

# SPECTRUM

**TODAY'S EDITION**  
See page 3 for  
information on  
outreach initiative  
with Halifax County.

Virginia  
Tech  
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

<http://www.spectrum.vt.edu>

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## Zahm, Eyre to speak at fall Commencement exercises

By Susan Dickerson

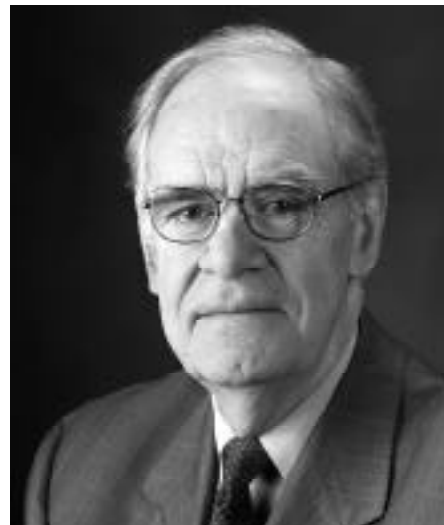
Professors Diane Zahm and Peter Eyre will be the keynote speakers at the university's fall 2004 Commencement ceremonies.

Zahm, associate professor of urban affairs and planning in the College of Architecture and Urban Studies, will be the keynote speaker at the fall 2004 Undergraduate Commencement ceremony. Eyre, former dean of the Virginia-Maryland College of Veterinary Medicine (VMRCVM) and professor in the department of biomedical sciences and pathobiology, will be the keynote speaker for the fall 2004 Graduate School Commencement ceremony.

Zahm's experiences include conducting crime prevention through environmental-design training for a variety of communities



ZAHM



EYRE

and organizations; providing technical assistance and consulting services to several architectural firms; and publishing, *Designing Safer Communities: A Crime Prevention Through Environmental Design Handbook*. The Urban Land Institute recently published her paper, "Why Protecting the Public Health, Safety and General Welfare Won't Protect Us From Crime."

Zahm was the 1993 recipient of the G. Paul Sylvestre Award, given by the U.S. Department of Justice, Bureau of Justice Statistics, for outstanding achievement in advancing criminal-justice statistics. In 2004, she was selected to give the Robert DeVoursney Lecture on Crime and Violence Prevention at the University of Virginia Department of Urban and Environmental Planning. She also was the recipient of the

(See COMMENCEMENT on 4)

## NSF grant funds study of plants' defense mechanisms

By Sally Harris

Humans and animals have a "fight-or-flight" response to danger, but plants can't flee. They originally had a built-in defense system to protect them from bugs and injuries, but humans cultivated some plants to serve humans' needs; and now some plants can't flee or fight. So costly pesticides that are sometimes harmful to the environment now defend the plants from the same things they used to be able to fight on their own.

Asim Esen, professor in the Department of Biology in the College of Science, and David R. Bevan, professor in the Department of Biochemistry in the College of Agriculture and Life Sciences, have received a \$711,000 grant from the National Science Foundation to study, over four years, the specific interaction between an enzyme and another protein, both of which are believed to be involved in helping plants defend themselves against pests.

"If we can understand how the plant defense system works, we can optimize it in such a way that plants can defend themselves without using pesticides," Esen said. "Plants have been around for millions of years and defended themselves before chemical pesticides."

However, because of selection of plant traits by humans, some plants can't even propagate themselves now. Eight thousand years ago, maize, or corn, could both defend itself and drop seeds to grow a new generation. But as humans selected for the cob and the ear, they made it impossible for the seed to get out and disperse itself; so maize now can't sustain itself. "We mutilated it," Esen said. "It can't survive on its own."

However, maize can still defend itself. Esen and Bevan are looking at the way its

(See NSF on 3)

## Next issue to be last for *Spectrum*

As first announced earlier this semester, *Spectrum* will cease publication following the Dec. 17 issue.

The printed publication is being replaced by Virginia Tech News, a daily, multi-media news-and-information service that will keep all members of the university community informed with up-to-the-minute campus news and notices.

Archived copies of *Spectrum* for recent years will still be available at <http://scholar.lib.vt.edu/vtpubs/spectrum/>. Campus departments which have published inserts in *Spectrum* will still have the capability to produce their printed publications through Printing Services.

All new stories will be archived at <http://vtnews.vt.edu/archives.php>.

The Virginia Tech News website, which has been on line since September, is located off the Virginia Tech News homepage. The site is

also linked from the Blacksburg Electronic Village website, for the convenience of Blacksburg residents, including university retirees, who use the site.

Larry Hincker, associate vice president for University Relations, said the electronic news service offers in-depth up-to-date information to faculty and staff members and students. The Virginia Tech News website features news stories, campus notices, photographs, and the university calendar. News stories include major administrative initiatives, educational programs, research projects and the many accomplishments of faculty and staff members and students. Retirees, alumni, parents and anyone who has an interest in Virginia Tech can now maintain daily contact with events and developments at the university

Campus notices include a wide range of campus-specific information, such as parking

(See SPECTRUM on 3)

## Murch associate director for Research Program Development

By Barbara Micale

Randall S. Murch has been named associate director for research program development at Virginia Tech, effective December 6.

Murch, who will be based at Tech's National Capital Region in Alexandria, will be responsible for strategic planning, and initiating and fostering research relationships between federal, state and local agencies and Virginia Tech departments and centers that focus on life science and bio-security. He will also work closely with The Institute for Genomic Research (TIGR), which recently formed a strategic partnership with Virginia Tech.

Murch joins Virginia Tech from the Institute for Defense Analyses, a leading federally funded research-and-development center, where he has served for two years as director of the Technology Discovery and Insertion Group and as a research staff member and study leader for the organization's Science and Technology Division. He has been responsible for planning and conducting complex, high-impact studies and analyses for intelligence, defense and homeland-security community sponsors.

His professional career includes 23 years of extensive experience in investigations, as well as research, development and applied science and engineering programs at the FBI. He began his career as a field agent, and advanced throughout his career in positions of increasing responsibility and authority. His most recent position, before retiring in 2002, was deputy director of the Investigative Technology Division, responsible for almost 800 personnel, four departments, 19 units, a \$650-million budget, all tactical systems for

(See MURCH on 3)



**TUBA EXUBERANCE** The Marching Virginians tuba line enthusiastically performs the *Hokey Pokey* at last Saturday's game with the University of Virginia. (M.Kiernan)

# ACTIVITIES

(Editor's note: For timely and expanded events information, go to the Virginia Tech Events Calendar at <http://www.calendar.vt.edu/main.php>.)

## EVENTS

### Friday, 3

**Theatre Arts Premiere**, 8 p.m., Squires Haymarket Theatre: *God Favors the Predator*.

### Saturday, 4

**Football**, 1 p.m.: At Miami.  
**Chamber Music**, 8 p.m., Squires Recital Salon.  
**Theatre Arts Premiere**, 8 p.m., Squires Haymarket Theatre: *God Favors the Predator*.

### Sunday, 5

**Chamber Music**, 3 p.m., Squires Recital Salon.  
**Theatre Arts Premiere**, 3 p.m., Squires Haymarket Theatre: *God Favors the Predator*.

### Monday, 6

**VTU Program**, 7:30 p.m., Burruss auditorium: "Fiddler on the Roof."

**University Council**, 3 to 5 p.m., 1045 Pamplin.  
**Academy of Teaching Excellence Dossier Workshop**, 3 to 5 p.m., 1810 Litton Reaves.  
**Theatre Arts Premiere**, 8 p.m., Squires Haymarket Theatre: *God Favors the Predator*.

### Tuesday, 7

**Faculty Senate**, 7 p.m., 129 McBryde.

### Wednesday, 8

**Classes End.**  
**Hanukkah Begins.**  
**"With Good Reason,"** 7:30 p.m., WVTF.

### Thursday, 9

**Reading Day.**  
**Project Success Information Luncheon**, noon to 1 p.m., Donaldson Brown Alumni Hall.

### Friday, 10

**Exams Begin.**

### Wednesday, 15

**Hanukkah Ends.**  
**"With Good Reason,"** 7:30 p.m., WVTF.

### Thursday, 16

**Pay Date for Faculty and Staff Members.**  
**Exams End.**  
**Staff Senate**, noon, 1810 Litton Reaves.

### Friday, 17

**Fall Commencement**, 11 a.m., Cassell Coliseum.  
**Graduate Commencement**, 3 p.m., Cassell Coliseum.  
**International Student Graduation Reception**, noon to 1:30 p.m. (graduate students) and 1 to 2:30 p.m. (undergraduate students), Cranwell Center.

## SEMINARS

### Friday, 3

**MCBB**, 12:20 to 1:10 p.m., 102 Fralin: Gregory Ordway, University of Mississippi Medical Center.  
**Geosciences**, 3:30 p.m., 4069 Derring: Susan Kidwell, University of Chicago.

## BULLETINS

### Project Success Information Luncheon set

The Center for Academic Enrichment and Excellence will hold its next Project Success Information Luncheon on Reading Day, Thursday, Dec. 9 from noon to 1 p.m. at the Alumni Hall in the Donaldson Brown Hotel and Conference Center.

The luncheon is aimed at providing current Project Success students and facilitators an opportunity to share their thoughts about Project Success with others in the hope of encouraging our guests to consider joining the program this spring as co-facilitators. It will also provide a chance for those interested in getting involved in Project Success to ask questions about the program.

Project Success is a semester-long program that assists probationary students in improving their academic performance by enhancing skills such as time management and study skills and by learning more about themselves and the university.

Faculty and staff members, administrators, and graduate students are recruited each semester to serve as co-facilitators for the student groups. Former PS students also serve as peer facilitators to provide the student's perspective. Training is provided so that the facilitators will feel comfortable in their role. For those who work with Project Success outside of their regular work responsibilities, there is a \$250 stipend available for the semester's participation.

Those who plan to attend should RSVP to [elaine@vt.edu](mailto:elaine@vt.edu) by Friday, Dec. 3.

Those who are interested in the program, but cannot attend the luncheon, may also get involved in Project Success. More information, as well as an on-line facilitator application, is available at <http://www.cae.vt.edu/programs/projectsuccess.html>.

### Basketball parking information detailed

The next home basketball game is Saturday, Dec. 4. For weekend games these three lots (Coliseum lot, Track/Field House lot, and Tennis Court lot) will be restricted the day before the game to no parking after 5:30 p.m. and all vehicles must be removed from these lots by mid-night or be subject to towing. Signs will be posted at the entrance to the three effected lots the day before the game.

Public parking for home games will be located in Litton-Reaves lot, the Stadium lot, and in the large fenced resident parking lot off Duck Pond Drive. Those attending the games should park in the large section of the cage closest to the Duck Pond. Handicap parking will be available in Coliseum lot. Public RV's must park in the Duck Pond lot.

For more information, call Parking Services at 1-3200 or go to [www.parking.vt.edu](http://www.parking.vt.edu); after regular business hours, contact the University Police Department at 1-6411.

### Dossier Workshop scheduled

The Academy of Teaching Excellence will host a Teaching Dossier Workshop on Monday Dec. 6, from 3 to 5

p.m. in 1810 Litton Reaves. The workshop covers preparation of dossiers for several teaching awards, including the Alumni Award for Excellence in Teaching, the W.E. Wine Award for Excellence in Teaching, and the college-level Certificate of Teaching Excellence (in some colleges).

Dossier guidelines will be explained with recommendations on how best to present information related to teaching. Members of teaching-excellence committees, department representatives, and potential nominees are encouraged to attend. Bud Brown (a past chair of the academy) will organize the workshop.

For more information, contact Rick Fell at [rfell@vt.edu](mailto:rfell@vt.edu).

### Lane Stadium demolition begins

Demolition of the Lane Stadium press box and west concourse has begun and is expected to last approximately 45 days. To meet the overall project schedule, demolition activities are planned from 6 a.m. until 6 p.m., Monday through Saturday. The schedule may be adjusted at the work progresses.

There is no blasting associated with the demolition work, but the removal of the structures will likely produce some noise. Noise-generating activities will be minimized as much as possible to avoid disturbing faculty and staff members and students, especially before and during semester exams. The demolition work will also result in increased truck traffic along Spring Road and Southgate Drive. Members of the campus community should avoid traveling on these roads over the next few weeks whenever possible.

For more information, contact Jim McCoy, director, Capital Design and Construction Department at 1-6449.

### Blackboard Upgrade scheduled

During this winter break Online Course Systems will upgrade Blackboard to its new release 6.2.3. The Blackboard vendor has resolved the issues previously discovered in the software which caused a delay to the summer upgrade. The upgrade will begin Sunday, Dec. 19 and end on Jan. 9, 2005.

The new version of Blackboard (6.2.3) will be available Jan. 10 for spring 2005. Transition items such as handouts, documentation, tutorial, and a schedule of "What's New in Blackboard" workshops will be available the week before spring semester begins (Jan 10 through 14) and during the month of December. The schedule is available at [https://www.fdi.vt.edu/public/login.php?term\\_pk1=1682](https://www.fdi.vt.edu/public/login.php?term_pk1=1682).

For more information, contact [ocs@vt.edu](mailto:ocs@vt.edu).

### Certified-public-managers society formed

The Department of Human Resource Management in Richmond has established a new Virginia Certified Public Managers Program (VACPM). The VACPM is a broad-based management-development program providing public professionals with training to maximize the effectiveness of government organizations. As part of a national consortium, the

certificate program offers practitioner-oriented course work that builds upon management-training programs offered through agencies, colleges, and universities. This curriculum uses the foundation of theory and applies it to practical problems facing the participants, their agency/department, and the state. At the completion of each program level, participants have developed practical applications relevant to advancing the mission and objectives of the organizations.

The 300-hour program consists of sequential levels of instruction in management theory and practice. The course work is highly interactive and is delivered primarily through classroom training, distance learning, and online instruction. Additional program hours include project completion, self-study, and electives. Those who complete the program will earn the national designation of certified public manager.

Recently the Virginia Society of Certified Public Managers has been formed and the society has been accepted as a member of the American Academy of Certified Public Managers. Anyone interested in learning more about this new and exciting program may contact Sam Camden at [scamden@vt.edu](mailto:scamden@vt.edu) or call 1-4281.

### Catering sales workshop to be held

University instructors will host a two-and-a-half day interactive workshop covering an array of topics regarding successful selling in today's market.

The workshop, designed for catering professionals who want to update their skills and knowledge to better sell in today's market, will be held Feb. 7 through 9 at the Donaldson Brown Hotel and Conference Center. Registration is \$395 and will be accepted until Jan. 25, 2005.

Howard Feiertag and Stuart Feigenbaum of the Department of Hospitality and Tourism Management in the Pamplin College of Business will instruct individuals on how to achieve success in the modern economy through educational presentations, discussions and exercises on the skills necessary for success.

For more information, go to <http://www.conted.vt.edu/catering/>, or contact Sharon Scott at 1-5567 or e-mail [scottsg@vt.edu](mailto:scottsg@vt.edu).

### Housing Office offers help

The Off Campus Housing Office at Virginia Tech currently has a program designed to help new and visiting faculty/staff members find permanent and short-term housing in the New River Valley Area. This program also provides an outlet for faculty and staff members to advertise housing availability or housing needs. The program was designed to make the rental process easier for faculty and staff members.

For more information about the Faculty and staff program, visit website [www.vtoch.uusa.vt.edu](http://www.vtoch.uusa.vt.edu), call 1-3346, or e-mail [vtoch@vt.edu](mailto:vtoch@vt.edu).

# University to launch new outreach initiative with Halifax County

By Susan B. Felker

Virginia Tech and Halifax County, have announced plans to begin a new research-based outreach initiative relating to science, technology, engineering, and mathematics (STEM). Carole C. Inge, who formerly managed Longwood University's National Institute for Technology Policy and Research, will direct the Halifax outreach program.

This program, which will be based at the new Riverstone Technology Park west of South Boston on Route 58, will be designed to stimulate economic development, produce content for the broadband Internet service that is coming to Halifax County, and academic programs at the Southern Virginia Higher Education Center. It will also reinforce the Halifax County school system's STEM education efforts.

## MURCH

Continued from 1

the FBI, engineering support and training for all 56 field offices, and liaison with other U.S. government and friendly foreign agencies. In addition, Murch created and structured programs and sought and acquired start-up or substantial increases in funding to advance research, development, test, evaluation and acquisition of new technologies. He also served in the FBI Laboratory as a forensic biologist, research scientist, department head and deputy director. From 1999-2001, he was detailed to the Defense Threat Reduction Agency, Department of Defense, where he led an advanced-study group which performed or directed a number of innovative efforts to seek new approaches to reducing the threat of weapons of mass destruction, including through the proliferation of biological weapons, biological warfare and bioterrorism.

Murch's experience in bioterrorism includes initiating and developing the FBI's leadership role in bioterrorism planning and response beginning with the 1996 Olympic Games in Atlanta and creating the FBI's Hazardous Materials Response Unit, the nation's focal point for the forensic investigation of crimes and terrorism involving biological, chemical, radiological and nuclear weapons from which a federal interagency consortium has been established. He is also a recognized leader and co-founder of the field of microbial forensics.

"Dr. Murch, with his extensive research and program-development experience in the life sciences and biosecurity, will be an outstanding partner for many of our faculty members across the university and an able

William Fitzgerald, chairman of the Halifax County Board of Supervisors, made public a grant of up to \$180,000 from the county to Virginia Tech to provide support for the university's first year of outreach operations in South Boston. "We are looking forward to many years of partnership," Fitzgerald said. "We have been impressed by Virginia Tech's contributions to Southside Virginia through the Institute for Advanced Learning and Research in Danville and invited the state's largest research university to join us in building the local economy in Halifax County."

John E. Dooley, vice provost for outreach and international affairs, said the university will work to enhance the capacity of STEM education in the region and will be seeking partnerships toward that end. "This is a research-driven initiative," Dooley said. "We will use

advocate for the expertise the university offers the nation," said Brad Fenwick, Virginia Tech's vice president for research. "He has demonstrated significant leadership during more than two decades with the FBI and is recognized for his service to several academic societies and government agencies."

Fenwick also said Murch is the first member of a growing agency-relations staff.

"We welcome Dr. Murch to our staff in the National Capital Region as we move forward with our mission to establish Virginia Tech's presence here in the metropolitan area and further enhance our research capabilities, particularly in the life sciences and biosecurity," said Jim Bohland, director of operations for the National Capital Region.

Murch earned a B.S. degree from the University of Puget Sound, Tacoma, Washington, an M.S. from the University of Hawaii, Honolulu, and a Ph.D. from the University of Illinois, Champaign-Urbana.

## NSF

Continued from 1

defense mechanism works. Young maize—the young seedlings and any growing tissues and organs—has two enzymes that help protect against insect attacks. Beta-glucosidases reside in the plastid of the maize cells, and their substrate DIMBOA-glucoside resides in the vacuole part of the cell. Usually, the two do not meet each other in an intact cell. However, when an insect starts gnawing at the young maize, it breaks the compartments. The enzyme beta-glucosidase breaks the DIMBOA-glucoside down into glucose and DIMBOA, and the DIMBOA is toxic to insects. However, 14 of 463 inbred lines of maize tested in a study seemed to lack the enzyme. They are called NULL.

Using spectrophotometric detection, Esen and Bevan found that all the NULL lines actually did have active beta-glucosidase, but the enzyme became aggregated and could not be extracted efficiently. From this discovery, the scientists knew the enzyme was there, but something was keeping it in the large aggregate.

our resources, including faculty expertise, for the economic and social well-being of this community."

The new outreach program will involve partnering with economic-development and industrial-development authorities to identify new STEM career-education areas, building STEM-related research initiatives between Southside businesses and Virginia Tech faculty members, and disseminating this information regionally, statewide, and nationally. Educating under-represented groups about career opportunities and educational requirements for relevant jobs will follow. Virginia Tech will also foster relationships with Southside industries to provide custom programs and continuing education for professionals, thereby increasing local support from outreach for research and instruction.

"While we have weathered the worst of the job losses in our area during the last several

## SPECTRUM

Continued from 1

notices, Personnel Services announcements, event reminders and various administrative policies or updates. The university community is encouraged to submit notices for inclusion in campus notices. All approved Virginia Tech-affiliated organizations may post calendar items to the university calendar.

The university will continue to send emergency e-mail and voicemail messages in the event that an urgent message needs to be conveyed to students, the faculty and staff, or the entire university community.

Members of the campus community who find a daily reminder highlighting each day's major headlines and announcements useful may subscribe to the Virginia Tech News Daily e-mail.

The researchers then found that the cause of aggregation was another protein, the beta-glucosidase aggregating factor (BGAF), which NULL lines produced in excess. They isolated BGAF and proved its aggregating activity.

The scientists found that BGAF was a hybrid protein with two distinct regions or domains, a disease-response region and a carbohydrate-binding region (lectin). In nature, the two occur as separate proteins, but in all the grass species studied so far, they were fused, probably millions of years ago in the ancestors of the grasses. Such things usually happen as accidents (mutations), and, if advantageous, they get selected and passed to future generations. Surfaces of cells have glycoproteins that lectins recognize by their carbohydrate portion and bind to it. The BGAF's lectin region is similar to lectins that recognize mannose sugar. Esen and Bevan hypothesized that one of the functions of BGAF is in defense when foreign cells such as bacteria, fungus, or viruses try to enter the cell. BGAF probably binds foreign cells, marks them, and

years and unemployment has come down from a high of 12.6 percent to 8.3 percent in only nine months, we still have a lot of work to do," said Delegate Clarke Hogan. "This cooperative venture between the broadband initiative, Riverstone Technology Park, and Virginia Tech is part of the answer and I'm very excited about this effort."

Ben Davenport, a business leader from Southside Virginia who serves as rector of Virginia Tech's Board of Visitors, told the audience "we must look to new models for improving the land-grant university's service to society in a changing world. We see our collaboration with Halifax County as a way to strengthen Virginia Tech's leadership role in the transfer of knowledge and expertise between the university and Southside Virginia to the benefit of both, and to support research and outreach activities that have potential for community and regional transformation."

To subscribe to the daily e-mail service, send an e-mail to [listserv@listserv.vt.edu](mailto:listserv@listserv.vt.edu) and write in the body of the message, "subscribe VTnews firstname lastname" ('firstname lastname' is the name of the person subscribing to the service). Information how to unsubscribe is posted on the bottom of each daily message.

University Relations will maintain the website and distribute the daily e-mail. Questions and comments may be sent to [VTnews@vt.edu](mailto:VTnews@vt.edu).

Recognizing that there are campus departments with employees who do not have daily access to e-mail, University Relations will produce a printed weekly summary which will be distributed to these departments. The university is also involved in a campus-wide effort to make employee access to computers more readily available.

recruits other components of the defense system to eventually arrest the development of the foreign elements and kill them. So the beta-glucosidase-BGAF aggregate is involved in defense, Esen said, and behaves much like a football team that surrounds the ball carrier and keeps him from moving.

The researchers' project is to understand the interaction between beta-glucosidase and BGAF—how they recognize each other and bind so tightly. Thus far, they have evidence of three genes that make BGAF, but they need to find out which one, which part of the molecule, is recognized. They will do that through genetic engineering—changing the gene for BGAF, producing the protein in bacteria and yeast, and then testing it with the enzyme.

The ultimate goal is to provide evidence of the biological function of the binding and aggregation, understand the defense system, and produce plants that can once again defend themselves—to re-engineer the plants in an artificial setting to enable them to do what they could originally do: survive on their own.



VIRGINIA POLYTECHNIC INSTITUTE  
AND STATE UNIVERSITY

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## EMPLOYMENT

For more information on all faculty and classified-staff positions, see [www.jobs.vt.edu](http://www.jobs.vt.edu).

### INSTRUCTIONAL

**Computer Science. Open Rank Tenure Track Faculty Position. Digital Animation/Graphics.**

**Civil/Environmental Engineering. Assistant/Associate/Professor in Transportation and Infrastructure Systems Engineering Program. (3 tenure-track positions).**

**Marion duPont Scott Equine Medical Center. Leesburg. Clinical Instructor or Clinical Assistant Professor or Clinical Associate Professor in Equine Lameness. (non-tenure track).**

**Marion duPont Scott Equine Medical Center. Leesburg. Open Rank. Instructional Faculty. Tenure track position.**

### NON-INSTRUCTIONAL

**Virginia Bioinformatics Research Center. Software/Web Developer.**

**Virginia Bioinformatics Institute. Visualization Software Development Manager.**

**Virginia Bioinformatics Institute. Web-Service Development Manager.**

**Reynolds Homestead. Director of Reynolds Homestead.**

**Central District Cooperative Extension. Extension Agent. 4-H Youth Development. Lunenburg County.**

**Northern District Cooperative Extension. Extension Agent. Horticulture. Arlington County.**

## IN OTHER NEWS

# Researchers create free, downloadable software radio-design tool

By Liz Crumbley

The Mobile and Portable Radio Research Group (MPRG) in the Bradley Department of Electrical and Computer Engineering has developed the fundamental software for use in designing software radios and is offering this tool free to other wireless communications researchers throughout the world.

"The tool available on the Virginia Tech website already has been downloaded by numerous companies and universities from around the world," said Jeffrey Reed, professor of electrical and computer engineering and deputy director of the MPRG.

"Software radio technology is today where personal-computer technology was in the 1970s," said Max Robert, the MPRG post-doctoral fellow who led development of the new tool, "OSSIE" (Open-Source Software Communication Architecture Implementation: Embedded).

Software radios can be any devices that use wireless radio-frequency transmission and

reception for communications—including cell phones, walkie-talkies, televisions, AM-FM radios, cordless phones, garage-door openers, radar, satellites, shortwave radios, pagers and GPS (global positioning systems), to name a few.

Currently, radios of all kinds perform their signal processing—transmitting and receiving—based on dedicated hardware. A combination TV/AM-FM radio operates with two separate radios, one to receive television broadcasts and the other to receive radio broadcasts. Similarly, a combination garage-door/car-door opener has to be constructed with two distinct transmitters.

This dependence on dedicated hardware limits the function of a radio. For example, a fire chief using a walkie-talkie to contact the walkie-talkie carried by a policeman in a burning building has to hope that the two devices have the same type of dedicated hardware.

Using a software radio, the fire chief could simply load in software designed to communicate with the policeman's device. This transition

would be possible if the signal-processing capability were defined by software, rather than by dedicated hardware. In addition, the fire chief's software radio could communicate with a variety of other devices, such as cell phones.

The concept of software radios has been especially attractive to the U.S. Department of Defense, which years ago established the Joint Tactical Radio System (JTRS) to create general-purpose hardware that can operate as software-defined radios.

This is where MPRG's OSSIE comes into play. OSSIE is an operating environment, or software framework, that is compatible with the JTRS military hardware and is written in C++, a computer-programming language commonly used by wireless researchers. OSSIE is an environment within which software radios can be programmed and can operate.

MPRG's Robert and a team of graduate students first developed OSSIE as a tool for a

software-radio research project sponsored by the Office of the Director of the Central Intelligence Agency. Robert and Reed soon realized that other researchers could use OSSIE in their development of software radios. They also realized that pooling software with other researchers would add to a collective knowledge base for the creation of a variety of working software radios.

MPRG has made OSSIE an open-source tool, which means that researchers can download it free and, in turn, are responsible for sharing their findings at no charge with other researchers.

"Offering OSSIE as an open-source tool over the Internet will speed up growth of the technology and make faster innovations possible," Robert said. "This will benefit all wireless researchers who are working to develop software radios."

Researchers can download OSSIE from the Virginia Tech MPRG website at <http://www.mprg.org/research/ossie>.

# Tech agricultural scientists work to protect soybean crop

By Mary Ann H. Johnson

Virginia Tech agricultural scientists are taking additional steps in the plan to protect Virginia's soybean crop from major yield reductions caused by Asian soybean rust, an aggressive fungal disease.

"Soybean rust has not been detected in Virginia," said David Holshouser, soybean agronomist at the Tidewater Agricultural Research and Extension Center at Suffolk.

The plan was put into action because the U.S. Department of Agriculture's Animal and Plant Inspection Service (APHIS) announced in November that the disease had been identified in Louisiana.

Soybeans are an important agricultural product. It is the largest row crop in the state, and this year, Virginia soybean producers are harvesting 490,000 acres with an average yield of 36 bushels per acre. Production is expected

to total 17.6 million bushels, up 8 percent from last year. The crop's farm gate value has ranged from \$75 million to \$100 million annually. This year the farm gate value should be in the range of \$80 million.

Virginia soybean producers became concerned about the devastation caused by the disease in Brazil where it now infests more than 90 percent of the soybean crop. The Virginia Soybean Rust Task Force prepared a Virginia Response and Action Plan last summer, said Jim Riddell, Virginia Cooperative Extension associate director for Agriculture and Natural Resources. The task force includes representatives from the Virginia Department of Agriculture and Consumer Services, Virginia Soybean Association and Board, Virginia Farm Bureau Federation, Virginia Crop Production Association, Farm Credit, and the USDA Risk Management Agency as well as Virginia Tech.

During the 2004 growing season, Virginia Tech used funding from the Virginia Soybean Board to conduct an extensive monitoring program. Fields throughout most of Virginia's soybean production region were scouted on a biweekly basis from June through September, and soybean rust was not detected. The 2004 soybean crop has already matured and is being harvested.

"To continue to protect Virginia soybean producers, Virginia Tech conducted in-depth training in September for more than 80 'first detectors,' who are the eyes and ears of a monitoring program," said plant pathologist Erik Stromberg, interim head of the

university's Department of Plant Pathology, Physiology, and Weed Science. These "first detectors" are Virginia Cooperative Extension agents, certified crop advisers, crop consultants, and other agronomists.

"The chance of soybean rust spreading to Virginia in 2005 will depend on whether or not the fungus is found in other areas of the United States, and whether it will survive the winter in those locations," Holshouser said.

It is currently thought that the fungus would over-winter on alternative hosts (such as kudzu, and winter vetch) in southern Florida or Texas. Unless the fungus is found in those areas, it would have to be reintroduced from South America or the Caribbean Basin before it could affect Virginia.

Stromberg said the state has applied for an emergency Section 18 pesticide label for several fungicides to control soybean rust. These plus three currently available fungicides can be used during 2005 if soybean rust is detected in Virginia or threatens Virginia's soybean production.

Researchers also are working to develop soybean cultivars that are resistant to the Asian rust, but fungicides will be the primary line of defense until resistant cultivars become available.

"Our action plan describes our educational goals, our pre- and post-confirmation communication plan, and how Virginia will respond once rust is confirmed in Virginia or other parts of the United States," Holshouser said.

"Virginia soybean growers need to stay informed about this potential problem," Holshouser said. If any growers suspect that there is rust, they should contact the local Virginia Cooperative Extension agriculture-and-natural-resources agent or a certified crop adviser. That person will take a sample of the suspected area to the nearest Virginia Diagnostic Center. If experts at the diagnostic center suspect rust, the sample will go on to USDA-APHIS for confirmation.

"Unfortunately, these models indicate the Mid-Atlantic and southeastern states are at most risk," said Pat Phipps, plant pathologist at the Tidewater center. "Wind patterns, our warm and humid climate, and significant acreage of soybeans and other hosts make Virginia an ideal location for the disease to become established."

## COMMENCEMENT

Continued from 1

College of Architecture and Urban Studies Excellence in Teaching Award in 1999 and selected to give the annual Richmond Area Development Archives Lecture for the Virginia Commonwealth University Department of Urban Studies and Planning in 1995.

Eyre has been an academic leader and mission-builder at Virginia Tech and throughout the state for nearly 20 years. He served as dean of the Virginia-Maryland College of Veterinary Medicine (VMRCVM) for more than 18 years, where he took on curricular reform and established academic excellence in the 1980s, aided in the development of its clinical-service programs in the 1990s, and greatly expanded its research, master's and Ph.D. programs. Today, the college is a \$30-million enterprise.

Eyre also served as a professor in the department of biomedical sciences and pathobiology and has initiated many outreach partnerships with the natural-sciences program at Virginia Tech. He continues to assist the college in advancing its strategic initiatives, such as developing a formal relationship in public health with the University of Maryland School of Medicine in Baltimore. In addition, the college has established the Center for Comparative Oncology, which serves as a unifying resource for the 40 Virginia Tech professors engaged in cancer research.

Eyre has received numerous honors including being the recipient of the Norden Award for Distinguished Teaching, the Sigma Psi Award for Excellence in Research and the John N. Dalton award for distinguished service. The 2004 Virginia General Assembly issued a formal resolution of commendation to Eyre for his exemplary service to the state.

Eyre also presided over the creation of the College Park, Md.-based Center for Public and Corporate Veterinary Medicine, and is

credited with building strong working relationships with organized veterinary-medical associations, as well as guiding the development of the Marion duPont Scott Equine Medical Center in Leesburg. He served for several years on the Board of Directors of the Association of American Veterinary Colleges, serving as its president in 2003. He has worked on the American Veterinary Medical Association's Council on Government Relations and the Board of the American Academy of Veterinary Pharmacology and Therapeutics, and has been honored for outstanding leadership by the Public Relations Society of America, the Virginia Veterinary Medical Association and the Maryland Veterinary Medical Association.

Eyre is the recipient of more than \$1.3 million in research sponsorship and is the author of 205 refereed journal articles and 31 book chapters and monographs. He has personally advised 34 master's and Ph.D. students.

Commencement for undergraduate students will be held from 11 a.m. to 1 p.m. Friday, Dec. 17, in Cassell Coliseum. The Graduate School processional ceremony will follow from 3 to 5 p.m. in Cassell Coliseum.

