugar, amino acids, etc.). Acid-forming fermentative bacteria will convert the monomers to volatile fatty acids, hydrogen, carbon dioxide, and others. The last step is the methane formation. While all these can be accomplished by anaerobic microbes indigenous to the manure, Pro-Act augments

these anaerobic microbes with aerobic and facultative ones. The aerobic and facultative bacteria take away some of the volatile fatty acids produced by the acid-forming bacteria so the pH of the manure system will not drop too low to inhibit the methane bacteria from producing methane out of either acetic acid or hydrogen and carbon dioxide.



Flow chart of the ideal system.

Charting the ideal

The flow chart above uses a 2,000-cow dairy as an example. A dairy of this size requires 75,700 kiloL (20 million gal) of yearly manure storage. In a flush system, manure slurry in the amount of about 1,893 kiloL (500,000 gal) will be collected in a day pit (or equalization tank) to feed the separator. For a scrape system, about

1,666 kiloL (440,000 gal) of recycled water will need to be added to 227 kiloL (60,000 gal) of manure in the day pit and fed to the separator. Separated solids can be composted and used as bedding material. All the liquid from the separator will then go to a processing tank the size of a four- to seven-day hydraulic retention time (7,570 to 13,251 kiloL or 2 to 3.5 million gal). This tank will be covered for methane collection. Solids will drop to the bottom and need to be cleaned out periodically, so this tank should have a pitched bottom with a drain for solids removal.

Going with the flow

The top water from tank #1 goes to the bottom of a 7- to 10-day (retention time) tank #2 (11,356 to 18,927 kiloL or 3 to 5 million gal) via a J-shaped tube. There should be a surface air diffuser on the surface of this vessel. In this tank, stratification will continue: solids will drop to the bottom along with phosphorus and nitrogen. This tank will also have a pitched bottom with a drain for solid removal. Solids, with high phosphorus content, collected from the bottom of the above two tanks can be stored in a separated solids storage pit for later composting or hauling to far-away fields.

Ideally, both tanks, being the processing tanks, will be full at all times, leaving the lagoon as the storage facility. The top water from tank #2 flows to the storage lagoon via a J tube. The lagoon should have two or more diffusers and again stratification occurs. The top water has few solids and a very low viscosity. It has been used for irrigating even on growing crops without burning them. If you put your hand in the manure liquid and let it dry, there will be no lingering odor as long as the microbes are active. The top water will also be used for flush. In the event of bi-annual pump down, fresh water from a reserve tank might be required to run the flush.

Perpetually adding microbes

Two proprietary microbial mixes will be needed for the ideal manure system. Mix #1 is added to the methane tank weekly. Preliminary study found that this microbe mix increased biogas production by more than 20 percent in the first seven days. Mix #2 is added to tank #2 with diffuser and eventually flows to the lagoon. This mix has been used on more than 80 farms all over the country.

The process of stratification can answer many of the dairymen's manure concerns, and it is easy to set up. The key elements are the use of the microbial system, which includes proprietary microbe mixes, growth factors, and patent-pending surface diffuser(s), using four manure storage vessels as outlined on the flow chart and having adequate solids separation. When the system is working right, phosphorus will concentrate at the bottom, leaving little in the lagoon top water for irrigation use.

Gathering energy

A byproduct of manure treatment – methane gas – will be collected from the first processing tank. The strategy will likely be both economical and efficient. It is inexpensive to cover a small processing tank for gas collection (rather than a big lagoon). With the help of proprietary microbes that take away some of the volatile fatty acids produced by the acid-forming bacteria, there is less chance that this “digester” will turn sour and stop working.

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Further, only the easily digested material will be converted to methane in this short retention tank to increase the rate of methane production. Hard-to-digest manure solids, such as cellulose that tend to be the bottle neck of microbial digestion, will first be separated out by the solids separator. Those small enough to get past the separator will be taken care of in processing tank #2 and the lagoon to reduce the size of the digester for methane collection. Although the ideal dairy manure system will not collect all the methane gas that can be produced from manure, the economics will favor the small design.

The proof is in the manure

A number of farms have expressed interest in modifying their existing manure systems to one that resembles the ideal system presented in this article to harness the methane energy and to comply with the phosphorus-based nutrient management program. When the system is up and running, *Resource* readers will be provided with an update on the effectiveness of the “ideal” manure system. **R**

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The Greenest Green Possible

Energy that is not consumed

Allen Zimmerman

There are numerous reasons for converting from a fossil-fuel-based global energy system to one that is based on sustainable (green) energy sources and consumption. These include eventual depletion of fossil fuels, environmental degradation, diversity of energy sources, global inequalities, stability, security, and what has become increasingly critical and urgent on a near term basis – global climate change.

Leadership needed

Based on data provided by the Department of Energy, Energy Information Administration (DOE-EIA), in 2003 the United States (with less than 5 percent of the world's population) consumed 23 percent of the global energy supply (86 percent was fossil-fuel based), and emitted 23 percent of the global anthropogenic carbon dioxide. As the major consumer of global energy and the largest economy, the United States should assume leadership in the transition to sustainability and make green practices and technology available to the rest of the world. If current trends continue, EIA projects U.S. energy use to increase by 36 percent between 2003 and 2030 (9.2 percent per capita increase) with a 40 percent (11.6 percent per capita) increase in carbon dioxide emissions. Global increases for energy and carbon dioxide emissions are predicted to increase by 71 and 74 percent, respectively.

Renewable energy sources must play a prominent role in the overall strategy to transition to a sustainable economy in the United States and worldwide. A series of articles in recent issues of *Resource* have highlighted the opportunities presented by solar, wind, bio-diesel, ethanol, and other alternatives to fossil fuel. All of these are greener than fossil fuels; however, all have negative environmental impacts and require some fossil-fuel embedded energy during various phases of their life cycles. Also, renewable energy sources only address the supply side of society's use of energy.

Conserve, conserve, conserve

It is essential that energy conservation, which addresses the demand side of energy consumption, be emphasized in any discussion of, and strategy for, transition to a sustainable economy. Although energy conservation may not be as glamorous, exciting, or exotic as other green alternatives, it has potential to make the largest contribution to solving the energy "crisis." The Alliance to Save Energy states that "energy efficiency is the quickest, cheapest, cleanest way to extend our world's energy sup-

plies." Amory Lovins of the Rocky Mountain Institute uses the term "negawatts" in conjunction with his statement that there is "no cheaper or cleaner power than that not used."

Energy conservation has a number of important advantages, an obvious one being monetary savings on the part of individuals and companies. Conservation measures can be implemented on an immediate, short- and long-term basis. Likewise, benefits of conservation can accrue during the same range of time periods. Energy conservation is a proven and flexible strategy and can be applied to a variety of situations, processes, and systems from simple to complex. The skill level and technology needed also range widely. Improvements in conservation can be made on an incremental basis using state-of-the-art and innovation technology and, in giant leaps, based on new concepts and advanced designs, materials, and processes.

The value of conserving energy is magnified by the fact that saving a unit of energy at the point of use results in even greater savings of primary source energy units. This principle has important applications. One concerns the energy embedded throughout the life cycle of energy supply systems (it takes energy to produce energy). For example, the energy equivalent of about 4 L (1 gal) of gasoline is required (when all resources are considered) to extract, refine, and transport 26.5 L (7 gal) of gasoline to the consumer. Thus every transportation choice that saves 26.5 L (7 gal) is actually saving an additional 4 L (1 gal).

The magnification principle also applies to the concept that the overall efficiency of a series of energy conversion and delivery devices is equal to the product of the efficiency of each. As an example, if the efficiency of a coal-fired electric power plant is 38 percent, and the efficiency of the power transmission lines is 88 percent, the overall efficiency of the system is 33 percent. Therefore, a household or company that saves 1 kWh of metered electrical energy is actually saving 3 kWh worth of energy in the form of coal at the plant (plus additional embedded energy).

It's up to us

Energy conservation as a strategy also has some roadblocks. As mentioned, energy conservation is less tangible and more mundane than other green alternatives. Given its decentralized nature, the overall success of energy conservation depends on the commitment, action, and cooperation of multitudes of people, companies, and governments in a culture that stresses individuality and independence. Large scale reductions in energy consumption depend on

behavioral and economic changes at the society level. Many people view energy conservation as the antithesis of modern life and economic progress – something that will automatically lower their comfort, ease, status, and quality of life and require undue sacrifice.

Energy conservation is also hindered by standard economic policy and practice. Many end-users only consider initial and not variable costs when making buying decisions related to energy conservation. Even when operating costs are considered, investment decisions at the consumer level are often based on payback periods of only two or three years. Likewise, many companies underinvest in energy conservation because they require discount rates much higher than those typical for other types of projects.

Standard economic practice in energy production has been to exclude the true and actual costs of the disposal of wastes into, and the disruption of, the environment from the calculation of internal costs. In other words, the costs of pollution and other environmental degradation to nature and society are regarded as externalities and typically undervalued if considered at all. Although difficult to quantify completely, the short- and long-term costs of the use of energy in terms of adverse effects on the environment and public health are both real and substantial. (Governmental mandated programs that regulate levels of pollutants and other environmental damage are one method that society uses to assign at least some of these indirect costs. However, since the costs are added after the initial analysis, they are viewed by many as negative and punitive.) The net result (along with taxpayer subsidies) in terms of energy conservation is that energy prices fixed by the market are artificially low. Therefore, there is much less economic incentive to invest in and practice energy conservation (lower energy prices encourage more consumption).

Reduce, reduce, reduce

Energy conservation can be achieved in two different ways: reducing the amount of primary energy consumed to supply the useful energy requirement (energy efficiency) and reducing the end point use of nonessential energy. The United States has made substantial improvements in energy efficiency in all sectors of the energy economy based on voluntary action and governmental mandates. Consider power trains of transportation vehicles; building shells, mechanical systems, and appliances; and industrial processing.

However, there is much more that can be accomplished using state-of-the-art and innovative energy efficiency technology at both the component and system levels. This is evidenced by companies that have implemented major reductions in energy use and carbon dioxide emissions while at the same time improving their bottom lines. Additional examples include companies, governmental agencies, organizations, universities, and homeowners who have and are purchasing energy-efficient, yet cost-effective buildings designed, constructed, and operated to meet the

Leadership in Energy and Environmental Design (LEED) standards of the Green Building Council (for commercial buildings) or Energy Star standards of the Environmental Protection Agency and DOE (for residences). It is crucial that others make major commitments to sustainability via energy efficiency. As the American Council for an Energy-Efficient Economy states, energy efficiency should become the “centerpiece of our nation’s energy policy.”

The second way to achieve energy conservation is to reduce use of nonessential energy. This requires raised consciousness and awareness on the part of individuals as private citizens and work professionals and a willingness to become better educated about the realities of sustainability. Energy conservation is crucial, but it will have a major impact only if it leads to a significant reduction in overall energy consumption.

Unfortunately, energy efficiency alone does not automatically result in less energy use. As one example, although the efficiency of U.S. passenger-vehicle power trains has improved significantly in the last few decades, the overall efficiency of new passenger vehicles has declined due to the public’s preference for vehicles that are heavier, larger, and have more accessories. (EIA projects that U.S. total energy use for passenger vehicles will increase by 44 percent for the period 2003-2030). As another example, although the efficiencies of residential building shells and appliances have improved significantly, this has been negated by the increased size of new homes and the amount of electrical devices. (EIA projects that U.S. total residential energy consumption will increase by 22 percent for the period 2003-2030).

A major goal of those who aspire to a more sustainable economy must be to reduce energy consumption to levels that provide satisfaction in life but are also socially responsible. Both aspects of energy conservation have to be included: energy efficiency and deliberately choosing to use less nonessential energy. Living green means energy stewardship, requiring frugality and thriftiness in energy consumption. This should become the new status symbol of society, for the sake of current and future generations. **R**

For further reference, see:

- Alliance to Save Energy, www.ase.org
- American Council for an Energy-Efficient Economy, www.aceee.org Technologies, www.eere.energy.gov/windandhydro/
- DOE Energy Information Administration Reports - Annual Energy Outlook 2006, www.eia.doe.gov/oiaf/aeo/ and International Energy Outlook 2006, www.eia.doe.gov/oiaf/ieo/
- Green Building Council, www.usgbc.org
- Energy Star Program, www.energystar.gov
- Rocky Mountain Institute, www.rmi.org

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Here Today, Ghana Tomorrow

A long boat ride up the river

David B. Parker

As we waited to board the boat for the 14-hour ride up the Volta River in Ghana, West Africa, I could only imagine what the next nine days would entail. It was mid-March, and back home in Amarillo, Texas, a jacket was still needed. Not here. It was hot and muggy. My sweat glands were getting a workout, even laying in bed at night.

We had spent the previous week in and around Accra, the capital city, getting adapted and buying food and supplies for the trip. I had already been exposed to a world I only knew through television – a world of hunger, poverty, open sewers, and burning trash. For the first few days following arrival in Ghana, my senses were taking a beating. But now, I felt like a well-seasoned traveler. I recorded in my journal just a day earlier, “I am adapting well, had to make myself take a shower today; it’s been two days, and the odors that were once offensive I no longer even notice.”

Several months before, I was invited on this trip into a remote area in Ghana. We were sponsored by Cornerstone Outreach Center, an organization primarily dedicated to compassionate inner-city work in Amarillo, Texas, but also takes annual trips to Ghana and other African countries. I was accompanied by a medical doctor and two clergymen. The four of us were embarking on a trip that would forever change our lives.

At 42, this was my first “real” trip out of the United States, not counting short jaunts across the borders to Mexico and Canada. Already it was a hard-to-describe experience. We were joined on the ground by a Nigerian co-worker, Mike Nwosu. He had arrived a week before us and had made arrangements for our visits to the small villages, including the mandatory meetings with the village chiefs to gain approval for our team to provide education and medical services.

Late in the evening, we boarded the boat just upstream of Akosombo dam, which forms Lake Volta, the largest



“Canoes are the only mode of transportation between most islands,” says Parker. “I counted 19 people, mostly kids, in this small wooden canoe as they were making their way across the lake to attend our medical outreach – all with no life jackets.”

man-made lake in the world. The dam was constructed in 1965 to provide hydroelectric power to the area. After an all-night trip, we arrived the next morning at our destination, Kete-Krachi, which means “island of the gods.” Kete-Krachi is 195 km (120 mi) up the lake at the tip of a large peninsula where the lake splits into the White Volta and Black Volta branches.

We were hustled off the boat as others waited to get on. The boat would return in eight days.

We received a warm welcome from the locals. Later that evening, we held our first of several nightly outreaches in the small villages that surrounded Kete-Krachi.

Medical outreaches

Typical of the days to follow, we rose about 5 a.m., ate a quick breakfast of scrambled eggs, and headed to the lake and the old wooden boat that would carry us on a two-hour trip to one of several remote islands we were to visit during our stay. Our mornings were committed to medical outreaches, where we would treat the younger children and mothers. We were joined by two male nurses who worked at the local clinic in Kete-Krachi.

When we arrived at the first village, I was surprised at the number of sick people. Many suffered from malaria, skin diseases, and internal parasites, and we treated as many as we could. As good as it felt to help these people, it was hard to pack up and leave when there were still so many sick, but early in the afternoon with the sun beating down, we retreated to Kete-Krachi.

Grasscutter soup

My first encounter with the infamous grasscutter was on the roadside as we made the 60-mile drive from Accra to Akasombo dam. A young girl was dangling a dead animal by the back legs as we drove by, offering it for sale.

“What in the world is that?” I asked. I had never seen a

grasscutter, so the van driver pulled over while we did an inspection. I would describe the grasscutter as a cross between a rat and a beaver or maybe an oversized gopher. I learned later that it indeed is a rodent that lives in the bush and is hunted or trapped for its meat. We were told that a single grasscutter costs upwards of 100,000 cedis (about \$10 U.S.). Considering that the average school teacher in this area only makes about \$1 per day, this rare protein source is an expensive delicacy.

Later in our trip, at our motel in Kete-Krachi, we were treated to grasscutter soup. As hard as I tried to avoid the ridicule of my warm-hearted friends, I just wasn't hungry that evening, so I can't say if it tastes like chicken or not. But I did sit and watch as my colleagues put on their best "yeah, this is good" faces while pulling the meat from the skin that still had some of the hair attached.

I'll stick with hamburgers.

Opportunities for agriculture

I couldn't help but think of ways to help these friendly people to feed themselves. I asked myself this question: "If I was to move to Ghana and live in one of these remote villages, and could only take one suitcase, what would I take with me?" It wouldn't be an MP3 player or a television, as there is no electricity anyway. No, I would definitely make plans for feeding myself and others. In most of the smaller villages, there is a shortage of food, especially healthy food to provide a well-balanced diet.

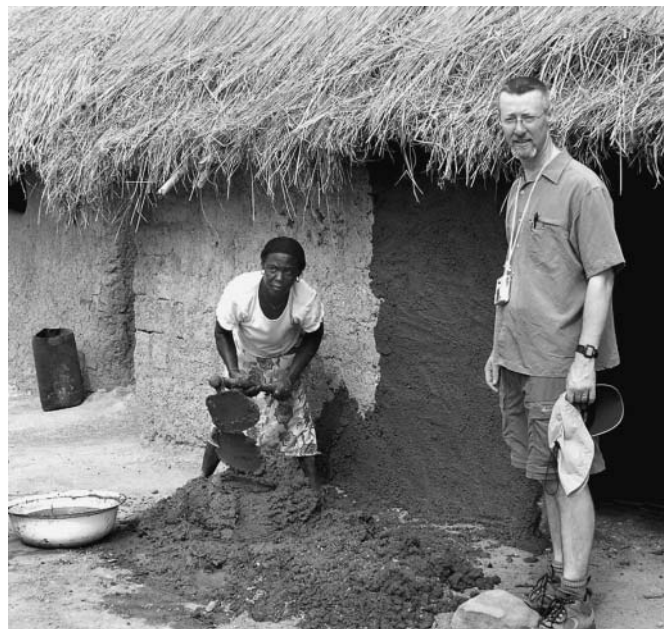
In the small farming villages, the primary staple food is cassava, a hardy, easy-to-grow vegetable that grows underground. Cassava provides the people with a high-starch diet. The cassava is boiled, then pounded into a sticky paste and shaped into a ball. The thick mixture

resembles mashed potatoes. Can you imagine eating mashed potatoes for every meal?

On the other extreme, the diet of villagers who live on the lake consists mostly of fish. A very high protein diet, but with no starch or fruits, it's the extreme Atkins Diet.



The grasscutter is a rodent resembling a cross between a rat and a beaver and is the main ingredient in grasscutter soup. The Ghanaian delicacy was enjoyed by all travelers – except the author.



Housing in remote villages consists of mud huts with thatch roofs. David Parker watches as the homeowner prepares stucco, a mixture of mud and manure, for her house.

They don't need tractors and modern machinery – at least not now. But with just a little bit of education and a supply of seeds, a world of difference could be made in the overall health of the Ghanaians in these remote villages. After speaking at the prayer breakfast at the ASABE meeting in Portland, several fellow engineers provided ideas and contacts for carrying on this humanitarian mission of feeding the poor and hungry.

What's next?

Cornerstone Outreach Center plans to build a center on Lake Volta, just upstream of Akosombo dam. The land has been purchased, and construction will begin this fall once the rainy season subsides. The center will house several short- and long-term missionaries. Once constructed and a boat purchased, it will be possible to reach the hundreds of villages on the islands and lakeshore that cannot be accessed by automobile, where we'll continue to do medical outreach and education about agriculture. One of my objectives is to start some research plots, so that the leaders can also be trained in general agricultural practices that they can take back to their villages.

By the time fellow ASABE members read this feature I will have returned from another trip to Ghana, taken in late October. I will have taken my seeds and additional knowledge, hopefully making a difference for many who call Ghana home. **R**

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Candidates for ASABE's 2007 Election

ASABE'S Nominating Committee has put together a platform of highly qualified individuals for the 2007 election. Use the candidates' position statements and background information provided on these pages to help you decide how to vote. Ballots will be mailed to all members in January.

ASABE Fellow President-Elect James H. Dooley, P.E.



"ASABE embarks on our second century as a professional and technical organization at an exciting time with unbounded professional opportunity. We enter an era of global collaboration and mobility, transitions to biobased economies, increased protection of our limited natural resources, and pursuit of technologies appropriate to feed, clothe, and shelter burgeoning populations."

Dooley is president and chief technology officer of Forest Concepts, LLC, in Auburn, Wash. Forest Concepts specializes in product and business development to utilize small-diameter timber and woody biomass in support of rural forest communities. His company serves markets associated with soil and water quality protection, bio-based products and bioenergy, and consumer products. Dooley previously held a number of engineering, technical management, and business development positions with major corporations, including Weyerhaeuser and Amfac. He received a bachelor of science degree in agricultural engineering from Cal Poly, San Luis Obispo; a master of engineering degree in agricultural engineering from the University of California, Davis; and a Ph.D. in forest engineering from the University of Washington.

A 34-year member of ASABE, Dooley is currently a member of the BE-22, T-12, and ED-204 Committees. He holds six patents and has won four AE50 Awards. He has received a Leadership Citation from the Membership Development Council, a BE Division Leadership Award, two Director's Citations, and a President's Citation. He was named ASABE Fellow in 1996. Dooley served eight years on the ABET Board of Directors, where he most recently served as board secretary and member of the executive committee. He also served as president of the Institute of Biological Engineering in 2000.

Dooley and his wife, Kathryn, have two children and one grandson. In his spare time, Dooley enjoys camping and fishing with his family on streams across the western United States.

When They Will Take Office

President-Elect. Upon confirmation by the membership, the president-elect will serve three years on the Board of Trustees – one year each as president-elect, president, and past president. If confirmed, Dooley will be president-elect in 2007-2008, president in 2008-2009, and past president in 2009-2010.

Trustees. The four trustees elected in 2007 will each serve a two-year term on the Board of Trustees beginning at the close of the 2007 Annual International Meeting and ending at the close of the 2009 Annual International Meeting.

Nominating Committee. Each of the six individuals chosen in this election will serve a two-year term beginning in 2007 and ending in 2009.

Candidates for the Board of Trustees

Robert D. Davis

Engineering Product Manager, OEM Products, Safety and Patents, AGCO Corp.



"History shows the first 100 years of ASABE has provided countless innovations allowing farmers to feed the world. I look forward to the future and more improvements and innovations raising the standard of living for people world-wide."

Davis is responsible for product approval of third party products supplied to AGCO Corp. as well as product safety and patent liaison. He has led or participated in projects during his career with AGCO Corp. and Hesston Corp. which have resulted in products that made farmers more efficient world-wide.

A 37-year member of ASABE, Davis served as Kansas Section chair, vice chair, and program chair. He is currently a member of the PM-23/3, PM-23/4/2, and PM-23/14 Committees. He holds two patents.

Robert D. Grisso Jr., P.E.

Professor, Virginia Tech



"ASABE has faced many challenges and it is critical that we continue to meet the changing needs of our Society. Our leadership must design, explore, and implement new opportunities. As a Trustee, I want to be a part of ASABE's leadership that creates and directs opportunities for our exciting future!"

In his educational role, Grisso develops programs in the areas of agricultural machinery management, precision farming, farm safety, and engineering design. His overall program goal is to improve agricultural profitability through the selection and efficient use of machinery systems used in crop production.

A 25-year member of ASABE, Grisso has chaired the PM-45, PM-43, P-208, and M-117 Committees, and the Nebraska Section. He is currently a member of the PM-04, PM-23/6, PM-43, PM-54, and PM-01 Committees. He has been an associate editor for the PM Division since 1995 and received the Nolan Mitchell Young Extension Work Award in 1994.

Stacy Lewis Hutchinson

Associate Professor, Kansas State University



"We must continue to maintain the high standards developed over the past 100 years; enhance our outreach to policy makers to help guide the future; continue to cultivate future engineers; and embrace the biological state of our Society to develop sustainable food and energy production for the world."

Hutchinson teaches in the area of natural resources/environmental engineering; conducts research related to water quality protection and preservation, conservation of soil and water resources, remediation of

contaminated systems, and management of natural systems for environmental quality. She also developed a collaborative research program with several departments at Kansas State University and several other universities.

A six-year member of ASABE, Hutchinson is associate editor for the SW Division. She is the current chair of the Kansas Section, which named her Young Member of the Year in 2005, and she has chaired the BE-24 Committee. She currently serves on the BE-22, BE-24, M-122, MDC-S02, and SW-05 Committees.

Russell A. Persyn, P.E.

Assistant Professor, South Dakota State University



"As a member of the Board of Trustees, I will work as an advocate on professional licensure and developing approaches for retaining student members as they move into their professional careers. Maintaining and building our Society in these two areas is the key to our future success."

Persyn works on water quality issues and evaluation of best management practices and waste treatment technologies. In addition to assistant professor, he serves as the Environmental Quality Engineer for the South Dakota Cooperative Extension Service. He received the ASABE Robert E. Stewart Engineering Humanities Award in 1999, several President's Citations, and an ASABE Service Award.

A 12-year member of ASABE, Persyn is the founding chair of the Environmental Student Design Competition. He has also chaired the P-120 and SW-262 Committees. He is currently a member of the ED-414, SE-412, P-121, SW-223, and SW-262 Committees; Professional Engineering Institute; and co-advisor to the International Preprofessional Council. He has served on the Membership Development Council, as president of the National Community of Preprofessionals, and as president of the ASABE Southern Region.

Anna Rodriguez

Technical Specialist/Professional Development Coordinator, Texas Commission on Environmental Quality



"I am a firm advocate in the promotion of this noble, proud, and necessary discipline known as agricultural engineering. I am committed to its promotion and in giving ASABE time and energy to make the discipline the best through the development of standards, research, outreach, continuing education, and professional licensing."

Rodriguez is the professional development coordinator for her division and conducts various technical specialist duties related to agricultural permitting issues including serving on special teams, developing rule language, and working on federal permitting topics.

A 16-year member of ASABE, Rodriguez has chaired the Texas Section, which named her Young Engineer of the Year in 1999. She is currently a member of the PM 23/7/3, T-9, and SE-305 Committees.

ASABE Fellow Marvin L. Stone

President, Microfirm Inc.,
Regents Professor Emeritus, Oklahoma State University



"We are involved in critically relevant aspects of engineering across the disciplines within ASABE. We should take advantage of our long productive history and of innovative engineering now being done by our membership to secure appropriate recognition of our discipline."

Stone is responsible for electronics system design and development at Microfirm and does graduate teaching at Oklahoma State University. He helped develop a fertilizer and chemical applicator system called GreenSeeker™ and ISO 11783 and SAE J1939 standards. He is co-author of the ASABE publication, *Off-Road Vehicle Engineering Principles*.

A 24-year member of ASABE, Stone has chaired the IET-353, IET-354, and IET 353/1 Committees. He currently serves on the PM-54 and PM-23/19/1 Committees. He was named ASABE Fellow in 2004, received the Evelyn E. Rosentreter Standards Award, and the A. W. Farrall Young Educator Award.

ASABE Fellow Lalit R. Verma, P.E.

Professor and Head, Biological and Agricultural Engineering,
University of Arkansas



"I would actively promote ASABE as the lead professional Society engaged in improving the quality of life in society through contributions in critical issues dealing with food, fiber, environment, and health. I would promote recognition of our profession based on our contributions to date in meeting society's essential needs."

Verma has provided leadership in the development and promotion of biological engineering and, as department head, has coordinated the transformation of unsustainable agricultural engineering programs into vibrant and growing biological engineering programs.

A 31-year member of ASABE, Verma was elected Fellow in 1999, received the Ford New Holland Young Researcher Award in 1991, and a President's Citation in 2005. He has chaired the P-204, E-08, P-204, P-210, PM-44, and FPE-709 Committees. He is currently a member of the ED-204 and ED-210 Committees and is ASABE representative to the ABET Board of Directors.

Ruihong Zhang

Professor, University of California, Davis



"In a rapidly developing world economy, the strong leadership and worldwide connection of the ASABE will be important for maintaining and increasing the strength and diversity of its membership. As a leading organization in biological and agricultural engineering, we must effectively address emerging issues facing our Society."

Zhang teaches and conducts research in the areas of bioenvironmental and bioenergy engineering.

She is leading an internationally recognized research program in the areas of bioenergy production and waste management. She developed and patented new biogas energy production technology and energy efficient wastewater treatment systems. She was a founding member and president of the Association of Overseas Chinese Agricultural, Biological, and Food Engineers.

A 14-year member of ASABE, Zhang holds three patents and has chaired the FPE-707 and SE-412 Committees. She is currently the T9 liaison for the SE Division, associate editor for the SE Division, and a member of the T-9, FPE-707, SE-412, and SE-305 Committees. She received the ASABE New Holland Young Researcher Award in 2003.

Candidates for the Nominating Committee

Biological Engineering

Mari Chinn

Assistant Professor, North Carolina State University

"ASABE leaders will need to recognize the many facets of our members and the impact they have as engineers designing solutions for quality ecological systems, food and fiber, renewable energy, machine systems, and education. I will strive to identify leaders that can build upon the diversity of engineering talents within the Society."

Chinn has established a well recognized research program in bioprocess engineering for the production of biologically-based products and biofuels, and provides instruction in biological engineering. Her current research focuses on biofuel production from plant-derived feedstocks using enzymatic, thermochemical, and/or fermentation processing technologies.

A five-year member of ASABE, Chinn is currently a member of the BE-28 Committee, of which she is chair, and the FPE-709 Committee. In addition, she is advisor to the ASABE Student Branch at NCSU.

Kyle Mankin

Associate Professor, Kansas State University

"ASABE is strong and poised for great growth, thanks to many leaders in our Society. At the same time, ASABE has grown increasingly diverse in both its disciplinary areas and its membership. As we nominate our new leaders, we must strive to select individuals who represent this diversity."

Mankin divides his time equally between teaching and conducting research analyzing, developing, and modeling natural systems to reduce non-point pollution and remediate its effects. He co-authored the textbook, *Dynamics of Biological Systems*.

An 11-year member of ASABE, Mankin has chaired the P-515, SW-26, SW-265, SW-262, P-120, and M-115 Committees. He currently serves on the M-122 Committee and is an associate editor for the SW Division. He received the A.W. Farrell Young Educator Award in 2003 and the Mid-Central Conference and Kansas Section Young Member of the Year Awards in 2002 and 2001, respectively.

Food and Process Engineering Institute

ASABE Fellow Sundaram Gunasekaran

Professor, University of Wisconsin-Madison

"ASABE is poised for tremendous growth as it encompasses more of the biological aspects of engineering than in the past. At this juncture, it is important to broaden our membership base. I will identify energetic and visionary individuals for leadership positions who will enable ASABE to take advantage of opportunities."

Gunasekaran teaches and conducts research in food and bio-process engineering. He has developed applications of cutting-edge technologies for evaluating and improving food quality. He is the author of two books: *Cheese Rheology and Texture* and *Nondestructive Food Evaluation: Techniques to Analyze Properties and Quality*.

A 26-year member of ASABE, Gunasekaran has chaired the FPE-02/2 and M-154 Committees and the Food Processing Engineering Institute. He also served as associate and division editors of FPEI. He is currently a member of the Meetings Council and the M-154 Committee. He received the Ford New Holland Young Researcher Award in 1996 and was named ASABE Fellow in 2006. He has also received two Paper Awards and a Blue Ribbon Award.

Kevin M. Keener, P.E.

Associate Professor, Department of Food Science, Purdue University

"Evolutionary forces have caused an expansion in the traditional role of agricultural engineers from on-farm production practices to biological systems across all fields of study. If elected to the nominating committee, I will seek out visionary leadership desiring to enhance ASABE's value to its membership and the Society."

Keener is responsible for developing technologies to improve production efficiencies, enhance quality, and reduce waste in an overall effort to promote economically sustainable practices in the production of food, pharmaceutical, and biological products. He also educates students and industry personnel on applying engineering principles to solve problems in those areas.

A 13-year member of ASABE, Keener is the holder of two patents. In 2004, he received the IAFIS-FPEI Emerging Food Engineer Award. He is currently a member of the FPE-701, FPE-703, FPE 01/02, and FPE-06, all of which he has chaired, and the ED-414 Committees.

Information and Electrical Technologies

Rabi Mohtar

Professor, Purdue University

"In my 20 years with ASABE, I have witnessed its evolution and growth and would like to be part of its future. We have a lot to offer to society. I bring global education and research experience to the committee including working with other technical societies including ASEE, EGU, and ASA."

Mohtar teaches and conducts research in environmental and natural resources engineering and the application of numerical methods in agricultural and biological engineering. He has developed conservation engineering programs that have evaluated the environmental impacts of land use and water management, developed innovative soil and groundwater remediation technologies, characterized and modeled hydrologic processes at various scales, and applied numerical methods to biological engineering systems.

A 20-year member of ASABE, Mohtar is currently associate editor for the IET and BE Divisions and IET Division Chair. He is a member of the IET-217, BE-24, SW-21 Committees and involved with biomass standard development. He has received two IET Division Paper Awards.

ASABE Fellow K. C. Ting, P.E.

Professor and Department Head, Department of Agricultural and Biological Engineering, University of Illinois

"ASABE needs excellent leaders to advance Society goals. We need leaders who are capable of looking at the big picture, paying attention to details, making things happen, getting things done, and enabling people to succeed. I would like to serve our Society by identifying future leaders on these criteria."

Ting is responsible for department leadership and administration, as well as faculty responsibilities in teaching, research, service, and economic development. He has served as chair/head for ASABE affiliated departments at three land-grant universities. He is the co-editor/co-author of the ASABE monograph, *Robotics for Bioproduction Systems*. He served as leader of the Systems Studies and Modeling Team within the New Jersey NASA Specialized Center of Research and Training.

A 26-year member of ASABE, Ting has chaired the P-210, SE-30, SE-303, and IET-318 Committees and served on the Publication Council and as IET Division Editor. He currently serves on the ED-210 and ED-210/1 Committees. Elected ASABE Fellow in 2001, he has received three Certificates of Appreciation and an IET Division Paper Award.



Don't leave it to chance!

Use these pages to learn about the candidates and their priorities, then

VOTE!

Ballots will be mailed next month.

Power and Machinery

Maynard M. Herron, P.E.

Engineer Manager, New Baler Product Design, AGCO Corp.

"Our Society will play a key role in providing food, fiber, energy, and clean air and water for mankind during the next century. We need to be proactive in addressing these issues related to these items as well as to the health and safety of those involved in agricultural production."

Herron manages the design and production release of new baler products. His career has included design, production release, and production responsibility for tillage tools, hay processing equipment, forage harvesting equipment, and hay balers.

A 28-year member of ASABE, Herron holds six patents and was named Kansas Section Young Engineer in 1987. He has chaired the PM-23/7/2 Committee and was secretary/treasurer of the Kansas Section. He is currently a member of the PM-23/7/2 and PM 23/4/2 Committees.

Edwin R. Kreis

Senior Engineer, John Deere Product Engineering Center

"With a great history as a technical Society behind us, there are still many challenges facing the world that ASABE can help to solve. The Nominating Committee has an important function in selecting potential leaders that can shape the Society's vision for the future."

Kreis is responsible for tractor-rear-implement interface design involving hitches on Waterloo-produced tractor platforms. He has been involved, to some degree, in the design, development, or testing of most of the major Waterloo tractor platforms released to production during his 29-year career at John Deere. He was recently on the platform team for the 9000T and 7000 product lines.

A 29-year member of ASABE, Kreis is inventor on three patents. He is currently a member of the PM-23/4/5 and PM-23/4 Committees and the US TAG ISO TC23/SC4 Committee.

Soil and Water

Jane Frankenberger

Association Professor, Purdue University

"The Nominating Committee must listen to all voices in ASABE and seek out candidates who represent the growing diversity of agricultural and biological engineering, and who will provide visionary leadership to ASABE as we celebrate the past and plan for success in the next 100 years."

Frankenberger is responsible for soil and water engineering extension and research, leading programs in watershed modeling, drinking water quality, and agricultural drainage management. She also teaches a course in GIS applications. She has led numerous extension programs and published extension publications on watershed assessment, wellhead protection, drinking water testing and treatment, and land use impacts on water quality.

An 11-year member of ASABE, Frankenberger has won six Blue Ribbon Awards for Educational Aids. She is a member of

the P-208 Committee, which she has chaired, and the SW-231 Committee. She is an associate editor for the SW Division.

Daniel Thomas, P.E.

Professor and Head, Louisiana State University and LSU Agricultural Center

"ASABE has excelled in agricultural engineering. The future growth and stability of our organization will require leadership that can meld established capabilities with new programs in biological engineering. Our future is bright, if we can address the wants and needs of current and future (young) professionals."

Thomas is responsible for departmental research, teaching, and extension programs associated with biological and agricultural engineering at LSU and the LSU AgCenter. He currently coordinates bio-based energy program development for the LSU AgCenter. He previously coordinated Ag Water Pumping (a program to evaluate agricultural water for the state of Georgia) and a team to develop irrigation conservation practices for the southeastern United States. He helped establish a new multi-state project on irrigation in humid areas, and helped patent a crop yield monitoring system.

A 22-year member of ASABE, he has chaired the ED-210 and P-205 Committees and currently serves on the ED-210, ED-210/L, ED-412, and SW-21 Committees.

District 2

Timothy L. Foutz, P.E.

Professor, University of Georgia

"One challenge faced by engineering is the ability to incorporate rapid advancements of science and technology into an engineering application. To meet this challenge, ASABE must develop programs – not pigeonholed to a specific technology – but, rather, focused the understanding of the theories and principles of new technologies."

Foutz is responsible for biomechanics research in the area of animal tissue injury and he is an instructor in design and bio-medical engineering courses. He is also the administrator responsible for the oversight of undergraduate engineering academics at the University. He has overseen the development of a soft tissue research center as well as development of new curricula and engineering education programs.

A 16-year member of ASABE, Foutz has chaired the BI-02, SE-301, and EA-02 Committees. He is currently a member of the BE-05, ED-203, ED-211, and BE-26 Committees. He has received two Paper Awards and a Director's Citation.

Michael Montross, P.E.

Associate Professor, University of Kentucky

"I have a traditional agricultural engineering background. Since I have arrived at the University of Kentucky, I have been conducting research more oriented towards biological engineering. I would like to ensure that a balance remains between biological and agricultural engineering within the Society."

Montross has an 80 percent research appointment and 20 percent teaching appointment. He teaches a course on engi-

neering economic analysis for biosystems. His research is focused on granular mechanics, storage and handling of grains, and characterization, collection, and processing of biomass feedstocks.

A nine-year member of ASABE, Montroll has chaired the FPE-792 Committee. He currently serves on the FPE-702, FPE-709, PM-23/7/2, and SE-20 Committees.

District 4

Rebecca A. Ostermann

Water Resource Engineer, CH2M HILL

"My supervisor's response to an ASABE preprofessional's resume: What's biosystems engineering? Despite multiple agricultural engineers on his staff, explaining the relationship between biosystems and agricultural engineering brought the inquiry: What can agricultural engineers do? ASABE's leaders must recognize that this common scenario is the major obstacle to our profession's future."

Ostermann is responsible for the design of storm sewer and utilities infrastructure for CH2M Hill in Denver, Colo.

An 8-year member of ASABE, Ostermann is treasurer of the Rocky Mountain Section and is a member and chair of the P-121 Committee. She is a member of Alpha Epsilon.

Mark Riley

Associate Professor, The University of Arizona

"ASABE is a dynamic organization working for its members in an ever-changing professional world. If elected to the Nominating Committee, I would strive to identify candidates who represent the diversity of our field and can connect with the young professionals while maintaining a relationship to the industrial base."

Riley teaches classes in biological engineering and performs research in bioprocessing, sensor development, and applied spectroscopy. He is the co-inventor and developer of a non-invasive device to determine the ripeness of fruits and vegetables called RediRipe[®], LLC with a patent pending. He has also developed spectroscopic sensors for the detection of viruses and inhalation toxins.

A nine-year member of ASABE, Riley has chaired the BE-23 Committee and was inaugural chair of the BE Division. He is currently an associate editor for the BE Division and a member of the BE-23, BE-28, P-513, and ED-211 Committees

Make YOUR vote count!

**Ballots will be mailed
in January!**

Nominations Being Sought for the 2008 ASABE Election

The ASABE Nominating Committee is seeking nominees for several ASABE offices. The committee is responsible for recommending candidates for:

Board of Trustees

- 2009-2010 ASABE President. This candidate should be a public service person who will succeed an industry person.
- Eight at-large trustee nominees for four positions.

Nominating Committee

Two nominees each to represent:

- Education
- Ergonomics, Safety, and Health
- Structures and Environment
- International
- District 1
 - Northeastern United States and Quebec
- District 3
 - Midwestern States
- District 5
 - Pacific Northwest, Manitoba, Saskatchewan, and British Columbia

Current members of the nominating committee include: Chair Jerry L. Wille, Dennis E. Buffington, William P. Campbell, John S. Cundiff, Richard W. Job, Anthony H. Kajewski, Radhey Lal Kushwaha, Harvey B. Manbeck, Edward C. Martin, Gregory Scott Osborn, Richard A. Peterson, Kurt A. Rosentrater, Terry J. Siebenmorgen, Eileen Fabian Wheeler, and Mary Leigh Wolfe.

Suggestions for candidates are needed now. These candidates will impact ASABE's future. Ability to lead the Society and interact effectively with other members should be considered. Past experience should also be a consideration, but the ability to help advance the Society in the future is of primary importance.

When making a recommendation, please provide a sentence or two explaining why you feel the candidate is qualified to serve in the position and highlight the candidate's previous activities in ASABE.

Send nominations by June 1, 2007 to Nominating Committee Chair Jerry Wille, 515-232-9078, jwille@currywille.com.

A WORD FROM THE PRESIDENT

Where Will I Find the Energy for Tomorrow?

ASABE President Charles E. Sukup, President, Sukup Manufacturing Co.



Perhaps you have asked yourself this question at the end of a tough day. But I am thinking about our dependence on fossil fuels. I can still vividly recall an ASABE summer meeting in

the '70s at the University of California, Davis, where an expert from Battelle Labs showed that petroleum fuels would be a solitary spike on the timeline of energy history and we needed to find alternatives. These concerns have surged again with record oil prices last summer.

Have you seen the advertisements that proclaim that BP means "Beyond Petroleum"? ASABE has identified renewable energy as one of our big opportunities. At our annual international meeting in Portland, Ore., our keynote speaker, Dr. Stan Bull, was from the National Renewable Energy Laboratory. We held a renewable energy round table, and there were numerous sessions on biomass, wind, and solar energy.

This fall we had a booth at the National Renewable Energy Conference in St. Louis, Mo., where President George Bush and the Secretaries of Agriculture and Energy spoke. Registrants numbered 1,500, many of them knowing little about agricultural and biological engineers – yet they recognized the tremendous contribution that we can make. ASABE Executive Vice President Melissa Moore and ASABE staff handed out more than 50 membership applications to interested people!

During the '70s, U.S. production of petroleum peaked and we endured an energy crisis with long gas lines. Unfortunately, we now import more foreign oil than back then. World demand continues to grow, led by China and

India, which have rapidly expanding economies. World production is now expected to peak this decade. Most of this oil comes from politically unstable areas of the world.

James Woolsey, former CIA director, is a strong proponent of 25x'25 and the goal to replace foreign petroleum with renewable energy.

ASABE endorses 25x'25 and its goal that 25 percent of American energy come from renewable resources by the

ASABE has identified renewable energy as one of our big opportunities.

year 2025 while still providing food, feed, and fiber in an environmentally responsible manner. We provide leadership with two of our members, Dale Threadgill and Al Rider, on their steering committee.

This goal presents a tremendous opportunity for America and the world. Experts predict it will cause the biggest restructuring in agriculture in the past 50 years. The next farm bill could also become an energy bill!

Undoubtedly, the energy solution will not be found in one silver bullet but in the boring basics of various solutions – biomass, wind, and solar. (Doesn't this sound like an ideal fit for agricultural and biological engineers?) Research in the '70s led to further advances in ethanol, which was a controversial energy alternative. Today ethanol has become successful because of energy benefits, government tax policy, and environmental benefits. It has dramatically changed the economy of many Midwest rural areas and nearly all experts agree that it is a net plus for energy. (A few still criticize the net

energy balance of producing ethanol, but by their criteria even oil production would be a net energy loser.)

Even if all of our corn was used to make ethanol it could replace only a fraction of the gasoline used in our country. Most would agree that grain ethanol is a transitional phase and the larger potential lies with cellulosic ethanol conversion of biomass, such as switch grass and woody biomass, which needs further development. President Bush mentioned

switch grass in his State of the Union speech. Our farms can become energy factories with fast pyrolysis units that convert crop residues to a liquid fuel.

Developing renewable energy is as popular now as motherhood and apple pie.

Environmentalists, farmers, conservatives, and liberals can all agree on the tremendous benefits to national security, the environment, and the rural economy. It invigorates rural America and will mean added research money for land grant universities. It is popular with environmental groups as it recycles carbon rather than adding greenhouse gases to the atmosphere as fossil fuels do.

However, many will recall that the energy crisis of the '70s was followed by plummeting oil prices. We need to support policies so that erratic oil prices do not derail progress on renewable fuels.

We as engineers are optimistic that we can solve our energy challenges. No other engineering society can contribute as much to this goal as ASABE.

Where will *we* find the energy for tomorrow? Agricultural and biological engineers know the answer: renewable energy!

I welcome your thoughts, ideas, or concerns about your Society. E-mail them to me at sukup@asabe.org.

Thailand To Host Engineering and Technology Conference

Thailand will be host to the ASABE co-sponsored International Symposium on Agricultural, Food and Biological Engineering and Post Harvest/Production Technology. The symposium will be held Jan. 21-24, 2007 at the Sofitel Raja Orchid Hotel in Khon Kaen, Thailand.

This international conference will provide an opportunity for researchers, academics, professionals, entrepreneurs, and practitioners in the fields of agricultural, food, and biological engineering — together with post harvest/production technology from organizations such as universities, ministries, public and private institutions, as well as industrial enterprises — to disseminate new knowledge and technology. Attendees will meet and share experiences, visions, and expectations in order to strengthen links between each other and be updated on recent progress and future perspectives in the relevant fields at the international level. The conference will be hosted by the Thai Society of Agricultural Engineering and the Faculty of Engineering, Khon Kaen University, and endorsed and co-sponsored by ASABE.

Traveling to Thailand. Thailand is nestled between the Andaman Sea and the Gulf of Thailand, bordering Myanmar, Laos, and Cambodia. It is exotic yet accessible, with something for every visitor. Relax on white sand beaches, hike through vast areas of tropical forest, or live it up in the humming capital of Bangkok. There is much for you to discover in Thailand. The country offers a huge range of new experiences in sights, sounds, tastes, and outlook. But different as it may be from your

home, Thailand is probably the easiest exotic country for visitors. The people are friendly, leisure activities are well organized, the food is great, and you receive excellent value for your money.

Khon Kaen, the host city for the symposium, is Thailand's fourth largest city and the major northeastern center of silk production. Khon Kaen is one of the region's fastest-growing cities.

About an hour's drive to the southeast of Khon Kaen, Prasat Peuy Noi is a ruined Khmer temple built in the 12th century. The structure and surrounding area contain ornately carved stonework.

Information and Registration. For more details about the conference, e-mail conference@as-thailand.com. To register online visit www.ae-thailand.com.

Don't miss this beautiful and yet educational opportunity.

Travelers to Thailand are required to hold a valid passport for entry into Thailand. No visa is required for U.S. citizens. Passport holders of 39 countries, including the United States, the United Kingdom, Canada, Australia, New Zealand, and most European and Southeast Asian countries, are automatically permitted to stay in Thailand for 30 days on a tourist visa status (no visa application needed). This 30-day tourist visa can be extended before exceeding the permitted period at the Office of Immigration Bureau at Soi Suan Plu.

YOUNG PROFESSIONALS COMMUNITY

YPC: Inclusive, Not Exclusive!

At the Portland Annual International Meeting it was discovered that many eligible YPC members were unsure if they would be welcomed into the Young Professionals Community. Because the YPC is a relatively new community within the ASABE, questions have been raised by some regarding who is welcome to participate in the YPC. The short answer is that any ASABE member who is 34 and younger and is not a pre-professional member is automatically a YPC member. However, the long answer includes everyone in YPC activities!

The YPC is a rapidly growing community with diverse representation. We strive to be representative of the Society as we have many members from academia, industry, and government within our ranks. It is important to note that even though graduate students are still "in school," they comprise a significant proportion of YPC membership. Age wise, active members include recent bachelor degree graduates through those who have been working several years. Our community encourages all international ASABE young professionals to participate.

It's important to understand that the YPC endeavors to reach beyond just our group. Many of our new activities welcome

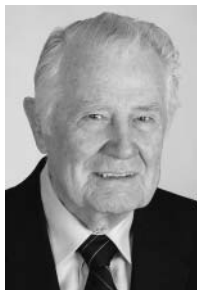
non-YPC members and, in fact, encourage YPCers to interact with other groups within the Society. For example, the first Annual YPC Fun Run in Portland had a variety of age groups represented. Though it was sponsored as a YPC event, it was intended to encourage fellowship between all ages of ASABE runners and walkers. Also, the YPC-sponsored Info Session has been a big hit for all members of ASABE regardless of age or station. Anyone interested in our Society's history or how to be involved is encouraged to attend. Lastly, the social outing traditionally held on Saturday night of the AIM is an event primarily for young professionals, but preprofessionals and regular members are more than welcome! Last summer's "Portland Underground" tour was a fantastic way to learn about the history of the area and, judging by the full bus, there were plenty of interested members.

In conclusion, if there are YPC activities that you are interested in attending but are not sure you fit the criteria, feel free to join us. Indeed, we are an inclusive, not exclusive, group. See you at the next YPC event!

Laura E. Christianson
YPC Publications Council Representative

MEMBER NEWS

Leslie W. Jochens, P.E., recently received the 2006 Irrigation Association



Industry Achievement Award. The award recognizes individuals within the industry who have contributed to the advancement of irrigation.

Jochens was praised by irrigation industry leaders for his technical knowledge, practical approach, and commitment to teaching effective irrigation practices. He is recognized for establishing a system to provide irrigation dealers with easier access to custom sprinkler packages and other parts for center pivots and designing a network of supply houses as a founder of the Western Irrigation Supply House.

Jochens graduated from the University of Nebraska with a degree in agricultural engineering. He started in the irrigation industry in 1949 as a pump expert for a Colorado company. He was co-owner of Rocky Mountain Irrigation in Denver and worked for Rain Bird

Corp. for 17 years. In 1982, he established Western Irrigation Supply House.

Eugene W. Rochester Jr., P.E., was recently named 2006 Irrigation



Association Person of the Year. The honor recognizes individuals for outstanding contributions toward the acceptance of sound irrigation practices.

Rochester's research on hard-hose travelers prompted traveler manufacturers to adopt speed compensation as a standard feature to provide uniform irrigation application. While serving on the faculty at Auburn University, Rochester developed the ASABE textbook, *Landscape Irrigation Design*.

Rochester has a doctorate in biological and agricultural engineering from North Carolina State University and is an Irrigation Association Certified Irrigation Designer and Certified Landscape Irrigation Auditor.

In Memoriam

ASABE Fellow Gale A. Holloway, P.E., 62, of New Lenox,



Ill., and former president of ASABE, died Oct. 30, 2006.

At the time of his death, Holloway held the position of President of the ASABE Foundation.

Holloway was employed by CNH America as an engineer for 37 years. He earned his bachelor's and master's degrees from Colorado State University. A member for 37 years, Holloway was President of the Society from 1998-1999. He was elected Fellow in 2003 and was the holder of five patents.

He is survived by his wife, Madonna, and two daughters, Kristin Noonan and Karen Holloway. He was preceded in death by a daughter, Karla, in 1994.

Memorials may be made to a newly established Gale Holloway fund through the ASABE Foundation or Misericordia, 6300 North Ridge, Chicago, IL 60661.

SECTION NEWS

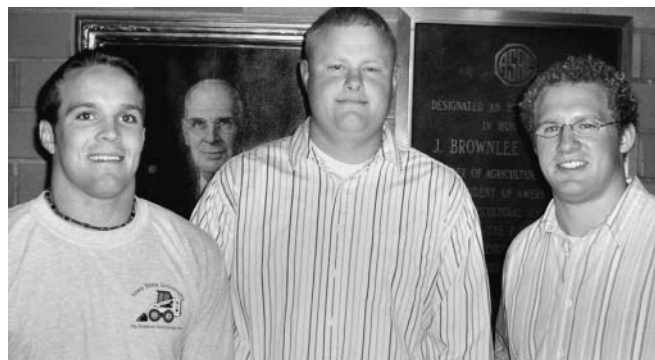
Iowa Section Fall Meeting

The Iowa Section had 121 attendees at its September fall meeting held in Ames, Iowa. Several tours were scheduled as part of the Section activities, including the Lincolnway Energy and Couser Feedlot, Grain Quality Lab, and the National Swine Research and Information Center.

Highlights of the meeting included a pledge announcement for a new agricultural biological engineering (ABE) building, recognition of student scholarship recipients, and a steak dinner. Money is raised annually for the scholarships through the section's fall steak fry.

Virgil Elings, a 1961 graduate of Iowa State University's College of Engineering, committed \$5 million toward the new ABE building to be named Elings Hall. The building will be part of a 166,000-square-foot complex that will also include ISU's Office of Biorenewables Programs.

ASABE scholarships were awarded to four upperclass students who have demonstrated involvement and leadership in the Agricultural Systems Technology (AST) and ASABE



(Left to right) Iowa Section scholarship recipients Ken Brennan, Darrin Kruger, and Jon Richardson. Not pictured is J.D. Greiner.

student clubs. The scholarship recipients were: Ken Brennan, an AST student from Emmetsburg, Iowa; Darrin Kruger, an AST student from Wesley, Iowa; Jon Richardson, an AE student from Montour, Iowa; and J.D. Greiner, an AE student from Keota, Iowa.

Rob Malone

2007 Preprofessionals/Student Awards and Competition Changes Announced

Due to an earlier than usual 2007 Annual International Meeting, many of the Preprofessionals/Student awards and competition requirements and due dates have been changed.

Please review each student award and competition carefully for changes by visiting the ASABE Web site at www.asabe.org/membership/students/index.html

Applying for a Scholarship? Entries Due March 15

Apply by March 15 for any of the four ASABE scholarships. These include the William J. Adams, Jr., and Marijane E. Adams Scholarship, ASABE Student Engineer of the Year Scholarship, the John L. and Sarah G. Merriam Scholarship, and the ASABE Foundation Scholarship.

Please check out the ASABE Web site for the new format in submitting scholarship entries. Official entry forms have been added for submission and can be accessed by visiting www.asabe.org/membership/students/index.html.

Remember to Renew Your Membership by Jan. 1

It's hard to believe, but it's that time of the year again. ASABE membership renewals are due by Jan. 1, 2007. If you have not already done so, here are your options for renewing your dues:

Renew online. This is a fast and easy way to renew. Simply log into the members-only section of the Web site from the home page at www.asabe.org. Click on the "Pay Your 2007 Dues" link and follow the directions from there.

Please call us at 800-371-2723 or 269-429-0300 if you need assistance with your login and/or password. Online payments are by credit card only. We accept VISA, MasterCard, American Express, and Discover.

Renew by mail. Please return your original invoice with payment by check or credit card in the envelope provided. Be sure to supply us with updated contact information. If you need another copy of your invoice, please let us know.

Renew by phone. Call us at 800-371-2723 or 269-429-0300 and we'll be happy to take your dues payment over the phone with a credit card.

Renew by fax. Fax your completed invoice and credit card payment information to 269-429-3852.

Cooperative Standards Program

New Standards

ASABE/ISO 5007:2003, Agricultural wheeled tractors – Operator's seat – Laboratory measurement of transmitted vibration.

ASABE/ISO 14269-1:1997, Tractors and self-propelled machines for agriculture and forestry – Operator enclosure environment – Part 1: Vocabulary.

ASABE/ISO 14269-2:1997, Tractors and self-propelled machines for agriculture and forestry – Operator enclosure environment – Part 2: Heating, ventilation and air-conditioning test method and performance.

ASABE/ISO 14269-3:1997, Tractors and self-propelled machines for agriculture and forestry – Operator enclosure environment – Part 3: Determination of effect of solar heating.

ASABE/ISO 14269-4:1997, Tractors and self-propelled machines for agriculture and forestry – Operator enclosure environment – Part 4: Air filter element test method.

ASABE/ISO 14269-5:1997, Tractors and self-propelled machines for agriculture and forestry – Operator enclosure environment – Part 5: Pressurization system test method.

New Projects

X526.3, Soil and Water Engineering Terminology. This standard is being revised to include additional terms to improve the standard.

X412.2, Ladders, Cages, Walkways, and Stairs. This standard is being reviewed to determine if the standard should agree with the requirements of ANSI 14.3-1979 and to make other changes to the standard as determined by the committee.

X278.8, Agricultural wheeled tractors and implements – Three-point hitch couplers – Part 1: U-frame coupler. This identical Adoption with deviations of ISO 11001-1:1993 is being revised to include categories 1, 3N, and 4N.

X599, Standardized Deployment Performance of an Automated Deployable ROPS for Agricultural Equipment. This proposed standard will provide performance requirements for the deployment of an automatic deployable protective structure for agricultural equipment (ride-on turf and landscape equipment as well as ag tractors).

New Revision

ANSI/ASAE S584.1 AUG 2006, Agricultural Equipment: Speed Identification Symbol (SIS). Changes were needed to revise the dimensions of the Speed Identification Symbol for practicality and to enhance visual clarity by adjusting the border and letter size for the speed units. There were no changes to the application requirements.

For more information, contact the ASABE Standards Department, 2950 Niles Road, St. Joseph, MI 49085-9659; 269-428-6331 or 269-429-0300 ext. 315; fax 269-429-3852.

What You Get for the Money — ASABE Member Benefits

As the time quickly approaches for you to renew your ASABE membership, please take a moment to remind yourself of the vast array of benefits that are available to you. Membership in ASABE is an important tool that works for you and keeps you abreast of emerging technologies, standards, accreditation, and advances in a wide variety of specialties. Take a look at all we have to offer ...

Online benefits at www.asabe.org include:

ASABE Technical Library. Members may access the full-text of all ASABE technical publications online including journals, proceedings, monographs, technical papers, standards, reference books, and textbooks. The collection includes material produced after 2000. In addition, earlier issues of ASABE journals continue to be added to the site as funding allows. The library currently contains over 65,000 pages of technical material.

Technical Expertise Database (TED). Search for members throughout the world who share your technical expertise. TED is a tool that members and ASABE staff can utilize for more effective networking and outreach to others who share your interests.

ASABE Committee Search. With over 180 technical committees, ASABE is sure to have one to complement your technical interest. Members may search on any committee to see the composition of that committee along with member contact information.

ASABE Forums. This interactive tool allows ASABE members to network and share information via public and private bulletin boards and workspaces. Organized by specific interest areas, members may discuss issues and post documents for feedback. Forums are also used for electronic balloting by ASABE technical committees.

E-Mail Alias Forwarding Service. This is not an e-mail account, but rather an alias. All e-mail sent to yourname@asabe.org will be automatically forwarded to a primary e-mail address you provide us. With the ASABE E-Mail Alias, you only have to change your primary e-mail account with us should you change Internet service providers.

ASABE Career Center. The most comprehensive career and recruiting site for the agricultural, biological, and food engineering industry. The ASABE Career Center offers extensive résumé and position databases and powerful and user-friendly searching capabilities, which allow you to find the job or candidate you're looking for.

E-Mentoring Program. This mentoring program allows pre-professional/student and young professional (aged 34 and under) members to search a database of ASABE members who are willing to serve as mentors. Mentee/mentor pairs are then matched based on common technical interests.

Meeting & Conference Registration. Members may now register for meetings and conferences with a click of the mouse. Registration payments may be made via our online secure server.

Resource Magazine. Read the monthly newsmagazine of ASABE at any time, from anywhere in the world. Back issues are available as well. Read on for more information about *Resource*.

Order ASABE Publications. Shop for and order all ASABE publications through our Web site. Member discounts will be automatically applied once you log in.

Other benefits include:

Member Certificate, Card, and Pin. Sent to all new members, these items announce your affiliation with the Society and your commitment to bettering your profession.

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Subscription to *Resource: Engineering & Technology for a Sustainable World*. The newsmagazine of ASABE reports on technologies affecting engineering issues as well as Society activities. Consultant listings available. Now available online at www.asabe.org. Not available with low-income country memberships.

Inside ASABE. The newsletter of the Society within *Resource*, which details activities, meetings, awards, and issues affecting ASABE members.

Awards, Scholarships, and Recognition. More than 20 international awards and student scholarships recognizing outstanding achievements and advancements.

Professional Development. Further your career through the submission of manuscripts for publication and presentation of papers at technical sessions or join a technical committee and assist in the development of standards.

ASABE Member Roster. Annual listing of your colleagues by name, geographic area, and employer as well as contacts for technical committees and local sections. Information contained in the ASABE Member Roster is now available electronically, allowing you to find member information anytime of the day or night from anywhere in the world.

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Avis and Hertz Car Rental Discounts.

WELCOME NEW MEMBERS

ASABE welcomes the following new members who joined the Society, reinstated a lapsed membership, or upgraded to full membership from student/preprofessional membership in August, September, and October. When available, the member's place of employment has been provided. Please join us in extending a warm welcome to these new and returned members of our Society.

New Members for August

Christopher O. Akudo, Louisiana State University
 Carl C. Andreasen, Testlink Services Inc.
 Darren B. Anholt, Associated Engineering Romain Armand, IMFS
 Simone D. Ashiku
 Ricardo E. Bartosik, Purdue University
 Randy L. Beaver, Nationwide Agri Business
 Amanda R. Bockhold, University of Missouri
 Dorin Boldor, North Carolina State University
 Anna M. Cathey, Buck Engineering
 Fangliang Chen, University of Manitoba
 Tommy H. Condrey, Mod Track Corp.
 Camilo Cornejo, University of Florida
 Thomas P. Curran, University College Dublin
 Gabriel Denicourt, McGill University Library
 Brian L. Dillard, Oklahoma State University
 Scott A. Dixon, University of Illinois
 Colin Doran
 Lan C. England, Meridian Labs
 Elie A. Fares, Holy Spirit University
 Lane Francis, Herbert Farm Equipment Ltd.
 James R. Geurtz, Blew, Bates & Associates
 William R. Haar, Oklahoma State University
 Jason W. Haegele, Iowa State University
 Luther Hanes, Consolidated Grain & Barge Co.
 Patrick L. Henry, Penn State University
 Byron H. Jefferson
 Carol L. Jones, Oklahoma State University
 Hak Jin Kim, National Institute of Agricultural Engineering
 Subodh S. Kulkarni, University of Arkansas
 Nicholas Kyei-Baffour, Kwame Nkrumah University of Science and Technology
 Tania R. Lanphere, McGill University
 Robert L. Larson, HKX Inc.
 Andy L. Lenkaitis, University of Illinois
 Steve W. Lyon, University of Arizona

Nesreen S. Mahmoud, Dalhousie University
 William D. McMillan
 Stephen J. McNally, Opus International Consultants
 Joe C. McNealy, Cal Poly State University
 Joseph A. Menicucci, Montana State University
 Anthony L.E. Mofoke, Abubakar Tafawa Balewa University
 Iram F. Mondaca, Instituto Tecnológico De Sonora
 Chanchal Singh Negi, Tractors and Farm Equipment Ltd.
 Dirk Niesing, South West Agriculture
 Gaylia C. Ostermeier, Iowa State University
 Prem B. Parajuli, Kansas State University
 Daniel A. Penafior, Universidad Nacional Agraria
 John J. Ramirez
 Eugene E. Reiss, Rutgers University
 Hakjun Rhee
 Marsha L. Roberts, Kansas State University
 Kurt R. Rottier, Kubota Tractor Corp.
 Sarah M. Sanders, Auburn University
 Brian K. Schaffer, University of Arkansas
 Heather A. Scully, University College Dublin
 Girja Sharan, Indian Institute of Management
 Vimal Sharma, University of Guelph
 Bruno Antonio C. Siaotong, University of Saskatchewan
 Kevin M. Tacke, AGCO Corp.
 Christopher L. Tamm, University of Wisconsin
 Mehari Z. Tekeste, University of Georgia
 Nathan R. Vandike, John Deere
 Luca Vigato, Tabacchicoltori Veneti
 Dai-chyi Wang, De Lin Institute of Technology
 Philip W. Wetzel, Eaton Corp.
 Henry T. Wiederhold, USDA-NRCS
 Harvey P. Wolfers
 Eric L. Wriglesworth, Penn State University
 Chan Yu, Gyeongsang National University

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Kamal Mohamed Adam, University of Wisconsin
 Harlan C. Bachmayer
 Andrew J. Benjamin, Grain Processing Corp.
 Ben W. Breedlove
 William A. Brockmann, John Deere Seeding
 Michael Calhoun
 Emil F. Carra, Madd Enterprises
 Deon M. Carriere, Amerequip
 Robert S. Comer, Caterpillar Inc.
 Ester V. Dittert, University of Kentucky
 Jason R. Ehlers, Heartland Builders Co.
 Roy P. Foerster
 Dallas N. Ford, Alpha Scouts
 Weldon D. Griffith, USDA-NRCS
 Jennifer D. Hause, West Virginia University
 Patrick W. Hinze, CNH
 Shivanshu N. Kaushik, New Holland Tractors India Pvt., Ltd.
 Barton E. Kirk, University of Vermont
 Sadanand Konchady, Praj Industries Limited
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 Pinaki Mondal, Indian Institute of Technology
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 Karsten Uhd Plauborg, MBP Group
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 Rajen P. Rao, MJ Mfg. Co.
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 William James Shuttleworth, University of Arizona
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 Ralph F. Turner
 David J. Wachal, City of Denton
 Xinying Wang, The Ohio State University
 Ukrit Watchareeruetai
 Marvin Weiss, Weiss Enterprises Inc.
 Jeffrey G. Wendle, CET Engineering Services
 Junius W. White, Amadas Industries Inc.
 David Wild, Accutrak Systems Ltd.
 Jeong Yeol Yoon, University of Arizona
 Yanwei Yuan

New Members for October

Salvador F. Acuna, Purdue University
 Phani Kumar Adapa, University of Saskatchewan
 Akinbode A. Adedeji, McGill University
 Bijaya Kumar Adhikari, McGill University
 Mubashshar Ahmed, University of Saskatchewan
 Folorunso S. Ashaolu, OG Parking
 Daisy A. Asis, Prairie Swine Centre Inc.
 Sundar Balasubramanian, Penn State University
 Karan Bansal, University of Illinois
 Roel P. Belderol
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 Natasha A. Burlingquette, University of Saskatchewan
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 Andy Ernst, Ernst Conservation Seeds
 Olayide O. Fabunmi, University of Saskatchewan
 Marcia R. Friesen, University of Manitoba
 Seth Frimpong, KNUST
 Leandro N. Gentili
 Matthew J. Germane
 Haidee Gonzales, Kansas State University
 George W. Gray, IONCOLLC
 Phillip C. Green

Kevin D. Grider, John Deere Agricultural Management Solutions
 Melissa J. Halverson, Burns & McDonnell
 Jay M. Ham, Kansas State University
 SangHoon Han, University of Florida
 Cheryl A. Hansen, Engineering Systems Inc.
 William B. Hauserman, Hauserman Associates Inc.
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 Derek M. Heeren, South Dakota State University
 Kevin L. Hickey, Clarkson University
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 Annette A. Humpal, USDA-NRCS
 Christopher A. Ide, Manhard Consulting, Ltd.
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 Stephen J. Kateley, Billericay Farm Services Ltd.
 Laurette Blandine Mezajoug Kenfack, ENSAIA INPL
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 Sleem Ali Kreba, University of Saskatchewan
 Jaclyn S. Leiva Conklin, University of California
 Hai Yan Li, University of Manitoba
 Minzan Li, China Agricultural University
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 Jodi A. Lindgren, North Carolina State University
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 Fernando Maciel, Disenos Industriales Y Maquinados Maciel S.A. de C.V.
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The Search for Excellence is On!

Enter your company's new products in this exciting competition. Entries must be postmarked by **Dec. 31, 2006**. Winners will be highlighted in *Resource* magazine and at the ASABE Annual International Meeting where an engraved plaque is presented.

The 20th annual AE50 recognition program will honor companies offering the best products engineered for agricultural, food, biological, and related systems available on the market for the first time in 2006. A panel of experts in these fields will choose up to 50 winners.

To be eligible, each product must:

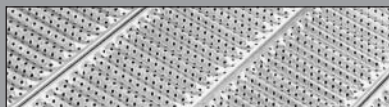
- be a new technology or an advancement of existing technology intended principally for producing, processing, storing, researching, packaging, or transporting agricultural, food, and other biological products.
- have potential for broad impact on its area or industries served by agricultural, food, and biological systems engineering.
- have been introduced to the marketplace between Jan. 1 and Dec. 31, 2006.

You'll find an entry form and more details at www.asabe.org/resource/ae5002entry.html

Contact Sandy Rutter at rutter@asabe.org for more information.

Sponsored by *Resource* magazine

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Personnel Service

Beginning in 2007, *Resource* will be published eight times per year; January 1, February 15, April 1, May 15, July 1, August 15, October 1, and November 15. The deadline for ad copy to be received at ASABE is four weeks before the issue's publishing date.

Advertisements are \$125 per column inch length (column width is 3.5 inches) and include free placement on the ASABE Career Center at www.asabe.org/membership/careercenter.htm. The minimum ad size is 2 inches — approximately 100 words — to qualify for the free online listing. Ads are posted on the Web site within three business days of final approval and remain there for 30 days. If the insertion order is for two issues, the cost is \$110 per column inch per insertion and includes a 60-day free Web listing.

For more details on this service, contact Pam Bakken, ASABE Personnel Service, 2950 Niles Road, St. Joseph, MI 49085-9659, USA; 269-428-6337, fax 269-429-3852, bakken@asabe.org, or visit www.asabe.org/resource/persads.html.

Centennial Scholars - Oklahoma State University

The Department of Biosystems and Agricultural Engineering at Oklahoma State University is seeking two PhD students as part of the Centennial Scholars Program. The Centennial Scholars Program provides up to three years of funding. Research emphasis for the scholarships is bioprocessing, particularly the production of fuels and other value-added products. Applicants must have a M.S. in biosystems, agricultural, chemical, or biological engineering or other related areas and be U.S. citizens or permanent residents. The scholarships are available immediately. For more information contact:

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Position Description: The individual filling this position is expected to develop a program of national recognition in biological or agricultural engineering. Program direction will focus on management of water resources to meet our future water needs. Specific areas include management of groundwater, surface water resources, storm water, and rainfall; evaluate the effect of water quantity and quality interactions on the water resources as watershed management programs are implemented which includes the TMDL program for management of contaminant loading on water resources; evaluation of stream processes and hydraulics to foster implementation of stream restoration programming; prediction of availability and sustainability of water resources; evaluate the potential for enhancement of our water resources through implementation of water management strategies such as water conservation, storm water management, desalinization, and wastewater reuse. The candidate is expected to work cooperatively in a multidisciplinary team to address the efficient use of water resources. The candidate is expected to work with State agencies for management and protection of our water resources. Information developed through the Extension and applied research program is expected to assist in regional planning efforts associated with the State water planning process. The incumbent will be expected to establish a publication record and attract extramural funding. Participation in professional improvement and professional society activities at the national and local levels is expected.

Administrative Relationship: This position is headquartered in Dallas, Texas at the Texas A&M Agricultural Research and Extension Center and reports to the Biological and Agricultural Engineering Department Head located in College Station, Texas and the Resident Director of the Dallas Research and Extension Center.

Qualifications: The candidate must have, by date of appointment, a Ph.D. in biological, agricultural, or an equivalent engineering degree with research expertise in water resources engineering. Effective verbal and written skills are essential. Candidate must have a positive interest in developing educational materials for delivery through Extension programs and conducting innovative applied research. Incumbent should have the interest and capability to work both independently and as a multidisciplinary team member. Experience or knowledge of Texas water resource issues is desirable. The candidate will be expected to either hold a professional engineering license or be capable of pursuing one in the state of Texas.

Application Process: Provide a letter of application; resume; one-page statement of career goals in context of the position; college transcripts; and name, address, phone number, e-mail address for three professional references to Dr. Gerald L. Riskowski, Head, Biological and Agricultural Engineering Department, Texas A&M University, College Station, Texas 77843-2117 or e-mail to riskowski@tamu.edu. Contact information: telephone 979-845-3940; fax: 979-862-3442.

Closing Date: Review of applications will begin in January 2007 and continue until position is filled. The position is available in March 2007.

The Texas A&M University System is an Equal Opportunity Affirmative Action Employer. Committed to excellence through diversity, the Texas A&M University System particularly invites applications from minorities, women and other protected groups.

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Your personal or company consultant business card could appear here. For information on rates, contact Pam Bakken, Advertising Sales Manager, *Resource: Engineering & Technology for a Sustainable World*, 2950 Niles Road, St. Joseph, MI 49085-9659, USA; 269-428-6337, fax 269-429-3852, bakken@asabe.org. An order form is available at www.asabe.org/resource/procards.pdf.

A Critical Crossing

Remembering a crucial publications navigation

Carroll E. Goering

The year was 1994. The good ship, ASAE Publishing, was cruising on the channel of hard copy publishing. All seemed well. High up in the crow's nest, the ship's lookout in the person of Society publications manager, Donna Hull, had a different view.

The channel was narrowing and would eventually become impassable. But also ahead was a crossing to an alternate channel of publications delivery, electronically via the worldwide Web.

Guarding the entrance to this promising channel were two treacherous rocks capable of severely damaging the ship and its Society investors. One rock was technical, the other financial. The technical barrier was that providing searchable full text on the Web was in its infancy, as was the software and the software providers necessary to support it. Choosing the wrong software/supplier could be disastrous.

The financial rock was that hard copy publication sales paid a substantial portion of the Society's bills. As that income declined, new income would be needed to keep the Society afloat financially. There was also the question of whether the ship had enough fuel to make the crossing, i.e., enough money to pay for the new software and for training the publications staff to use it.

The Society trustees decided that access to the new Web-based library would be a member benefit. The new benefit later served as part justification for a dues increase that partially offset the reduction in hard copy sales. Also, the Society trustees used strategic reserve funds to partially fund purchase of the new software, and the foundation trustees provided additional funding.

The publications manager began developing a site license system by which companies and institutions could pay an annual fee to give their employees access to the online library. It began to appear that the ship would be able to slip past the financial rock and would have enough financial fuel to make the crossing. There remained the technical rock.

System specifications were written based on needs of our Society members. The specifications went out for bids to supply the needed software and training. Interleaf, the eventual supplier of the BladeRunner software that was selected, was later purchased by BroadVision, an indication of the instability in such companies at the time.

The critical crossing was planned for January 2000, to coincide with the start of a new Society publications year. That date was deferred for a year due to the uncertainty in software suppliers. In April 1999, the Society trustees gave tentative approval for the critical crossing, i.e., the switch to the new system. On Oct. 1, 1999, the Society became

proud owners of the BladeRunner software, and the ASAE staff began learning how to use it.

During the voyage, a series of Publications Council chairs had two-year stints at the helm. One of these, Carroll Goering – this column's author – announced at the 2001 Annual International Meeting that the new system had been launched

in January. The critical crossing had been made. The Foundation later set up a Legacy Fund to bring back issues into the electronic library.

At the 2006 meeting, Donna Hull and Publications Council chair Dwayne Edwards looked back as the crucial crossing receded behind the stern. The new system generated a slight positive contribution to annual net income. More importantly, ASABE publications had become conveniently available to a much wider audience, including those in developing countries who could not afford hard copies.

The entire ship's crew, including the Publications Council, the staff, the Society trustees, and the Foundation trustees deserve a hearty cheer for making the critical crossing a resounding success!

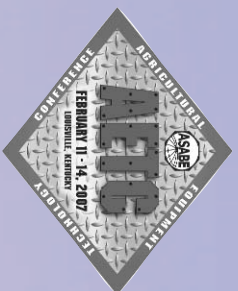
... the crucial crossing receded behind the stern ... Society publications had become conveniently available to a much wider audience ...

ASABE fellow Carroll E. Goering is professor emeritus, University of Illinois, 217-333-9420, cgoering@uiuc.edu.

Views expressed in this article are those of the author and do not represent the official position of ASABE.



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