

Jane K. Dever

Professor of Cotton Breeding

Dept. of Soil and Crop Sciences, Texas A&M AgriLife Research, Lubbock, Texas

Education/Training

1989 PhD Agronomy, Texas Tech University
1986 MS Crop Science, Texas Tech University
1983 BS Textile Technology and Management, Texas Tech University

Positions and Employment

2008- Associate Professor/Professor, Texas A&M AgriLife Research, Lubbock
1998-2008 Product Development Manager/Global Cotton Breeding Manager, Bayer CropScience
1995-1998 Senior Research Scientist, BioTex
1993-1995 Engineer, Plains Cotton Cooperative Association
1992-1993 Head, Materials Evaluation, Fiber and BioPolymer Research Institute, Texas Tech
1983-1992 GRA/Research Associate/Associate Research Scientist, Texas A&M AgriLife Research

Program Overview

Research focus includes developing new and differentiated germplasm with enabling technology, and screening exotic germplasm collections for native traits to be used in breeding cotton.

Breeding targets include improved fiber quality, drought tolerance, nematode resistance, disease tolerance to *Verticillium dahliae*, *Theilaviopsis basicola*, and *Xanthomonas* (bacterial blight) and yield component stability in high fiber quality lines. Fiber quality research includes not only improvement of heritable physical fiber properties, but also enhanced utilization facilitated by positive genetic/agronomic/processing interactions. Incorporating native traits into cultivars through classical breeding for organic production and preserving genetic resources in a recombinant DNA environment is a primary goal of the breeding program.

Significant 5 Year Accomplishments

Acquired \$15,462,092 in research funds, of which \$3,985,257 went to my research program. Released cotton germplasm lines for Verticillium wilt resistance and fiber quality improvement resulting in three disclosures and material transfer agreements. Verticillium wilt, *V. dahliae*, continues to be a major yield-limiting factor in High Plains cotton production (as well as globally), and there has been no real improvement in resistance of commercial varieties in decades. The two problems that appear to limit progress in this area are a lack of better resistance germplasm sources, and poor understanding of the genes involved with partial resistance to the fungus. An early maturing germplasm line, partially resistant to Verticillium wilt, CA 4002, was released in 2012. Drs. Libo Shan and Ping He's laboratories have established the virus-induced gene silencing (VIGS) assay for CA 4002 (Gao, et al., 2013, *Journal of Integrative Plant Biology*) and identified a same set of key regulatory genes for resistance in both CA 4002 and Fibermax FM 960B2F. Demonstrated that properly-calibrated cotton fiber extensibility measurements are heritable and selection pressure for improved elongation can result in 50% improvement in cotton yarn strength. Demonstrated that host plant resistance to thrips is moderately heritable, and prepared release requests for three thrips-tolerant cotton breeding lines. Discovered novel sources of resistance to salinity, root-knot nematode, and Verticillium wilt, and characterized germplasm accessions with improved response to drought stress. Since 2011, authored/co-authored 17 refereed journal articles and two book chapters. Supervised seven graduate students with three in progress, and served on 15 graduate research advisory committees with three in progress.

Publications

Ten most recent publications (23 total)

1. Eng, E. H., K. Jernigan, W. Smith, E. Hequet, **J. K. Dever**, S. Hague, and A. Ibrahim. 2013. Stability analysis of upland cotton in Texas. *Crop Science* 53(4): 1347-1355.
2. Gao, X., M. Li, F. Li, A. S. Kianinejad, **J. K. Dever**, T. A. Wheeler, Z. Li, P. He, and L. Shan.

2013. Cotton GhBAK1 mediates Verticillium wilt resistance and cell death. *Journal of Integrative Plant Biology* online: doi: 10.1111/jipb.12064.
3. Niu, G., D. Rodriguez, **J. K. Dever**, and J. Zhang. 2013. Responses of five cotton genotypes to sodium chloride and sodium sulfate saline water irrigation. *Journal of Cotton Science* 17(3): 233-244.
 4. Hutmacher, R. B., M. Ulloa, S. D. Wright, B. T. Campbell, R. Percy, T. Wallace, G. Myers, F. Bourland, D. Weaver, P. Chee, P. Thaxton, J. Zhang, C. W. Smith, **J. K. Dever**, V. Kuraparthy, D. Bowman, D. Jones, J. Burke. 2013. Elite upland cotton germplasm-pool assessment of fusarium wilt resistance in California. *Agronomy Journal* 105(6): 1635.
 5. Zeng, L., W. R. Meredith, B. T. Campbell, **J. K. Dever**, J. Zhang, K. Glass, A. Jones, G. Myers, and F. Bourland. 2014. Genotype X environment interaction effects on lint yield of cotton cultivars across major regions of the U. S. cotton belt. *Journal of Cotton Science* 18(1): 75-84.
 6. Ng, E-H., C. W. Smith, E. Hequet, S. Hague and **J. K. Dever**. 2014. Generation means analysis for fiber elongation in upland cotton. *Crop Science* 54(4): 1347-1353.
 7. Kothari, N., **J. K. Dever**, S. Hague and E. F. Hequet. 2014. Evaluating intra plant cotton fiber variability. *Crop Science* 55(2):564-570.
 8. Hinze, L., P. Horn, N. Kothari, J. Frelichowski, **J. K. Dever**, K. Chapman, and R. Percy. 2014. Non-destructive measurements of cottonseed nutritional trait diversity in the US National Cotton Germplasm Collection. *Crop Science* 55:770-782.
 9. Kothari, N., B. T. Campbell, **J. K. Dever**, and L. L. Hinze. 2015. Combining ability and performance of cotton germplasm with diverse seed oil content. *Crop Science* (accepted)
 10. Kelly, C. M., **J. K. Dever**, and E. F. Hequet. 2015. Registration of CA 4003 and CA 4004 cotton germplasm lines with improved fiber quality profiles and yarn properties. *Journal of Plant Registrations*. doi: 10.3198/jpr2015.02.0007crg.

Awards and Honors

- 2011-2016, Appointed to National Genetics Research Advisory Council by U.S. Secretary of Agriculture Tom Vilsack
- 2012-2013, Selected to participate in the Texas A&M Advanced Leadership Cohort II
- 2012, “Golden Hoe” award presented by Texas Organic Cotton Marketing Cooperative for contribution to organic cotton industry
- 2012, Blue Legacy Award in Agriculture for contribution to the Ogallala Aquifer Project
- 2012, Cotton Genetics Research Award

Professional Experience

- Advised/co-advised 3 postdoctoral research associates, 14 PhD students, and 13 MS students.
- Authored/co-authored 23 peer-reviewed journal articles, 2 book chapters, 83 scientific abstracts/proceedings, and 29 technical reports.
- Acquired \$20,724,910, of which \$4,456,580 went to my research program.
- Presented 33 posters at scientific meetings, nine invited international presentations, 50 national presentations, 32 invited, 11 invited state-level presentations, and 22 outreach presentations.
- Served as officer in National Association of Plant Breeders Communications Committee, CSSA C549 Seed Science Award Committee, Cotton Database Steering Committee, National Cotton Variety Testing Committee
- Associate Editor – Cotton, *Journal of Plant Registrations*, 2011-2014
- Technical Advisor to USDA-FAS funded, Catholic Relief Services-administered development project in Burkina Faso, “Revenue through Cotton Livelihoods, Trade, and Equity (RECOLTE)” since 2013.