Xuejun Dong
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Education/Training

1997 PhD Ecophysiology, Chinese Academy of Sciences, Beijing, China
1991 MS Ecophysiology, Chinese Academy of Sciences, Beijing, China
1987 BS Plant Physiology, Lanzhou University, Lanzhou, China

Positions and Employment

2013–Present Assistant/Associate Professor, Texas A&M AgriLife Research, Uvalde, TX
Department of Soil and Crop Sciences, Texas A&M University, College Station, TX
2000–2013 Research Specialist, Assistant Range Scientist/Adjunct Professor, Range Scientist/Adjunct Professor, North Dakota State University, Central Grasslands Research Extension Center, Streeter, ND
1999–2000 Research Associate, Duke University, Department of Botany, Durham, NC
1997–1999 Research Associate Professor, Institute of Botany, Chinese Academy of Sciences (IBCAS), Beijing, China
1991–1997 Research Assistant Scientist, IBCAS, Beijing, China

Program Overview

My program focuses on understanding soil-plant water relations and root/shoot processes for crop management in water-limited cropping systems. Leading research areas include (a) understanding plant biotic and abiotic stresses associated with water deficit and plant adaptation processes; (b) analyzing crop systems and developing new technologies to minimize risk, improve productivity and enhance soil quality and water conservation. I am currently serving as a guest-lecturer to a new graduate course, "Root Biology," which is cross-listed in MEPS and HORT at Texas A&M University, College Station.

Significant 5 Year Achievements

Measured soil hydraulic properties of the clay soil in southwest Texas. Developed a ground-based phenotyping cart for high-throughput measurement of crop canopy features and applied it for predicting leaf rust infection rate in winter wheat. Applied ground penetrating radar (GPR) technology for crop fine root detection under field conditions. Explored the value of compound-specific carbon isotope composition of leaf wax alkanes in indicating leaf water use efficiency of winter wheat. Elucidated new opportunities for improving crop root traits for drought tolerance by testing the applicability of the root economic spectrum framework for explaining the root traits-environment-management relationships using data of winter wheat collected from contrasting environments. Showed that long-term strip tillage practice significantly improved activities of both soil bacteria and fungi communities in watermelon production. Demonstrated that water use efficiency of cropping systems can be increased significantly through improved management of irrigation (amount and timing), including cover crops in crop rotation, as well as the applications of soil amendments that promote soil health.

Publications

Ten most recent publications in peer-reviewed journals (60 total)

1 X. Liu, X. Dong, X. Ma, E. B. Blancaflor and J. R. Butnor. 2019. Ground penetrating radar with a high frequency antenna improves root biomass detection in sandy soil-grown winter wheat. *Ground Penetrating Radar* 2(2): xxx-xxx (In press).

2 B. Peng, X. Liu, X. Dong, Q. Xue, C. B. Neely, T. Marek, A. M. H. Ibrahim, G. Zhang, D. I. Leskovar and J. C. Rudd. 2019. Root morphological traits of winter wheat under contrasting environments. *Journal of Agronomy and Crop Science* 00:1-15. DOI: 10.1111/JAC.12360.

3 K. Qin, X. Dong, J. Jifon and D. I. Leskovar. 2019. Rhizosphere microbial biomass is affected by soil type, organic and water inputs in a bell pepper system. *Applied Soil Ecology* 138: 80-87. https://doi.org/10.1016/j.apsoil.2019.02.024

4 X. Dong, B. Peng, X. Liu, K. Qin, Q. Xue and D. I. Leskovar. 2019. An automated calculation of plant root distribution parameters based on root length density data. *Applied Ecology and Environmental Research* 17: 3545-3552. DOI: http://dx.doi.org/10.15666/aeer/1702_35453552

5 X. Liu, S. Feakins, X. Dong, Q. Xue, J. Han, T. Marek, D.I. Leskovar, C.B. Neely and A.M.H. Ibrahim. 2019. Evaluating leaf wax and bulk leaf carbon isotope surrogates for water use efficiency and grain yield in winter wheat. *Crop Science* 59: 718-732. doi:10.2135/cropsci2018.07.0452.

6 Y. J. Zhang, M. Y. Hou, H. Y. Xue, L. T. Liu, H. C. Sun, C. D. Li, X. J. Dong. 2018. Photochemical reflectance index and solar-induced fluorescence for assessing cotton photosynthesis under water-deficit stress. *Biologia Plantarum* 62: 817-825. DOI: 10.1007/s10535-018-0821-4.

7 X. Liu, X. Dong, Q. Xue, D.I. Leskovar, J. Jifon, J.R. Butnor and T. Marek. 2018. Ground penetrating radar (GPR) detects fine roots of agricultural crops in the field. *Plant and Soil* 423: 517-531. https://doi.org/10.1007/s11104-017-3531-3.

8 X. Liu, S. Feakins, X. Dong, Q. Xue, T. Marek, D.I. Leskovar, C.B. Neely, A.M.H. Ibrahim. 2017. Experimental study of leaf wax n-alkane response in winter wheat cultivars to drought conditions. *Organic Geochemistry* 113: 210-223.

9 X. Liu, X. Dong, D. Leskovar. 2016. Ground penetrating radar for underground sensing in agriculture: a review. *International Agrophysics* 30: 533-543. doi: 10.1515/intag-2016-0010

10 D. Leskovar, Y. Othman, X. Dong. 2016. Strip tillage improves soil biological activity, fruit yield and sugar content of triploid watermelon. *Soil & Tillage Research* 163: 266-273.

Synergistic Activities

1. Member of Crop Science of America, American Society of Agronomy, Soil Science Society of America; ACS - Book and Multimedia Publishing Committee (term 2017-2019).
2. Member of NCCC31 (Ecophysiological Aspects of Forage Management), representing North Dakota State University from 2015 to 2013.
3. Associate Editor, *Arid Land Research and Management*, 2009-present
4. Associate Editor/Board Member, *Photosynthetica*, 2010-present
5. Associate Editor, *Irrigation Science*, 2016-present