

RESOURCE

Engineering & Technology for a Sustainable World



Inspired Ideas
Outstanding Innovations
the Best of the Year



Good Things are Happening



I recently returned from the Agricultural Equipment Technology Conference (AETC) in Atlanta, Ga. The enthusiasm and energy at the conference were exhilarating. Attendance was up, and participation in the various sessions and committees was excellent. This year, the conference was held in conjunction with the AG CONNECT equipment show, which gave ASABE a terrific opportunity to network with a wide variety of ag professionals.

Our registration booth was particularly well placed to maximize our exposure to the AG CONNECT attendees. The display was eye-catching and very professional (see page 25 in this issue)—and provided yet another way for ASABE to get its name out in front of the American Farm Bureau, other show exhibitors, and the many visitors. Huge thanks go to Walt and Donna Hull for their dedication in staffing the booth throughout the entire show.

As a highlight of AG CONNECT, the Society presented the 2011 AE50s. These long-standing awards recognize the year's fifty outstanding innovations in the field of ag engineering. This was the first year that five Judges' Choices were also tagged. These special awards recognized the cream of the crop—five of the fifty. The presentations took place in the Innovation Theater at the Georgia World

Congress Center and included video highlights of the Judges' Choice award winners. Manufacturers covet the AE50, and it allows ASABE to support the agricultural equipment industry and provides great publicity for our Society.

At the awards luncheon, I took the opportunity to survey the ASABE members in attendance as to how many had signed up "Just One" member. I was pleasantly surprised at the number of hands that were raised. I have to smile every time someone tells me, with pride, how they recruited "Just One." How are you coming along with finding your new member?

There are many other good things happening within our Society. We finished 2010 with a surplus in the budget, and the ASABE Foundation has done well due to the market upswing and some significant contributions from our members. In particular, we received several gifts from the estates of past members. In each case, it is clear that ASABE had a significant impact on the life of the departed. Such recognition is a solemn honor.

In short, we have a lot to be thankful for, proud of, and excited about as we move into the future.

Ronald L. McAllister
Ron.mcallister@cnh.com

events calendar

ASABE CONFERENCES AND INTERNATIONAL MEETINGS

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

2011

- Aug. 7-10 **ASABE Annual International Meeting.** Louisville, Kentucky, USA.
- Sept. 18-21 **International Symposium on Erosion and Landscape Evolution Conference.** Joint conference with AEG. Anchorage, Alaska, USA.

2012

- May 26-31 **21st Century Watershed Technology Conference: Improving Water Quality and the Environment.** Bari, Italy.

ASABE ENDORSED EVENTS

2011

- April 18-20 **6th CIGR Section VI International Symposium: Towards a Sustainable Food Chain.** Nantes, France. Contact Da-Wen Sun, dawen.sun@ucd.ie.
- Oct. 9-12 **2011 GSA Annual Meeting—Archean to Anthropocene.** Minneapolis, Minnesota, USA.
- Nov. 11-12 **Land.Technik—AgEng 2011.** Hannover, Germany.

2012

- Sept. 16-20 **SPC-02: 1st International Symposium: CFD Applications in Agriculture.** Valencia, Spain. Contact: Murat Kacira, mkacira@cals.arizona.edu.

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ON THE COVER

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A Personal Side to the PE Exam

I am currently on cloud nine. I recently received my California civil engineering license—something I never expected to do in my career, but the rules are not the same everywhere. That’s a story for another time. Now, I am both a licensed agricultural engineer and licensed California civil engineer.

For me, the journey to the agricultural engineering PE license started at Clemson University. I enrolled in agricultural engineering in the hopes of one day working in the environmental field. My area of emphasis was soil and water, with a few environmental classes thrown into the mix. I was fortunate to be involved in a department that provided a realistic approach to engineering. Nearly all my agricultural engineering professors had PE licenses. These same professors also worked or had worked outside the university as consulting engineers, which required a PE license. I saw my professors do a wide variety of jobs, from research to design to consulting, so I made the mental leap that if I had my PE license, then I could work in any field. And it would enhance my résumé. Thus, I saw pursuing my license as a natural progression for my career, and I felt there was a certain pride associated with having obtained a PE license.

After graduating with my BS degree, I went on to obtain an MS from the same department. When I was doing research for my thesis, I was fortunate to work with the USDA-ARS to collect the necessary data and get some exposure to agricultural engineering in the research field. This was the first time that I’d had the opportunity to work with confined animal operations. Little did I know that I would really like working with traditional agriculture and

the people involved in it. From my experiences with the USDA-ARS, I was able to land my first consulting job. I worked for a company that specialized in designing and permitting confined animal facilities. It was a huge learning experience for me, and I loved it. The hours could be long, but the benefits were many, like designing a storage pond in AutoCAD, reviewing and understanding the relevant regulations, working with clients from all over the United States and Canada, and learning all the other skills that you don’t learn in school. What’s more, all the engineers that I worked for were licensed ag engineers. It was very apparent that I would need my license to continue in this field.

I took the ag engineering PE exam the first time in the spring of 2003. At that time, no study materials were available. The only guideline I had was the NCEES list of knowledge areas for ag engineering. In addition, the exam had been converted to an all-multiple-choice exam from an essay exam. All of my co-workers who were licensed had taken the essay version. One co-worker lent me a three-ring binder of information that he’d put together when he took the exam. I reviewed the binder, looked at old tests, and thumbed through textbooks to prepare. On the day of the exam, I had a horrible cold and little faith that my preparation had really been enough. In the end, I didn’t pass that first time.

When the next testing cycle arrived, things had changed. I now had some co-workers who would also be taking the exam, and ASABE had released the first study guide for the exam. While the study guide was slim (probably 20 pages at most), it was a start, and it gave me a much better idea of how the questions were worded. We formed a



BETSY GERWIG

HOMETOWN: Summerville, S.C.

CURRENT POSITION:
Project Engineer

FAVORITE ACTIVITIES: Kayaking, hiking, gardening, crafts, hanging out with friends, visiting new places

FAVORITE VACATION: Maine, always something new to see

Above: "Here I am in Sequoia and Kings Canyon National Parks at the top of Moro Rock—a 360 degree view and my favorite picture!"



Left, Gerwig bringing up the rear, kayaking off Shell Beach, Calif., and far right, with her group of water-worthy, paddling friends.

study group and worked through the guide together, and we were able to pull similar example problems from our college classes. We met at least once a week for several hours for nearly two months prior to the exam. In addition to studying with the group, I also studied a couple hours a week on my own. When exam day came, I felt much more prepared. I had all my notes organized, my books were tabbed, and I was healthy. After the first half of the exam, I felt very confident that I had done well. The second half was tougher, and it definitely drained my brain. I was physically tired. But all the preparation paid off—I passed! Since then, my agricultural engineering PE license has helped me build credibility in my

career, obtain promotions, and make me more marketable when I look for a job.

After my initial consulting work, I worked for the government, where I had to apply the law, but I have recently come back to consulting. I really like the intensity and variety of the jobs and clients. And I’m always around people who see the PE license as a benefit. Even if you never have to sign off on a document or perform another task that the PE qualifies you for, just taking the PE exam will teach you a lot about yourself. Preparing for the exam will teach you discipline, and passing will show you that you can achieve a difficult goal. I encourage any engineer to get a PE license. It will reward you.

Betsy's Shovelful of Recommendations for Young Graduates Just Starting Their Careers

First, take the EIT within a year of graduating. You have to pass this exam to move on to any other PE license exam. Even if you never take a PE license exam, the EIT is an accomplishment worth including on your résumé.

Second, if you plan to work in a state other than where you attended school, check out the engineering licensure rules. If possible, talk to a licensed engineer in that area to get a better picture of the requirements. Your professors should be able to tell you about the local rules.

Third, here's the real scoop: **STUDY!** Don't think that, because you have a job in your field, you will remember or be proficient in every aspect of agricultural engineering. It is a very broad field. Collect study materials, or borrow them from others who have taken the exam. Find a study partner or group. Take refresher courses in areas that you are not familiar with. You need to put the time into studying to get the benefit.



Gerwig “scooping poop” out of a storage pond at a dairy in central California. “It’s not glamorous work,” she says, “but it’s wonderful!”

Fourth, rest the evening before the exam, and have a good dinner. You will need your strength. And pack a lunch for the next day because you won't have enough time to leave the testing site.

“Good skill!” as my grandma used to say, because luck has very little to do with passing the PE exam.

The cost of inflation?

\$5 for Your Thoughts



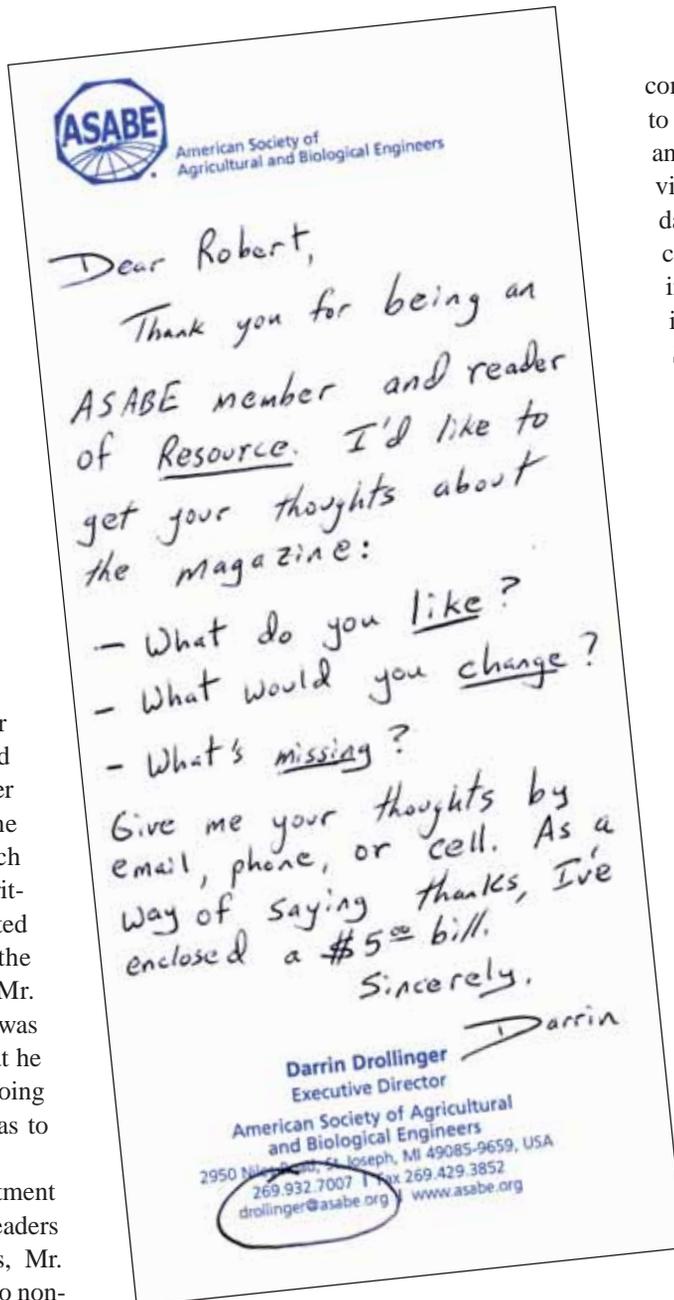
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At *Resource* magazine, we like to hear what we're doing right. Who doesn't enjoy a compliment from time to time? But we also need to know what we can do better to serve the interests of our readers.

Shortly after being settled in the corner office, ASABE Executive Director Darrin Drollinger brought fresh eyes to *Resource*. He asked thoughtful questions, looked over draft pages, and asked more good questions. And he continued his inquiries beyond the office walls as well.

Late last year, Mr. Drollinger asked ASABE's Sandee and Sandy to select twenty subscriber names at random from the *Resource* mailing list. Each name selected received a handwritten note and a \$5 bill, both inserted within the pages of the November/December issue. Mr. Drollinger told the staff that he was soliciting reader comments. What he didn't say was how he was going about it or what the incentive was to respond with comments.

Mr. Drollinger's \$100 investment paid off. Within days, several readers sent responses. After six weeks, Mr. Drollinger made follow-up calls to non-responders. More sent or called in their



comments. We are still waiting to see if all of his personal notes and the Lincoln portraits he provided will be discovered. To date, an unusually high percentage has responded including one reader who replied and included a \$500 check for the Society. On the following page is a sampling of comments received so far.

So check your desktop clutter, that stack of unopened mail, and publications yet untouched. Your *Resource* may contain a bill—and not the kind you have to pay.

We can't guarantee you'll be one of the lucky few to receive money, but we'd still like to hear from you: what's good about *Resource* and what you'd like to change. If we hear from you, we'll send you a gift to make life more profitable (and fun), keeping inflation in mind.

Send your comments to drollinger@asabe.org, mitro@asabe.org, or 2950 Niles Road, St. Joseph, Mich., 49085-3852.



To: Darrin Drollinger
 From: Robert Ward
 Subject: \$5 note!

Darrin, your \$5 note in my recent *Resource* magazine did the trick—I am responding! I am retired, so my views must be interpreted with that qualification.

What do I like? In general, I like articles that address the history of efforts to improve the use of science and technology within the agricultural landscape. I also like articles that confront the changing reality of food production and non-point source environmental protection, such as “Farming on Urban Land” in the November/December 2010 issue. I am less interested in the latest technological developments, unless improvements—that come from the application of the new technology—are also discussed. In other words, what is the new technology doing to improve the rich history of agricultural engineering?

What would I change? Probably less focus on new technology (without any context) and more emphasis on the evolution of science and technology (which includes the latest developments), within the context of the history of the technology. If a new science and/or technology is forthcoming, from where does it come? What will it do for us? What makes it economically viable?

What’s missing? I have often wondered why agricultural and biological engineering, as a profession, did not, in the 1970s, move more forcefully into the field of non-point source pollution control—agricultural engineering was perfect for this engineering specialty. What is the status of non-point source pollution control today and what engineering specialties are most involved in the work? What engineering specialties are addressing the more traditional soil and water topics historically addressed by agricultural engineers? That is a history article I would like to read.



To: drollinger@asabe.org
 From: Sauerwein, Chris
 Subject: magazine feedback

Likes:

1. Print clarity/quality
2. Quantity and quality of photos accompanying the articles

3. Articles are well written and informative.

Changes:

1. My own bias, but would be nice to see increased content related to off-road machinery/mechanical systems.
2. Might be interesting to feature some editorials.



To: Darrin Drollinger
 From: Jorge A. Guzman
 Subject: *Resource*

Darrin, I find *Resource* to be a well written, edited, and printed magazine that keeps ASABE members updated. For future editions I would like the editorial board to consider a section that features selected papers from *Transactions of the ASABE*. The board could also consider including a section that

features the professional lives of ASABE members who have made outstanding contributions to the biosystems and agricultural engineering community.



To: Darrin Drollinger
 From: Brandon Bechtel
 Subject: \$5 in the latest issue of *Resource*

Darrin, I was just going through my mail from the last 2 months and found the issue with the note inside it. I enjoy reading *Resource* magazine as it keeps me up to date with the many advances within the different areas of the agricultural and biological engineering community. While I enjoy being updated on the activities of areas outside of my own (power and machinery), it would be nice to organize the articles based on their areas of focus (power and machinery, food process engineering, environmental and natural resource engineering, etc.). One other thing that would be useful for me, working in the agricultural equipment industry, would be to have more features on the activities taking place in industry, as much as in the academic world (although I know there are other publications that focus on these things). Thank you for the note, and I hope this feedback is useful for *Resource*.



To: Darrin Drollinger
 From: Dale Kirk
 Subject: *Resource*

Darrin, I like the simplicity and directness with which the subjects are addressed and covered. I like the coverage of activities by members of our profession who are working on and finding answers to problems related to our production of food and fiber for our world’s population.

I am used to finding the captions to pictures under or near the picture. Would most readers take the time and effort to search out a caption at the bottom of the page?

The most delightful pages in the Jan/Feb issue were about Jimmy Butt. For my many years of membership in ASAE and ASABE (I am 93), he was a most loved and respected leader.



To: Darrin Drollinger
 From: Ruch, Terri
 Subject: Thoughts on *Resource*

What an interesting enclosure in the mail! Since you sent cash, I thought it was best to respond.

I love *Resource* and look forward to every issue. I do like the email that alerts me to the opportunity to view the magazine online; however, I still like the actual printed copy so much better.

For many print items, such as newspapers and magazines, I understand the validity of putting them online, but I still want a printed copy. I don’t think it is comfortable to read on the computer. Plus, I like to be able to carry around printed material. I can read the material any time anywhere, without the bother of using a computer.

I think the content is excellent. Please keep up the good work!

SALUTE!

Resource is pleased to sponsor the AE50 awards program—the only one of its kind—that celebrates developments in agricultural, food, and biological systems. **This issue** is dedicated to the gifted engineers and their co-workers who creatively harness resources and pursue exciting innovations. *Resource* annually **showcases** the winning results of their ingenuity.

For over two decades, companies from around the world have annually submitted AE50 entries, and a panel of international, industry-leading engineering experts have selected up to 50 **products that** best reflect engineering advancements for the agriculture and food industries.

This year's winning products include agricultural equipment and implements, grain storage structures, control systems, irrigation equipment, and more. Some of the award winners **are** patented and their names trademarked. Several companies won multiple awards.

Five products that were found to have particular merit have received the Judges' Choice Awards, a new feature of the annual AE50 program. While these five products have been singled out, the products featured here are **all winners.**

CONGRATULATIONS!



1023 E and 1026 R Compact Tractors and Attachments

The new John Deere 1023E/1026R tractor platform was developed from the ground up to improve attachability and customer satisfaction. New implements, including a series of front-end loaders, a snow blower, and a series of AutoConnect™ mowers, were developed with the new tractor platform. The two tractor models will be differentiated with power level and basic or premium options. The loaders will also be differentiated with basic or premium operator features.

The D120 and H120 loaders are two new loaders designed to optimize the performance of the 1 Series Sub-Compact Tractors from John Deere. The lift capacity, lift height, breakout, and reach complement the capability of the 1 Series tractor. The H120 loader offers convenience features including a deluxe parking system and an optional Quik-tach attachment carrier. The D120 loader brings similar levels of performance in a cost-conscious package with fewer features.

The 54D and 60D AutoConnect mowers greatly increase the speed and ease of attaching or removing a mower. AutoConnect mowers represent the first application of this technology to the sub-compact tractor market and are designed to complement the 1 Series tractors. The mower allows automatic attaching of the mid-mount mower and its PTO drive system to the 1 Series tractors.

John Deere

Grovetown, Georgia, USA
803-372-8753
www.deere.com



3020 TerraFlex™ Flexible Cutterbar Auger Header

The Case IH 3020 TerraFlex™ flexible cutterbar auger header introduces significant new innovations for smooth feeding and flexibility, which allow the headers to feed the highest capacity combines on the market. With the exclusive TerraFlex™ technology, cutterbar tension can be adjusted to lightly float over soft muddy fields in order to harvest in adverse conditions, or it can be adjusted to shave the top of the ground to follow rolling terrain. The 3020 TerraFlex™ has innovative features such as a rubber isolator spring flotation system, optional in-cab-adjust flotation system, reel-position sensors, sectional floors, and a method to retain auger fingers in the auger when they are broken. These features combine to provide less downtime for the operator, a lower cost of ownership, and high-capacity harvesting even in the most challenging field conditions.

Case IH Agriculture

Racine, Wisconsin, USA
262-636-6011
www.CaseIH.com



430 Series Ball Valves

TeeJet Technologies offers a platform of compact, durable ball valves providing superior performance. Configurable for a customer's operation, the 430 Series comes in a choice of two-way, flow back, or three-way functionality with a wide range of boom section counts and many inlet, outlet, and electrical connection options. The series offers the reliability and durability of a ball valve, with stainless steel ball and stem, in a market segment normally occupied by solenoid and plunger valves, at a very attractive price point. Due to the compact size, a customer is able to install more valves in the existing space and increase control capability. The 430 Series is also compatible with automatic boom section control, closely correlating actual spray applications to ABSC signals and recorded data. The series boasts excellent performance and long life, at 30 percent less expense than large valves.

TeeJet Technologies

Wheaton, Illinois, USA
630-665-5000
www.teejet.com



6420 SHD Olive Harvester

The Oxbo 6420 SHD olive harvester mechanically harvests olives grown in super-high-density hedgerow plantings, removes unwanted leaves and other debris, and stores olives on-board in bulk bins or conveys olives to a trailer towed in the adjacent row. Using feedback from growers, processors, and nurseries, the 6420 was designed from the ground up to provide the olive oil industry a custom, cost-effective harvesting solution that improves profitability and allows the grower to avoid costly, hand-harvest labor issues. The standard limited-slip, four-wheel traction control system enables the 6420 to power through any terrain encountered during harvest. The climate-controlled, high-visibility cab can be lowered while mounted to the chassis, allowing for simple height reduction for trucking between distant fields. Together, new cultural practices and new harvesting technologies provide growers a better way to grow and manage their crop.



Oxbo International Corp.

Lynden, Washington, USA
360-354-1500
www.oxbocorp.com



8200DC Irrigation Controller System

The 8200DC is a solar-powered irrigation controller system that utilizes a single two-wire cable to automate Nelson 800 Series control valves. The simplicity of the system is unique in utilizing sophisticated decoders that control valve watering functions. The full-color graphic display simplifies the installation, setup, and diagnostics of each control valve. During operation, the controller logs data, recording soil moisture in conjunction with water application. Setup errors are eliminated by the controller's time-saving capacity to search and verify decoder identity and to monitor valve solenoid power current and wire continuity. The controller is powered by 12 VDC technology that makes automation efficiency possible where there is no AC electricity available.

Nelson Irrigation Corp.

Walla Walla, Washington, USA
509-525-7660
nelsonirrigation.com



ActiveCommand Steering

John Deere has developed a steer-by-wire system for increased levels of steering comfort and control on large row-crop tractors. ActiveCommand steering provides customer value in transport, field, and loader applications. The system automatically adjusts the steering ratio and the steering effort to optimize field and transport operations. Full electronic closed-loop steering control eliminates the mechanical backlash of a traditional steering column shaft and steering valve for improved line-holding ability when driving at transport speeds. Additionally, closed-loop control eliminates the hand-wheel drift associated with hydro-mechanical steering valves. Dynamic road wheel offset control automatically adjusts the road wheel angle based on a lateral acceleration signal (derived from the system gyro) for improved vehicle control when cornering at transport speeds. Over-steering is reduced. The ActiveCommand steering system complies with the ECE R79, ISO 10998, and ISO 25119 standards.

John Deere
 Moline, Illinois, USA
 309-765-8000
www.deere.com

AgriWave

AgriWave is an exclusive, premiere, remote machine management system, designed and built by GVM AgJunction. The completely web-based AgriWave allows users to remotely monitor the functioning of critical systems such as the engine, transmission, electrical, hydraulic, and controller (ViperPro). This monitoring reduces downtime, improving customer satisfaction and reducing costs. AgriWave allows users to send map files to the machine and as-applied logs back to the system wirelessly. Online maintenance logs and vehicle tracking (one minute updates) are also included. In addition to viewing machine position, engine and transmission data, flow control data and reports, and keeping online maintenance logs, AgriWave also allows GVM service to remotely dial into the machine for troubleshooting.

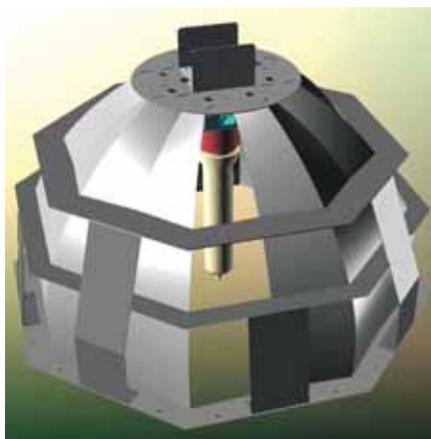
GMV AgJunction
 Biglerville, Pennsylvania, USA
 800-345-3546
www.gvminc.com



Air Filter Blaster

The Air Filter Blaster provides a safe and appropriate way to clean an air filter, either on the go or during routine preventative or reactive maintenance. A centrifugal force, air-induction chamber causes air to flow throughout the filter such that it is cleaned from the inside out. The cyclone inside the air filter dislodges particles in 30 seconds. This allows for an air filter to be cleaned several times, ultimately achieving over 20 times the life of a filter. The benefits of utilizing the Air Filter Blaster are realized after the first use, for a quick payback. Once the filter is cleaned, fuel efficiency will increase, engine performance will improve, and there will be a significant decrease in air filter replacements, which leads to cost savings and fewer air filters in landfills.

Salmon River Innovations, LLC
 Salmon, Idaho, USA
 515-451-2101
www.airfilterblaster.com



All-Bright 315W Greenbeams®

The All-Bright 315W Greenbeams® is a supplemental lighting system for single-tier plant growth chambers that is up to 70 percent more energy efficient than existing fluorescent lighting. This is accomplished through the use of roof-mounted Cycloptics reflectors using a 315 W ceramic metal-halide lamp that produces 630 photosynthetic photon flux (PPF). Advantages for plant researchers over existing T12 and T5 fluorescent systems include energy savings up to 70 and 50 percent, respectively, greater average PPF tailored to the photosynthetic action spectrum, improved horizontal and vertical light uniformity, a dimmable ballast to adjust PPF output to 50 percent of maximum without uniformity or spectral degradation, and a 30,000-hour rated lamp life. New chambers equipped with the All-Bright 315W Greenbeams® will also require less air-conditioning. These performance features will reduce operation costs and expand lighting options in plant growth chambers operating All-Bright 315W Greenbeams® supplemental lighting.

Cycloptics Technologies, LLC

Dayton, Ohio, USA
937-723-9818
www.cycloptics.com

Application Pro Module:

- GreenStar Sprayer Pro
- Sprayer Pro Universal
- Seeder Pro Universal
- Spreader Pro Universal

Application Pro Modules is a joint software development project between John Deere and Kverneland Group to enable the ISOBUS Task Controller for Section Control on different platforms, independent of brand. Developed in cooperation with third parties on the basis of ISOBUS, it allows operators to have the full benefit of the Section Control function. There are major cost savings due to optimization of inputs through precise application of seeds, fertilizer, and chemical products using ISOBUS-compatible sprayers, seeders, and spreaders of all manufacturers with a John Deere GreenStar2 system. In addition, the Headland Control feature allows operators to work the main field first and finalize the headland at the end, which avoids crossing a treated area twice. The Product Details feature enables users to add up to 25 bits of information about the applied products, such as active ingredients of chemicals, in order to have all necessary information for best practices at hand.

John Deere

Kaiserslautern, Germany
49-631-36191-504
www.deere.de



AutoFarm® ParaDyme® GPS Precision Farming System

AutoFarm® ParaDyme® is a totally integrated GPS steering and precision farming solution with factory-installed wireless communication. The communication devices include a VHF/UHF radio for RTK corrections from a local base station; a cell phone modem for corrections via cell phone, such as CORS networks; and a WiFi link for easy software uploads and data transfer. AutoFarm's patented dual-antenna GPS roof module integrates the GPS receiver, steering controller, and all communication devices in a single enclosure, which easily transfers between tractors, sprayers, spreaders, combines, and other machines. AutoFarm's patented dual-antenna GPS receiver features Logic7D® technology—key to high steering accuracy, repeatability, and fast line acquisition—tracking the vehicle's roll, pitch, and yaw at all times. Three options of color touch-screen displays integrate all precision farming functions into a single interface. All ParaDyme® systems are shipped with AutoFarm's Remote Real-Time Service, which allows dealers to remotely access a customer's ParaDyme® system from anywhere using an Internet browser.



AutoFarm Division of Novariant, Inc.

Fremont, California, USA
877-947-7327
www.gpsfarm.com

Biobaler® WB55 Woody Biomass Harvester

The Biobaler® WB-55 woody biomass harvester makes dense bales of woody crops—from 4-in. diameter stems to small natural brush. The cutter head is 2.25 m (88 in.) wide and produces 1.2 × 1.2 m (48 × 48 in.) round bales. This small-dimension harvester compresses biomass in the field, reducing the ecological footprint. Bales are easy to handle and transport, and they dry naturally while stored. The Biobaler® includes a mulching head that cuts, shreds, and feeds biomass residues in the reinforced bale chamber. The central swing pivot tongue allows offsetting the Biobaler® from a tractor on both sides and increases maneuverability in restricted areas. The harvesting rate can be up to 23 Wt/h in dedicated woody crop plantation and up to 10 Wt/h in natural vegetation. The harvester performs land clearing operations and recovers clean biomass simultaneously, which provides new feedstock for green energy producers.



Anderson Group, Inc.
 Chesterville, Quebec, Canada
 888-833-2952
 www.grpanderson.com



Brielmaier Q1 Motor Mower

The Brielmaier Q1 Motor Mower is the first and only uniaxial, agricultural, high-performance mower that houses its engine, wheel drive, and all major hydraulic or mechanical components completely inside its studded roller wheels. This gives the Q1 the ruggedness needed for rough terrain and an extremely low center of gravity, enabling the user to safely mow slopes at angles that other products could not navigate. Based on a patented and revolutionary technology, the Q1 is also suitable for wet and watery terrain. Equipped with a remote control, it can be steered wherever the operator likes. The Q1 is engineered on an electronic-hydraulic layout without mechanical gear parts, so many devices and applications—not just cutterbars or flail mowers—can be attached.



Brielmaier Motormäher GmbH
 Friedrichshafen, Baden-Wuerttemberg, Germany
 0049-171-5538053
 www.brielmaier.com

DISCO 3900TC Center-Pivot Mower Conditioner

The CLAAS DISCO 3900TC is a center-pivot tine mower conditioner. This unit incorporates the new ACTIVE FLOAT hydraulic floatation system. The ACTIVE FLOAT provides the suspension for the mowing cutterbars to float and follow the ground contours in the field. The ACTIVE FLOAT can be adjusted to increase or decrease the pressure to make the cutterbar lighter or heavier during operation. The heavy-duty cutterbar is protected with the CLAAS SAFETY LINK, which protects the cutterbar from internal damage when the cutterbar comes in contact with external objects. The CLAAS QUICK KNIFE system allows for quick removal of the knives. The full-width conditioner allows for wide windrow width to maximize dry down, facilitating the hay in a day practice or a narrow windrow for other markets.



CLAAS of America, Inc.
 Omaha, Nebraska, USA
 402-861-1000
 www.claasofamerica.com

Excellerator™ Vertical Tillage System

The Krause Excellerator™ is a vertical tillage system that utilizes rotary soil engagement components to provide effective high-speed residue management and uniform seedbed preparation while maintaining consistent soil density in the seed zone without the use of horizontal shearing actions. Residue is cut by flat center Excalibur™ blades that feature 32 shallow-concavity outer edge flutes on an adjustable 1- to 5-degree gang angle. This creates soil mixing with minimal lateral soil movement but permits variation in residue coverage and soil leveling to meet specific farming needs. Exclusive Star Wheel™ rotary treaders dislodge uncut soil and further mix soil and residue, leaving an even, well mixed soil profile. Two active hydraulic down-pressure circuits maintain uniform operating depth across the machine and consistent contact of the rotary treaders in uneven field conditions. Additional clod sizing and soil firming is accomplished by 24/7® conditioning reels.



Krause Corp.

Hutchinson, Kansas, USA
620-663-6161
www.krauseco.com

GAC® 2500 Moisture Analysis Tester

The DICKEY-john GAC® 2500 is the next generation in moisture analysis testers. Utilizing the USDA's 149 MHz technology, the GAC® 2500 provides superior accuracy in grain analysis when compared to the air-oven method, the industry-recognized definitive method for determining moisture content in grain. DICKEY-john successfully combined the 149 MHz technology with improved mechanics to create a machine that provides industry-leading moisture analysis results in a shorter timeframe. Analysis time with the GAC® 2500 is approximately 50 percent shorter than with the current federal standard moisture tester. The GAC® 2500 is also equipped with a color display/touchscreen, improved operator interface, and multiple communication methodologies, all of which make it easier to use in a commercial grain elevator setting.



DICKEY-john Corp.

Auburn, Illinois, USA
800-637-3302
www.dickey-john.com

GPS Shadow Tracker®

The Orthman GPS Shadow Tracker® active implement guidance system is a ground-engaging, GPS-controlled steering system that works in conjunction with the tractor guidance system to position an implement with sub-inch accuracy. The system is comprised of a group of one-blade steering modules hydraulically linked to move in unison. One master module provides blade position feedback to the steering control system. The remaining blade modules “shadow” the master, matching its blade position via linked rephasing hydraulic cylinders. The individual blade module design combined with the use of hydraulic, rather than mechanical, connections between modules allows for mounting versatility on a multitude of planting implements. The GPS Shadow Tracker® is compatible with Trimble®, AutoFarm®, and John Deere™ guidance systems.

Orthman Manufacturing, Inc.

Lexington, Nebraska, USA
308-324-4654
www.orthman.com





HI Pump with Integrated Automotive Control

The HI Pump with Integrated Automotive Control (HI AC) is a hydraulic pump and integral electronic controller with embedded application software programmed to control the entire vehicle propel transmission system. With over 30 pre-tested and pre-qualified vehicle transmission functions pre-programmed into the controller, many man-months to man-years of time and related development expenses can be saved by OEMs bringing new vehicles to market, all with the added precision performance obtained via closed-loop electronic control.

The embedded controller also features additional watchdog circuitry, which provides real-time fault monitoring of the electronic hardware. Combined with optional software to monitor redundant input channels, HI AC provides single-fault tolerance for vehicle transmission systems, SIL 2 certified by the international certification organization TÜV (Technischer Überwachungsverein). This helps vehicle manufacturers meet European Machinery Directive 2006/42/EC and related safety standard ISO 13849-1:2006, and also reduces OEM cost and time required for system qualification and vehicle certification.

Sauer-Danfoss, Inc.
Ames, Iowa, USA
515-239-6000
www.sauer-danfoss.com



iGrade™

John Deere iGrade™ is an integrated RTK-based grade-control system that automates four different water management applications by using the electrohydraulic selective control valves (SCVs) on most late-model tractors. Four applications—Distance Trip, Plane Control (single or dual-plane), Grade Control, and Surface Water Pro™ Automation—all integrate with a common look and feel to the GreenStar display family to serve a variety of irrigation and surface water drainage applications.

John Deere
Moline, Illinois, USA
515-360-2026
www.JohnDeere.com



iSteer™

John Deere iSteer™ is an active implement guidance system that automatically acquires and steers the implement onto a guidance line using steering components on the implement and the selective control valves (SCVs) on most late-model tractors. The iSteer™ system determines the AB guidance line that the tractor is following and steers the implement to the same line. The system uses GPS data from a John Deere StarFire™ receiver with an RTK signal to actively steer the implement through the field, obtaining RTK accuracy at the implement even in challenging terrain. This additional accuracy at the implement will allow growers to use advanced methods of strip tillage and crop side dressing to improve crop yields at reduced input levels.

John Deere and SBG Innovatie BV
Moline, Illinois, USA
888-476-7827
www.JohnDeere.com



JDLink™ Ultimate and Service Advisor™ Remote

JDLink™ Ultimate and Service Advisor™ Remote are two separate systems that work together to help customers optimize the performance of their 8R Series tractors, while helping dealers provide new levels of product support. JDLink™ Ultimate is a telematics system that taps into the tractor CAN bus and stores key pieces of machine data off the CAN bus. This data is periodically sent wirelessly to a data warehouse where it can be accessed by customers and those they authorize. This information can then be used to optimize machine and operator performance. Service Advisor™ Remote is an electronic service support tool that connects to the tractor via the JDLink™ controller. It allows dealers to wirelessly read fault codes, diagnose the tractor, or send new software updates to the tractor controllers. These remote capabilities will allow John Deere dealers to support the new 8R Series tractors in ways that will increase the amount of time that the tractor is available to the customer.

John Deere

Waterloo, Iowa, USA
319-292-7942
www.deere.com



LightScout DLI 100 Light Meter

The LightScout DLI 100 Light Meter is an affordable tool for measuring variability of daily light integral (DLI) in different plant growing locations during the same 24-hour period. Light falls like rain on plants, so it is the accumulated amount, or DLI, that matters more than the intensity. Sold as a set of three meters, each meter measures the PAR light that falls on plants during a 24-hour period and then displays this value as DLI. The DLI 100 allows for easy comparison of DLI variation throughout a greenhouse due to hanging baskets, glazing or shade cloth materials, and angle of the sun, allowing growers to make decisions about plant placement and supplemental lighting to improve plant quality. The DLI 100 enables turf managers to direct branch pruning so that turf health is balanced with course esthetics.

Spectrum Technologies, Inc.

Plainfield, Illinois, USA
800-248-8873
www.specmeters.com



M SERIES™ Commercial Grain Storage Bins

The Brock Grain Systems M Series™ line of commercial grain storage bins feature single bin capacities up to 1.34 million bushels. The bins feature free-span roofs in addition to a sidewall system that incorporates a smooth inner wall sheet laminated to a corrugated outer wall sheet. The 47.5 m (156 ft) diameter model has a maximum eave height of 21.3 m (70 ft) with a 22,700 kg (50,000 lb) peak load capacity. The 40.2 m (132 ft) diameter model has a maximum eave height of 27.7 m (91 ft) with an 18,150 kg (40,000 lb) peak load capacity. The roofs are designed to support loads generated by a 2.4 kPa (50 psf) ground snow load and have temperature-monitoring cables. The SMOOTHCORR™ sidewall system resists wind loads and adds insulating value to the sidewall. It also assembles to create double shear on the vertical seam bolts, thus reducing assembly time. Brock's exclusive FULL SWEEP® bin anchoring system was expanded to include these new larger models.

Brock Grain Systems

Milford, Indiana, USA
574-658-4191
www.BrockMfg.com



M-Series Loaders S850 and T870

Bobcat® M-Series skid-steer loaders and compact track loaders are versatile compact tool carriers that deliver performance in smaller packages. With stronger hydraulics for improved attachment performance, better tractive effort for digging and pushing, improved ergonomics for operator comfort, and increased fuel capacity for long days, M-Series loaders are meant for intense work in a variety of agricultural, construction, landscaping, mining, recycling, and rental applications. The machines include a unique cab-forward design that brings the operator closer to the work area, and they have a larger door for improved operator entry and exit. Other ergonomic improvements include larger windows and door for improved vis-

ibility, increased operator space, best-in-class pressurized cab, greater availability of seat adjustments, and improved engine mounting to reduce noise and vibration. Machine travel is controlled with the Standard Control with Power Assist for comfortable machine operation.

Bobcat Company

West Fargo, North Dakota, USA
701-476-4243
www.bobcat.com

Matrix™ Guidance System with RealView™ Guidance Over Video

The Matrix™ Guidance System with RealView™ Guidance Over Video from TeeJet Technologies allows guidance and live video to be displayed simultaneously to improve accuracy and efficiency in field operations. This affordable system allows growers to monitor what is ahead, to view difficult-to-see machine parts or operations, and to see behind the vehicle for improved safety during road transport. RealView™ Guidance Over Video allows operators to see guidance information displayed over an actual image rather than a virtual image. The real field is displayed on the console, not a 3-D animation of a generic field. This makes it easier for operators to verify that they are on the right path, especially when turning at end rows. RealView™, a new concept in guidance, gives an operator access to more and better information to make GPS guidance more intuitive.



TeeJet Technologies

Wheaton, Illinois, USA
217-747-0235
www.teejetguidance.com

MAXFLO 1200 Draper Head

The MAXFLO 1200 is a 40-foot draper head equipped with compression augers to positively feed cut material to the combine without the added complexity of a center-feed belt (draper) and adapter. The header can be mounted closer to the combine, improving visibility and lessening travel distance of material between the cutterbar and feederhouse intake. The compression augers hold material to the surface of the side conveyor belts to ensure continuous positive feeding into the stationary contoured center floor section. The contour of the stationary center floor section directs material flow into the header's center feed drum, as supplied by the side belts (drapers) and compression augers, and into the combine feederhouse for processing. The stationary center floor also acts as a catch basin to capture and collect potentially harmful foreign objects traveling within the material flow and prevent ingestion by the combine. A six-sensor digital auto-contour terrain sensing system maintains a safe and consistent cutting height in all ground conditions. Belt (draper) speed is operator controlled to optimize material flow pending conditions. Additionally, the side belts (drapers) can be reversed from the cab to assist in clean-out and/or to dislodge obstructive material or objects.



Additionally, the side belts (drapers) can be reversed from the cab to assist in clean-out and/or to dislodge obstructive material or objects.

CLAAS of America, Inc.

Omaha, Nebraska, USA
402-861-1000
www.claasofamerica.com

Nutrient Tracker™

The Digi-Star Nutrient Tracker™ system is an application management tool and documentation system for manure or fertilizer spreading operations. The Nutrient Tracker™ System allows operators to see the application rate while spreading and automatically collects information for the time, date, field names, and amount of material applied with GPS verification data. The system then records the data to internal memory and makes it available for downloading to a USB drive at the end of the day, week, or month. The Nutrient Tracker™ includes scales on the spreader, the NT460 data-collecting indicator with GPS interface, and PC software. The proprietary PC software combines the data with downloaded Google satellite images of operator's fields to show exactly where, when, and how much of the nutrients were applied. The N application information helps producers comply with EPA and DNR CAFO regulations and also aids in reducing the amount of commercial fertilizers needed to grow a successful crop.



Digi-Star, LLC

Fort Atkinson, Wisconsin, USA
 920-563-1400
 www.digi-star.com



NWX 660 In-Line Wrapper

The NWX 660 is a fully automatic in-line wrapper for round bales equipped with a last-bale X-Tractor™. The X-Tractor™ is a telescopic cylinder that comes out of the table and pushes the last bale on the ground in less than a minute. With previous in-line wrappers, ending the tube was obtained by handling heavy square tubing. The NWX 660 significantly reduces the amount of physical labor during the wrapping process. It is a self-propelled unit, powered by a 13 hp engine. An optional 24 L (6.34 gal) fuel tank can be added to decrease downtime during intensive wrapping work. It can wrap different bale sizes, from 1.2 to 1.7 m (4 to 5.5 ft) in diameter by 1.2 or 1.5 m (4 or 5 ft) long. Traction wheels are hydraulically driven and are also used as a brake to increase compaction in the tube. The remote control allows the operator to steer the wrapper from the tractor cab.

Anderson Group, Inc.

Chesterville, Quebec, Canada
 888-833-2952
 www.grpanderson.com

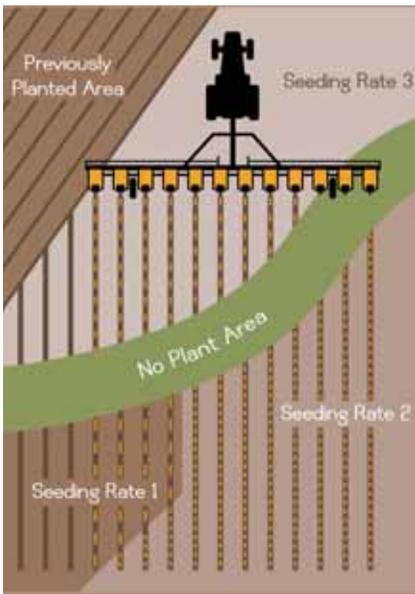
O3000 Orbiter Pivot Sprinkler

The Nelson O3000 Orbiter pivot sprinkler features new technology that eliminates the struts of a sprinkler body to provide outstanding uniformity and optimal droplets at low operating pressures. Designed with an innovative bracketless assembly, debris hang-up and water pattern misting common to conventional sprinklers are eliminated. Irrigators can expect long wear life, reliable operation, and durability even in the toughest watering conditions. The Orbiter utilizes Nelson's universal 3TN quick-change, color-coded plastic nozzle. The O3000 Orbiter offers an excellent water application solution from 69 to 138 kPa (10 to 20 psi) operating pressure. This low-pressure sprinkler is mounted on drop tubes and utilizes low trajectory angles to keep the water out of the wind for maximum water and energy conservation. The O3000 is available with the choice of two plates to meet desired droplet configurations specific to site and soil requirements. The sprinkler allows farmers to more precisely apply water, energy, and fertilizer.



Nelson Irrigation Corp.

Walla Walla, Washington, USA
 509-525-7660
 www.nelsonirrigation.com



OmniRow™

Raven's OmniRow™ advanced planter control system has fully integrated design with RTK sub-inch accuracy and patent-pending planter control technology for maximum yields and efficiency. It controls seeding rates by row or section with precision and reliability. OmniRow™ works in sync with Raven's Envizio Pro II field computer and Slingshot RTK/Online Service to deliver a definitive planting experience. Variable-rate seeding, automatic on-off planter control, and real-time seed monitoring can be managed by individual rows or sections for higher yields and elimination of costly skips, doubles, and overplants. OmniRow™'s real-time seed monitoring and singulation ability allows the user to easily find optimum tractor speed for maximum yields and efficiency.

Raven Industries

Sioux Falls, South Dakota, USA
800-243-5435
www.ravenprecision.com

OPI-integris Moisture Cable

The new OPI-integris moisture cable is a solid cable with sensor nodes placed at intervals along the cable. Each node consists of a relative humidity sensor encapsulated in a sintered filter that protects it from dust and contamination while allowing for instantaneous moisture and temperature readings. It tracks in-bin grain drying, conditioning, and shrink, allowing users to deliver quality. The moisture cable works by measuring the relative humidity in the airspace around the grain, with which users can calculate grain moisture content with accuracies of ± 1.5 percent or better. Each node also includes a temperature sensor so that moisture content and temperature can be read at predetermined intervals up through the grain. It is well suited for use with StorMax manual monitoring, as well as Integriss monitoring and fan control applications. For the added comfort of measured feedback, the OPI-integris moisture cable can be used with IntegrissPro and Integriss ProModel software.



OPIsystems, Inc.

Calgary, Alberta, Canada
800-661-1055
www.advancedgrainmanagement.com

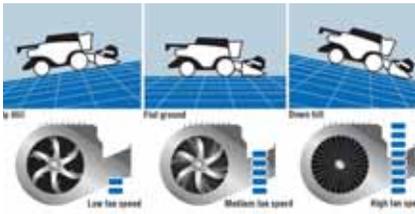


OpticMapper

The OpticMapper from Veris Technologies provides detailed, geo-referenced maps of soil organic matter variability. The OpticMapper uses an optical sensor mounted within a specially configured planter row unit for on-the-go soil mapping beneath crop residue and dry surface soil. It is combined with Soil EC sensing on the Veris Mobile Sensor Platform, so variations of two critical soil properties are mapped at once—soil texture and organic matter. Precise soil management zone delineation is critical for accurately varying rates of nutrients, seed populations, and other inputs. While USDA soil surveys and grid sampling contain data about soil variability, that information is typically too coarse to identify soil variations accurately. On-the-go soil sensing provides the detailed soil maps needed to establish management zones accurately. Veris has been a leader in soil mapping technology since the mid-1990s, and this innovation represents a significant step forward for soil-specific agriculture.

Veris Technologies, Inc.

Salina, Kansas, USA
785-825-1978
www.veristech.com



Opti-Fan™

The new Opti-Fan™ automatic cleaning fan rpm adjustment system for New Holland combines is the first fully automatically adjusting cleaning fan that actively corrects the rpm for longitudinal field slopes, to considerably reduce the influence of harvesting up and down hills on cleaning shoe capacity. The remote-controlled cleaning fan speed is adapted for optimal performance based on calculations by the on-board electronics, which take into account the continuously measured longitudinal slope, current setting, slope variation, and time delays. Combines of different brands have optional devices to compensate for lateral field slopes; the Opti-Fan™ actively corrects for longitudinal slopes as well. Having devices that correct for both longitudinal and lateral slopes considerably increases the unit's daily capacity, reducing grain losses and increasing flexibility of field harvest. The Opti-Fan™ system is offered on combines with or without a lateral self-leveling device.

New Holland

Turin, Italy
0032-50-25-3101
www.newholland.com

ORBIS 635 Row Independent Corn Head for Forage Harvesters

The CLAAS ORBIS 635 is a specially designed header to harvest row distances of both 0.8 m (30 in.) and 1 m (38 in.). The header can gather seven 1 m (38 in.) or eight 0.8 m (30 in.) rows of corn, milo, or forage sorghum while allowing the forage header to run its tires in between rows and furrows. The most innovative feature is a unique center gathering drum, allowing harvest of one 1 m (38 in.) row exactly in the center of the machine as required by the grower. The ORBIS 635 allows for a smoother crop flow and consistent stubble height, as most headers are designed to fit only 0.8 m (30 in.) row applications. The ORBIS 635 complements the range of ORBIS headers by using many common parts.

CLAAS of America, Inc.

Omaha, Nebraska, USA
402-861-1000
www.claasofamerica.com



Planter SeedStar™ XP

Building upon the foundation of SeedStar™ 2, the new SeedStar™ XP system takes planter monitoring to the next level. This new monitoring system provides more real-time information about the planting process to the operator within the tractor cab. Seed singulation, row unit ride dynamics, row unit downforce, and seed spacing are the key new monitoring features that were introduced with compatibility on ISO 11783 displays. Specific information about how the planter is performing enables the operator to make needed adjustments for planter optimization. With the rising cost of seed corn, it is imperative to make sure that every seed is planted accurately and precisely within the seed furrow for maximum yield potential.

John Deere

Moline, Illinois, USA
309-765-7313
www.johndeere.com



**Self-Aligning Driveline System
TM850 Trailed Mower**

The Vermeer TM850 Trailed Mower has a unique, patent-pending, self-aligning driveline system for smooth operation in all tongue positions. This self-aligning driveline system helps the mower easily maneuver around obstacles. It consists of two swivel gearboxes, the driveline, and a steering tube between the gearboxes. Within this specially engineered system, the secondary driveline does not need a CV joint and can utilize common U-joints, but it can still mow in any position behind the tractor. The secondary driveline is designed to run through the steering tube and, as the tongue is swung from transport to the field position, the steering tube keeps the driveline and the two swivel gearboxes perfectly lined up. This eliminates any severe driveline angles that would normally require a CV joint in order to perform reliably in the field. The TM850's heavy-duty driveline performs effectively in the field without being overly complex or expensive.

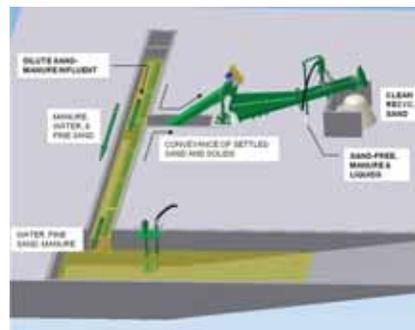
Vermeer Corp.
Pella, Iowa, USA
800-370-3659
www.vermeer.com

Self-Cleaning Sand Lane (SCSL)

The McLanahan Self-Cleaning Sand Lane (SCSL) is an equipment system for processing flushed or otherwise diluted sand-laden dairy manure. Sand is the preferred bedding on dairy farms, as it maintains a comfortable and healthy resting environment for cows due to its cushioning capabilities and its inability to sustain mastitis-causing organisms.

Conventional methods of handling diluted sand-laden manure are labor and machinery intensive while producing a poor quality (high organic matter content) sand product. Due to the difficulties associated with managing traditional systems, the quantity of sand recovered is poor, resulting in manure storage ponds and treatment systems failing as sand accumulates. The McLanahan SCSL is an automated, quarry-duty system for separating sand from highly dilute manure at flow rates in excess of 22,700 L (6,000 gal) per minute. The automated nature of the system allows for high recovery of sand both in terms of quality and quantity. Recycled sand is reused with lactating cows in less than one week.

McLanahan Corp.
Ag Systems Division
Hollidaysburg, Pennsylvania, USA
www.mclanahan.com



**Series 400 Wireless
Irrigation Management System**

The AgraTek® Series 400 monitors and controls irrigation water use on farms and in vineyards, orchards, and irrigation districts. AgraBus™ network technology, with Plug And Grow™ modular signal input/output (I/O) modules, simplifies setup, operation, and future expansion. Installation costs are reduced by up to 40 percent from savings in labor, material, and end-user training. Field upgrades and repairs are easy. When I/O modules are added or replaced in remote stations, the system discovers and adds them to the supervisory display in the control room. Modules for direct connection of nearly all types of sensors include soil moisture, flow, pressure, rain, temperature, and humidity. Output modules support latch valves, power factor pump controllers, drip valves, and water treatment equipment. The Series 400 can stand alone or be added to existing systems by a MODBUS connection. Remote monitoring, control, and system diagnostics can be done via secure Internet connection, allowing field support at very low cost. A GSM cellular modem allows connection for locations without Internet service. Use your web browser or smart phone to view data, get trend reports, and control machinery with AgraTek's optional OPC-based Data Center services.

AgraTek, LLC
Cave Creek, Arizona, USA
480-215-1340
www.AgraTek.org,
www.AgraTekControls.com

Slingshot™

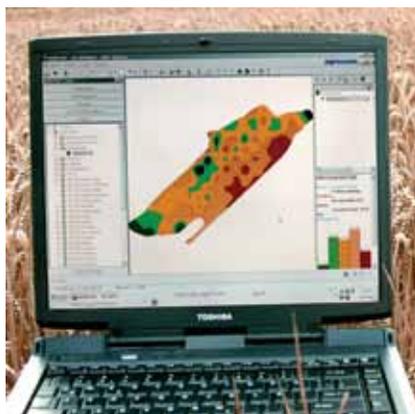
Slingshot™ delivers connectivity through mobile networks for access to a system of RTK correction signals, sophisticated data management capabilities, precision ag equipment, and online services such as remote support and vehicle tracking. Zero line-of-sight RTK signal limitations provide uninterrupted operation and convenience. Slingshot RTK is compatible with Raven and non-Raven hardware and public CORS networks.

The core of the Slingshot system is the Slingshot™ Field Hub. A small device that fits neatly into the vehicle cab, the hub connects precision ag hardware to the most advanced RTK correction signal available. It also connects operators, managers, and Slingshot support to each other via the Internet and puts a complete web experience on a field computer.

The hub delivers Slingshot's advanced RTK correction signals and high-speed Internet to the field computer via mobile cell phone networks, the same wireless connectivity technology that powers smart phones and PDAs. However, Slingshot's industrial-grade hardware, software configuration, and high-end antennas can acquire signals with higher performance than a cell phone.

Raven Industries

Sioux Falls, South Dakota, USA
800-243-5435
www.ravenprecision.com



TELEMATICS

The CLAAS TELEMATICS system is a management tool that collects all important operational data for a self-propelled harvester and transfers it to a web page to give the owner unlimited access using just an Internet connection. TELEMATICS helps analyze the efficiency of the harvester, displays all settings, and offers a wide range of management tools like live remote GPS tracking, GPS tracing, direct machine comparison, live settings, yield monitoring and mapping, and the status of machine maintenance. For custom operations, TELEMATICS offers an easy way to log and collect data for invoicing and cross-compliance purposes. TELEMATICS also includes the capability of remote service and diagnostics so that the service partner can remotely connect to the harvester and diagnose problems to reduce service technician travel time and machine downtime.

CLAAS of America, Inc.

Omaha, Nebraska, USA
402-861-1000
www.claasofamerica.com

TERRA TRAC

TERRA TRAC is a suspended-track undercarriage with independently suspended rollers. A hydropneumatic suspension system connects hydraulic cylinders with integrated accumulators to their respective roller system (rear driver, front idler, and oscillating mid-rollers), enabling them to respond independently to uneven or changing terrain in order to maximize machine ride stability and operator comfort while minimizing ground pressure and disturbance to the soil structure. An automatic (hydraulic) belt-tensioning system maintains continuous belt tension for consistent performance and durability. The stability of the new TERRA TRAC undercarriage supports higher road speeds, up to 40 kph (25 mph) (model specific), minimizing the time required for road transport and improving the ratio between engine hours and fieldwork hours for an improved return on investment. The TERRA TRAC system replaces the generation II Mobil-Trac System (MTS), which utilizes a mechanical linkage interface between the track undercarriage and the axle and contains shock absorbers to dampen the effects of changing terrain.

CLAAS of America, Inc.

Omaha, Nebraska, USA
402-861-1000
www.claasofamerica.com





Tractor Baler Automation

The Tractor Baler Automation system combines a previously independent tractor and implement to work intelligently as a baling system. The system automates manual baling operations by bringing the tractor to a stop automatically when a bale reaches the desired size in the baler chamber, and then it opens/closes the gate to eject the bale. By automating baling tasks and eliminating repetitive operation of the tractor controls to initiate the baling operations at the appropriate times, operator comfort is improved to accommodate longer working days. Customer value and productivity are increased

through error reductions and quality improvements for bale size consistency. Using bidirectional CAN communication via the ISOBUS, the baler is able to make intelligent implement requests of the tractor to help improve the customer's baling operation. The capability of the implement to request tractor functions helps to automate many of the operator interactions with the Tractor-Baler Automation system.



John Deere
 Waterloo, Iowa, USA
www.JohnDeere.com

Turbo-Chisel™ Chopper Wheel

The Turbo-Chisel™ chopper wheel is a finishing attachment specially designed to enhance the performance of the Great Plains Turbo-Chisel™, a primary vertical tillage tool. Opposing pairs of angled chopper wheels mount from a spring-cushioned bar attached to the rear of the Turbo Chisel™ frame. The six-bladed, 0.5 m (21 in.) diameter chopper wheels size and mix crop residue and are strategically positioned to fill the valley left from the rear rank of shanks, leveling the soil for effective one-pass seedbed preparation. Other features include easily replaceable chopper blades, special maintenance-free hubs that feature oversized double-row sealed bearings, and double dirt-exclusion seals. The chopper wheel attachment is available for all Turbo-Chisel™ models and sizes.



Great Plains Manufacturing, Inc.
 Salina, Kansas, USA
 800-255-0132
www.greatplainsmfg.com

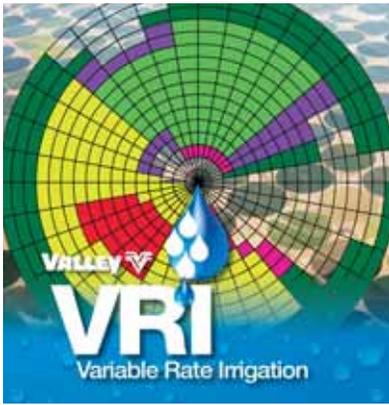
V60 Series Nut Sweeper

The Flory model V60 Series sweeper is a self-propelled "V" nut sweeper. It was developed to help growers reduce sweeping passes by as much as 60 percent. Labor and fuel are dramatically reduced as well. The V60 has hydraulically driven fans on each side, allowing the operator to blow the nuts in either direction. The V60 has a 130 hp Cummins QSB 4.5 engine with an automatic reversible cleaning fan to keep the radiator clean. Flory uses the Sauer-Danfoss Plus 1 hydraulic control system for all machine controls. Although the V60 has the ability to sweep a 6 to 7 m



(20 to 24 ft) tree row, it can be folded up for easy transport. All hydraulic functions can be controlled from inside the cab. The ability to create a windrow on each side of the tree using only two passes versus the traditional four or five passes significantly reduces dust.

Flory Industries
 Salida, California, USA
 209-545-1167
www.floryindustries.com



Valley Variable-Rate Irrigation (VRI) Zone Control

The Valley VRI Zone Control package is designed to allow the center-pivot operator the ability to apply water and crop inputs to specific management zones in the field. Management zones may be based on soil nutrient maps, topography, dual EM (electromagnetic) survey data, yield maps, field conditions, or other farmer-defined areas and prescriptions written in an operator's computer. The prescription is then uploaded into the Valley Pro2 control panel. The VRI Zone Control package utilizes Valley field-proven components, such as power line carriers, GPS position, and control valves combined with the Valley VRI prescription software to offer maximum reliability and performance. Other precision farm equipment, such as planters, sprayers, and fertilizer applicators, can also be equipped for variable rate, but these depend on one pass to make their application. A center pivot makes multiple passes across the field, which allows the operator more opportunity to manage crop inputs.

Valmont Irrigation

Valley, Nebraska, USA
402-359-2201
www.valleyirrigation.com

Virtual Agronomist Pro

Virtual Agronomist Pro from CropMetrics is a web-based agronomic variable-rate irrigation (VRI) software program that optimally determines and automatically generates center-pivot VRI speed control and VRI zone control prescriptions based on field data layers such as EM/EC, topography, and yield. Virtual Agronomist Pro provides agronomists and crop consultants a unique platform that delivers GIS data processing, advanced multi-layer yield analysis, and fully optimized VRI prescriptions for virtually any irrigated acre and any crop type. VA Pro helps growers maximize profits by establishing variable yield goals and information-based management strategies that conserve resources, improve input use efficiencies, and optimize crop production. When combined as part of the Virtual Agronomist base management program, VRI prescriptions can be additionally matched to Virtual Agronomist variable-rate seeding and variable-rate nitrogen prescriptions for a complete precision management solution.



CropMetrics, LLC

North Bend, Nebraska,
402-595-8090
www.CropMetrics.com

WatchDog® 1000 Series Micro Station

The WatchDog® 1000 Series Micro Station records up to six in-field environmental parameters throughout the growing season and provides the ability to view current conditions onsite, without a PC. The Micro Station features long battery life (despite handling the high current draw of modern soil sensors), high-capacity data storage in non-volatile memory, LCD display, multiple sensor options, small size, and a price point that permits deploying multiple Micro Stations to measure varied microclimates. Connecting via direct or remote methods to a PC running SpecWare software offers numerous graphs and reports for data analysis of plant disease pressure, soil moisture trends, and plant growth parameters. There are eight WatchDog® 1000 Series Micro Station models, compatible with twenty-one different sensors, enabling custom station configurations to meet specific needs.



Spectrum Technologies, Inc.

Plainfield, Illinois, USA
800-248-88
www.specmeters.com



Wave Bin Floor Support

The Sukup Wave Bin Floor Support is a sheet metal support designed for use with 9 cm (3.5 in.) or 18 cm (7 in.) floor planks of any style. The Sukup Wave Bin Floor Support is made from a single sheet of galvanized steel that is cut and bent to create a stable support for bin floor planks. This style of floor support is easier and more economical to manufacture than welded wire frame supports, while still providing excellent support and allowing ample air movement and even heat distribution in the plenum area. The wave shape of this new support creates more surface area to support the floor planks, while at the same time making the support more stable than other sheet metal supports. Flanges in the top portion fit under the crowned area of the floor plank at a 45 degree angle, providing support for the planks over a larger surface area.

Sukup Manufacturing Co.

Sheffield, Iowa, USA
www.sukup.com

Xpress Cascading Roller Press System

The Xpress cascading roller press system squeezes liquid from the solid reject of a dewaterer, processing raw scraped manure or digester effluent to produce a material suitable for bedding or compost. The modular design increases the serviceability and performance of the system by providing drier fibers, and it can be tailor-fit to any size dairy operation. The equipment package can include a 1.8, 1.2, and 0.6 m (6, 4, and 2 ft) wide roller press system with primary or secondary screens. The virgin gum rubber and perforated stainless steel rollers squeeze material to produce a dry fiber with minimal power. The frame design allows individual removal of the rollers from the front and side access to the inside of the roller and the upgraded heavy-duty bearings. The air pressure suspension system limits mechanical shock loads while allowing easy adjustment of each squeezing step.

GEA Houle

Drummondville, Quebec, Canada
819-477-7444
www.gea-farmtechnologies.com
/houle/en/



XPulse Twin Piston Pump

The XPulse Twin Piston Pump is a positive-displacement pump transferring livestock manure slurry between 76 and 587 L (20 and 155 gal) per minute. The dual pumping chambers in sequence provide a non-pulsing flow, ideal for feeding downstream processing equipment, while using 25 percent less power than conventional transfer equipment. The XPulse uses existing pumping-tube technology proven in manure handling over the past 25 years. The compact footprint and controllable flow rate make this pump easy to retrofit into existing systems as well as new construction. The flapper doors with a rubber and urethane sealing surface, combined with an air relief, allow the pump to self-prime. The top-down assembly of the pump enables all working components to be removed from the top using standard tools. The openness of the base enables passage of solids found in manure; additionally, the placement of the access doors allows easy cleaning of unwanted material.

GEA Houle

Drummondville, Quebec, Canada
1-technologies.com
/houle/en/



CONTACT
Dolores Landeck
269-428-6339
landeck@asabe.org

News Release

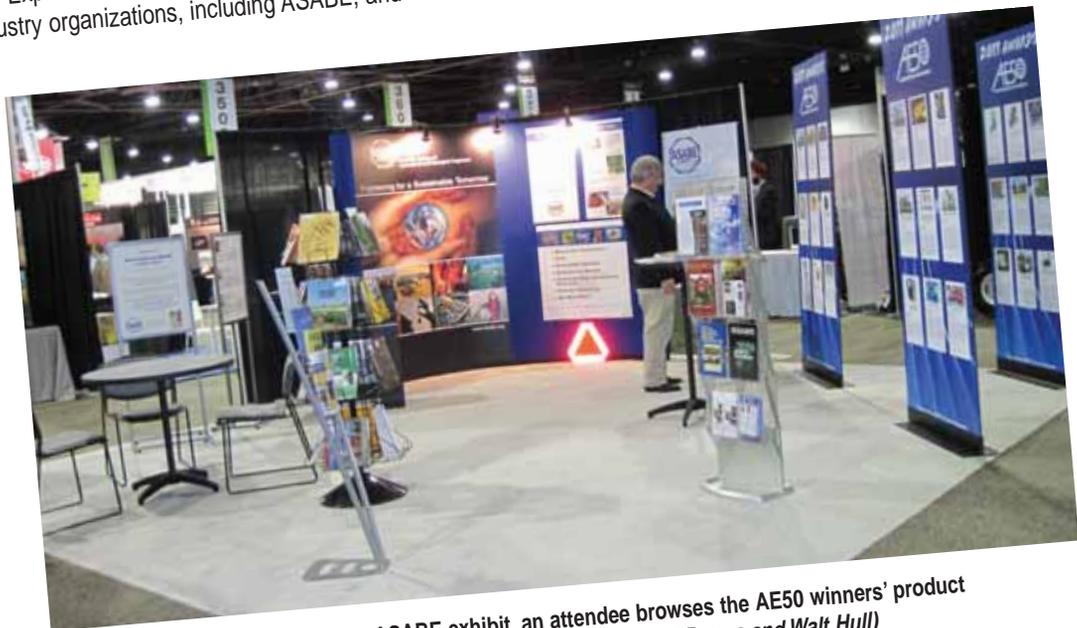
ASABE HIGHLIGHTS 2011 AE50 WINNERS FOR INNOVATIVE TECHNOLOGY AT AG CONNECT EXPO

St Joseph, Michigan — *Resource* magazine and the American Society of Agricultural and Biological Engineers announced the winners of the 2011 AE50 Awards at the AG CONNECT EXPO. The annual AE50 program has been encouraging and applauding engineering achievements for over two decades.

The 2011 AE50 winners represent the world's best technology innovations introduced in 2010 for the agricultural, food, and biological systems industries. Submitted by companies of all sizes and varying inventive focus, the 50 winning products bring clear advancements to the marketplace—improved efficiency and user safety, reduced labor and costs, and much more. Several companies, including CLAAS and Deere, won multiple awards. Entries were evaluated by a blue-ribbon panel of industry experts in technology, design, and product development. Five products were found to have particular merit and were singled out for first-ever Judges' Choice awards. Although the Society's *Resource* magazine has been recognizing product innovation through its AE50 awards program for 25 years, this is the first year that the judges have highlighted products for special recognition. The judges looked for unique innovations and significant engineering advancements when selecting just 50 products from the many entries received.

The 50 winners were announced at the 2011 Agricultural Equipment Technology Conference (AETC), held at the Georgia World Congress Center, Atlanta, Georgia, in conjunction with AG CONNECT EXPO, building prominence as the global meeting place for agriculture in North America. The January 7-10, 2011, event enlarged the success of the first show in 2010.

AG CONNECT Expo has continued to receive widespread industry support, with more than 35 sponsoring and supporting industry organizations, including ASABE, and 20 co-located industry events.



During a rare quiet moment at the ASABE exhibit, an attendee browses the AE50 winners' product descriptions on display at AG CONNECT EXPO. (Photo courtesy of Donna and Walt Hull)



ASABE member Dennis Corwin on the salt-encrusted edge of an evaporation pond that received drainage water from nearby irrigated land. (Photo by Peggy Greb, courtesy of USDA-ARS)

Using remote sensing to map soil salinity on a regional scale

In Brief: An ARS scientist has led efforts to develop a new method for using remote sensing to assess soil salinity. This could give land managers worldwide a regional-scale tool for measuring and mapping soil salinity in fields where salt buildup lowers crop yields.

ASABE member Dennis Corwin, an ARS soil scientist, led a team that used moderate resolution imaging spectroradiometer (MODIS) imagery to assess and map soil salinity across approximately 299,993 ha (741,300 acres) of the Red River Valley in North Dakota and Minnesota. Increased soil salinity levels in this region have been linked to higher water tables caused by management and precipitation changes over the past 20 years.

The team compared two vegetation indices: the normalized difference vegetation index (NDVI) and the enhanced vegetation index (EVI). Both indices were developed using seven years of vegetation reflectance data obtained with MODIS imagery. The team also collected soil samples from 60 fields across three counties in the Red River Valley to see

how strongly field-scale soil saline levels correlated with the EVI and NDVI indices.

The researchers found that 21 to 37 percent of the variability in soil salinity levels could be correlated with EVI. Then they added another factor into their estimates: whether the land qualified for the Conservation Reserve Program (CRP), a federal program that sets aside marginally productive land for conservation purposes. They found that 34 to 53 percent of the variability in soil salinity could be correlated to EVI and whether land was eligible for CRP inclusion.

For this project, Corwin partnered with Stanford University scientist David Lobell and former University of California-Riverside statistician Scott Lesch. Corwin is at the U.S. Salinity Laboratory in Riverside, Calif. Other collaborators included Michael Ulmer, Keith Anderson, Dave Potts, James Doolittle, Manuel Matos, and Matthew Baltes, who are soil scientists with the USDA NRCS.

Results from this research provide the NRCS with an easy and reliable tool for mapping soil salinity over regions that span from hundreds of thousands to millions of acres.

For more information contact, Ann Perry, ARS Public Affairs Specialist, Ann.Perry@ars.usda.gov.

“Super socks” help stem pollution runoff

In Brief: ARS scientists and their collaborators have improved on an existing method for removing contaminants from storm water runoff. Findings could provide surface waters additional protection against runoff-containing pollutants from point sources such as construction sites, storm waters, and other urban landscapes.

Filter socks containing compost tucked into mesh tubes are used to capture silt, heavy metals, fertilizers, and petroleum products washed from compacted surface areas into nearby streams and rivers.

A group of scientists from the ARS Animal and Natural Resources Institute in Beltsville, Md., teamed with researchers from Filtrex International, manufacturer of the socks, to test adding flocculation agents to the socks for performance improvement.

Wastewater treatment plants use flocculation agents to help sediments and pollutants form clumps large enough to be filtered out of the water, even when the substances are in a dissolved state. The team added flocculation agents to compost socks and then ran laboratory tests to see how well the socks trapped sediment, coliforms, nitrates, *E. coli* bacteria, heavy metals, and petroleum products in runoff after simulated rain events.

The scientists found that compost socks alone removed the majority of clay and silt particles that contribute to sus-



Filtrex Inlet Protection system captures runoff pollutants before entering storm sewer system.

pended solids in surface waters. They also removed 17 percent of ammonium nitrogen, 75 percent of *E. coli* bacteria, and from 37 to 72 percent of the heavy metals. In addition, runoff levels of diesel fuel dropped 99 percent; levels of motor oil, 84 percent; and gasoline levels, 43 percent.

However, socks with flocculation agents removed even more of the pollutants from runoff, including 27 percent of the ammonium nitrogen, 99 percent of *E. coli* bacteria, 99 percent of the motor oil, 54 percent of the gasoline, and from 47 to 74 percent of the heavy metals.

For more information contact, Ann Perry, ARS Public Affairs Specialist, Ann.Perry@ars.usda.gov.

Power play re-defined

In Brief: With February's U.S. Super Bowl shining a spotlight on the National Football League's (NFL's) newest gridiron—Cowboy Stadium in Arlington, Texas—fans of another stripe are cheering sustainable developments at Philadelphia's eight-year-old Lincoln Financial Field. The operators of the Pennsylvania NFL stadium, where the Eagles roost, recently announced plans to go to “net zero,” meaning they will generate power needs through onsite sustainable or renewable sources.

With proper design, stadiums and certain other building types can become net self-sufficient in power, or even generate extra power and income for owners.

“For those of us who have designed green systems, the initiative for the high-profile Lincoln Financial Field will be closely watched,” says Alan Locke, PE, founding principal of IBE Consulting Engineers. Locke is not involved in the Philadelphia project but has contributed engineering services to Milwaukee's Miller Park Stadium, Seoul Dome in Korea, and Los Angeles' Dodger Stadium.

The term “net zero” is generally used to identify buildings that produce as much power as consumed, over the

course of a year. A net-zero building might tap into the local utility grid when in full use but delivers excess power back to grid during off-seasons or off-hours.

In the future, stadium owners might actually derive income from power sales. “With lower photovoltaic prices, and with wind turbines, it is possible to actually go beyond net zero, and move into net power generation, especially for larger structures that are less used, or used passively,” says Locke. Football stadiums are ideal in many ways to become power sources, instead of power sinks. “Stadiums are often empty—running at full operations for more than 60 days a year is a rarity,” says Locke. “The large surface area and building height of a typical stadium means that solar and wind power may be practical, with just some accommodation in the tax and regulatory picture.

Many states and jurisdictions have adopted provisions mandating that utilities buy all surplus power offered by green facilities, at fair market rates. “It more often makes sense to invest the design and construction costs to produce a sustainable, energy-exporting facility if the local utility buys the extra net power,” says Locke.

For more information, contact Benjamin Mark Cole, benjamin@taylor-pr.com, or Julie D. Taylor, Taylor & Company, julie@taylor-pr.com.



Rotating corn with shrubby legumes holds a key for fueling Africa's green revolution, predicts scientist Sieglinde Snapp.

Shrubby crops can help fuel Africa's green revolution

In Brief: Crop diversification with shrubby legumes mixed with soybean and peanuts could be the key to sustaining the green revolution in Africa, according to a Michigan State University (MSU) study.

Diversifying crops would boost production of nutrient-enriched grain by 12 to 23 percent," said Sieglinde Snapp, a crop and soil scientist at MSU's Kellogg Biological Station, who led the study.

Malawi has been called the cradle of Africa's green revolution. Through government subsidizing of 90 percent of fertilizer and superior corn seed costs, Malawi has reaped substantial gains in productivity of calorie-rich food. The successful program has had some unintended consequences, though, such as reliance on starchy cereals, expensive fertilizer, and depleted soils.

Rotating corn with pigeonpea mixtures (a shrubby legume grown in tropical regions) keeps the soil from being stripped of nutrients while increasing nutrient-rich grain productivity. This sustained boost could enhance food and environmental security in Africa, Snapp said.

"This diversified rotation provides multiple benefits compared to simply planting a continuous corn crop," she

said. "One big plus is that it will allow twice as much sunlight capture and nitrogen fixation, which supplements fertilizer and improves the efficiency of any fertilizer that is applied. This translates to more stable grain production and enhanced nutritional grain."

Malawi furthered its green reputation by committing at every level to make this unprecedented long-term and wide-ranging study possible. The study was carried out over multiple years and involved thousands of extension educators, farmers, government officials, hospital staff, university educators, and farmer research groups, according to Snapp.

"This participatory research approach has led to an agricultural revolution, one that will provide multiple benefits in addition to increased productivity," she said. "For example, as dependence on fertilizer and subsidies decreases, the government can use the money to invest in education, healthcare, and a civil society."

Researchers from the Farmhouse (Norwich, U.K.), the University of Florida, the University of Western Ontario (Canada), and the University of Malawi (Lilongwe, Malawi) also contributed to the study. Snapp's research is funded in part by the Michigan Agriculture Experimental Station. To read more about MSU's collaborations in Africa, visit <http://special.news.msu.edu/africa/>.

For more information, contact Layne Cameron, layne.cameron@ur.msu.edu, or Sieglinde Snapp, snapp@msu.edu.

HEAD

DEPARTMENT OF AGRICULTURAL & BIOLOGICAL ENGINEERING, MISSISSIPPI STATE UNIVERSITY

Mississippi State University (MSU) invites applications for the position of Head of the Department of Agricultural and Biological Engineering (ABE). MSU is a comprehensive land-grant institution with an enrollment of almost 20,000 students. The ABE Department has strong programs in biomedical engineering, ecological engineering, bio-energy, and engineering technology. A new building houses classrooms, offices, and laboratories for 12 teaching and research faculty, four extension faculty, and 310 undergraduate and 40 graduate students.

The Head of the Agricultural and Biological Engineering Department provides overall leadership, direction, and administration for teaching, research, and extension functions and reports to the Dean of the College of Agriculture and Life Sciences, the Dean of the Bagley College of Engineering, the Director of the University Extension Service, and the Director of the Experiment Station. The Head is the liaison between department personnel and university administrators and has the responsibility for coordinating the budget and managing personnel. He or she is expected to establish and maintain working relationships with other units in the university, clientele, government agencies, and professional groups and is expected to actively participate in developing extramural support for the department.

The candidate must have a doctorate in engineering from an accredited university and should be eligible for a tenured, full professor appointment based on a strong record of research, teaching, and service. The candidate must have a broad understanding of the emerging trends and the future directions in agricultural and biological engineering. The Head is expected to be an outstanding leader and to have a demonstrated commitment to diversity, teaching excellence, and student achievement. He or she is also expected to exploit internal and external sources to maintain the department's solid financial footing and to ensure opportunity for sustained growth. Other desirable qualifications include registration as a Professional Engineer and experience in program assessment such as SACS or ABET. Salary will be commensurate with training and experience.

Applicants should provide a letter of application outlining their leadership and strategic planning philosophy, a curriculum vita, and names and contact information of five professional references. Application materials should be submitted on-line at <https://www.jobs.msstate.edu>. Dr. Glenn Steele is chairing the Search Committee. You may contact him at 205 Research Blvd., Starkville, MS 39759 or steele@me.msstate.edu. Review of applications will begin 21 March 2011 and will continue until the position is filled.

Mississippi State University is an Affirmative Action/Equal Opportunity Employer. Women and minorities are encouraged to apply.

Resource is published six times per year: January/ February, March/April/, May/June, July/August, September/October, and November/December. The deadline for ad copy to be received at ASABE is four weeks before the issue's publishing date.

Advertisements are \$140 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.

For more details on this service, contact Melissa Miller, ASABE Professional Opportunities, 2950 Niles Road, St. Joseph, MI 49085-9659, USA; 269-932-7017, fax 269-429-3852, miller@asabe.org, or visit www.asabe.org/resource/persads.html.

SALES ENGINEER

Bondioli & Pavesi Inc. is responsible for North American sales and distribution of power transmission components manufactured by Bondioli & Pavesi SpA. We are seeking a technically oriented individual for a position as the area manager for our OEM customers of agricultural drivelines and gearboxes in the Upper Midwest. This individual will be responsible for maintaining existing accounts as well as expanding the market with new applications and customers.

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The ASABE Career Center

www.asabe.org/membership/careercenter.htm

The most comprehensive **CAREER AND RECRUITING SITE** for the agricultural, biological, and food engineering industries is now available for your use. The 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!

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Innovation Application

This year's AE50 recipients indexed on the facing page join the ranks of many, over more than two decades, who have been honored for their creativity.

In June 1984, *Agricultural Engineering* (now *Resource*) included "A Forum for New Developments" in a special issue on technology. Twenty-five new techniques, inventions, and innovations were showcased. The featured items were drawn from product information solicited by the Society and screened by a panel of experts.

From this focus on identifying innovative technology, two years later the AE50 was born. Its intent was described as follows: "Acceptance in the marketplace is the highest accolade any new agricultural product can receive. But for innovative developments in the last 12 months, a singular honor is to be named one of the year's Agricultural Engineering 50 outstanding innovations in product or systems technology."

Product nominations poured in. A panel of engineers was enlisted to review the entries, and in 1986 the first AE50 awards were bestowed on "applications intended for principle use in the production, processing, research, storage, packaging, or transportation of agricultural products."

The interest in new technology and innovative applications of existing technology remains constant. Over the years, the AE50 application process has specified that each entry must "have potential for broad impact on its area or industries served by agricultural, food, and biological systems engineering."

As was the case in the beginning, many of the products featured on the previous pages are patented and their names trademarked. In the years ahead, some may even become household words. Others may be further improved as technology advances, and will in turn inspire further innovations.

For more information and an entry form, go to www.asabe.org/resource/ae5002entry.html.

Your personal or company consultant business card could appear here.
 For information on rates, contact Melissa Miller, tel: 269-932-7017; miller@asabe.org.
 An order form is available at <http://www.asabe.org/resource/2008%20consultants%20listing%20and%20cards.pdf>

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ASABE Foundation Dinner at the Kentucky Derby Museum

Tuesday, August 9th

7:30 to 11:00 pm

\$100 per person (includes bus transportation, admission to museum, and filet mignon dinner)

Spend an evening at the Kentucky Derby Museum while supporting the ASABE Foundation. This unique dinner provides exclusive access to two floors of the Kentucky Derby Museum, an unforgettable opportunity for all.

The Kentucky Derby's bugler, Steve Buttleman, will play the "Call to Post" as you take your seat. During dinner, "The Greatest Race" will be shown on the 360 degree museum screen. Following dessert, Buttleman will discuss his experiences at the Kentucky Derby. This evening is sure to be a favorite part of your ASABE meeting experience.

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FOUNDATION FESTIVITIES

2011 ASABE ANNUAL INTERNATIONAL MEETING

5th Annual Gail A. Holloway Memorial Golf Outing

Wednesday, August 10th, 3:00 pm
Quail Chase Golf Club
Louisville, Kentucky

Don't miss this great opportunity to tee one up with your colleagues. Get a team together or we will find one for you. Lots of fun and friendly competition. \$100 includes greens fees, golf cart, prizes and lunch tickets (golf club rental available).

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For more information about both events, visit www.asabe.org/foundation/index.html.