

Dirk B. Hays
Professor and Chair Molecular and Environmental Plant Sciences
Dept. of Soil and Crop Sciences, Texas A&M University, College Station, Texas

Education/Training

1997	Ph.D.	University of Calgary	Plant Physiology
1991	B.S.	Texas A&M University	Biochemistry

Positions and Employment

2014 -Present	Professor , Soil and Crop Sciences, Texas A&M University
2009-present	Chair Molecular and Environmental Plant Sciences
2002-2014	Assistant/Associate Professor , Soil and Crop Sciences, Texas A&M University
1999-2001	Research Geneticist USDA,ARS,GMPCR, PSERU, Manhattan, Kansas
1997-1999	Research Plant Physiologist , USDA, ARS, PSWCRL, Stillwater, Oklahoma

Program Overview

My research focuses on nutritional, food product, and a/biotic stress plant breeding in wheat, sorghum, cowpea, cassava and high biomass energy crop using high throughput remote sensing, biochemical, physiological, and genetic based methods. I currently teach an upper-level undergraduate course in Crop Stress Management (SCSC 402) and a graduate course in Physiology of Plants (MEPS 601) each Fall semester semester.

Significant 5 Year Accomplishments

Research: Acquired \$23,073,837 of which \$11,395,085 went to my research program. Developed novel patent-pending GMO free wheat cultivars using chromosomal deletions with ideal clean ingredient functionality for unleavened breads. Co-developed novel grain sorghum hybrids with ideal quality for bioethanol, brewing and gluten free bread products. Developed novel wheat germplasm with ideal heat, drought, and rust resistance for Texas. Develop the use of ground penetrating radar, and terrestrial laser scanning for root and foliar crop biomass phenotyping. Since 2009, authored/co-authored 24 peer-reviewed publications. Teaching: Instructed six semesters of Physiology of Plants (MEPS 601), and two semesters of Crop Stress Management (SCSC 402). Supervised 3 postdoctoral research associates. Supervised 12 MS and PhD students

Publications

Ten most recent publications (40 total)

1. **Suchismita Mondal, Richard Esten Mason, Trevis Huggins, Dirk B. Hays** 2014. QTL on wheat (*Triticum aestivum* L.) chromosomes 1B, 3D and 5A are associated with constitutive production of leaf cuticular wax and may contribute to lower leaf temperatures under heat stress. *Euphytica*. DOI 10.1007/s10681-014-1193-2
2. Acuna, A., **Mason, R.E.**, Subramanian, N., **Hays, D.B.** 2014. Meta-analysis of Wheat QTL Regions associated with adaptation to heat and drought stress. *Crop Science* doi:10.2135/cropsci2013.11.0793.
3. Basnet BR, Ibrahim AMH, Chen X, Singh RP, **Hays DB, Mason ER**, Bowden R, Liu S, Devkota RN, Subramanian NK, Rudd JC. 2014. Molecular Mapping of Stripe Rust Resistance in Hard Red Winter Wheat TAM 111 Adapted in the U.S. High Plains, *Crop Science* doi: 10.2135/cropsci2013.09.0625.

4. Liu S, Rudd JC, Bai G, Haley SD, Ibrahim AMH, Xue Q, **Hays DB**, Graybosch RA, Devkota RN, Amand P. 2014. Molecular Markers Linked to Genes Important for Hard Winter Wheat Production. *Crop Sci.* 54:1–18.
4. **R. Esten Mason, Dirk B. Hays, Suchismita Mondal**, Amir M.H. Ibrahim, and Bhoja R. Basnet. 2013. QTL for yield, yield components and canopy temperature depression in wheat under late sown field conditions, *Euphytica* DOI 10.1007/s10681-013-0951-x.
5. **Jampala B., Rooney WL, Peterson GC, Hays DB. 2012.** Estimating the relative effects of the endosperm traits of waxy and high protein digestibility on yield in grain sorghum. *Field Crop Research* 139: 57-62.
6. Mugode L., **Portillio O.R., Hays D.B.,** Rooney L.W., Taylor R.N. 2011. Influence of high protein digestibility sorghums on free amino nitrogen (FAN) production during malting and mashing. *Journal of the Institute of Brewing* 117: 422-426.
7. **Mason, R.E., Mondal, S., Beecher, F.W,** Hays, D.B. 2011 Genetic loci linking improved heat tolerance in wheat (*Triticum aestivum* L.) to lower leaf and spike temperatures under controlled conditions. *Euphytica*.180: 181-194.
8. Reynolds M.P., **Hays D.B.** Chapman S. 2010. “Breeding for adaptation to heat and drought stress” *In: Climate change and crop production*, Reynolds M.P. (Ed.), CABI Inc.
9. **Mason R.E., Mondal S., Beecher F.,** Ibrahim A., **Hays D.B.** 2010. Quantitative loci regulating yield maintenance under reproductive stage heat stress in wheat. *Euphytica* 174: 423-436.
10. Wu, Xiaorong, **Jampala, Babitha, Robbins, Adriana, Hays, Dirk** Yan, Shuping Xu, Feng, Rooney, William, Shi, Yong-Cheng, and D. Wang, 2010, Ethanol Fermentation Performance of Grain Sorghums with Modified Endosperm Matrices¹ *J. of Agriculture and Food Chemistry* **58**: 9556-9562.

Awards and Honors

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| 2013 | Texas A&M, Coll. of Agric. and Life Sci., Vice Chancellors Award in Excellence: Team Collaboration |
| 2012 | US Fulbright Fellow, South Central Asia to Bangladesh, India. |
| 2010 | Texas A&M, Coll. of Agric and Life Sci., Vice Chancellors Award in Excellence: Advanced Leadership Program |
| 2010 | Texas A&M, Coll. of Agric. and Life Sci., Vice Chancellors Award in Excellence: Diversity |

Professional Experience

- Advised 4 postdoctoral research associates, 20 PhD students, and 10 MS students.
- Authored/co-authored 40 peer-reviewed journal articles, 4 book chapters, and 129 scientific abstracts/presentations.
- Acquired \$23073,837 of which \$11,395,085 went to my program.
- Courses instructed: Crop Stress Management (SCSC 402), Physiology of Plants (MEPS 601).