



Division of Plant Sciences  
 College of Agriculture, Food and Natural Resources  
 University of Missouri

# Plant Sciences Quarterly

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### FROM THE DIVISION DIRECTOR

## A Season of Change

Fall has slid a bit into winter, but I am pleased to offer this issue of the Plant Sciences Quarterly to update you on recent happenings in the division. The budget has been a major topic of discussion in recent weeks. Reduced state revenues are projected, so it looks like a cautious approach will be needed for the foreseeable future.

Even with projected budget difficulties, many new and very exciting projects and activities are set to begin. Highlights include word that Melissa Mitchum will be co-Principal Investigator on a National Science Foundation grant to study the soybean cyst nematode problem. Felix Fritschi, another assistant professor in Plant Sciences, recently received word that the Life Sciences Trust Fund project on drought research was among those that received significant funding and Drs. Nguyen and Stacey are among recipients of a \$1.1 million grant from the United Soybean Board (See page 3). Division faculty also released more than 50 refereed publications during the fall.

The Around The Division section highlights Dr. Grover Shannon and the Delta Center soybean breeding team in this issue (pages 4 & 5).



**Mike Collins**

Margie Anglen retired from her position as Executive Staff Assistant this summer, after many years of dedicated service.



Christa Smith recently joined the division in the ESA role, coming to us from the Extension ExCEED Entrepreneurship program.



## Awards and Honors

### Priyamvada Voothuluru

Priyamvada Voothuluru will be among just 15 students nationwide to be named as Student Ambassadors by the American Society of Plant Biologists (ASPB). Voothuluru will attend the ASPB annual meeting in Honolulu, Hawaii, during 2009 to network with other graduate students, present her research and interact with plant biologists from across the world. Priyamvada is originally from Hyderabad, India, and is in the fourth year of her doctoral program in the Division of Plant Sciences.

She is interested in understanding how plants respond to biotic and abiotic stresses. Dr. Robert Sharp is her advisor on a project involving regulation of root growth in corn grown under drought conditions.

(From: <http://cafnr.missouri.edu/news/ambassador.php>)



MU student named  
**Student Ambassador**  
by American Society of  
Plant Biologists

### Michael G. Chippendale

Was honored for his Research Contributions to Entomology at a special reception held at the recent Annual Meeting of the Entomological Society of America meeting in Reno, NV. Dr. Chippendale held a faculty appointment in Entomology from 1968 until his retirement in 2005. He led the insect physiology laboratory which focused on studying the regulation of diapause and development in plant-feeding insects. Later, he served as Chair of the Department of Entomology, Coordinator for Entomology and Plant Pathology, Unit Leader for Plant Sciences, Interim Associate Director of the Missouri Agricultural Experiment Station, and Senior Associate Dean, College Agriculture, Food and Natural Resources. Mike completed his career at MU as Interim Director of the Bond Life Sciences Center in 2006.

### Tran Nguyen

A Plant, Insect and Microbial Sciences (PIMS) graduate student, Tran Nguyen, received the Outstanding Seminar Award for fall semester, 2008, for her presentation titled "Systems biology and its potential application in plant-microbe interactions." Congratulations Tran. Dr. Stacey is Tran's graduate advisor.



### Gary Stacey

Will be named Fellow of the American Association for the Advancement of Science (AAAS) for 2008. The announcement was formally released on December 19. A recognition ceremony will take place as part of the association's annual meeting in Chicago, Feb. 14, 2009, during the AAAS Fellows Forum. Dr. Stacey is the MSMC Endowed Professor of Soybean Biotechnology.

Dr. Gary Stacey of the Division of Plant Sciences is among the scientists who led the effort to sequence the genome of soybean. The genome has now been made available to the scientific community through an effort funded by the US DOE Joint Genome Institute.

### Amy Replogle

Amy is showcased in a special issue of [SyndicateMizzou](#) talking about her research with plant-nematode interactions. Amy works with Dr. Melissa Mitchum.



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## Programs & People

The CAFNR South Farm Showcase was a big success this year, and our programs played a big part in that success.



Future turf majors getting a feel for Plant Sciences.



Drs. Henry Nguyen, Gary Stacey and Dong Xu will utilize a \$1.1 million award from the United Soybean Board to determine soybean proteins and metabolites under drought and other stress conditions in a 3-year project. Drs. Nguyen and Stacey are Plant Sciences faculty and Dr. Xu is Professor and Chair of the Dept. of Computer Sciences here at MU.

Plant breeders can combine knowledge derived from this new database with the soybean genome to produce better varieties.



Dr. XI XIONG recently joined the Division of Plant Sciences at the University of Missouri, in Columbia, as assistant professor with research and teaching responsibilities in Turfgrass Science. Teaching responsibilities include two undergraduate courses in the area of turfgrass management. Research interests focus on best management practices in the transition zone and on turfgrass responses to abiotic stresses, such as water and temperature stress. Dr. Xiong received the Ph.D. in Crop Science / Horticulture from Oklahoma State University in 2005, and the M.S. in Turfgrass Science and B.S.E. in Horticulture from Sichuan Agricultural University in China.



## 4 Around the Division

### KNOW YOUR COLLEAGUES:

### Dr. Shannon's Delta Center Soybean Crew



#### The Delta Center Soybean Team . . . .

**Melissa Woolard** - Melissa is a Senior Research Specialist who supervises employees and coordinates research under Grover's direction. She also coordinates all planting plans, agronomic data, and data analysis and data reporting for the breeding program.

**Tommy Branum** - Tommy is a Farmworker III who assists with all farm work including preparing fields for planting, herbicide and insect control, irrigation, and harvesting. He also aids in greenhouse maintenance, including insect control and soybean cyst nematode maintenance.

**Hyun Jo** - Hyun is a Visiting Scholar who primarily works with Dr. Lee with maintaining plantings, harvesting and taking agronomic data in breeding research. He also prepares and samples seed plots for various testing including protein, oil, fatty acid, salt tolerance and gene mapping.

**Stewart Selves** - Stewart is a Senior Research Lab Technician who prepares seed for planting, helps maintain and harvest all test plots, and takes agronomic notes in the field and greenhouse. He also analyzes soybean protein and oil with the Near Infrared Reflectance analyzer.



## Around the Division

**Dr. Grover Shannon** is a Professor in the Division of Plant Sciences and holds the Dave Haggard Endowed Chair in Soybean Breeding. Dr. Shannon is located at the Delta Research Center in Portageville, Missouri.

Grover received his B.S. Degree from Mississippi State University, another good school, in the late 1960's and earned both the M.S. and Ph.D. degrees from Purdue University. As a soybean breeder, Grover's primary emphasis has been his contribution to the development of more than 70 soybean varieties in maturity groups III-VIII. These varieties are grown on large acreages across the southern USA.

Dr. Shannon's research has also resulted in numerous refereed journal publications and in many invited scientific presentations, including several at international conferences.



### The Delta Center Soybean Team, continued . . . .

**Bill Becker** - Bill is a part-time Farm Worker who assists with farm work including preparing fields for planting, irrigation and harvesting. He also aids in preparing seed for planting, maintaining and harvesting test plots.

**Charlotte Johnson** - Charlotte is a Farmworker I who coordinates scheduling and inoculation of soybean cyst nematode for greenhouse studies. She also assists in preparing seed for planting, maintaining and harvesting all test plots.

**Jeong Dong Lee** - Jeong Dong is a Research Scientist who works with Dr. Shannon in writing publications and research proposals. Jeong Dong also leads several research projects under Grover's supervision.

**Scotty Smothers** - Scotty is a Research Specialist who supervises and coordinates all farm work including preparing fields for planting, herbicide and insect control, irrigation, and harvesting. He also maintains all mechanical equipment used in the breeding program.

**Sung Hoon Jung** - Sung Hoon is a Visiting Scholar who assists Dr. Lee with maintaining, harvesting and taking agronomic data in breeding research. He also prepares and samples seed plots for various testing including protein, oil, fatty acid, salt tolerance and gene mapping.

**Trey Hastings** - Trey is a Farmworker I who assists with farm work including preparing fields for planting, irrigation and harvesting. He also aids in preparing seed for planting, maintaining and harvesting all test plots, and in taking agronomic notes in the field and greenhouse.



## 6 Recent Grants

Investigators	Title	Sponsor	Funding	Dates
Bailey, W.; Hibbard, B.	Selection Intensity of MIR604, Event 5307 and MIR604X530	Syngenta Biotechnology, Inc.	\$7,500	4/1/08-3/31/09
Bailey, W.	MIR604: Refuge Strategy Adult Emergence Tent Studies	Syngenta Seeds, Inc.	\$51,577	4/22/08-4/21/09
Bailey, W.	Lap Resistant (MIR162) Corn: Efficacy and Yield vs. Corn Earworm	Syngenta Seeds, Inc.	\$4,485	4/4/08-4/3/09
Bradley, K.	Optimum GAT Corn	Pioneer Hibred	\$10,000	4/11/08-4/10/09
Bradley, K.	Fomesafen/Glyphosate Premix: Evaluate formulated premix variants for weed control and crop tolerance in soybeans	Syngenta Crop Production	\$13,455	4/16/08-4/1/09
Bruhn, J.; Mihail, J.	2008 Sudden Oak Death Stream Baiting Survey	Forest Service	\$13,100	5/1/08-4/30/09
Burdick, B.	Academic Yield Trial with Roundup Ready 2 Yield Soybeans	Monsanto Co.	\$9,000	4/1/08-3/31/09
Finke, D.	University Research Council Grant	University Research Council	\$7,500	5/1/08-6/30/09
Fritschi, F.	University Research Council Grant	University Research Council	\$7,500	4/1/08-5/31/09
Fritschi, F.	Fifth International Crop Science Congress Travel Grant	American Society of Agronomy	\$2,000	5/5/08-5/30/08
Fritschi, F.	Coupling high-throughput genetic and phenotypic information for yield enhancement	Smith Bucklin and Associate	\$106,267	4/1/08-3/31/09
Nelson, K.	Academic Yield Trial with Roundup Ready 2 Yield Soybeans	Monsanto Co.	\$11,000	4/1/08-3/31/09
Nelson, K.	RICETEC Agreement, 2008	RICETEC, Inc.	\$5,000	4/1/08-3/31/09
Nelson, K.	RR2Y Soybean Germplasm Early-Mid MG# Yield Plots	Monsanto Co.	\$5,000	5/1/08-11/30/08
Kroening, M.; Quinn J.; Starbuck, C.; Fresenburg, B.	A Statewide Educational Program Featuring IPM in the Urban Homeowner's Landscape	CSREES	\$15,211	5/15/08-5/14/2010
Nguyen, H.; Shannon, G.; Kumar, R.	Molecular-genetic regulation of seed oil accumulation in soybean	MSMC	\$72,582	5/1/08-8/31/09
Nguyen, H.; Stacey, G.; Valliyodan, B.; Tran, S.	High throughput cloning and functional characterization of molecular switches for stress tolerance and enhanced seed composition in soybean	MSMC	\$73,671	5/1/08-4/30/09
Phillips, A.	Replicated Cotton Yield Trials	Monsanto Co.	\$22,025	4/15/08-7/15/09



## Recent Grants

Investigators	Title	Sponsor	Funding	Dates
Roberts, C.; Kallenbach, R.	Managed Reductions of Problems Associated with Fescue Toxicosis at Both Plant and Animal Levels	ARS	\$136,091	4/1/08-2/14/13
Shannon, G.; Sleper, D.; Nguyen, H.;	Evaluate germplasm for oleic acid and develop group III-V soybeans with optimum saturates, oleic and linolenic acids	ARS	\$129,675	4/21/08-2/28/09
Shannon, G	Evaluation of Soybean Varieties and Exotic Germplasm for Tolerance to Drought	Smith Bucklin and Associates	\$25,206	5/1/08-4/30/09
Shannon, G.	Evaluation of Soybean Varieties and Exotic Germplasm for Tolerance to Soil Waterlogging	Southern Soybean Research Program	\$24,206	5/1/08-4/30/09
Sharp, R.	Physiology and Genetics of Maize Root Adaptation to Water Deficits	Monsanto Co.	\$643,560	4/1/08-9/30/11
Sleper, D.; Nguyen, H.; Shannon, G.; Pathan, M.	Development of High Yielding Group III-V soybeans with Hi-Protein, SCN Resistance, and Low Allergen, Stachyose Concentrations	Dept. of Ag.	\$91,113	4/28/08-2/28/09
Wiebold, B.	Academic Yield Trial with Roundup Ready 2 Yield Soybeans	Monsanto Co.	\$9,000	4/1/08-3/31/09
Wiebold, B.	RR2Y Soybean Germplasm Mid-Late MG3 Yield Plots	Monsanto Co.	\$3,500	5/1/08-11/30/08
Zhang, Z.	University Research Council Grant	University Research Council	\$39,572	6/1/08-5/31/09
Nguyen, H.; Shannon, G.; Sleper, D.	Commercialization of value-added food grade soybean lines developed by the University of Missouri and new generation functional food ingredients and plant-made component extraction for nutritional retail	Mid-American Research and Development Foundation	\$290,281	1/1/08-12/31/09
Nguyen, H.; Stacey, G.; Xu, Dong	Construction of proteome and metabolome maps of soybean to improve yield and value-added traits	Smith Bucklin and Assoc.	\$743,108	1/1/09-12/31/10
Sweets, L.	Improving Management of Soybean Cyst Nematode through Extension Demonstration and Outreach	University of Nebraska-Lincoln	\$15,000	3/1/08-2/28/09
Davis, G.	Improving Maize Genome Resources for Cereal Crop Improvement	USDA/ARS	\$37,960	9/15/08-9/14/09
Bailey, W.	Lygus Rearing	Monsanto	\$70,411	7/1/08-6/30/09
Fritschi, F.	Drought Stress Tolerance in Missouri	ARS	\$50,000	7/1/08-3/31/09
Shannon, G.	Identification and Utilization of Exotic Germplasm to Improve Soybean Productivity	Agricultural Research Services	\$42,000	6/23/08-3/31/09



## 8 Recent Grants

Investigators	Title	Sponsor	Funding	Dates
Song, Q.	Baseline Monitoring of Field Populations	Monsanto	\$15,360	5/1/08-4/30/09
Stevens, G.; Dunn, D	Nitrogen Fertilization for Sprinkler Irrigated Rice	Mo. Dept. of Natural Resources	\$155,194	3/13/08-6/30/11
Stevens, G.	Rice Production Research for the Upper Mississippi Delta Region	ARS	\$172,234	7/15/08-7/14/09
Fritschi, F.	Drought Stress Tolerance in Missouri	ARS	\$50,000	7/1/08-3/31/09
Wrather, A; Shannon, G.	Managing Frogeye Leaf Spot and Charcoal Rot in the North Central Region	Southern Il. University	\$19,000	3/1/08-2/28/09
Nguyen, H.; Sleper, D.; Shannon, G.; Stacey, G.	National Center for Soybean Biotechnology	Dept. of Agriculture	\$685,232	8/1/08-7/31/09
Kallenbach, R.	Regional Biomass Feedstock Partnership-Herbaceous Bioenergy Crop Field Trials	South Dakota State University	\$25,000	10/1/07-3/31/09
Wrather, A., Mitchum, M., Nguyen, H., Shannon, G., Sleper, D.	Biology and Management of Soybean Cyst Nematode	CSREES	\$551,890	8/1/08-7/31/09
Wright, S.	Plant Diagnostic Center Laboratory	Michigan State University	\$65,000	7/1/08-6/30/09
Kroening-Hibbard Mary, Quinn, J., Starbuck, C.	A Statewide Educational Program Featuring IPM in the Urban Homeowner's Landscape	CSREES	\$15,211	5/15/08-5/14/10
Nguyen, H., Sleper, D. Shannon, G.	Confirmation of Quantitative Trait Loci and Gene-Based Molecular Marker Development for Broad Spectrum Resistance to Soybean Cyst Nematode	Smith Bucklin and Associates	\$74,076	1/1/09-12/31/09
Fritschi, F.	Coupling high-throughput genetic and phenotypic information for yield enhancement	Smith Bucklin and Associates	\$151,814	4/1/09-3/31/10
Wiebold, B.	Development and Management of Canola in the Great Plains Region	Kansas State University	\$4,500	9/1/08-8/31/09





## Recent Publications

- Barrett, Bruce A. (2008). Assessment of methoxyfenozide exposure on the sexual attractiveness and responsiveness of adult codling moth, *Cydia pomonella* L., in small orchard blocks. *Pest Management Science* 64:916-922.
- Behl, R.W., B.E. Hibbard, S.C. Cermak, and T.A. Isbell. 2008. Examining *Cuphea* as a potential host for western corn rootworm (Coleoptera: Chrysomelidae) larval development. *J. Econ. Entomol.* 101: 797-800.
- Bento, M., Sofia Pereira, H., Rocheta, M., Gustafson, Perry, Viegas, W., and Silva, M. Polyploidization as a reaction force in plant genome evolution: sequence rearrangements in triticale. *PLoS 3(1)*: e1402. doi:10.1371/journal.pone.0001402. 2008.
- Bohnert, C., C. Starbuck and S. Anderson. 2008. Amending a gravel based growing medium with calcined clay Improves physical properties and seedling growth. *J. Environ. Hort.* 26(3):149–156.
- Bradley, K. W. and L. Sweets. 2008. Influence of glyphosate and fungicide coapplications on weed control, spray penetration, soybean response, and yield in glyphosate-resistant soybean. *Agron. J.*:100:1360-1365.
- Bradley, K. W., R. J. Smeda, and R. E. Massey. 2008. Management of glyphosate-resistant waterhemp in corn and soybean. *Univ. MO. Ext. Pub. IPM1030*.
- Brechenmacher, Laurent, Joohyun Lee, Sherri Sachdev, Zhao Song, Tran Hong Nha Nguyen; Joshi Trupti, Beverly Dague, Nathan Oehrle, Marc Libault, Brian Mooney, Dong Xu, Bret Cooper, and Gary Stacey (2008) Establishment of a protein reference map for soybean root hair cells. *Plant Physiol.* (Published online Nov. 26, 2008)
- Brechenmacher, Laurent, Moon-Young Kim, Jijun Zou, Marisol Benitez, Min Li, Crystal B. McAlvin, Trupti Joshi, Bernarda Calla, Mei Phing Lee, Reena Philip, Marc Libault, Lila O. Vodkin, Dong Xu, Suk-Ha Lee, Steven J. Clough, Gary Stacey. (2008) Transcription profiling of soybean supernodulation by *Bradyrhizobium japonicum*. *Mol. Plant-Microbe Int.* 21: 631-645
- Bruhn, J., and Hall, M. 2008. Growing shiitake mushrooms in an agroforestry practice. 2nd edition. *Agroforestry in Action*, AF1010 - 2008, 12 p., University of Missouri Center for Agroforestry, [www.centerforagroforestry.org](http://www.centerforagroforestry.org).
- Bruhn, J.N. and Mihail, J.D. 2008. What is the largest living organism? Pages 188-189 in: M.J. Benton, ed. *The Seventy Great Mysteries of the Natural World*. Thames & Hudson, London.
- Collins, N.C., Shirley, N.J., Saeed, M., Pallotta, M., and Gustafson, J.P. An *ALMT1* gene cluster controlling aluminium (aluminum) tolerance at the *Alt4* locus of rye (*Secale cereale* L.). *Genetics* 179:669-682. 2008.
- Curtis, L.E., R.L. Kallenbach, and C.A. Roberts. 2008. Allocating forage to fall-calving cow-calf pairs strip-grazing stockpiled tall fescue. *J. Anim. Sci.* 86:780-789.
- Dierking, R.M., R.L. Kallenbach, M.S. Kerley, C.A. Roberts, and T.R. Lock. 2008. Yield and nutritive value of 'Spring Green' festulolium and 'Jessup' endophyte-free tall fescue stockpiled for winter pasture. *Crop Sci.* 48: 2463-2469.
- Finke, D.L. and W.E. Snyder. 2008. Niche partitioning increases resource exploitation by diverse communities. *Science.* 321: 1488-1490.
- Govindarajulu, Manjula, Sung-Yong Kim, Marc Libault, R. Howard Berg, Kiwamu Tanaka, Gary Stacey, and Christopher G. Taylor (2008) GS52 ecto-apyrase plays a critical role during nodulation in soybean. *Plant Physiology* (Published online Nov. 26, 2008)
- Gustafson, J.P., Ma, X.-F., Korzun, V., and Snape, J.W. A Consensus Map of Rye Integrating Mapping Data from Five Mapping Populations. *Theor. Appl. Genet.* 2008.
- Hibbard, B.E., Y.M. Schweikert, M.L. Higdon, and M.R. Ellersieck. 2008. Maize phenology affects establishment, damage, and development of the western corn rootworm. *Environ. Entomol.* 37: 1558-1564.
- Jiang, P., Kitchen, N.R., Anderson, S.A., Sudduth, K.A., and Sadler, E.J. Estimating plant-available water using the simple inverse yield model for claypan landscapes. *Agron. J.* 100:830-836. 2008.



## Recent Publications

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- Keesey, I. and B. Barrett (2008). Seasonal occurrence and soil distribution of the lesser chestnut weevil, *Curculio sayi* (Coleoptera: Curculionidae) in mid-Missouri. *Journal of the Kansas Entomological Society* 81(4):354-354.
- Kitchen, N.R. Emerging technologies for real-time and integrated agriculture decisions. *Comp. Electron. Agric.* 61(1):1-3. 2008.
- Lee, Jeong-Dong, Scotty L. Smothers, David Dunn, Margarita Villagarcia, Calving R. Shumway, Thomas E. Carter, Jr. and J. Grover Shannon. 2008. Evaluation of a simple method to screen soybean genotypes for salt tolerance. *Crop Sci.* 48:2194-2200.
- Legleiter, T. R. and K. W. Bradley. 2008. Glyphosate and multiple herbicide resistance in waterhemp (*Amaranthus rudis*) populations from Missouri. *Weed Sci.* 56:582-587.
- Jerch, R.N., Sadler, E.J., Kitchen N.R., Sudduth, K.A., Kremer, R.J. Myers, D.B., Baffaut, C., Anderson, S.H., and Lin, C.H. Overview of the Mark Twain Lake/Salt River Basin conservation effects assessment project. *J. Soil Water Conserv.* 63(6):345-359. 2008
- Jerch, R.N., Sadler, E.J., Kitchen N.R., Sudduth, K.A., Kremer, R.J. Myers, D.B., Baffaut, C.; Anderson, S.H., and Lin, C.H. 2007. Overview of the Mark Twain Lake/Salt River Basin conservation effects assessment project. *J. Soil Water Cons.* 63(6):345-359.
- Libault, Marc, Sandra Thibivilliers, Osman Radman, Steven J. Clough and Gary Stacey (2008) Identification of four soybean reference genes for gene expression normalization. *Plant Genome.* 1:44-54
- Lory, John. *Spatial Nutrient Management Planner ver. 2.0*. The Spatial Nutrient Management Planner facilitates collection, analysis and presentation of spatial data related to nutrient management planning. Version 2.0 was released in October 2008. Available for download online at <http://nmplanner.missouri.edu/software/snmp.asp>.
- Lory, John. *The Missouri Plant Available Nutrient Calculator*. Calculations are detailed in MU Guide G9186 "Calculating Plant-Available Nitrogen and Residual Nitrogen Value in Manure." This tool is available online at [http://nmplanner.missouri.edu/tools/pan\\_calculator.asp](http://nmplanner.missouri.edu/tools/pan_calculator.asp).
- Ma, X.-F., and Gustafson, J.P. Allopolyploidization Accommodated Genome Sequence Changes in Triticale. *Annals of Botany* 101:825-832. 2008.
- Mathieu, Melanie, Elizabeth K. Winters, Fanming Kong, Jinrong Wan, Shaoxing Wang, Helene Eckert, Christopher Donovan, David Somers, Kan Wang, Gary Stacey and Tom Clemente (2008) Establishment of a soybean (*Glycine max* Merr. L) transposon-based mutagenesis repository. *Planta* (published online).
- Meihls, L.N., M.L. Higdon, B.D. Siegfried, T.A. Spencer, N.K. Miller, T.W. Sappington, M.R. Ellersieck, and B.E. Hibbard. 2008. Increased survival of western corn rootworm on transgenic corn within three generations of on-plant greenhouse selection. *Proceedings of the National Academy of Science* 105: 19177-19182.
- Meyer, A.M., M.S. Kerley, and R.L. Kallenbach. 2008. The effect of residual feed intake classification on forage intake by grazing beef cows. *J. Anim. Sci.* 86:2670-2679.
- Motavalli, P. P. and K.A. Nelson. 2008. Use of enhanced-efficiency fertilizers for improved agricultural nutrient management: Introduction to the symposium. Online. *Crop Management* doi:10.1094/CM-2008-0730-01-PS.
- Nelson, K. A., Scharf, P. C., Bundy, L.G., and Tracy, P. 2008. Agricultural management of enhanced-efficiency fertilizers in the north-central United States. Online. *Crop Management* doi:10.1094/CM-2008-0730-03-RV.
- Olmer, K.J. and B.E. Hibbard. 2008. The nutritive value of dying maize and *Setaria faberi* roots for western corn rootworm development. *J. Econ. Entomol.* 101: 1547-1556.
- Oyediran, I. O., B. W. French, T. L. Clark, K. Dashiell, and B. E. Hibbard. 2008. Prairie grasses as hosts of the northern corn rootworm (Coleoptera: Chrysomelidae). *Environ. Entomol.* 37: 247-254.
- Pruett, G.E., Bruhn, J.N., and Mihail, J.D. 2008. Colonization of Pedunculate oak by the Burgundy truffle fungus is greater with natural than pelletized lime. *Agroforestry Systems* 72:41-50.



## Recent Publications

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- Pruett, G., Bruhn, J., and Mihail, J. 2008. Temporal dynamics of ectomycorrhizal community composition on root systems of oak seedlings infected with Burgundy truffle. *Mycological Research* 112:1344-1354.
- Pruett, G.E., Bruhn, J.N., and Mihail, J.D. 2009. Greenhouse production of Burgundy truffle mycorrhizae on oak roots. *New Forests*. 37:43-52.
- Shanahan, J.F., Kitchen, N.R., Raun, W., and Schepers, J.S. Responsive in-season nitrogen management for cereals. *Comp. Electron. Agric.* 61(1):51-62. 2008.
- Shoemaker, Randy, David Grant, Terry Olson, Wesley C. Warren, Rod Wing, Perry Cregan, Bindu Joseph, Montana Futrell-Griggs, Will Nelson, Jon Davito, Jason Walker, John Wallis, Colin Kremitski, Debbie Scheer, Sandy Clifton, Tina Graves, Henry Nguyuen, Xiaolei Wu, Mingcheng Luo, Jan Dvorak, Steve Cannon, Jeff Thomkins, Jeremy Schmutz, Gary Stacey and Scott Jackson (2008) Microsatellite discovery from BAC end sequences and genetic mapping to anchor the soybean physical and genetic maps. *Genome* 51: 294-302
- Somers, D.J., Langridge, P., and Gustafson, J.P. *Plant Genomics*. Humana Press, London. 2008.
- Spollen, William G, Wenjing Tao, Babu Valliyodan, Kegui Chen, Lindsey G Hejlek, Jong-Joo Kim, Mary E LeNoble, Jinming Zhu, Hans J Bohnert, David Henderson, Daniel P Schachtman, Georgia E Davis, Gordon K Springer, Robert E Sharp and Henry T Nguyen. 2008. Spatial distribution of transcript changes in the maize primary root elongation zone at low water potential. *BMC Plant Biology* 2008, 8:32 (15 pages)  
doi:10.1186/1471-2229-8-32
- Stacey, Minviluz G., Ami Patel, William E. McClain, Melanie Mathieu, Melissa Remley, Elizabeth E. Rogers, Walter Gassmann, Dale G. Blevins and Gary Stacey. (2008) The Arabidopsis AtOPT3 protein functions in metal homeostasis and movement of iron to developing seeds. *Plant Physiol.* 146: 589-601
- Stevens, G., A. Wrather, M. Rhine, D. Dunn, and E. Vories. 2008. Predicting rice yield response to midseason nitrogen with plant area measurements. *Agronomy Journal* 100:387-392.
- Takeda, F., K. Demchak, M. R. Warmund, D.T. Handley, R. Grube, and C. Feldhake. Row cover improves winter survival and production of western trailing 'Siskiyou' blackberry in the eastern United States. *HortTechnology* 18: 575-582.
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- Wan J., Patel A., Mathieu M., Kim S.-Y., Xu D., Stacey G. (2008) A lectin receptor-like kinase is required for pollen development in Arabidopsis. *Plant Mol. Biol.* 67: 469-482
- Wan, Jinrong, Xuecheng Zhang, and Gary Stacey (2008) Chitin signaling and plant disease resistance. *Plant Signaling and Behavior*, 3 (10): 1-3.
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# Events and Activities

## SOME UPCOMING MEETINGS & ACTIVITIES:

A more complete list of Division Events can be found at <http://plantsci.missouri.edu>

## 2009 MEETINGS:

2009 Mid-America Fruit Growers Conference, Jan 13 - 15, Columbia, MO.

The 26th Annual Interdisciplinary Plant Group Symposium will be held May 27-29, 2009, at University of Missouri, Columbia. This year's symposium focuses on root biology.

The 9th IPMB Congress will be held Oct 25-30, 2009 in St. Louis, MO. See details on this page.

Missouri is host to the 2009 Annual Meeting of the American Society for Horticultural Science. The meeting will be held in St. Louis, from 25 to 28 July 2009.



Perry Gustafson is Chair of the International Plant Molecular Biology Congress and leads the organizing committee for the 9th International congress coming up next fall in St. Louis. Details can be seen on the IPMB web site at:

<http://www.ipmb2009.org>



Turf Field Day was damp but visitors took the opportunity to learn about turf and ornamental plant management.

Plant Sciences staff and faculty supported the McCambridge House this holiday season. Jean Miller took the lead and support included food and presents for the residents.



Interested but skeptical.... Visitors at the South Farm Showcase talk with Richard Houseman about the insect dishes he has on offer.