

# BARC e-Update

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**BARC** is part of the USDA's Agricultural Research Service and encompasses programs at the Beltsville Agricultural Research Center; the U.S. National Arboretum in Washington, D.C.; and worksites in Chatsworth, New Jersey; Presque Isle, Maine; and McMinnville, Tennessee. BARC is the largest and most diversified agricultural research complex in the world. BARC's record of accomplishments and its ongoing programs have made it a world leader in agricultural research.

## Blowing Our Own Horn!

### SOIL PHYSICS AWARD WINNER



**Dr. Yakov Pachepsky** of our Environmental Microbial Safety Laboratory has been selected to receive the 2007 Don and Betty Kirkham Soil Physics Award. This highly prestigious international award is administered by the Soil Science Society of America and is designed to recognize a mid-career soil scientist who has made outstanding contributions in the areas of soil physics. Ten scientists from six countries have received this award in the period from 1998 to 2007.

### TECHNOLOGY TRANSFER ACTIVITIES

The Beltsville Area Technology Transfer Office reports that between October 1, 2006 and July 1, 2007, nine CRADAs (Cooperative Research and Development Agreements) and 172 Material Transfer Agreements were established. A

CRADA provides a mechanism for companies to utilize and commercialize BARC research by supporting continuing research on an idea. This support has generated more than \$1,800,000 in direct funds to BARC and more than \$2,000,000 of in-kind contributions. This promotes significant progress in research and accelerates the process of moving new technologies from the research arena to the public use arena. BARC scientists who established new CRADAs during this time frame are Neil Talbott and Tom Caperna, Biotechnology and Germplasm Laboratory; Margaret Pooler, Floral and Nursery Plants Research Unit; Joseph Urban and Richard Anderson, Diet, Genomics and Immunology Laboratory; Cathleen Hapeman, Environmental Management and By-Product Utilization Laboratory; Daniel Shelton, Environmental Microbial Safety Laboratory; Kuanglin Chao and Kim Moon, Food Safety Laboratory. The Agricultural Research Service also lists technologies that are available, nationwide, for licensing or further cooperative research partnering. The list may be found at: <http://www.ars.usda.gov/business/availtechs.htm>

## Community Interest...

### UPPER BEAVERDAM CREEK CLEANEST IN ANACOSTIA WATERSHED

Upper Beaverdam Creek on the BARC-East campus has the cleanest water of any Anacostia River sub-watershed, according to **Dr. Harriette L. Phelps**, Professor Emeritus, University of the District of Columbia. Throughout the Anacostia watershed, she employs "active biomonitoring" with Asiatic clams (*Corbicula fluminea*). The clams are collected from the Potomac River at a site below the Woodrow Wilson Bridge, placed in mesh bags, and positioned in Anacostia sites for 2-3 weeks. Pollutants are concentrated from the water by the clams without dying, hence the term "active biomonitoring." The levels of EPA priority pollutants and seven metals are then determined by laboratory analysis and compared to controls.

The excellent health of Upper Beaverdam Creek made it a great candidate for the successful river herring transplantation

event reported in the April and June issues of the E-Update. The healthful condition of the watershed is evident also by the quality of bird watching. According to BARC scientists, the area is very good for bird watching due to the combination of fields, forests, and wetlands and many relatively uncommon species for central Maryland have been seen here.

The clean water is largely the result of excellent watershed management by BARC. The Center has an Integrated Pest Management (IPM) program that uses less toxic chemicals in minimal amounts, spraying only in specific fields that reach a pest-level threshold that would cause harm to crops. Last year, BARC was recognized for its responsible nutrient management practices by the EPA's Businesses for the Bay program, as reported in the 2006 e-Update. (Contact: Mr. Dave Prevar at [dave.prevar@ars.usda.gov](mailto:dave.prevar@ars.usda.gov))

## DEVELOPING INNOVATIVE REMOTE SENSING TOOLS FOR WETLAND ASSESSMENT

BARC scientists doing research on the Choptank River Watershed Project on the eastern shore of Maryland have now expanded this project to include wetlands assessment. With assistance from the National Resources Conservation Service the goal of this Wetland Conservation Effects Assessment Project (Wetland CEAP) is to synergistically combine information gained from individual wetlands with landscape scale measurements derived from remotely sensed images. This will enable assessment of the impacts of wetland alteration on ecosystem functioning in adjacent streams and the ability of wetlands to improve water quality in the Choptank River and ultimately the Chesapeake Bay. Remotely sensed data, particularly space borne RADAR and airborne LIDAR, and geographic information systems provide unique means to study and monitor wetland services, especially those related to hydrology. This interdisciplinary, collaborative project is a test-bed for new landscape scale tools and techniques and will serve as a prototype for regional and, ultimately, a national decision support system that can be used to assist the adaptive management of wetland restoration and enhancement programs.



Research to date has demonstrated that the intensity of the LIDAR signals can be used to reveal significant surface flow pathways between Delmarva bays, which are generally considered to be isolated wetlands, and intermittent streams. The recent identification of these "landscape connections" is timely as it has the potential to inform the wetland regulation debate (e.g., the impact of the "significant nexus" concept on the jurisdiction of the Clean Water Act) ongoing within the federal government. Project findings will be used to assess and improve the effectiveness of conservation practices and Farm Bill programs affecting wetlands and associated lands on the Maryland and Delaware Coastal Plain. For additional information contact **Dr. Greg McCarty** of our Hydrology and Remote Sensing Laboratory ([greg.mccarty@ars.usda.gov](mailto:greg.mccarty@ars.usda.gov)).

## BEEPETH – A TOOL FOR HONEY BEE COLONY COLLAPSE DISORDER

Beepath, a gene panel used to measure honey bee disease responses, was developed in 2006 by BARC scientist **Dr. Jay Evans** using data collected during the honey bee genome project. Dr. Evans is with our Bee Research Laboratory. The panel uses real-time PCR, a technology widely adopted for determining the activity levels of genes in organisms of medical or agricultural importance. Recently, this panel was updated to cover a wide range of genes useful in identifying and managing the sources of bee losses. The panel now assesses immune gene responses, levels of genes implicated in chemical stress, and activity level of all known bee pathogens. This improved panel is being used by BARC scientists to survey bees tied to "Colony Collapse Disorder", a widespread phenomenon whereby adult bees vanish from bee colonies at unusually high rates. (Contact: [Jay.Evans@ars.usda.gov](mailto:Jay.Evans@ars.usda.gov))

### Mark Your Calendar!

#### BELTSVILLE AREA DISTINGUISHED LECTURE SERIES

*This seminar is open to the public*



**Dr. Otto Doering**, Professor of Agricultural Economics, Purdue University

**Date:** Wednesday, **October 17, 2007**

**Time:** 10:30 a.m. - 11:30 a.m.

**Place:** Building 003 Auditorium, BARC-West

**Title:** "From Biofuels to the Agricultural Landscape: Where Are We Headed?"

#### BELTSVILLE AREA DISTINGUISHED LECTURE SERIES

*This seminar is open to the public*



**Dr. Pedro A. Sanchez**, Director, Tropical Agriculture and Rural Environment Program, The Earth Institute at Columbia University

**Date:** Wednesday, **October 24, 2007**

**Time:** 1:30 p.m. - 2:30 p.m.

**Place:** Building 003 Auditorium, BARC-West

**Title:** "The African Green Revolution, Millenium Villages and Food Aid"

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