

Plant and Soil Sciences

Plant and Soil Sciences
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From the Department Head

I took the opportunity in this issue of the Plant and Soil Science Newsletter to include a listing of our refereed journal publications for 2004 (pages 4 & 5). These publications provide the best mechanism for communicating our activities to the scientific community, which includes many of the decision makers who determine grant funding for competitive programs. The list is impressive and every faculty member and student listed should be proud when this critical step in our mission is completed successfully.



Fall Flower and Garden Fest, Truck Crops Experiment Station, Crystal Springs.

Station (see photo inset) where thousands of adults and young people visited over a two week period to see the plants and visit with the experts. I found out how much the MSU logo means after the 20th person saw my MSU—Weed Science golf shirt and rushed up with the specimen brought from home for identification and management advice. Norman Winter saved me more than once by stepping in to take over and identify the plant. Thanks Norman.



Mike Collins

Fall brought the Fall Flower & Garden Fest at the Truck Crops Experiment

International Activities

Billy Kingery was invited to give a presentation in November to scientists of the Center for Agricultural Resources Research in Shijiazhang, China and to meet with officials of the Yellow River Conservancy Commission. Dr. Kingery's activities were sponsored by the Chinese Academy of Sciences.

Earlier, Dr. David Nagel traveled to the Teriviv Region of Ukraine for the purpose of providing recommendations management of vegetable crops in the region.

Cody Gray attended the 4th International Weed Science Congress held in Durban, South Africa on June 20-25, 2004 (See Page 2).



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Awards & Honors

Dr. Dan Peterson (left) was presented with the 2004 MAFES Grantsmanship Award at the November 11 MAFES Awards Banquet. Presenting the award to Peterson was Dr. Clarence Watson (right), Associate Director of MAFES. The MAFES Grantsmanship Award is given to the MAFES faculty member who has had the most success procuring extramural funding during the previous year. Peterson's most recent award is a \$1.6 million NSF Grant to develop genomic resources for loblolly pine, arguable the South's most important crop.



Student Awards

Zhijun Liu, Ph.D. Graduate student with Dr. Kingery, was the recipient of National Oceanic and Atmospheric Administration-National Estuarine Research Reserve System-Graduate Research Fellowship. Title: Guidelines for Development of a Grand Bay Hydrology and Water Quality Simulation Model: Criteria and Data Assessments.

Zhijun also received Honorable Mention, Graduate Student Paper Competition, 68th Annual Meeting, Mississippi Academy of Sciences, Biloxi. Title: Development of a Hydrologic and Water Quality Model for the St. Louis Bay Watershed. Advisor—Billy Kingery.

Rachael Stout-Evans, M.S. Graduate Student, received Honorable mention at the Graduate Student Paper Completion, 68th Annual Meeting Mississippi Academy of Sciences, Biloxi. Title: Bermudagrass Growth in Drastically Altered and Ameliorated Soil. Advisor—Billy Kingery.

At the recent Mid-South Chapter of the American Society of Photogrammetry and Remote Sensing conference, two PSS students received awards.

Darrin Dodds placed first in the poster contest and second in the oral paper contest. Site-specific application of plant growth regulators in cotton based on remotely sensed aerial imagery. D. Dodds, D.B. Reynolds, M.T.

Kirkpatrick, J.J. Walton, C.G. O'Hara, and J.L. Willers. (1st Place Poster).

Differentiating weed species from background components using hyperspectral remote sensing. D. Dodds, D.R. Shaw, L. M. Bruce, J.D. Byrd Jr., J.H. Massey, D.B. Reynolds, L.T. Barber, J.W. Barnett, N.W. Buehring, K.D. Burnell, C.J. Gray, W.B. Henry, K.C. Hutto, F.S. Kelley, C.T. Leon, C.H. Koger, D.B. Mask, W.G. Powell, and J.C. Sanders. (2nd Place Oral Presentation).

Wade Givens won 1st place in the paper contest with a presentation titled Texture analysis or remotely-sensed images for weed patch detection in soybean. W.A. Givens, D.R. Shaw, A. Mathur, and L.M. Bruce.

Catching up with some earlier activities we missed in the PSS Newsletter, Cody Gray received a travel scholarship to attend the 4th International Weed Science Congress held in Durban, South Africa on June 20-25, 2004. The award was sponsored by the International Weed Science Society and the Weed Science Society of America. Cody was one of eight graduate students selected out of 29 applicants across the world. The recipients were selected based on a paper submitted describing their dissertation/thesis topic and results obtained. Cody's dissertation topic involves weed identification and differentiation using various remote sensing techniques. Advisor, David Shaw.



Student News

Golf & Sports Turf Management

GSTM Students have been awarded scholarships recently;
 Hunter Perry, Senior, Greenville, MS was awarded a Trans Mississippi Golf Association Scholarship of \$1,250. Kevin Boutwell, Senior, Madison, MS and Wil Misenhimer, Senior, Lawrenceburg, TN received \$500 scholarships from the Mississippi Turfgrass Association. Keith Julkenbeck, Senior, Madison, MS and Brett Long, Jr. Birmingham, AL received \$500 scholarships from the Mississippi Turfgrass Foundation. Barry Stewart, Advisor.



Grenada High School students Susan Barfield (left) and Cailyn Estey (right) and Grenada High Science Teacher Melaine Harlow (2nd from right) visit with PSS undergraduate Ashley Andrews (2nd from left) about the Environmental Science courses and research opportunities available to undergraduate in the Department of Plant and Soil Sciences at MSU. Advisor, Joe Massey.

Degree Candidates, 2004

- Steven R. Bradley - B. S. - AGN/ICM, Dr. Lang
- Vincent S. Kuhn - B.S. - AGN/GSTM, Drs. Stewart & Munshaw
- Michael D. Posey - B.S.- AGN/GSTM, Drs. Stewart & Munshaw
- Jason G. Schultz - B. S. - AGN/ICM, Dr. Cox
- Scott B. Toler - B.S. - AGN/GSTM, Drs. Stewart & Munshaw
- Andrew D. Willingham - AGN/GSTM, Drs. Stewart & Munshaw
- Stephanie A. Douglas - B. S. - HO/Flor. Orna., Dr. Harkess
- Casey E. Griffin - B. S. - HO/RFMGT, Drs. DelPrince & McDougald
- Danny L. Moore - B. S. - HO/Flor. Orna., Dr. Harkess
- Rachael E. Sullivan - B. S. - HO/RFMGT, Drs. DelPrince & McDougald
- Joseph C. Wallace - B. S. HO/ Flor. Orna., Dr. Harkess
- Cari Wilson - B. S. - HO/RFMGT, Drs. DelPrince & McDougald
- Russell W. Hayes - AGN - Ph.D., Dr. Jenkins
- Lon T. Barber - Weed Science, Dr. Reynolds
- Nathan W. Buehring - Weed Science, Dr. Reynolds

Welcome to the following new graduate students to the department:

AGRONOMY:

- Chuanfu An, Ph.D., Drs. Jenkins & Saha.
- John H. Cartwright, Ph.D., Dr. Kingery.
- Satya Sai Kumar Matcha, Ph.D., Dr. Reddy.
- Shardendu Kumar Singh, Ph.D., Dr. Reddy.
- Walter Lloyd Solomon, Ph.D., Dr. Baldwin.

HORTICULTURE:

- Safwan Shiyab - Ph.D., Dr. Matta.

WEED SCIENCE:

- Thomas Eubanks, M.S., Dr. Byrd.
- Matthew Myers, M.S., Dr. Byrd.
- Joby Prince, Ph.D., Dr. Shaw.

Refereed Publications, 2004

- Akin, DS; Shaw, DR. In-season applications of glyphosate for control of redvine (*Brunnichia ovata*) in glyphosate-resistant soybean. WEED TECHNOLOGY, 18 (2): 325-331 APR-JUN 2004
- Ali, I; Whisler, FD; Iqbal, J; Jenkins, JN; Mckinion, JM. Soil physical properties web database for GOSSYM and GLYCIM crop simulation models. AGRONOMY JOURNAL, 96 (6): 1706-1710 NOV-DEC 2004
- Baird, RE; Carling, DE; Watson, CE; Scruggs, ML; Hightower, P. Effects of nematicides on cotton root mycobiota. MYCOPATHOLOGY, 157 (2): 191-199 FEB 2004
- Bowman, Daryl T, FM Bourland, GO Myers, TP Wallace, and D Caldwell. Visual Selection for Yield in Cotton Breeding Programs. THE JOURNAL OF COTTON SCIENCE 8:62-68 2004
- Brink, GE, KR Sistani, and DE Rowe. Nutrient Uptake of Hybrid and Common Bermudagrass Fertilized with Broiler Litter. AGRONOMY JOURNAL, 96(6): 1509 - 1515. 2004
- Callahan, FE, X-D Zhang, D-P Ma, JN Jenkins, RW Hayes, and ML Tucker. Comparison of MIC-3 Protein Accumulation in Response to Root-knot Nematode Infection in Cotton Lines Displaying a Range of Resistance Levels. THE JOURNAL OF COTTON SCIENCE 8:186-190 2004
- Case, ML and JD Madsen. Point intercept surveys of aquatic macrophytes, tubers and sediment in Heron Lake, Minnesota: Identifying factors limiting the growth of *Stuckenia pectinata* (L.) Börner (*Sago Pondweed*). JOURNAL OF FRESHWATER ECOLOGY, 19:17-23. 2004.
- Cushman, KE; DH Nagel, TE Horgan, and PD Gerard. Plant population affects pumpkin yield components. HORTTECHNOLOGY, 14 (3): 326-331 JUL-SEP 2004
- Fridgen, JL, and JJ Varco. Dependency of cotton leaf nitrogen, chlorophyll, and reflectance on nitrogen and potassium availability. AGRONOMY JOURNAL, 96 (1): 63-69 JAN-FEB 2004
- Han, FX, WL Kingery, HM Selim, PD Gerard, MS Cox, and JL Oldham. Arsenic solubility and distribution in poultry waste and long-term amended soil. SCIENCE OF THE TOTAL ENVIRONMENT, 320 (1): 51-61 MAR 5 2004
- Henry, WB, DR Shaw, KR Reddy, LM Bruce, and HD Tamhankar. Remote sensing to detect herbicide drift on crops. WEED TECHNOLOGY, 18 (2): 358-368 APR-JUN 2004
- Henry, WB, DR Shaw, KR Reddy, LM Bruce, and HD Tamhankar. Remote sensing to distinguish soybean from weeds after herbicide application. WEED TECHNOLOGY, 18 (3): 594-604 JUL-SEP 2004
- Henry, WB, DR Shaw, KR Reddy, LM Bruce, and HD Tamhankar. Spectral reflectance curves to distinguish soybean from common cocklebur (*Xanthium strumarium*) and sicklepod (*Cassia obtusifolia*) grown with varying soil moisture. WEED SCIENCE, 52 (5): 788-796 SEP-OCT 2004
- Kakani, VG, KR Reddy, D Zhao, and W Gao. Senescence and hyperspectral reflectance of cotton leaves exposed to ultraviolet-B radiation and carbon dioxide. PHYSIOLOGIA PLANTARUM, 121 (2): 250-257 JUN 2004
- Karaca, M, S Saha, FE Callahan, JN Jenkins, JJ Read, and RG Percy. Molecular and cytological characterization of a cytoplasmic-specific mutant in pima cotton (*Gossypium barbadense* L.). EUPHYTICA, 139 (3): 187-197 2004
- Koger, CH, CT Bryson, JD Byrd. Response of selected grass and broadleaf species to cogongrass (*Imperata cylindrica*) residues. WEED TECHNOLOGY, 18 (2): 353-357 APR-JUN 2004
- Koger, CH, DR Shaw, KN Keddy, and LM Bruce. Detection of pitted morningglory (*Ipomoea lacunosa*) by hyperspectral remote sensing. I. Effects of tillage and cover crop residue. WEED SCIENCE, 52 (2): 222-229 MAR-APR 2004
- Koger, CH, DR Shaw, KN Reddy, and LM Bruce. Detection of pitted morningglory (*Ipomoea lacunosa*) with hyperspectral remote sensing. II. Effects of vegetation ground cover and reflectance properties. WEED SCIENCE, 52 (2): 230-235 MAR-APR 2004
- Koti, S, KR Reddy, VG Kakani, D Zhao, and VR Reddy. Soybean (*Glycine max*) pollen germination characteristics, flower and pollen morphology in response to enhanced ultraviolet-B radiation. ANNALS OF BOTANY, 94 (6): 855-864 DEC 2004
- LaMastus-Stanford, FE, and DR Shaw. Evaluation of site-specific weed management implementing the herbicide application decision support system *HADSS). PRECISION AGRICULTURE 5:411-426 2004
- McCarty, JC; Jenkins, JN; Wu, JX. Primitive accession derived germplasm by cultivar crosses as sources for cotton improvement: I. Phenotypic values and variance components. CROP SCIENCE, 44 (4): 1226-1230 JUL-AUG 2004
- McCarty, JC, JN Jenkins, and JX Wu. Primitive accession derived germplasm by cultivar crosses as sources for cotton improvement: II. Genetic effects and genotypic values. CROP SCIENCE, 44 (4): 1231-1235 JUL-AUG 2004
- McKinion, JM, SB Turner, JL Willers, JJ Read, JN Jenkins, and J McDade. Wireless technology and satellite internet access for high-speed whole farm connectivity in precision agriculture. AGRICULTURAL SYSTEMS, 81 (3): 201-212 SEP 2004
- McPherson, MG, JN Jenkins, CE Watson, and JC McCarty, Jr.

2004 Publications, cont'd

Inheritance of Root-knot Nematode Resistance in M-315 RNR and M78-RNR Cotton. *THE JOURNAL OF COTTON SCIENCE* 8:154-161 2004

Poovey, A.G., KD, Getsinger, JG Skogerboe, TJ Koschnik, JD Madsen and RM Stewart. Small-plot, low-dose treatments of tri-clopyr for selective control of Eurasian watermilfoil. *LAKE AND RESERVOIR MANAGEMENT*, 20(4):322-332. 2004.

Qureshi, SN, Saha, S, Kantety, RV, Jenkins, JN. EST-SSR: A new class of genetic markers in cotton. *JOURNAL OF COTTON SCIENCE* 8:112-123. 2004

Reddy, KR, S. Koti, GH Davidonis, and VR Reddy. Agroclimatology - Interactive effects of carbon dioxide and nitrogen nutrition on cotton growth, development, yield, and fiber quality. *AGRONOMY JOURNAL*, 96 (4): 1148-1157 JUL-AUG 2004

Richardson, AG and KR Reddy. Assessment of solar radiation models and temporal averaging schemes in predicting radiation and cotton production in the southern United States. *CLIMATE RESEARCH*, 27 (2): 85-103 OCT 7 2004

Saha, S, J Wu, JN Jenkins, JC McCarty, Jr., OA Gutierrez, DM Stelly, RG Percy, and DA Raska. Effect of Chromosome Substitutions from *Gossypium barbadense* L. 3-79 into *G. hirsutum* L. TM-1 on Agronomic and Fiber Traits. *THE JOURNAL OF COTTON SCIENCE* 8: 162-169 2004

Sistani, KR, GE Brink, A Adeli, H Tewolde and DE Rowe. Year-Round Soil Nutrient Dynamics from Broiler Litter Application to Three Bermudagrass Cultivars. *AGRONOMY JOURNAL* 96:525-530 2004

Sloan, RC, RL Harkess, and WL Kingery. Nitrogen and cotton gin waste enhance effectiveness of pine bark soil amendment. *HORTICULTURE*, 14 (2): 212-217 APR-JUN 2004

Smith, MC, DR Shaw, JH Massey, M Boyette, M and W Kingery.

Incubation time effects on imazaquin desorption as determined by nonequilibrium thin-soil disc flow. *JOURNAL OF ENVIRONMENTAL QUALITY*, 33 (2): 581-593 MAR-APR 2004

Spiers, JD, FB Matta, DA Marshall, and BJ Sampson. Effects of kaolin clay application on flower bud development, fruit quality and yield, and flower thrip [*Frankliniella* spp. (Thysanoptera:Thripidae)] populations of blueberry plants. *SMALL FRUITS REVIEW* 361-373. 2004

Villarroel, DA, RE Baird, JE Trevathan, CE Watson, and ML Scruggs. Pod and seed mycoflora on transgenic and conventional soybean [*Glycine max* (L.) Merrill] cultivars in Mississippi. *MYCOPATHOLOGY*, 157 (2): 207-215 FEB 2004

Watson, RH, MA McCann, JA Parish, CS Hoveland, FN Thompson, and JH Bouton. Productivity of cow-calf pairs grazing tall fescue pastures infected with either the wild-type endophyte or a nonergot alkaloid-producing endophyte strain, AR542. *JOURNAL OF ANIMAL SCIENCE*, 82 (11): 3388-3393 NOV 2004

Williams, W. Paul, Gary Windham, Paul Buckley, and James Perkins. 2004. SWCB damage and aflatoxin accumulation in conventional and transgenic corn hybrids. *Field Crops* 91:329-336.

Zhao, DL, KR Reddy, VG Kakani, AR Mohammed, AR, JJ Read, and W Gao. Leaf and canopy photosynthetic characteristics of cotton (*Gossypium hirsutum*) under elevated CO₂ concentration and UV-B radiation. *JOURNAL OF PLANT PHYSIOLOGY*, 161 (5): 581-590 MAY 2004

Zhong, M, JC McCarty, JN Jenkins, and S Saha. Assessment of Day-Neutral Backcross Populations of Cotton Using AFLP Markers *THE JOURNAL OF COTTON SCIENCE* 6:97-103 2004

Congratulations

Congratulations to Tom and Scharidi Barber on the birth of their son (Kohlton (Kohl) Kache born October 25. Kohn is welcomed home by his big brother Haeden.

Congratulations to Wayne Wells, Ms. Susan Seal, Ms. Barbara Curry, and Ms. Brenda Burdine on their election to the MSU-Extension Catalyst Team for Diversity and Engagement. Members selected will partner with members from Alcorn State University Extension Program to assist in creating an environment of inclusion and active participation by all employees and customers. The entire Extension Employee Relations Team will be utilized in this process.

New Grants & Contracts

Dr. John Byrd received a grant funded by the Mississippi Department of Transportation Research Division to conduct an inventory of con-gongrass along Mississippi highway rights of way for \$195,000.

Dr. Bill Evans and Yvonne V. Thaxton (MSU Poultry Science Department) were awarded \$20,039 from the US Poultry and Egg Association to support their work on Safety and Efficacy of Broiler Litter Compost in Vegetable Crop Production. Years 2 and 3.

Dr. David Lang received a grant entitled Evaluation of Prime Farm Soil and Mixtures of Gray Unoxidized Subsoil and Red Oxidized Top Soil Substitute funded by Mississippi Lignite Mining Company for \$104,885.50.

Dr. Rick Snyder Extension Professor at the MAFES Truck Crop Branch has awarded a \$99,575 Risk Management Agency Partnership Agreement to support the 2005 Greenhouse Tomato Short Course. The Partnership Agreement will support instruction on managing agribusiness and production risks including crop culture, pest management, insurance, business management, marketing, and strategic planning.

Dr. Frank Matta received a USDA/ARS Grant for Small Fruits research (blueberries/muscadines), \$25,000. 2003-2006.

J.L. Silva and Frank Matta received USDA-IFAFA Grant, production development, and marketing of value added hor-

ticulture products (regional project) for \$256,242. 2002-2005.

Dr. Ted Wallace received grants from Cotton Incorporated for Development of Cotton Cultivars and Breeding Lines Adapted to Mississippi (PI) - \$34,570 (1 year of 3) and Development and Evaluation of Nectarless Breeding Lines for Resistance to Plant Bugs (co PI) for \$10,000 (1 year of 3). Mississippi Reniform Nematode Field Nursery; Evaluation of Commercial Cotton Varieties and Breeding Lines (co PI) for \$7,500 for (1 year of 3).

Special Presentations

Mrs. Lynette McDougald recently presented two holiday floral design shows. Starkville, MS were given a centerpiece, and the Town and Philadelphia, MS were given a procor. Senior Retail Floristry Managers, assisted in the Philadelphia recent feature in the Tupelo Daily part of the paper dedicated to 'area



Mrs. Lynette McDougald and Dr. organized and presented a Rose Symposium the Oktibbeha County Rose Society "Petal on the Bypass" featured Delprince and three students, Suzanne Williams, Aisha Booker, and Amber Adsit. The annual event was expanded this year and held at the Hunter Henry Center on campus. Over 150 attended the event.

The M'Lady Garden Club of Starkville presented a program on Thanksgiving Country Garden Club of Starkville on Holiday decoration student, Suzanne Williams. Lynette was also a feature in the Journal. The article was a 'personalities'.

James Delprince recently presented a symposium in conjunction with the Rose Symposium. The program entitled signs by McDougald, Delprince and three students.

The annual event was expanded this year and held at the Hunter Henry Center on campus. Over 150 attended the event.



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Department of Plant and Soil Sciences



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Curricula focus is on the application of sciences to the integrated management of plants, soil, and climate for high-quality production of food, fiber, and ornamental plants. Central to this course of study is the dedication to conserve, maintain, and enhance our environment. Dr. Frank Matta serves as interim head of the department.

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For information about this page, contact [Dr. Richard L. Harkess](#). Last modified: January 28, 2004.
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Bill Evans and Rick Snyder thank faculty and staff who worked supporting the Fall Flower and Garden Fest and Youth Days educational sessions at the Truck Crops Branch Experiment Station in Crystal Springs. More than 50 MSU staff and faculty, most with PSS affiliation, helped host nearly 6,000 people during the two day Fest, plus nearly 3000 elementary students the following week. Thank you all!

Upcoming Events

- Mississippi Crop College - February 15-17, Bost Building, MSU
- North Mississippi Producer Advisory Council—February 17– North MS Research and Extension Center - Verona, MS
- Greenhouse Tomato Short Course—March 1-4, Mississippi Agriculture and Forestry Museum, Jackson, MS
- Spring Commencement, Humphrey Coliseum, Saturday, May 7th, 3PM