

Institute of
Agriculture
Accomplishments

Research Achievements

- Dr. Vince Pantalone is leading a nationwide effort to develop a healthier soybean. His team has mapped amino acids to specific molecular markers.

This has important implications for improving soybean protein for human and livestock nutrition.

- The potential to control nematodes, weeds and soil-borne pathogenic fungi with bio-based pesticide has been discovered through Dr. Carl Sams's research program. The product controls certain turf diseases that have developed resistance to commercial fungicides.

- Drs. Mentewab Ayalew and Neal Stewart reported in a recent issue of *Nature Biotechnology* the first use of a plant gene as an antibacterial marker. This discovery will alter research and production of genetically modified crops.

- 22 invention disclosures and 14 patent applications have been submitted by TAES through UTRF in the 14-month period beginning July 1, 2004

- Dr. Steve Oliver's research on disease factors causing mastitis in dairy cattle continues to bring national and world recognition to the Institute of Agriculture. Therapeutic strategies developed through this research have potential to reduce the incidence of mastitis by nearly 30 percent.

- Dr. John Wilkerson is leading an effort funded by USDA to reduce herbicide usage and lower agricultural production costs. By using precision agricultural technology, he is developing selective sprayer systems that make application “decisions” while in the field, using sensor inputs and intelligent controllers.

- Dr. Michael Davidson found that a natural occurring chemical compound in the spice fingerroot can be used to inhibit pathogen growth in foods.
- Drs. Mark Windham and Robert Trigiano have released Appalachian Joy and Missy Appalachian Morning, disease-resistant flowering dogwood cultivars

- Dr. Jaehoon Lee developed and evaluated a novel technique to simultaneously measure field hydraulic and chemical transport properties in multiple soil locations. The new method is between one-tenth and one-half the cost of current methods, while being 50 percent more accurate.

- Dr. Mark Radosevich has been named Executive Director of the Center for Biomarker Analysis. The Center, founded and led by UT Distinguished Scientist Dr. David White, uses various analytical tools to measure biomarker-molecules that serve as a signature of the health or structure of a microbial community.

- Dr. Barry Rouse is internationally highly regarded for his research on ocular inflammatory disease caused by herpes simplex, and for the development of a vaccine against herpes.

- Dr. Hildegard Schuller is a Distinguished Professor of Comparative Pathology who is highly regarded internationally for her research on the mechanisms of pulmonary and pancreatic carcinogenesis. She is the principal investigator of three active NIH grants.

Faculty Awards and Recognition

- Dr. Carl Sams received the Outstanding Graduate Educator Award from the American Society for Horticultural Science.
- Dr. Robert Henry served as the Chair of the Scientific Committee for the 12th International Congress on Plastination held in Spain.

- Dr. Lannett Edwards, Associate Professor, Animal Sciences, received the Chancellor's Professional Promise Citation in Research and Creative Achievement
- Dr. Jerome Grant, Professor, Entomology and Plant Pathology, received the Distinguished Achievement Award for Teaching by the Entomological Society of America

- The American Agricultural Economics Association presented its “Premier Forecaster Award” to Dr. Delton Gerloff. This award is given to the forecaster whose predictions were most accurate for the previous year

- Dr. Kim Jensen was appointed as a Board Member of the National Council on Food and Resource Economics

- Dr. Charles Faulkner served as President of the Southeastern Society of Parasitologists.
- Dr. John New received the Animal Welfare Award from the American Veterinary Medical Association.

Noteworthy Initiatives

- The Hyperbaric Oxygen Therapy Initiative with the TN Walking Horse Celebration was featured at this year's celebration
- Across the various sections of the Veterinary Teaching Hospital, the caseload increased from 10 to 22 percent over 2004 numbers.

- CVM Clinical Oncology service has implemented a Fax-based consultation service to better serve the practicing veterinarians of TN and beyond.

150 individualized consultation reports have been generated with a 24 hour turn-around time.

- Following the discovery of soybean rust in a number of southern states last year, Extension specialists became proactive in a program of surveillance for 2005. They led a massive effort to survey, at least weekly, 32 plots throughout the state during the growing season.

- The Pesticide Education Program, headed by Dr. Gene Burgess, has been a model for the introduction of fee-based programming. Last year, 1840 people received certification training and 5721 received recertification training. Many of these individuals received their live training via distance education.

- Dr. Mike Buschermohle has trained more than 630 row crop producers and grain storage managers with over 5.5 million bushels of storage capacity to implement IPM strategies to minimize grain quality losses from insects and molds in their on-farm storage systems.

- Marketing and pricing continue to be concerns for TN farmers. Several methods were used to teach marketing alternatives to producers. Dr. Delton Gerloff authored eight articles which appeared in several issues of the MidAmerica Farmer magazine. Dr. Emmitt Rawls and Dr. Gerloff wrote the weekly *Market Highlights* newsletter, which has a new, more usable format in response to clientele requests.

- In cooperation with TN Farm Bureau and IRS, one-day Federal Income Tax Seminars were conducted in seven locations to train 762 tax professionals who complete IRS returns. The participants prepared over one-half of the federal farm tax returns in TN

- Led by Dr. Hugh Savoy, the Soil Test Laboratory in Nashville underwent significant renovation in 2005, including enhancements to the lab's IT and analytical capabilities. TN agricultural producers will save in excess of \$10 million annually if they use fertilizer recommendations based upon the UT Soil Test Lab.

- **HABIT (Human-Animal Bond in TN)** continues to grow in service to the East TN region. There are more than 280 volunteers who utilized approximately 330 medically and behaviorally screened dogs, cats and rabbits – to make over 85,000 visits last year.

- The Departments of Agricultural Economics, Forestry Wildlife and Fisheries and Civil Engineering received federal line-item funding of \$1 million to develop the Natural Resource Policy Center

- Dr. Elizabeth Strand, Director of Veterinary Social Work, organized AniCare Child and AniCare Adult Certification Training in Knoxville. This training resulted in a new TN law that gave courts an option of requiring counseling for convicted animal abusers.

- The Extension livestock premise registration effort began in April in TN. The program is being led by the State Veterinarian's Office in partnership with Extension, the Farm Service Agency and the TN Farm Bureau. Extension is primarily responsible for education and information dissemination and assistance .

- Under a federally funded project, 112 acres of switchgrass has been planted on Tennessee soils to develop and recommend agronomic and economic production practices. Conversion techniques and environmental impacts of utilizing a biomass-derived fuel are being analyzed through research with Alabama Power and TVA as partners.

- TN Shapes Up is a successful state-wide program aimed at reversing the obesity trend in TN.

The focus is on healthy eating, physical activity and emotional eating and stresses.

- The Companion Animal Initiative of TN (CAIT) was created in January 2005. This is a statewide initiative of the CVM to reduce the state surplus of homeless cats and dogs by promoting humane education throughout the state to improve the lives of companion animals in TN.

- Parenting Apart: Effective Co-Parenting is a legislative-mandated program that has served more than 18,000 individuals since 2001 and generated \$500,000 as a fee-based program. Participants reduce behaviors that put children at risk, use new skills to communicate and 75 percent continue to use materials after the class.

- TN ranks second nationally in bankruptcies. TN Saves is a UT Extension-led partnership among statewide government and community agencies and financial institutions to motivate and support savings among young people and adults. More than 2000 enrollees in the program have committed to regular savings.

- The Master Beef Producers Program is in the 2nd year of an anticipated 3-year program. Six-hundred TN cattle producers have participated.

The program will provide more than \$1million in additional farm profits for TN producers each year over the life of these farm operations.

- Six new Master Gardener Web sites (<http://mastergardener.tennessee.edu>) were created to communicate with Extension agents and Master Gardeners across the state. This site houses materials to use in teaching and recruiting new agents as well as facilitating the reporting of Master Gardener activities.

- The new Canine Arthritis Rehabilitation Exercise and Sports medicine Service (CARES) is designed to meet the growing needs of patients with chronic or acute orthopedic conditions. It provides owners of performance dogs with a comprehensive health care program.

- The Bovine Reproductive Initiative led by Drs. Neal Schrick and Lannett Edwards has resulted in the development of new assisted reproductive technologies.

- Small Animal Clinical Sciences Department is formulating a partnership with the new, state-of-the-art Regional Institute of Veterinary Emergency and Referral (RIVER) Hospital in Chattanooga. The department will provide on-site referral veterinary services in selected specialties.

- Small Animal Clinical Sciences Department faculty presented seminars at more than 50 national and state conferences and conventions. Thirteen faculty spoke at 16 international conferences abroad.

- Drs. Amy LeBlanc and Greg Daniel are collaborating with colleagues at the UT Medical Center on projects using PET and CT scanning in dogs with tumors
- Grant and Contract Awards for TAES in FY-05 climbed to \$11,314,183, an increase of 17 percent from FY-04. This follows an increase of 14 percent and 22 percent, respectively, during the two preceding years

- \$12 million in state funding has been received for development of a new applied environmental field laboratory and dairy research facility in Blount County

- In an effort to raise the profile of TAES, 11 field laboratories were renamed Research and Education Centers. Advocacy Groups were initiated at each location.
- \$4.2 million in funding has been received for greenhouse construction. Planning and design work is nearing completion.

- Efforts are underway to establish 3 new start-up companies from research conducted in TAES
- A research initiative in greenhouse production systems for fruits and vegetables has begun. It is centered in East and Middle TN to develop supplementary use of greenhouses currently used for tobacco production.

- A milestone achievement for Entomology and Plant Pathology was the dedication of the Lindsay Young Beneficial Insects Laboratory and the formation of a hemlock woolly adelgid working (HWA) group. The department received more than a \$1 million in public and private funding to create and operate a facility for addressing the serious exotic threat of HWA in the Smoky Mountains and beyond and prepare for future invasive threats.

Student and Teaching Achievements

- CASNR awarded \$833,072 in scholarships to 370 students in 2005-06, representing a _____ percent increase over 2004.

- Eleven students were placed in Philip Morris internship programs this summer in county Extension offices under Dr. Randol Waters' oversight. Over the past two years, this grant-funded program has been an excellent tool for recruiting new Extension agents.

- The NAMA Marketing Team finished fifth in national competition among 30 major universities. The team is coached by Drs. John Riley and John Brooker

- Andrew Haddow, PhD EPP student, was elected President of the UT Graduate Student Association. He also won the top award for the outstanding student presentation at the annual meeting of the TN Entomological Society.

- Strong recruitment efforts have resulted in an outstanding incoming class for fall semester 2005. Students have an average ACT of 25.7 and core GPA of 3.62.

This is our strongest freshman class to date.

- Brady Lewis, BESS student, served as President of American Society of Agricultural Engineers International Preprofessional Council

- Susan Conlon, graduate student, Plant Sciences, received:

2005 Young Professional Award from
the Perennial Plant Association

- Christine Pierson, graduate student, Plant Sciences, received the 2005 American Society for Horticultural Science Senior Award
- Undergraduate students in BESS degree program garnered national recognition in five categories at the American Society of Agricultural and Biological Engineers competition

- Carol White and Alee Lynch were selected TorchBearers for 2005; only 7 UT students were chosen.

This is the second consecutive year that two CASNR students were selected for this highest honor conferred upon UT students.

- Forty new laptop computers will be used by students in the Agricultural Economics department this fall

- Collaboration with the Knox County Animal Shelter enabled CVM students to gain proficiency in their surgical skills as students spayed and neutered more than 730 dogs and cats.
- CVM internship and residency programs continue to be among the most sought-after in the world.

Marketing and Communications:

Distributed 124 press releases and 6, 034 press clips

Produced 129 Web packet articles offering the potential for more than 4 million exposures in print circulation

Produced 49 television video news releases (VNRs) reaching nearly 3 million households.

Aired VNRs and UT Connections regularly
reaching more than 10 million homes
nationwide through Dish Network

Generated 88 radio news releases

Published 732 print and/or electronic production
pieces

Published two issues of *Tennessee Land, Life and Science* and *Third Thursday* regularly throughout the year.

Developed and hosted “AgSmarts” – a game show event designed to increase interaction with local media personalities.

4-H Achievements

In 2004, 382,677 4-H'ers and 17,234 volunteers were involved in the TN 4-H program

During the past 3 years, over 200,000 4-H youth and adult volunteers donated over 600,000 hours in service. The service time is valued at \$10 million

A newly developed TN Life Skills Evaluation online system is being utilized by agents and specialists. Indicators for the ten targeted life skills were developed for beginning, intermediate and advanced levels

UT President Emeritus Dr. Joe Johnson agreed to serve on the TN 4-H Foundation Board

\$64,300 in scholarships was awarded to TN 4-Hers in 2005 through the 4-H Foundation and awards programs

4-H Centers attracted more than 6,000 youth in the summer camping program and

Over 6,000 youth participated in the Environmental Education Program

Faculty Accomplishments

- Small Animal Clinical Sciences Department publications included:

59 peer-reviewed journal publications

23 book chapters

61 published abstracts

Proceedings published for over 50
national and international meetings

- The Comparative Medicine Department had 14 first-author manuscripts and 5 mentored manuscripts published in peer-reviewed journals

Faculty members authored 7 book chapters; Twenty-seven presentations were made at national or international meetings by faculty and

Eleven abstracts were published at national/international meetings

- Ocean systems and ocean health are important concerns for this country and on a global scale. Dr. David Rotstein, one of five full-time veterinary marine mammal pathologists in the United States, have been subcontracted with the Center for Marine Animal Health to organize all veterinary marine mammal pathologists to develop a national database for disease surveillance.

- Dr. Paul Ayers has developed a GPS-based video mapping system to assess habitats in sensitive East TN mountain ecosystems like the Big South Fork National River and Recreation Area.

- Dr. Forbes Walker led a national effort to draft, publish and post on the Internet a series of fact sheets on best management practices (BMPs) to reduce losses of phosphorus from agricultural soils. This involved coordinating technical contributions from 26 educational, governmental and private institutions across the country

- The Revised Universal Soil Loss Equation 2 erosion prediction program, which Dr. Daniel Yoder has spearheaded for over a decade, is nearing full implementation by USDA-NRCS as its soil erosion prediction tool. This will make it the only tool used for conservation compliance planning.

- Dr. Bill Morris provided leadership in developing the “Wines of the South” competition, which provides a forum for southern wineries to compete in a unique venue in which they can promote wine-making skills. Thirteen TN wineries participated in the competition. The evaluation information provided to the wineries helps to improve wine quality.

- Robert Trigiano co-chaired the meeting of the National Agricultural Biotechnology Conference and serves as an editor for the publication, *Critical Reviews in Plant Sciences*.
- Ernest Bernard was selected as a Fellow of the Society of Nematologists

- Dr. Susan Hamilton and Beth Babbit are featured on a weekly radio show titled “The Garden Girls” on WNOX FM 100.3. This live show features topics on vegetable gardening, fruit trees, landscaping, lawn care, and numerous other areas.

- Drs. Chris Clark and Bill Park have developed a method to track farmland conversion at a finer spatial resolution than was available before. They are examining the ways farmland conversion increasingly fragments agricultural production and threatens the sustainability of agricultural production in Tennessee.

- Dr. Daryll Ray continues to be recognized as an international authority on agricultural policy. He made nearly 30 presentations before various non-governmental organizations and groups interested in agricultural policy around the world

- Several years of research and outreach work by Dr. Kelly Tiller addressing policy and economic challenges associated with the federal tobacco program contributed to passage of tobacco quota buyout legislation signed into law in October.

- Dr. Emmit Rawls coordinated the Improved Beef Cattle Genetics Demonstration. Field days were held on 15 farms to present results of the demonstrations and teach producers about estrus synchronization, artificial insemination, and the benefits of preconditioning calves.

- In September 2004, Dr. Robert Wang met administrators and faculty members of the CVM at China Agricultural University (CAU) in Peking to explore the potential of a future exchange of faculty members and students. This resulted in the formal establishment of the International Multi-Task Cooperative and Exchange Program with China Agricultural University.