LEE TARPLEY
Associate Professor of Whole Plant Physiology
Texas A&M AgriLife Research Center at Beaumont, Texas
Department of Soil and Crop Sciences, Texas A&M University

Education/Training

1993	PhD	Plant Physiology	Texas A&M University
1987	MS	Plant Science	California State University
1980	BA	Botany	University of Wyoming

Positions and Employment

2001-	Assistant/Associate Professor; Texas A&M AgriLife Research Center; Soil & Crop Sciences; Texas A&M University
1999-2001	Visiting Research Scientist; Plant & Soil Sciences; Mississippi State University
1997-1999	Postdoctoral Plant Biochemist; USDA Agricultural Research Service; Mississippi State, MS
1996-1997	Postdoctoral Researcher; Soil & Crop Sciences; Texas A&M University
1993-1996	Postdoctoral Researcher; Soil & Crop Sciences; Texas A&M University
1992-1993	Research Associate; Biochemistry & Biophysics; Texas A&M University

Program Overview

The ***objectives*** of my research are: (1) discover knowledge of plant physiological processes pivotal to how a crop plant operates in producing the product of yield; **(2)** develop near-term technologies to minimize the effects of specific environmental factors on crop productivity; (3) develop near-term strategies to directly improve crop productivity/profitability; and (4) develop strategies for measuring novel characteristics that can be used to assist crop genetic improvement.

As a plant physiologist working with crops, I have dual, interdependent, ***obligations*** – one towards discovering and applying knowledge of how the crop plant and plant populations function and interact with the environment for the agronomic and genetic improvement of crop production at all scales – global to regional, the other towards 'troubleshooting' and improving specific production systems in the region (rice is the major crop where I am located) as part of an interdisciplinary team. Through discovery and application of knowledge of the physiology of crop plants, my research positively ***impacts*** the economics and sustainability of crop production, both locally and globally.

Significant 5-Year Accomplishments

International, national and (Texas A&M University System (TAMUS) cooperations: Three current international cooperations that include funded travel to the international site; another in process; Participant in several international ag-oriented proposals; Three recent articles from international cooperations, 2 from national-level cooperations, plus 2 from within-TAMUS cooperations. ***Research methodology:*** Introduced systematic use of plant growth regulators when studying plant response to environmental stresses**.** This helps identify the nature of the plant stress response, and speeds the identification of potential tools for minimizing the stress effects on crop yield and quality**.** This research resulted in 5 recent articles. ***Crop biology:*** Showed that rice plant response to high night temperature stress involves both ethylene response and oxidative stress. This suggests specific options for in-field prevention of high night temperature stress effects in rice, as well as options for genetic improvement of tolerance. Documented through 3 recent articles. ***Findings to help industry:*** Documented relationships among total soil nitrogen, available soil nitrogen and soil texture. This information can be used to provide better nitrogen fertilizer recommendations for southern U.S. rice production.

Publications - *Ten most recent publications (42 total)*

1. **Mohammed, A. R., J. T. Cothren, M.-H. Chen, and L. Tarpley. 2015.** 1-Methylcyclopropene (1-MCP)-induced alteration in leaf photosynthetic rate, chlorophyll fluorescence, respiration and membrane damage in rice (*Oryza sativa* L.) under high night temperature. Journal of Agronomy and Crop Science 201:105-116.
2. **Pinson, S. R. M., L. Tarpley, W. Yan, K. Yeater, B. Lahner, E. Yakubova, X. Huang, M. Zhang, M. L. Guerinot, and D. E. Salt. 2015.** Worldwide genetic diversity for mineral element concentrations in rice grain. Crop Science 55:1-18.
3. **Darapuneni, M.K., G. Morgan, A. Ibrahim, R. Duncan, B. Bean, T. Baughman, C. Trostle, L. Tarpley, R. Sutton, J. Grichar, and B. Wiedenfeld. 2014.** The evaluation of cool-season oilseed crops for yield and adaptation in Texas: An approach for selection of efficient biofueld feedstock. International Journal of Agronomy and Agricultural Research 5:62-74.
4. **Mohammed, A. R. and L. Tarpley. 2014.** Differential response of two important Southern U.S. rice (*Oryza sativa* L.) cultivars to high night temperature. Australian Journal of Crop Science 8:191-199.
5. **Norton, G. J., A. Douglas, B. Lahner, E. Yakubova, M. L. Guerinot, S. R. Pinson, L. Tarpley, G. C. Eizenga, S. P. McGrath, F. J. Zhao, M. R. Islam, S. Islam, G. Duan, Y. Zhu, D. E. Salt, A. A. Meharg, and A. H. Price. 2014.** Genome wide association mapping of grain arsenic, copper, molybdenum and zinc in rice (*Oryza sativa* L.) grown at four international field sites. PLos One 9(2):e89685.
6. **Zhang, M., S. R. M. Pinson, L. Tarpley, X. Huang, B. Lahner, E. Yakubova, I. Baxter, M. L. Guerinot, and D. E. Salt. 2014.** Mapping and validation of quantitative trait loci associated with concentrations of 16 elements in unmilled rice grain. Theoretical and Applied Genetics 127:137-165.
7. **Zhou, X. G., M. O. Way, and L. Tarpley. 2014.** Field evaluation of the efficacy of Coats AgriAloe treatments for management of rice diseases, 2013. Plant Disease Management Reports 8:FC238.
8. **Dowling, C. D., B. L. Burson, J. L. Foster, L. Tarpley, and R. W. Jessup. 2013.** Confirmation of pearl millet-napiergrass hybrids using EST-derived simple sequence repeat (SSR) markers. American Journal of Plant Sciences 4:1004-1012.
9. **Mohammed, A. R., and L. Tarpley. 2013.** High night temperature and abscisic acid affect rice productivity through altered photosynthesis, respiration and spikelet fertility. Crop Science 53:2603-2612.
10. **Mohammed, A. R.[†] and L. Tarpley*. 2013.** Effects of enhanced ultraviolet-B (UV-B) radiation and antioxidative-type plant growth regulators on rice (*Oryza sativa* L.) leaf photosynthetic rate, photochemistry and physiology. Journal of Agricultural Science 5:115-128.

Awards and Honors

- Secretary/Chair-Elect (=National conference organizer/President-Elect) of national society (Rice Technical Working Group); officer three times previously
- Division Chair/Past-Chair in Crop Science Society of America
- Panel member for federal agency; grant reviewer for 3 international agencies and 2 other federal agencies
- Invited speaker at two international conferences
- Appointed to editorial board of *Crop Science*; reviewer for more than 30 reputable journals

Professional Experience

- $5.4 million in research funds; $4.2 million to my program
- 42 refereed journal articles, 4 refereed (all externally peer-reviewed) book chapters , with 19 graduate student/post-graduate staff authors; 1 book (co-editor); 76 scientific abstracts; 154 non-refereed editor-reviewed proceedings/articles; 83 research outreach publications
- Co-Chair/Primary advisor: 2 Ph.D., 1 M.S. students
- Hosted 5 Visiting Scholars