



Biological Systems Engineering

Engineering Update

Spring 2007

BSE Named a University Exemplary Department!

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*Visit BSE Specialist in
Seitz Hall*

Engineering Update Biological Systems Engineering March 2007



To: Extension Unit Directors, Extension District Directors, Extension Program Directors, and ANR Agents

Dear Co-Workers: Engineering Update is a joint effort of Biological Systems Engineering and other interested agents. Subject matter areas include timely information on water quality, natural resource management, TMDL, air emissions, animal waste management, machinery management, precision farming, application technology, farm safety, energy, engineering education, and technology. Please use this information in your on-going Extension programs and circulate to all Extension staff. Engineering Update is electronically accessible via the VCE Intranet World Wide Web site

(at <http://www.ext.vt.edu/vce/anr/bse/index.html>).



Virginia Cooperative Extension

A partnership of Virginia Tech and Virginia State University

www.ext.vt.edu



VIRGINIA STATE UNIVERSITY

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June 12 - Virginia Household Water Quality Program/Master Well Owner In-service

VCE Agents are invited to participate in the Virginia Household Water Quality Program/Master Well Owner In-service to be offered June 12 at the Northeast District Office in Richmond.

This day long (8:00 a.m. to 3:00 p.m.) program, patterned after the very successful Pennsylvania Master Well Owner Network, will include such topics as proper well location and construction, well-head protection, landuse and water quality impacts, use and management of spring and cis-

terns, drinking water standards, water testing and interpretation, water treatment, and water conservation. Topics will be taught through a training format of lecture, demonstration, lab, and group discussion.

Instructors will be Dr. Brian Benham, Extension Specialist, Virginia Tech; Julie Jordan, Biological Systems Engineering Water Quality Lab Manager, Virginia Tech; and Stephanie Clemmons, MWON Coordinator, Penn State University. Attendees will re-

ceive a 3" thick Master Well Owner three ring reference binder.

For additional programming information, contact **Dr. Brian Benham** brbenham@vt.edu, Biological Systems Engineering, Virginia Tech (540) 231-5705.

The ANR Office will provide lodging (location to be announced). Please respond to Debbie in the ANR Office dprice@vt.edu by May 14.

Planter/Drill Considerations for Conservation Tillage Systems

No-till planters and drills must be able to cut and handle residue, penetrate the soil to the proper seeding depth, and establish good seed-to-soil contact. Many different soil conditions can be present in the Mid-Atlantic region at planting time. Moist soils covered with residue, which may also be wet, can dominate during the late fall and early spring and occasionally, in the summer. Although this condition provides an ideal environment for seed germination, it can make it difficult to cut through the

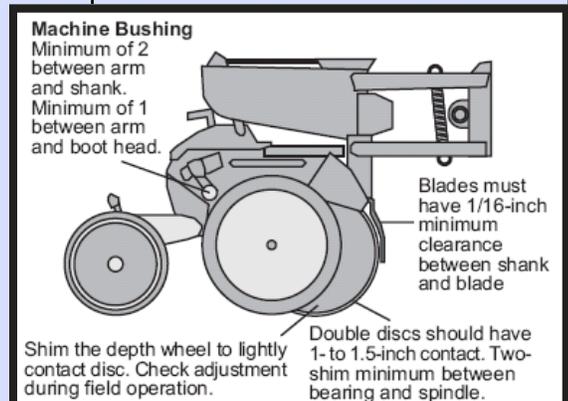
residue. In contrast, hard and dry conditions may also prevail. Although cutting residue is easier during dry conditions, it is more difficult to penetrate the hard, dry soils. Proper timing, equipment selection and adjustments, and crop management can overcome these difficult issues.

This new publication 442-457, "*Planter/Drill Considerations for Conservation Tillage Sys-*

tems," has been posted to the VCE public website at:

<http://www.ext.vt.edu/pubs/bse/442-457/442-457.html>

PDF format: <http://www.ext.vt.edu/pubs/bse/442-457/442-457.pdf>



Ethanol Fuels -Myths and Facts

In spite of the outstanding track record of ethanol for our economy, our environment and our energy supply, some myths still exist—and those who oppose the growth of renewable fuels many times resurrect these myths in an attempt to discredit the ethanol industry.

MYTH: *Ethanol raises the cost of gasoline.*

FACT: While many predicted that the switch from MTBE to ethanol would increase the price at the pump, the fact is that there has been no negative impact on gasoline supplies or the cost per gallon of gasoline. Ethanol is less expensive than other oxygenates and octane enhancers. In fact, ethanol is also less expensive than ordinary gasoline.

The net effect of blending ethanol with gasoline is actually a product that costs less—and that has been proven as oil prices have escalated of late. A May 2005 report by the Consumer Federation of America notes that drivers everywhere should be saving as much as eight cents per gallon if petroleum marketers would simply blend ethanol into more gasoline.

MYTH: *Ethanol actually adds to air pollution.*

FACT: Because ethanol is inherently cleaner than gasoline, it emits less hydrocarbons, nitrogen oxides, carbon monoxide and hydrogen. Ethanol reduces carbon monoxide emissions by as much as 25 percent—and less carbon monoxide helps reduce ozone formation and helps reduce levels of greenhouse gases.

According to EPA, gasoline is the largest source of manmade carcinogens. Ethanol reduces overall toxic pollution by diluting harmful compounds found in gasoline such as benzene and other aromatics.

MYTH: *Ethanol will harm car and truck engines.*

FACT: Every major automobile manufacturer approves the use of ethanol blends up to 10 percent (E-10 Unleaded) under warranty. In fact, many auto manufacturers go so far as to recommend the use of clean, renewable fuels such as E-10 Unleaded. Cars built since the 1970s are fully compatible with E-10 Unleaded.

In addition, ethanol in gasoline:

- Adds oxygen to the fuel, thereby raising the air/fuel ratio for more complete combustion;
- Eliminates the need and expense of adding a gas line antifreeze, since the ethanol in the gasoline absorbs more water than a small bottle of isopropyl;
- Prevents burning of engine valves because ethanol burns cooler than gasoline;
- Prevents build-up of olefins in fuel injectors, thus keeping the fuel system cleaner.

MYTH: *Ethanol takes more energy to produce than it contributes.*

FACT: In June 2004, the U.S. Department of Agriculture updated its 2002 analysis of the issue and determined that the net energy balance of ethanol production is 1.67 to 1. For every 100 BTUs of energy used to make ethanol, 167 BTUs of ethanol is produced. In 2002, USDA had concluded that the ratio was 1.35 to 1. The USDA findings have been confirmed by additional studies conducted by the University of Nebraska and Argonne National Laboratory.

These figures take into account the energy required to plant, grow and harvest the corn—as well as the energy required to manufacture and distribute the ethanol. The net energy balance of ethanol production continues to improve because ethanol production is becoming more efficient. For example, one bushel of corn now yields 2.8 gallons of ethanol—up from 2.5 gallons just a few years ago.

MYTH: *Ethanol contributes to global warming*

FACT: Because the energy balance of ethanol production is positive (1.67 to 1), greenhouse gas benefits are also positive. The Argonne National Laboratory has demonstrated that using ethanol produces 32 percent fewer emissions of greenhouse gases than gasoline for the same distance traveled.

Ethanol also reduces emissions of other harmful pollutants such as carbon monoxide—and it dilutes and displaces components of gasoline that produce toxic emissions.

According to a recent study by Smog Reyes: “Ethanol currently is the only compound that can be blended with gasoline to help reduce global warming...”

MYTH: *Ethanol production wastes corn that could be used to feed a hungry world.*

FACT: Wet mill ethanol production facilities are also known as corn refineries—and they also produce starch, corn sweeteners, and corn oil—all products that are used as food ingredients for human consumption. The corn used for ethanol production is field corn typically used to feed livestock. Ethanol production also results in the production of distillers grains and gluten feed—both of which are fed to livestock as well, helping produce high quality meat products for distribution domestically and abroad.

There is no shortage of corn. In 2004, U.S. farmers produced a record 11.8 billion bushel corn harvest—and some 1.4 billion bushels (about 13 percent) were used in ethanol production. In other words, there is still room to significantly grow the ethanol market without limiting the availability of corn. Steadily increasing average corn yields and the improved ability of other nations to grow corn also make it clear that ethanol production can continue to grow without affecting the food supply.

MYTH: *Ethanol does not benefit farmers.*

FACT: The ethanol industry opens a new market for corn growers, allowing them to enjoy greater profitability. Studies have shown that corn prices in areas near an ethanol plant tend to be five to 10 cents per bushel higher than in other areas. This additional income helps cut the costs of farm programs and helps add vitality to rural economies. And the additional profit potential for farmers created by ethanol production allows more farmers to stay in business—helping ensure adequate food suppliers in the future.

Ethanol production also creates jobs—many of them in rural communities where good jobs are hard to come by. A January 2005 study by LECG found that the ethanol industry powered the U.S. economy by creating more than 147,000 jobs, boosting U.S. household income by \$4.4 billion and reducing the U.S. trade deficit by \$5.1 billion by eliminating the need to import 143.3 million barrels of oil.

Safety Videos, Slide Sets, and Films

BSE has a loan library of safety presentation materials available on a short-term loan basis for educational programs. Users are required to pay return postage fees.

Following is a categorical listing of safety presentations currently available:

- ATV Safety
- Automobile Safety
- Bicycle Safety
- Chain Saw Safety
- Chemical & Pesticide Safety
- Electrical Safety
- Falls
- Fire Safety

- General Farm Safety
- Gun Safety
- Home Safety
- Garden, & Landscaping
- Spraying Systems
- Tool & Shop Safety
- Tractors & Machinery
- Water & Recreation
- Wood Stoves
- Miscellaneous

Descriptions are found at:
<http://www.ext.vt.edu/vce/anr/bse/farmsafety/videos.html>

To request: Phone (540) 231-6809, Fax (540) 231-3199 or
E-mail: tlcox@vt.edu

May 15, 2007 Arthritis Summit

On Friday, May 11th, The Virginia Arthritis Action Coalition will be hosting its second Annual Arthritis Summit: Living Well With Arthritis-You Can!, at the Marriott West Hotel Innsbrook, in Richmond. This summit offers a forum for up-to-date information and practices about arthritis, the most common chronic condition in America among older adults. The summit will offer two tracks, health care professionals and lay health care, recognizing that much of chronic care is in the hands of the family and friends of people who have many of the more than 100 conditions that fall under the umbrella of "arthritis."

PLANS

In response to numerous requests, building and facility plans are now available for download from the Virginia Cooperative Extension (VCE) Intranet. Plans are categorized under five main categories: Forage Storage and Feeding, Grain Handling and Feeding, Beef, Horse, and Sheep. You will need Adobe Acrobat to download these files. For the building and facility plans, as well as additional resources, please visit:

<http://www.ext.vt.edu/vce/anr/bse/index.html>

Calculator Helps Users Gauge Heart Attack Risk Related

A new online heart disease risk calculator that can help you understand and gauge your heart attack risk is available.

The risk calculator asks several questions about your lifestyle and health and then determines your 10-year risk of a heart attack. The risk score is based on a number of factors, such as age, gender, tobacco use, cholesterol levels, and blood pressure.

You can find the risk calculator by heading to MayoClinic.com and looking under "Heart Disease Risk Factors," in the Web site's Heart Disease Center. Direct link is: <http://mayoclinic.com/health/heart-disease-risk/HB00047>

About one in 10 people with a risk level of 12 percent will have a heart attack or die of heart disease within the next 10 years.

Here are five heart disease prevention tips:

- Don't smoke or use tobacco products.
- Get exercise. Regular, moderately vigorous physical activity can reduce the risk of fatal heart disease by 25 percent. Combining physical activity with other positive lifestyle habits, such as maintaining a healthy weight, can provide even more heart health benefits.

- Eat a heart-healthy diet that includes plenty of fruits, vegetables, whole grains, and low-fat dairy products. Legumes, low-fat sources of protein and certain types of fish may also help reduce heart disease risk. Limit intake of saturated fats and trans fat.
- Watch your weight. Excess pounds can lead to conditions -- high blood pressure, high cholesterol and diabetes -- that increase the risk of heart disease.
- Get regular blood pressure and cholesterol screenings. High blood pressure and high cholesterol can damage your cardiovascular system, including your heart.

Setting Planters and Drills for the Season

When the weather and time are right for planting, producers should be in the field planting, not getting equipment ready and making last minute repairs.

In the shop. Read the owner's manual for suggested maintenance and lubricate as directed. Check the operation of the seed metering devices and replace worn parts. Adjust the seed metering devices using this year's seed to match seed size and shape. Check, adjust, and lubricate chains, sprockets, bearings, and fittings. Replace worn ones. Adjust or replace the seed-furrow opener disks and other ground engaging components. Properly inflate all tires, including those on the tractor.

In the field before planting season. Set the toolbar and the hitch point at the proper height to match soil conditions. Level the planter from front-to-rear, slightly tail down to help with seed-to-soil contact. Blind plant (or use old seed) for a short distance to check operation: check residue cutting and handling, check penetration to desired seeding depth, evaluate seed-to-soil contact, and evaluate closing the seed-vee. Adjust down-pressure springs to improve residue cutting and seedbed penetration. Add weight as needed for the down-pressure springs to work against and to keep the drive wheels in firm contact with the ground to avoid slippage.

Adjustments may be needed as soil and residue conditions change. Continuously monitor planter performance and make adjustments as conditions dictate. Since the planter/drill system must handle and cut the residue, allow the residue to dry and

become crisp before planting. These conditions aid in the cutting and handling of the residue. The weight of the drill and pressure from the down-pressure springs are essential for cutting residue, penetrating the soil, and preventing seed openers from bouncing over residue. Most manufacturers suggest operating speeds of 6 to 10 mph. While this hinders accurate metering from fluted-meter devices, a higher operating speed assists in residue flow, especially for planter/drills equipped with a coulter caddie and/or a harrow.

In the field during planting season, especially when changing fields. Check residue cutting and handling. Leave more residue over the row as the weather warms up to reduce seedbed drying. Check planting depth and seed-to-soil contact. Back off on pressure in wet soils that are easily compacted. Slow down to improve seed placement uniformity. Check seed spacing for proper population. Adjust harrows on drills to redistribute residue and help close the seed-vee.

Check seed depth. Drill depth control surveys indicated a strong tendency to plant much deeper than intended. Only 20 percent of the producers were at or near the intended depth, and 68 percent of the fields were planted too deep. Excessive depth delayed germination and reduced stands. These same surveys found that producers are much more accurate with population rate than with planting depth.

Check for seeds on the ground. The closure and seed-to-soil contact device should be adjusted if seeds

are found on the soil surface.

Varying soil and residue conditions across the field. If depth control is insufficient due to soft soil conditions (sandy soils) or if residue amounts are changing, check to see if the manufacturer offers some additional down-pressure spring kits that activate more spring pressure as conditions dictate and less when the down pressure is not needed.

Check for hairpinning. When operating a planter/drill system in heavy residue, residue may be pushed in the seed furrow (hairpinning), reducing seed-to-soil contact and slowing or reducing germination. Make sure the cutting angle on the coulter is correct (coulter depth should not exceed one-third the coulter radius) and the cutting edge is sharp. Depending on the conditions, a smooth coulter may provide the needed cutting of residue better than a fluted coulter. The hairpin effect is minimized when seeding units operate on a firm soil, and when residue is dry and crisp. Simply waiting until a little later in the day, when residue is drier, may greatly improve the operation of the planter/drill system.

Erratic Operation. Any time the operation of the planter causes the metering unit to jerk, variable seed placement will occur. Adjust all elements of planter operation for smooth performance. Observe and adjust planting speed to match ground conditions.

VCE website at:

<http://www.ext.vt.edu/pubs/bse/442-457/442-457.html>

Regional Animal AgroSecurity Conference



EDEN Regional Animal Agrosecurity Conference, March 27-28, 2007

The issue: Extension professionals throughout the country recognize they need to better define their roles -- and the roles of other agencies and organizations -- before, during, and after an animal agrosecurity event. In addition, these roles will vary from state to state, so there is a need to help agencies and organizations to fully understand the capacity to which Extension can serve in this arena.

The Event: With support from the Cooperative State Research, Education, and Extension Service, the Extension Disaster Education Network (EDEN) is offering three regional conferences in 2007, focusing on animal agrosecurity. EDEN intends to hold an

additional three conferences in 2008, thus serving the entire continental U.S.

The Goals: By the end of a conference, attendees will be able to describe the roles of Extension and other agencies/organizations in an animal agrosecurity event within their region.

The Objectives: Conference attendees will be able to identify key roles and players in:

- Emergency and disaster management in an animal agrosecurity event
- Education during all phases of emergency and disaster management
- Partnership development within and across states
- Crisis communication related to an animal agrosecurity event
- State animal response team development
- Educational program and

material development/delivery for an animal agrosecurity event

The Hosts:

Northeast and Mid-Atlantic Region: Pennsylvania State University/University of Maryland -- in Grantville, PA March 27 & 28

<http://www.eden.lsu.edu/LearningOps/Workshops/AnimalAgroSecurity2007/Northeast/default.aspx>

Contact: Dave Filson (PA) Emergency Preparedness and Response Coordinator and Partnership Director Pennsylvania State University Cooperative Extension and Outreach, 401 Agricultural Administration Bldg University Park, PA 16802 ph: 814-863-6424 / fax: 814-863-7776 email: dfilson@psu.edu

About EDEN and this Website

The Extension Disaster Education Network (EDEN) is a collaborative multi-state effort by Extension Services across the country to improve the delivery of services to citizens affected by disasters.

This site serves primarily Extension agents and educators by providing them access to resources on disaster mitigation, preparedness, response, and recovery that will enhance their short- and long-term programming efforts. It includes a password-protected "Intranet" section, where internal working documents are shared among the delegates. Learn more about the [Cooperative Extension System](#).

EDEN Site:

<http://www.eden.lsu.edu/>

vemaweb.org

Just a reminder that the 2007 Virginia Emergency Management Conference

“Shaping Our Destiny”

will be held in Williamsburg, April 17th - 20th.

Looking forward to seeing everyone there!



Web Site Catalog

News & Features

[View All Articles](#)

Severe Weather Information Available

Abigail Borron

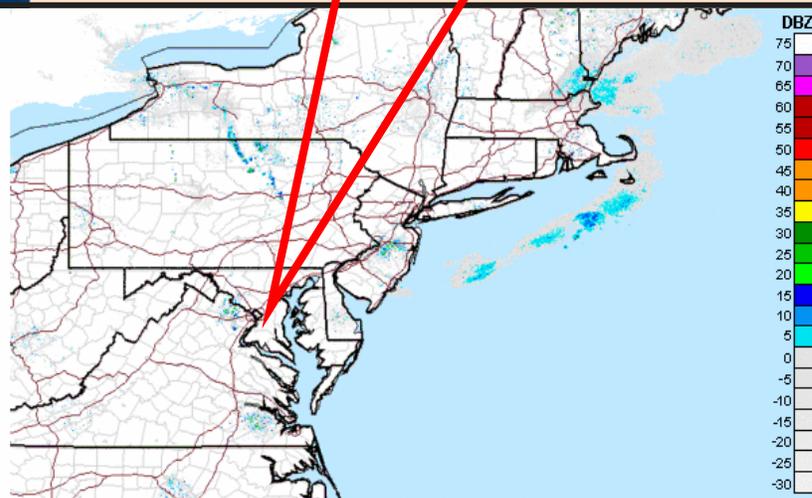
June 06, 2006

[Tom Priddy](#), EDEN POC for the University of Kentucky, has made available nationwide severe weather Web pages. By organizing information from the National Weather Service and the Storm Prediction Center, Priddy has made it possible for you to easily access real time severe weather information for your state.

The Web page is available at:

<http://www.wagwx.ca.uky.edu/radar/Severeweather.html>

Feel free to place this link on your Web pages where appropriate and helpful.





Applying knowledge to improve water quality

Mid-Atlantic
Regional Water Program
A Partnership of USDA CSREES
& Land Grant Colleges and Universities

http://www.mawaterquality.org/themes/ma_compost_school.htm

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The Mid-Atlantic Better Composting School

Composting is becoming the method of choice for converting organic waste into a marketable product - Commercial Compost. If horticultural industries and home gardeners are to accept commercial compost as they do fertilizers, processed animal manures and peatmoss, the compost must be produced under controlled conditions employing methods deemed acceptable by the industry.

Horticultural industries include nurseries, greenhouses, landscape contractors, garden centers, and landscape maintenance companies. Such service providers are major users of organic matter and fertilizers. Since commercial compost can be manufactured from a variety of waste materials, a variety of standards have been established based on end uses. Managers of composting facilities must be familiar with these standards and with the waste materials and composting systems that can best produce the desired products.

Composting to produce a product that is consistent in quality will require good management and quality control. School participants will learn the basics of making good compost. They will tour commercial operations. They will perform product sampling and learn simple procedures for compost testing. Participants will become better composters.



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Agritourism for Kids-Safety Guidelines

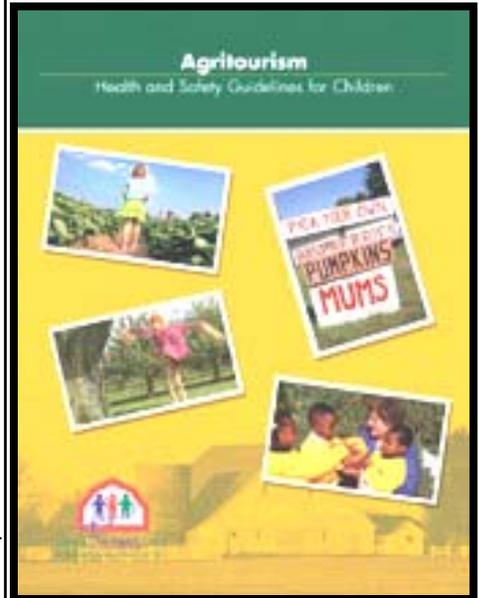
"*Agritourism: Health and Safety Guidelines for Children*" is a new, user-friendly resource written for agritourism operators large and small, and for long-term operations as well as farmers who might host a one-time event.

The full-color, 37-page guidelines booklet was published by the National Children's Center for Rural and Agricultural Health and Safety, a program of the National Farm Medicine Center at Marshfield Clinic Research Foundation. The project was funded by the National Institute for Occupational Safety and Health.

The booklet includes tips on identifying and reducing hazards found on farms, such as those involving animals, water, machinery and hygiene. Convenient checklists help owners implement recommendations before visits by agritourists.

The guidelines are available at www.marshfieldclinic.org/agritourism. or direct link to the PDF booklet: <http://www.marshfieldclinic.org/nfmc/Pages/Proxy.aspx?Content=MCRF-Centers-NFMC-nccrahs-keyprojects-AgritourismHSGuidelines.1.pdf> If you would like a printed booklet, please contact the National Children's Center at

1-800-662-6900, or if you have any specific questions contact Tammy Ellis (ellis.tammy@mcrf.mfldclin.edu).



Perceptions of Youth Risk and Safety Education

In the October 2006 issue of the *Journal of Extension*, Glen Arnold, Dee Jepsen, and Jason Hedrick report on "*Perceptions of Youth Risk and Safety Education: A Survey of Farm Safety Day Camp Participants and Their Parents.*"

The authors surveyed over 500 third-graders who had just attended a farm safety day camp. Most of these students also returned surveys from their parents. The children's survey addressed issues in the areas of

how much they were exposed to certain hazards, if they had ever experienced an injury, and if they were capable of following safety rules. The parents' survey examined the importance of the safety day camps and preferred topics. Questions on the parent survey provided a check on children's responses.

The study showed that students were capable of self-reporting their exposure rate and that they are capable of following safety rules over 90% of the

time. A large majority of parents described the program as beneficial and reported that they preferred general safety topics over farm-specific topics.

Farm safety day camps are a widely used tool for safety education. This report reinforces the value of these camps for both children and parents and should be of interest to anyone involved with these camps.

(link: <http://www.joe.org/joe/2006october/rb3.shtml>)

Three Simple Exercises that can Prevent Falls

Are getting older? Maintaining your independence? For now, your balance is good. You want to keep it that way to avoid falls and broken bones.

Balance exercises can help, but they are not for everyone. This is especially true if you have severe balance problems or certain orthopedic conditions. Talk with your doctor before you get started if you are uncertain whether you should do them.

Try doing the three balance exercises at least once a day. For all exercises, hold on to a table, wall, heavy chair or kitchen countertop with one hand when you start. When you are certain of your balance, try balancing yourself by placing only a fingertip on the surface. If you are unsteady or uncomfortable, ask someone to stand by to assist.

Forward leg lift

- Lift one leg slightly off the floor and hold it for five seconds.
- Repeat at least five times, and then switch to the other leg.

- Next try the exercise without holding on at all, arms at your sides.
- Once you do not need to hold on, try doing these exercises with your eyes closed.

Forward toe touch

- Place your feet about shoulder-width apart. Raise your hands to your shoulders with your palms facing forward.
- Extend your right arm and place your left foot forward, pointing down with your toes and touching the floor.
- Return to starting position and do the same with the opposite arm and foot. Re-

peat at least five times.

Stand on one leg

- Place your feet about shoulder-width apart. Extend your arms straight in front of you.
- Lift your left leg and bend it back. Hold for five seconds.
- Repeat five times and switch legs.
- As you improve, practice one-leg standing throughout the day. For example, stand on one leg while you are doing the dishes, reading the newspaper or watching TV. The more you do it, the more you will improve your stability.



Visit our website:
<http://www.bse.vt.edu>

Agricultural & Environmental Innovations Galore in the Valley

On February 22nd, the **Waste Solutions Forum** sponsored the "Innovative Environmental Technologies Symposium" at the Rockingham County Fairgrounds in Harrisonburg, VA. The symposium focused on cost effective nutrient solutions for economic viability, optimum agronomic use, and the future of agriculture in the Valley. The event was led by Kathy Holm of Shenandoah RC&D, and Eric Bendfeldt of VCE.

Turnout was impressive with around 250 people braving the windy day. Folks from all over came to learn more about innovative solutions for agricultural problems. The majority of the audience was local Valley farmers, but there was also significant turnout from industry leaders, local entrepreneurs, public agencies, and even a large group of students from the Massanutten Regional Governors School for Integrated Environmental Science and Technology.

The all day event began with a general session in the morning with speakers discussing emerging trends and concerns relevant to all aspects of agri-



culture. After lunch, two breakout sessions were held one focusing on the poultry industry, and the other on the dairy industry. **Dr. Foster Agblevor (BSE)** kicked off the poultry session with a description of the conversion of poultry litter to value-added resources through pyrolysis. Between sessions participants interacted with thirty vendors and exhibitors, each promoting their programs and products related to innovative environmental technologies. Attendees also had the opportunity to learn of even more innovative research efforts during the poster sessions, about 1/3 of which were submitted from BSE and VCE.

So now what? Well, the **Waste Solutions Forum** has worked with diverse groups to identify nutrient management priorities for the Valley area, and through this most recent symposium, has spread the word to Valley framers on new technologies to assist in the efficient utilization of agricultural byproducts. Now, through a variety of efforts and grants, work is already underway to begin implementing several pilot projects to test these innovative technologies on Valley farms. For more information please contact **John Ignosh** (jignosh@vt.edu)

Making a good impression - on the phone

An excellent telephone manner can make a person seem more professional, friendly, and outgoing; poor phone skills can cost you.

Do you like what you hear?

Hearing ourselves speak on an audio-tape or on a video recording can be quite a shock. You can improve your voice and technique by recording yourself and paying attention to your tone, inflection, articulation, and mood. It is a good idea to practice until you sound natural, clear, enthusiastic, calm, confident, cheerful, and in control.

Be prepared: Preparation and planning are essential for ensuring that the important telephone call is a success. To do so, focus on what you want from the call, plan what you are going to say,

prepare your paperwork, and relax.

More telephone tips: The following are some additional suggestions that may improve your telephone skills:

- Stand up while talking; this assists with breathing
- Talk with a 'smile' in your voice
- Prepare a confident opening to your conversation
- Say what you need to say, but don't talk too much
- Be reasonably persistent if barriers are put in your way
- Take the hint if you are getting nowhere
- Always sound confident but polite
- Check understanding to ensure the person knows what you mean
- Be alert to the other person's responses
- Actively listen to what is said

- Avoid a distracting environment (for example, try not to have the children running around)
- Try to remember names and voices for the next time you ring
- Have a short script in case you encounter voicemail or answering machines
- Don't 'ummm' and 'ahhh'
- Be clear and concise, especially if you leave a contact number; a garbled message may mean no response
- Keep secretaries and receptionists on your side

Security note: When you make the call, be prepared to identify who you are and the purpose for your call; research organizations are often security-conscious and may screen calls.

New dairy housing plans

A new book, Penn State Housing Plans for Milking and Special-Needs Cows, provides dairy producers the information they need to plan new housing facilities that will result in improved productivity for milking and special needs cows, as well as for those that care for them. The publication is an update and expansion of plans contained in Penn State Dairy Housing Plans: Freestall, Heifer, Dry Cow, and Maternity, which was published in 1997.

The new plans emphasize greater cow comfort, which translates to increased longevity and productivity. According to the authors, field observations resulting from improvements reflected in the new plans indicate that the greater productivity of both cow and worker more than offsets the added investments.

The 100-page coil-bound book includes 13 idea plans for freestall dairy cow shelters, 11

plans for housing special needs cows, and eight plans showing building component details, such as floor surfaces, feed barriers, watering locations, freestalls, curtain sidewalls, and ventilation openings. More information: <http://www.nraes.org/publications/nraes200.html>

Ordering NREAS Publications: <http://www.ext.vt.edu/vce/publications/nraes.html>

GPS Receivers Dynamic Accuracy

Accuracy on the Move

The American Society of Agricultural and Biological Engineers (ASABE) announced an effort to develop a standard on the dynamic accuracy of GPS equipment used in precision agriculture. In unveiling Project X587, Assessment and Reporting of GPS Receiver Dynamic Accuracy, in its October 2006 newsletter, the Society states: "GPS receivers are used in many agricultural field operations. There are standards in place to guide assess-

ment of the static accuracy of GPS receivers, but static performance is not always indicative of the performance when the receiver is used dynamically."

The ASABE seeks to develop such dynamic accuracy standards to enable evaluation of moving GPS units. Farmers spend thousands of dollars on mobile, high-precision GPS units that are components of tractor guidance systems, variable-rate application equipment, and crop-yield monitoring equipment. The proposed

standards will provide prospective purchasers with a benchmark to compare the specifications of units for accuracy.

Current specifications assume that GPS units that monitor satellite signals five times per second deliver greater positional accuracy than units that monitor the signals one time per second. The proposed ASABE standards will provide a more definitive measurement on the way GPS units must function on moving vehicles.

Bioenergy Engineering Education Program (BEEP)

As energy prices continue to rise and environmental concerns grow, there is more interest in developing bio-based energy as an alternative energy source to partially replace our reliance on imported fossil fuels. Biological Systems Engineering (BSE) Extension Specialists have received many inquiries about bioenergy related issues from extension agents, farmers, industry, and general public. In response to those inquiries, BSE Extension Specialists (Arogo, Wen and Ignosh) have developed a Bioenergy Engineering Education Program (BEEP). The goal of BEEP is to develop and disseminate fundamental knowledge about bioenergy and bioenergy utilization focusing on bioethanol, biodiesel, biogas, pyrolysis, gasification, and combustion to interested Virginians. .

Arogo and Wen initiated BEEP in November 2006. To date they have conducted BEEP workshops at two locations: Appomattox county and Charlottesville during the VCE annual conference. About 30 to 40 people attended each of these workshops. Feedback has been very positive. Other BEEP workshops are planned for Cumberland County on **March 8, 2007**; April/May at a location (TBD) in Northern Virginia; and May/June in Franklin Co for the Southwest/Central VCE districts. Plans for the Northern Virginia and Southwest/Central workshops have not been finalized.

Stress in the Agricultural Workplace

Striking a balance between working and living.

Work-related stress gets the best of all of us at times. But for America's agricultural producers, suggestions to "leave it at the office" don't quite have the intended impact.

When a producer shares the same work and home address, it's tough to walk away from job stress - especially when work duties often require 24-hour attention seven days a week. As such, it's critical for farmers to anticipate stress triggers and treat them in an appropriate manner.

Different people have different thresholds of stress. If you can identify your stress triggers and change your thinking or physically reduce that stress, then you're much

better off.

The nature of stress for agricultural producers is exacerbated by the many factors that are out of the producer's control. Long days, unpredictable weather, changing commodity prices and equipment repairs can trigger stress.

Balance is possible, by controlling three key areas in your life and work.

First, control the events in your life as much as possible. Do not let work pile up, and plan ahead for equipment and staffing issues. Second, control your attitude to the stress. Is it really that bad? And third, control your response to the stress.

Don't give in to impulsive decisions, and embrace an activity to reduce

the stress. A hobby, a relationship or a physical activity can separate you from the stress, literally or figuratively.

Recognize that some stress is good, as it improves performance and efficiency. It's imperative to assess your personality when determining your level of stress. For example, fleeing the stress of the agricultural workplace can actually backfire for some people, who may then feel they've lost control of day-to-day operations.

Check your stress indicators at:



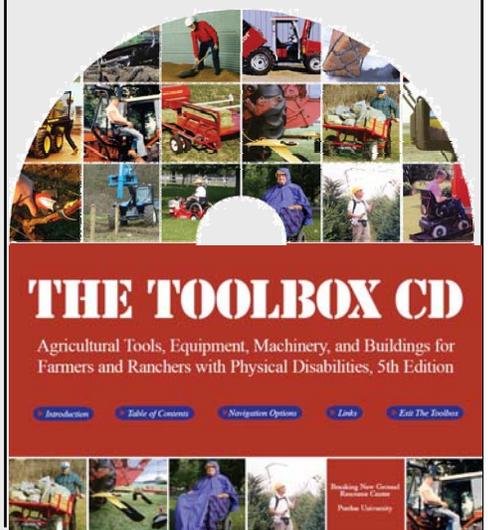
<http://mayoclinic.com/health/stress-assessment/SR00029>

AT-Toolbox CD Mailing to Virginia Cooperative Extension Offices

In early March all Virginia Cooperative Extension offices throughout Virginia will receive a free copy of Breaking New Ground's (BNG) recently updated CD version of its Toolbox reference manual (Purdue University). This reference source is a unique compilation of assistive technol-

ogy/adaptations (AT) that have been used for a variety of situations in assisting farmers and ranchers throughout the U.S. With a grant from the NEC Foundation, BNG has made these available to AgrAbility Projects, at no cost to the Projects. These resources will be shipped to Extension offices throughout the U.S. Our thanks to BNG! Toolbox CD information available at:

<http://pasture.ecn.purdue.edu/~agenhtml/ABE/Extension/BNG/>



Visit our website:
<http://www.bse.vt.edu>

