

Environmental & Natural Resource Issues

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University of Kentucky • College of Agriculture
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New Fertilizer Technologies Can Improve Efficiency

Greg Schwab, UK Extension Soil Management Specialist

Fertilizer use efficiency is defined as the amount of applied fertilizer that is taken up by the crop. Research being conducted at the University of Kentucky and other Land Grant Institutions across the country is focusing on improving fertilizer use efficiency in large-scale crop production. Controlled release fertilizers are one of the newest options to help farmers improve efficiency. A new commercially available fertilizer product called ESN® is urea encapsulated by a very thin polyurethane membrane.



This plastic coating controls the release of the urea making it available exactly when the plant needs it. Once all of the fertilizer is released, the soil

microorganisms break down the polymer into carbon dioxide, nitrogen, and water.

This product has been used in the turf and vegetable markets for many years, but has been too expensive to use in production agriculture. Because of advances in plastic technology, manufacturers can now make it affordable enough for grain crop farmers to consider. Corn and wheat studies to determine the benefits of ESN® have been conducted for the past 4 years in Kentucky. For wheat, results indicate that there is a wider application window when using ESN compared to uncoated urea. In addition, apparent N losses to the environment have been less, especially on wetter soils. The corn studies have been less consistent; however, there is no reason to expect similar reduction in N loss potential.

Improving N use efficiency is a goal for farmers and environmentalists alike. For farmers, improved efficiency means that less fertilizer is needed to maximize profitability. For environmentalists, lower application rates and greater efficiency equates to a lower potential for groundwater contamination and lower nitrous oxide emissions from agriculture.

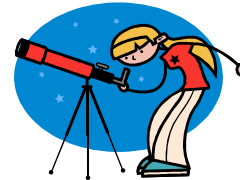
Surfing the ENRI Website

Are you in need of environmental or natural resource related information? Visit the ENRI website at www.ca.uky.edu/enri. Click on the *Agent and Educator Information* link to find information on air quality, the Kentucky Agriculture Water Quality Plan, water education including previous Kentucky Water Awareness Month packets, nutrient management, gardening, solid waste, and watershed information. Visit the *Publications* link and have a wealth of information on environmental health, water quality, solid waste, waste water, and more at the click of a button. Our *Links* page has numerous websites related to environmental and natural resource information including federal agencies, Kentucky agencies, Kentucky organizations, and much, much more. Looking for an event? Visit our *Upcoming Events* webpage to find events taking place throughout Kentucky related to environmental and natural resources. Have environmental information, a website, or current event you would like to see added to our webpage? Or can't find the information you need? Contact Ashley Osborne at ashley.osborne@uky.edu.



Save the Date ~ Upcoming Events

- The East Kentucky Science Center has a free **Star Party** each month. For more information on dates, times, and locations visit www.wedoscience.org or call (606) 889-0303.



- The **Kentucky Forest Leadership Program** (KFLP) is now accepting applications for the 2007 program. The residential camp will be held at the Kentucky Leadership Center in Jabez, June 5 through June 9. Students entering their junior or senior year of high school in the fall 2007 that have a sincere interest in natural resources are encouraged to apply. For more information contact Doug McLaren at dmclaren@uky.edu or (859) 257-2703.

"The things you will learn, see, and feel... The people you will meet – the whole program – will change your life and the way you feel about the forest."
~ Past KFLP Participant

- May is **Water Awareness Month!** For more information visit www.ca.uky.edu/enri/kwam.htm or contact Amanda A. Gumbert or Ashley Osborne at (859) 257-6094 or 2505.

- Celebrate **Earth Day** on April 22! For information on Earth Day visit www.ca.uky.edu/enri or contact Ashley Osborne at (859) 257-2505.



- National Environmental Education Week is April 15-27! For more information visit www.eeweek.org.

- The **Kentucky Water Resource Research Institute Annual Symposium** will be held at the Marriot's Griffin Gate Resort in Lexington on March 26. For more information contact Jim Kipp at kipp@uky.edu or (859) 257-1832.
- Celebrate agriculture during March! **National Agriculture Week** is March 18 through 24 and **National Agriculture Day** is March 21. Planning tools, lesson plans, and general information and facts are available at www.agday.org to help plan an event.
- The **2007 Kentucky Cooperative Extension Professional Development Conference** will be held February 6-9 at the Hyatt Regency Hotel in Lexington. For more information visit www.ca.uky.edu/conf/feb07.

News to Use and Ideas to Share

Bluegrass Regional Recycling Corporation Receives National Recycling Award

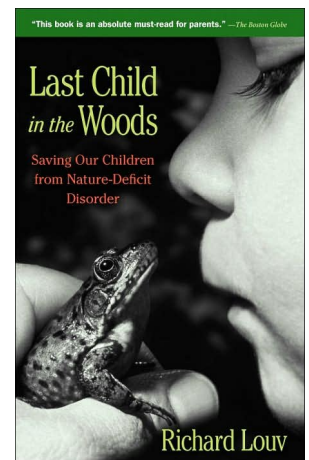
The Bluegrass Regional Recycling Corporation (BRRC) in Richmond, Kentucky won the 2006 AF&PA Business Leadership Recycling Award in the small business category. In 2005, BRRC collected 18,000 tons of paper for recycling. That's equivalent to saving approximately 306,000 trees and 126,000,000 gallons of water. For more information on BRRC visit their website at www.thebrrc.com. The American Forest and Paper Association (AF&PA) is currently accepting applications from individuals, businesses, schools, and communities that have outstanding paper recycling programs. Entries are due by February 16. For more information or to apply visit www.paperrecycles.org.

Did you know...enough paper is thrown away each year to construct a twelve foot wall from New York to California!

Last Child in the Woods – Saving Our Children from Nature Deficit Disorder by Richard Louv,
Algonquin Books of Chapel Hill (2005)

Book Review by Douglas McLaren, UK Cooperative Extension Specialist in Forestry

Natural resource educators continuously discuss the frustration of providing youngsters of all age's quality opportunities to explore the natural world. After reading Richard Louv's book, a natural resource educator will find many of the reasons for this frustration. Numerous quotes of "nature deficit" youngsters are threaded throughout the book.



Book review continued...

Many of these student's comments can make the best natural resource educator stop in their tracks having to ponder the next step in an educational opportunity. The best of these comments appears within the first few pages of the book. A fourth grader's statement as to how he related to nature was both honest and at the same time hard for a natural resources educator to imagine, "I like to play indoors better, 'cause that's where all the electrical outlets are."

Louv contrasts all this with baby boomer reflections and comments about the enjoyment that he had in nature while growing up. Many explain in very vivid description of their younger years spending countless hours in the outdoors. Not because they were instructed to, it was simply the place to be. Countless commentaries in this book of the baby boomers make you realize that they seemed content and very comfortable in the fields, streams and woods they explored. It seems that the youth of today find the out of doors as strange as many older adults find using and depending on instant text messaging, computer usage and ipods.

Page after page of Louv's book highlights issues in today's world and how our youth are not only using the outdoors in a limited fashion but also how adults and parents are limiting the use of the "great outdoors" for children's educational opportunities. The book comments on how we as adults have limited the use of a youngster's senses while even traveling in a moving vehicle by providing

headphones and DVD players. A child's mind is not even allowed while traveling to imagine how being "out there" could be a greater adventure than that on the DVD. We even travel hundreds of miles with the windows up to eliminate or mask the sense of smell that the outdoors provide.

One segment of the book that best explains, for me, how valuable being out doors can be is revealed in the segment entitled, "Schoolhouse in a Tree". The author admits that he was not a good baseball player while growing up but one heck of a tree house architect. For boys growing up in the 50's a tree house was a task that all enjoyed. Reflecting back on the projects of his youth he realized how the building of this tree house in a real tree provided by nature was actually a lesson on life. You learned dimensions and strengths of lumber and the art of bracing for the floors of the tree house. While you foraged among old nails and screws on your father's work bench you realized which would be of the most value for each segment of the project. You learned about geometry and trigonometry through the use of ladders and the pitch of a roof line. Handsaws and hammers diverse uses became evident. And lastly, you learned how the size of your body related to the real world when learning to climb the rungs on a ladder, climbing on the limbs of the tree and the first attempted jump from the finished tree house porch to the ground.

The book reflects how our world of natural resource education is changing in an ever-changing world. The time devoted to the reading is well spent.

UK Ag Student Studies Merits of Environmentally Beneficial Concrete*

*This recent UK College of Agriculture news release by Amiee Nielson provides information about a new paving method. For more information contact Steve Workman, 859-257-3000, ext. 105 or Joe Luck, 859-257-3000, ext. 234.



Paved surfaces are so commonplace that many people don't think about how they affect the environment. A University of Kentucky College of Agriculture graduate student is studying how a form of porous, or "pervious," concrete could benefit rural and urban areas.

"A lot of farmers use concrete on their property and they get a lot of runoff," said Joe Luck, graduate student in UK's biosystems and agricultural engineering department. "Pervious concrete could provide a durable surface for animals and equipment but also reduce runoff. And the neat thing about this (research) is, I think it could lead into using a product like pervious concrete to help remove some of those nutrients and pathogens before they get off the facility and get into the natural environment and cause some type of pollution."

Taking several microbiology courses and seeing the effects of pollutants on the environment prompted Luck's desire to study using pervious concrete as a way to protect the environment.

Luck, from Hanson, is working on his master's degree under the direction of UK Bioenvironmental Engineering Professor Stephen Workman, who believes pervious concrete could be beneficial in urban settings as well.

"In light of the recent storm water problems in Lexington, this type

of material would be great for parking lots and it allows water to go through rather than run off," he said. "As far as agricultural applications, one of the key things is we don't want to have nutrients leaving the farm. If we can have nutrients residing on top of the concrete and the liquid going through and being treated as it moves through, it will increase water quality."

Pervious concrete is porous and has more voids (small holes) than impervious surfaces, allowing water to naturally move through it. Yet, it provides a durable surface capable of supporting livestock – even cars in a parking lot.

Luck and Workman's research is in conjunction with the Kentucky Ready Mix Association, Steve Higgins in BAE and Mark Coyne in the UK Department of Plant and Soil Sciences.

Recently the Portland Cement Association chose Luck to receive one of only six educational fellowships awarded by the association's education foundation. The \$20,000 award helped Luck purchase materials to further his research and begin to publish the results.

"My goal is to maybe provide a new way of treating effluent from animal confinement facilities and animal operations, which we have a lot of in Kentucky," Luck said. "That's one of the major reasons for this research – to see if there may be a way for farmers and even large corporations to help reduce pollution."

Surfing the Internet

Test Your Water Sense

www.epa.gov/watersense/water/test.htm

Play this interactive game that requires Hydro, the water-efficiency hero to travel through water pipes, answering water-efficiency questions and steering clear of the water-wasting monsters.

Slow Food USA & Slow Food International

www.slowfoodusa.org & www.slowfood.com

According to the Slow Food Organization, the Slow Food Movement “was founded in 1989 to counteract fast food and fast life, the disappearance of local food traditions and people’s dwindling interest in the food they eat, where it comes from, how it tastes and how our food choices affect the rest of the world.”

What does the Slow Food Movement have to do with environmental issues? The Slow Food Movement supports purchasing foods that are in season and grown locally. By purchasing products that are seasonal and local, we reduce the amount of energy used during processing and transportation. For more information visit the links above.

arborday.org 2006 Hardiness Zone Map

www.arborday.org/media/zones.cfm

The National Arbor Day Foundation has released the new Hardiness Zone Map which includes data from 5,000 National Climatic Data Center cooperative stations across the United States. The site provides animated maps that show how hardiness zones have changed since 1990.

Since 1990 much of Kentucky has shifted from Zone 6 to Zone 7. This site is an excellent resource for individuals planning to plant trees as well as those interested in changes in climate and global warming.

Backyard Jungle

<http://pbskids.org/backyardjungle/>

Ever wonder what’s in your backyard? Backyard jungle is a kid-friendly website where users from all over the world can map real or imaginary backyards, share discoveries they have made, and load photographs and drawings. Backyard jungle is an opportunity to get youth to explore the outdoors and learn about the world around them.

About this newsletter... This newsletter is available on the World Wide Web in a PDF at <http://www.ca.uky.edu/enri/news.htm>. This newsletter is coordinated by Amanda Abnee Gumbert (amanda.gumbert@uky.edu) and Ashley Osborne (ashley.osborne@uky.edu), Extension Associates for Environmental and Natural Resource Issues.